February 18, 1998

RECEIVED
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OFC. OF ENVIRONMENTAL QUALITY CONTROL

TO: The Honorable Kazu Hayashida, Director
Department of Transportation

SUBJECT: Acceptance of Final Environmental Impact Statement
for Kahului Airport Improvements

With this memorandum, I accept the Final Environmental Impact Statement for Kahului Airport Improvements, Kahului, the Island of Maui, as satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes. The economic, social and environmental impacts, which will likely occur should this project be implemented, are adequately described in the statement. The analysis, together with the comments made by reviewers, provides useful information to policy makers and the public.

My acceptance of the statement is an affirmation of the adequacy of that statement under the applicable laws but does not constitute an endorsement of the proposed action.

I find that the mitigation measures discussed in the environmental impact statement will minimize the negative impacts of the project. Therefore, if this project is implemented, the Department of Transportation and/or its agents should perform these or alternative and at least equally effective mitigation measures at the discretion of the permitting agencies. The mitigation measures identified in the environmental impact statement are listed in the attached document.

Benjamin J. Cayetano

BENJAMIN J. CAYETANO

Attachment

c: Honorable Lawrence Miike
Office of Environmental Quality Control

ATTACHMENT TO ACCEPTANCE MEMORANDUM FROM GOVERNOR BENJAMIN CAYETANO TO DIRECTOR KAZU HAYASHIDA REGARDING KAHULUI AIRPORT IMPROVEMENTS ENVIRONMENTAL IMPACT STATEMENT MITIGATION MEASURES

The following list of mitigation measures identified in the final environmental impact statement will minimize the negative impacts of the project. If the project is implemented, the Department of Transportation and/or its agents should perform these or alternative and at least equally effective mitigation measures at the discretion of the permitting agencies.

Construction Phase Mitigation Measures

Noise

DOT will use properly muffled equipment to minimize construction noise.

Water Quality

DOT will employ erosion and sediment control measures such as sediment retention basins, berms and landscaping to minimize storm water runoff.

DOT will utilize best management practices consistent with DOH and NPDES rules to minimize water quality impacts to nearshore and coastal areas and reefs.

Air Quality

DOT will comply with DOH rules on fugitive dust to prohibit visible emissions of fugitive dust from construction activities at the property line. These mitigation measures include: (i) use of a frequent watering program; (ii) limiting the area that can be disturbed at any given time; (iii) application of chemical soil stabilizers or mulching; (iv) construction of wind screens; (iv) covering all open-bodied trucks when transporting dirt or dust producing materials; (v) cleaning roads or washing tires; and (vi) paving parking areas and landscaping early in the construction process.

Archaeological

DOT will conform to the Programmatic Agreement on Archaeological and Historic Sites that has been prepared by the FAA and State Historic Preservation Officer.

Should there be any inadvertent discoveries of archaeological resources during construction work, work that would affect the archaeological resources must stop immediately and the State Historic Preservation Division must be notified.

Botanical Resources

When and where possible, DOT will landscape using native and drought tolerant species to compensate for the removal of vegetation and reduce irrigation demand.

During the construction of the parallel runway, DOT will transplant healthy trees that are removed to landscape the open space buffer between Hana Highway and the parallel runway.

Traffic

During the construction of the Airport Access Road, DOT will ensure that no lanes are closed during the peak traffic hours. DOT will complete the new Hansen Road prior to closing Pulehu Road and realigning Hansen Road.

Operational Phase Mitigation Measures

Airport and Aircraft Noise

To the extent possible, DOT will implement the abatement and mitigation measures set forth in the Kahului Airport Noise Compatibility Program to reduce existing land use incompatibilities with the airport environs.

Ground Vehicle Noise

DOT will discuss with the community the construction of a noise barrier to reduce the noise level (to below 67 dBA Leq) for homes along Dairy Road/Kuihelani Highway between Puunene Avenue and Hukilike Street. The noise barrier will be built only if there is majority approval among community members.

Earthquakes

DOT will design facilities to meet building codes and the applicable seismic codes (Maui is within seismic zone 2B which corresponds to light-to-moderate seismic strength/risk) to minimize potential earthquake damage.

Fuel

DOT will design and build the two new 8,500 barrel above ground fuel storage tanks at Kaonawai Place during Phase 1 in compliance with all applicable regulations to prevent the contamination of soil and water and will employ state of the art technology.

Air Quality

DOT will monitor aircraft emissions and impose controls if the measured air quality exceeds State or Federal standards. DOT will encourage the use of capacity enhancements techniques to lessen aircraft delay on the airfield and reduce air quality impacts.

DOT and Maui County will increase the capacity of intersections, reduce roadway speed limits at locations that cause excessive acceleration emissions, promote bus service for arriving and departing airport passengers, and if feasible, coordinate air carrier schedules to minimize airport-related traffic during peak commute hours to reduce ground vehicle emissions.

Water Quality

DOT will employ erosion and sediment control measures such as sediment retention basins, berms and landscaping to minimize storm water runoff.

DOT will utilize best management practices consistent with DOH and NPDES rules to minimize water quality impacts to nearshore and coastal areas and reefs.

Flood and Tsunami

DOT will design and construct new facilities to meet the latest Federal and State flood zone and coastal high hazard rules to minimize potential damage from flooding or tsunamis. The airport area emergency warning system will be extended to cover all facilities.

Archaeological

DOT will conform to the Programmatic Agreement on Archaeological and Historic Sites that has been prepared by the FAA and State Historic Preservation Officer.

Botanical Resources

When and where possible, DOT will landscape using native and drought tolerant species to compensate for the removal of vegetation and reduce irrigation demand.

Fauna

DOT will design outdoor lighting using the Department of Land and Natural Resources' guidelines for the Newell's Shearwater, entitled "The Newell's Shearwater Light Attraction Problem, A Guide for Architects, Planners, and Resort Managers" to reduce lighting impacts on the Dark-rumped Petrel and other birds that may be affected.

Wetlands

DOT will design the alignment of the Alahao Street/Old Stable road emergency connection which is part of Phase 2 to avoid wetlands.

Energy Use

DOT will minimize energy consumption by i) upgrading the airport electrical distribution and management systems, ii) using energy efficient lighting fixtures and employing other energy conservation measures, iii) insulating buildings to reduce heat loss and gain, and iv) utilizing motion sensors as applicable to control lighting requirements.

Light Emissions

DOT will properly shield and direct new lighting to minimize light intrusion into areas outside the airport.

Toxic/Hazardous Waste

DOT will remove, treat and/or dispose all toxic and hazardous materials (petroleum products, PCB, asbestos, lead paint, etc.) in accordance with applicable Federal and State rules and regulations. DOT will also maintain a current emergency response plan.

Water Supply

As part of the proposed project, DOT will reduce the amount of potable water consumption at the airport by:

i) rehabilitating the existing water supply system to alleviate leakage.
ii) using non-potable water for landscape irrigation.
iii) landscaping with plant species that are salt-tolerant and drought-resistant.
iv) recycling rental car wash water.

Wastewater

As part of the proposed project, DOT will reduce flows to the wastewater collection and treatment system by:

i) reusing rental car wash water.
ii) improving the storm water drainage system to alleviate flooding of and stormwater intrusion into the sewage system.
iii) repairing deteriorated and broken sewer lines to decrease water infiltration into the sewer collection system.

DOT will monitor the flows into the Naval Air Station - Kahului sewage pump station (owned by DOT and managed by the County of Maui) which serves the entire airport property exclusively. As the peak flow exceeds 80 percent of the design capacity, DOT will initiate plans to upgrade the sewage pump station.

Ground Transportation

As part of the proposed project, DOT will improve the following intersections to reduce traffic congestion:

i) Hana Highway intersection with Hansen/Spine Road;
ii) Airport Access Road intersection with Dairy Road;
iii) Airport Access Road intersection with westbound on-ramp to Hana Highway; and
iv) Airport Access Road Interchange.

As part of the proposed project, DOT will maintain the existing Hana Highway bike route and will design bike crossings at the highway on- and off-ramps to provide safety for the bikers and motorists.

Alien Species Introduction

In cooperation with the Department of Agriculture, Department of Health, Department of Land and Natural Resources and other affected agencies and groups, DOT will prepare an action plan to achieve the goals of the mitigation measures discussed below to minimize the risk of alien species introductions.

PRE-ENTRY MEASURES

Pre-entry Traveler Education about Alien Species: DOT will support the Consulting Group on Alien Pest Species (CGAPS) in their educational role of informing the traveling public of the dangers of alien species, particularly in promoting an Alien Species Video acceptable for in-flight viewing.

Notification of New Routes to Maui: DOT, as a member of CGAPS, will keep CGAPS informed of any new proposed domestic or international routes to Maui. CGAPS members include DOA, the U.S. Department of Agriculture (USDA), and the U.S. Fish and Wildlife Service.

Treatment of Cargo Holds: DOT will develop a voluntary program for all airlines serving Kahului Airport using a non-chemical (sticky traps, light traps, modified lighting) best practical pesticide/pest prevention treatment program for aircraft cargo spaces.

PORT-OF-ENTRY MEASURES

Traveller Education Regarding Alien Species Risks, Quarantine Restrictions, and Penalties: DOT shall support efforts by CGAPS and others to adequately and effectively inform arriving passengers of the dangers posed by alien species, the nature of quarantine restrictions, and the penalties for violations.

Training of Airline and Airport Personnel in Alien Species Recognition and Response: DOT will plan and implement in coordination with DOA, USDA and CGAPS an education program to train airport employees, baggage handlers, airline cabin personnel, and others to recognize and report smuggled animals and plants/fruits, stowaway snakes and insects, and new alien species on airport grounds.

Arrival Inspection Facilities: DOT will support DOA with Domestic Arrival Inspection by installing a data link between the arrival gates and baggage claim, installing one X-ray machine to test the feasibility of inspecting arriving baggage, installing a paging system at baggage claim, and supplying office space, kennels and inter-terminal golf carts as necessary. DOT will furnish the infrastructure and support to adequately meet the USDA inspection needs for international arrivals.

Additional Agriculture Arrival Inspectors: DOT will fund one additional inspection dog and three additional agriculture inspector positions. One new inspector will act as a handler for the dog. This increase will bring the total inspection team at Kahului Airport to eleven inspectors and two dogs.

New Air Cargo Building: DOT will design and construct a new air cargo building to meet existing and forecast demands to include:

- an industrial air curtain to prevent escape of any insects during inspection of air cargo containers;
- offices and facilities for U.S. Customs, USDA and DOA;

- lab space, freezer and sterilization/incineration facilities;
- space for X-ray equipment; and
- computer equipment and facilities for the DOA alien species database system.

Quality Control Program: DOT will design and fund, on an ongoing basis, a comprehensive program to monitor the efficacy of the alien species interdiction system at Kahului Airport. The program shall be designed in consultation with DOA, USDA and CGAPS and shall be developed and operated by a consultant or agent under the control and management of DOT. The program will provide yearly reports to all concerned agencies. These reports shall include summaries of all alien species interceptions from all airport-based operations, their origin and mode of arrival, to the extent possible, and estimates of the efficiency of the inspection system for various taxonomic groups of concern. DOA will take the lead in developing these estimates which should be based in part on tests of the system (e.g., attempted smuggling, random sampling of passengers effects and cargo, and complete inspections of aircraft). The yearly reports shall also include recommendations to improve the efficiency of the inspection system and the quality control program itself. The program will be integrated with the existing USDA Quality Control system for international arrivals.

EARLY ESTABLISHMENT/RESPONSE AND OTHER MEASURES

Security Committee: DOT will encourage the Kahului Airport Security Committee to include alien species control as an element under its purview.

Brown Tree Snake Control Plan: DOT will review the Brown Tree Snake Control Plan to determine its applicability to all airports within the State.

Alien Arthropod Detection and Response: DOT will, on an ongoing basis, contract with a consultant in entomological pest identification to assist the USDA Animal Damage Control in conducting semi-annual monitoring of the airport environs to detect early establishment of new alien insects, particularly social hymenoptera (ants and wasps) and biting diptera (midges, flies and mosquitoes). Results will be communicated to the DOA and the Quality Control Program described above. DOT will assist DOA and USDA with manpower, resources and funds in the eradication of any detected population within the Kahului Airport boundary.

FINAL
ENVIRONMENTAL IMPACT STATEMENT

VOLUME I OF V

KAHULUI AIRPORT IMPROVEMENTS
KAHULUI, MAUI, HAWAII

State Project No. AM1011-07

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

and

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

GOVERNOR, BENJAMIN CAYETANO

September 1997

Office of Environmental Quality Control
235 S. Beretania #702
Honolulu HI 96813
586-4185

DATE DUE

~~12-23-97~~
~~9-14-98~~
~~June 2, 1999~~
April 29, 2003
JUNE 22, 2005

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
As lead Federal Agency pursuant to the National Environmental Policy Act of 1969

STATE OF HAWAII, DEPARTMENT OF TRANSPORTATION
As lead State Agency pursuant to the Hawaii Revised Statutes, Chapter 343

FINAL ENVIRONMENTAL IMPACT STATEMENT

KAHULUI AIRPORT
PROPOSED AIRPORT MASTER PLAN IMPROVEMENTS
KAHULUI, MAUI, HAWAII

This Environmental Impact Statement (EIS) addresses the potential environmental impacts of the proposed airport master plan improvements including: extending and strengthening Runway 2-20; construction of a parallel Runway 2R-20L; land acquisition; new airport access roadway; commercial and general aviation facilities such as aircraft parking aprons, taxiways, navigational aids, etc.; jet blast protection; and an interim helicopter facility. The EIS also addresses the required information necessary for the State of Hawaii to obtain federal assistance for the development of surface access around the airport from the U.S. Federal Highway Administration, through the Intermodal Surface Transportation Efficiency Act (ISTEA). The EIS is submitted for review pursuant to the following public law requirements: Section 102(2)(c) of the National Environmental Policy Act of 1969; Hawaii Revised Statutes, Chapter 343; and 49 USC 47106 (c)(B) and (C) of the Airport and Airway Improvement Act of 1982, as amended.

VOLUME I of V: DOCUMENTATION

For further information:

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Honolulu, Hawaii 96850-0001
Telephone: (808) 541-1243

Mr. Jerry Matsuda, P.E.
Airports Administrator
Department of Transportation
Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880
Telephone: (808) 838-8600

September 1997

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FINAL
ENVIRONMENTAL IMPACT STATEMENT
KAHULUI AIRPORT, KAHULUI, MAUI, HAWAII

Wailuku District, Island of Maui

Tax Map Keys: 3-08-01: 2 - 5, 15, 18, 19, 20, 45, 73, 76 - 78, 80, 92, 95 - 98, 100 - 105, 121 - 124, 127, 129, 131, 133, 134 - 136, 142, 145, 147, 148, 152 - 155, 157 - 162, 166, 168, 173 - 176, 178, 181 - 187, 189, 190, 192, 195, 196, 204, 205, 209, 211, 212, 214 - 220, 222 - 228, 236, & 237; and 3-8-79: 13 & 21

State Project No. AM1011-07

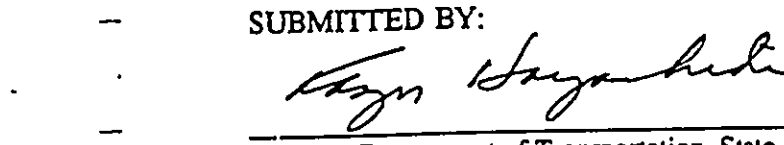
Lead Federal Agency: U.S. Department of Transportation
Federal Aviation Administration
Airports District Office, Honolulu
Box 50244
Honolulu, Hawaii 96850-0001

Lead State Agency and Applicant: State of Hawaii
Department of Transportation
Airports Division
400 Rodgers Blvd., Suite 700
Honolulu, Hawaii 96819-1880

ABSTRACT: The purposes of the proposed actions are to provide the island of Maui with an Airport that will have improved airport facilities (including an extended runway, taxiways, and support facilities) to reduce operating and maintenance costs, provide a more efficient airfield and airport facility; to allow for more efficient use of aircraft by airlines using Kahului Airport; to accommodate existing and forecast aviation demand, and to provide improved access to the airport. Alternatives to the proposed airport projects include various runway lengths, different airport layouts and configurations, relocation of airport operations, the no-action alternative, alternatives to the intersection/interchange, and alternate transportation modes. Potential significant adverse impacts are in the areas of: air quality (exceedance of State standards); highway noise; archaeological, cultural resources and historical features; socio-economic; and surface transportation (new intersections and bike routes). In addition, the impacts on water quality, water supply, health care facilities, and alien species, with or without the airport improvements, are considered potentially significant adverse cumulative impacts. Proposed mitigation measures include: a highway noise barrier, landscaping, proper design, use of non-potable water, avoidance or data recovery of archaeological, cultural and historical resources, increasing roadway intersection capacities; and alien species education, inspection facilities, and additional inspectors. Potential positive (beneficial) impacts are listed in the categories of air quality, recreation, surface transportation, and airfield safety. The proposed improvements are generally consistent with: (i) the applicable Hawaii State Plan and various Functional Plans; (ii) the Maui County General Plan; and (iii) the Wailuku-Kahului Community Plan goals and policies.

I, the undersigned, certify that this Environmental Impact Statement and all ancillary documents were prepared under my direction or supervision. The information submitted, to the best of my knowledge, fully addresses the document content requirements as set forth in sections 11-200-17 and 11-200-18 of the Hawaii Administrative Rules, as appropriate.

SUBMITTED BY:



Director, Department of Transportation, State of Hawaii

9/29/97
Date

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ENVIRONMENTAL IMPACT STATEMENT
KAHULUI AIRPORT IMPROVEMENTS

TABLE OF CONTENTS
VOLUME I

NOTE: The shaded text within the Final EIS, indicates changes made to the text of the Draft EIS, pursuant to State of Hawaii, Department of Health, Administrative Rules, 11-200-18.

LIST OF APPENDICES

VOLUME II

VOLUME III

LIST OF FIGURES

Note: the Figures which have been modified since the Draft EIS, are dated after May 1996

LIST OF TABLES

SUMMARY

This joint Federal and State Environmental Impact Statement (EIS) has been prepared in support of: (1) the federal actions consisting of approval of the Airport Layout Plan (ALP) and continued processing of an application for federal assistance in the construction of proposed improvements to the Kahului Airport (OGG) as recommended in the 1993 Master Plan; and (2) the State of Hawaii actions consisting of state environmental approval and construction of the proposed improvements. The EIS has been prepared in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), the Airport and Airway Improvement Act of 1982 (AAIA), as amended, and other applicable environmental review laws, executive orders, and regulations. The EIS complies with the requirements of Chapter 343 of the Hawaii Revised Statutes (HEPA) and Title 11, Chapter 200 of the State of Hawaii, Department of Health Administrative Rules. The EIS also addresses the Circuit Court of the Second Circuit, State of Hawaii, Stipulated Court Order that was entered into on March 12, 1991.

The format and content of the EIS conform to the requirements for an EIS set forth in the President's Council on Environmental Quality (CEQ) *regulations that implement* the procedural provisions of NEPA (40 CFR 1500-1508), and to the Department of Transportation (DOT), Federal Aviation Administration (FAA) implementing requirements appearing in DOT Order 5610.1C and in FAA Orders 1050.1D and 5050.4A, and to Chapter 343 of the Hawaii Revised Statutes (HEPA), and to Title 11 of Chapter 200 of the State of Hawaii, Department of Health Administrative Rules.

PURPOSE AND NEED FOR THE PROPOSED IMPROVEMENTS

The 1993 Master Plan examined the existing airport facilities, projected the growth in aviation activity through the year 2010 using the 1990 Hawaii State Airport System Plan (SASP) forecasts, and proposed various improvements which would enable the airport to accommodate the forecasted demand at acceptable levels of service. Through a phased approach, a number of improvements were identified which could remedy the deficiencies of the existing airport and accommodate the forecasted demand at acceptable levels of service. The SASP forecasts were updated in 1994 by the "Update of Hawaii Aviation Demand Forecasts." Based upon these updated forecasts, the phasing in the 1993 Master Plan was revised to delay the proposed improvements in Phases 2 and 3 by six (6) years. The major improvement components of the 1993 Master Plan, which reflect the revised forecasts, are shown on Figure 1-1 in this EIS. The specific purpose and need for each phase component is as follows:

PHASE 1 (1996 - 2002) Refer to Figure 2-11

Property Acquisition - The acquisition of land in fee and avigation easement for Phase 1 will allow the airport to implement a variety of measures to accommodate the forecasted demand for expanded aviation facilities and to reduce the potential for incompatible land uses adjacent to the airport. Phase 1 acquisitions include four (4) acres for the new Hansen Road, nine (9) acres for Runway 2/20 NAVAID relocation, and 45 acres for an avigation easement for Runway 2/20 Runway Protection Zone.

Strengthening and Extending Runway 2/20, and Associated Taxiways, and Relocate NAVAIDS - The 2,600 foot southerly extension of Runway 2/20 from 7,000 feet to 9,600 feet total length will allow the airport to: (1) accommodate those air carriers which currently serve destinations outside Hawaii, including mid-west, east coast, and future international hubs; (2) accommodate future projected increases in passengers and cargo leaving Maui for destinations outside Hawaii; (3) improve the efficiency and flexibility of aircraft use at Kahului and within Hawaii; and (4) reduce the need for redundant flight operations such as stopover flights at Honolulu International.

Air Cargo Facilities - The proposed facilities for air cargo operations will accommodate existing and forecasted demand, and will ensure that economical and timely air cargo service is available to Maui residents and industries. Air cargo is carried in the holds of passenger aircraft (belly cargo) and in all-cargo aircraft. Phase 1 includes a new cargo facility, including an access road, to be constructed on the West Ramp.

New Airport Access Road - The new Airport Access Road from the airport to Puunene Avenue, and interchange at Hana Highway, will provide improved airport access through increased lane capacity and reduced congestion at other intersections in the airport environs.

Improvements to Infrastructure Components - Airport roadways and utility systems will be constructed, expanded, and upgraded to support the other planned facility improvements at acceptable levels of service. Phase 1 includes a Post Office ramp access road, an airfield perimeter road and fencing around extended Runway 2/20, expanded and improved water/irrigation system, expanded and improved sewage system, expanded and improved storm water drainage system, and expanded and improved electric power and communication system.

Installation of New Fuel Storage and Loading Facilities - The proposed bulk fuel storage facility and connection to the existing apron hydrant lines will eliminate the need for fuel trucks to cross active runways to reach the passenger terminal apron. These facilities will be constructed and operated by the airlines fuel consortium, Hawaii Fueling Facilities Corporation (HFFC). HFFC's initial construction will consist of two 8,500 barrel above-ground storage tanks with berms to contain the liquid in the event of a spill.

Interim Relocation of Helicopter Apron - The proposed helicopter apron will provide greater separation between helicopter takeoffs and landings and fixed-wing aircraft landing on Runway 2/20 until completion of Phase 3. The existing location (less than 1,000 feet from Runway 2/20) can cause missed approaches for landing aircraft. The proposed apron will provide an unobstructed line-of-sight from the Airport Traffic Control Tower (ATCT).

PHASE 2 (2003 - 2008) Refer to Figure 2-12

Property Acquisition - The acquisition of land in fee and avigation easement for Phase 2 will allow the airport to implement a variety of measures to accommodate the forecasted demand for expanded aviation facilities and to reduce the potential for incompatible land uses adjacent to the airport. Phase 2 acquisitions include 488 acres for the proposed parallel runway (this land will serve as a land bank until such time as the parallel runway is required), two (2) acres for the expansion of the West Side cargo area, and 40 acres for an avigation easement for future Runway 2R/20L Runway Protection Zone.

Commercial Aviation/Fixed Base Operator (FBO) Facilities - The proposed lease lots will accommodate the forecasted FBO demand.

Air Cargo Facilities - The proposed facilities for air cargo operations will accommodate the forecasted demand, and ensure that economical and timely air cargo service is available to Maui residents and industries. Air cargo is carried in the holds of passenger aircraft (belly cargo) and in all-cargo aircraft. Phase 2 includes a new cargo facility on the East Ramp and related apron improvements.

General Aviation Facilities - Additional aircraft T-Hangars and apron facilities will be constructed to accommodate the forecasted demand of acceptable levels of service and the anticipated future growth for general aviation aircraft parking.

Air Taxi (Scenic Air Tour) Facilities - The proposed apron parking for scenic air tour aircraft and a new air taxi terminal building will accommodate future growth demand. The existing terminal building will be removed because it is located within the Building Restriction Line for Runway 2/20.

New Airline Ground Support Equipment Maintenance Building - The proposed building will replace a substandard facility that is located within the Building Restriction Line.

Additional Ground Transportation Facilities - Five acres of airport property will be made available to private companies to accommodate additional ground transportation services. The existing services will be relocated from the Runway Protection Zone off the end of Runway 5.

Improvements to Infrastructure Components - Airport roadways and utility systems will be constructed, expanded, and upgraded to support the other planned facility improvements. Phase 2 includes a connection from Alahao Street to Old Stable Road for emergency access, ground transportation subdivision roads, airfield perimeter roads, the north section of an East Ramp access road (spine road), expanded and improved storm water drainage system, and expanded and improved electric power and communication system.

Expansion to Kanaha Park - Additional recreation facilities will be provided adjacent to the eastern side of Kanaha Park. Ownership of the area would remain with the State of Hawaii Department of Transportation (HDOT), but facilities would complement existing County facilities.

PHASE 3 (2009 - 2016) Refer to Figure 2-13

Phase 3 is in the far future, 2009 to 2016, and is only discussed to the extent reasonable and practical in the EIS. It is expected that various Phase 3 projects will require additional environmental analysis and documentation prior to those projects being implemented.

Proposed New Parallel Runway 2R/20L, associated taxiways, and NAVAIDS - The proposed parallel Runway 2R/20L (8,500 feet long, 150 feet wide) will allow the airport to accommodate the forecast airfield capacity needs and avoid the forecasted delays to maintain an efficient and safe airport operation at acceptable levels of service. Further environmental documentation will be required prior to implementation of this project.

Airfield Improvements - Proposed airfield improvements will facilitate airfield operations and provide additional aircraft parking area. Taxiway "F" will be extended northeast to provide a full-parallel taxiway for Runway 5/23. The east side parallel taxiway to Runway 2L/20R will be extended south to the extended end of Runway 2L. The proposed Transient and Military Apron will provide parking for "overnight" and long-term aircraft. The demand for aircraft parking gates is limited and relocating these aircraft will allow for better gate utilization. A full Runway Safety Area will be provided for both ends of Runway 5/23.

New/Relocated Helicopter Facilities - The construction of the future parallel Runway 2R/20L will necessitate the proposed off-site helicopter facility at the Old Puunene Airfield Site. Due to the long range nature of this facility, an environmental analysis for this Puunene site will be analyzed prior to design in order to determine what, if any, additional environmental documentation is required.

Air Cargo Facilities - The proposed facilities for air cargo operations will accommodate the forecasted demand, and will ensure that economical and timely air cargo service is available to Maui residents and industries. Air cargo is carried in the holds of passenger aircraft (belly cargo) and in all-cargo aircraft. Phase 3 includes an expansion to the cargo facility on the West Ramp.

Expansion of Ground Transportation Facilities - Additional airport property will be made available to private companies to accommodate expansion to the ground transportation subdivision.

Expand Passenger Terminal Parking Lot - Space south of the existing automobile parking lot will be reserved for possible future expansion of parking facilities.

Improvements to Infrastructure Components - Airport roadways and utility systems will be constructed, expanded, and upgraded to support the other planned facility improvements. Phase 3 includes completion of the East Ramp access road from Hana Highway (spine road), realignment of Hana Highway at northeast end of the airport. airfield perimeter roads, expanded and improved storm water drainage system, and expanded and improved electric power and communication system.

Flight Kitchen Facilities - The on-airport flight kitchen will provide more efficient catering service to the airlines and reduce catering truck traffic on and off airport roadways. A lease lot will be provided for construction and operation of the facility by a private catering service.

Installation of New Fuel Storage and Loading Facilities - The proposed fuel supply line from Kahului Harbor to the new fuel storage facilities will eliminate the need to transport fuel by trucks on local roadways. Further environmental documentation will be required prior to implementation of this project.

Commercial Aviation/Fixed Base Operator (FBO) Facilities - The proposed lease lots will accommodate the forecasted FBO demand.

STIPULATED COURT ORDER

Litigation was brought against the Hawaii Department of Transportation by a number of Maui citizens and several environmental organizations to halt the expansion of the airport until a more thorough evaluation of the environmental impacts of the proposed development actions included in the 1988 Kahului Airport Development Plan had been completed. This litigation resulted in a Stipulated Court Order entered into on March 12, 1991. This Stipulation required that the below listed issues be addressed in addition to the projects recommended in the 1993 Master Plan. These issues were all analyzed and have been addressed in this EIS.

1. The analysis of the long-term development plan projects, the short-term development plan projects, and other projects enumerated in the Stipulated Court Order.

2. The analysis of traffic impacts at the Dairy Road and Puunene Avenue intersection.

3. The investigation of the feasibility of reactivating the old Puunene Airport on a permanent basis for General Aviation, as a reliever airport, and for night cargo operations. The investigation would also consider the reactivation of the old Puunene Airport on a temporary basis for night aircraft use during the period of time required to implement the runway strengthening project.

4. The investigation of realigning, widening, and improving Alahao Street and extending it to the northeast to Hana Highway as a road which shall be open for public use providing through traffic along the coastal side of Kahului Airport.

5. The investigation of a recreational/beach park on airport lands adjoining the County Kanaha Beach Park.

6. The investigation of international flight operations including permanent and temporary (interim) international facilities.

7. The investigation of the findings, alternatives, and recommendations contained in the FAR Part 150 Noise Study for Kahului Airport.

8. The analysis of international flight operations, including permanent or temporary (interim) international arrival facilities.

ALTERNATIVES Refer to Table 1-2 and Figure 1-1

A variety of both on and off airport alternatives have been examined for their ability to meet the Purposes and Needs established in the 1993 Master Plan. The No-Action alternative and those reasonable alternatives that satisfy the purposes and needs are assessed for environmental impacts. The alternatives considered are: (1) No-Action alternative; (2) the Preferred Alternative (Proposed Project) and six alternative development concept plans from the 1993 Master Plan; (3) several other runway alternatives; (4) an at-grade intersection and different interchanges at the Hana Highway - Airport Access Road intersection; and (5) use of other transportation modes.

1. The No-Action Alternative involves retaining the airport in its current state without any of the Proposed Improvements.

2. Alternatives for the development actions determined to be feasible and prudent from an operational and environmental standpoint considered in the 1993 Master Plan include:

a. Strengthening and Extending Runway 2/20, and Associated Taxiways

Preferred Alternative extends Runway 2/20 south to a total length of 9,600 feet.

Alternative 1 has no extension to the existing 7,000 foot runway.

Alternatives 2 and 6 extend Runway 2/20 south to a total length of 8,500 feet.

Alternatives 3 and 5 extend Runway 2/20 south to a total length of 9,500 feet.

Alternative 4 extends Runway 2/20 to 10,500 feet (2,600 feet south and 900 feet north).

b. Runway 5/23

Runway 5/23 remains the same for all alternatives except Alternative 6 where it is closed.

c. Proposed New Parallel Runway 2R/20L

Preferred Alternative has a 8,500 foot parallel runway.

Alternative 1 has no parallel runway.

Alternative 2 has a 3,500 foot parallel runway.

Alternatives 3 and 5 have a 8,500 foot parallel runway.

Alternative 4 has a 10,500 foot parallel runway.

Alternative 6 has a 7,000 foot parallel runway.

d. Property Acquisition

Various property acquisitions are included in each of the alternatives.

e. New Airport Access Road

The New Airport Access Road is included in each of the alternatives.

f. General Aviation Facilities

Alternative 1 relocates General Aviation to an off-airport location.

Alternative 2 has General Aviation adjacent Hana Highway near the intersection with Kala Road.

Preferred Alternative plus Alternatives 3, 4, 5, and 6 have General Aviation on the east ramp near the Preferred Alternative location.

g. Air Taxi (Scenic Air Tour) Facilities

The Air Taxi Facilities are the same for all alternatives.

h. Commercial Aviation/FBO Facilities

Alternative 1 relocates the Commercial Aviation/FBO Facilities to an off-airport location.

Alternative 2 has the Commercial Aviation/FBO Facilities located west of Hana Highway near Eena Street.

Preferred Alternative plus Alternatives 3, 4, 5, and 6 have the Commercial Aviation/FBO Facilities on the east ramp.

i. Air Cargo Facilities

Preferred Alternative has General Cargo on the west ramp near Haleakala Highway.

Alternative 1 has General Cargo in the same location as existing.

Alternatives 2, 3, 4, and 5 have General Cargo on or near the east ramp.

Alternative 6 has General Cargo on the west ramp near closed Runway 5/23.

Preferred Alternative plus Alternatives 1, 2, 3, 4, and 5 have Hold Cargo on or near the west ramp.

Alternative 6 has Hold Cargo on the west ramp near closed Runway 5/23.

j. New/Relocated Helicopter Facilities

Preferred Alternative has an interim relocation of the helicopter facility directly east of the existing facility and relocation of the facility off the airport when the parallel runway is constructed.

Alternatives 1 and 3 do not relocate the existing helicopter facility.

Alternatives 2 and 6 relocate the helicopter facility off the airport in Phase 1.

Alternatives 4 and 5 relocate the helicopter facility to a site east of Hana Highway near the intersection with Kala Road.

k. Ground Transportation Facilities

The Ground Transportation Facilities are the same for all alternatives.

l. Flight Kitchen Facilities

The Flight Kitchen Facilities are the same for all alternatives.

m. New Airline Ground Support Equipment Maintenance Building

The New Ground Support Equipment Maintenance Building is included in all alternatives.

n. Installation of New Fuel Storage and Loading Facilities

Preferred Alternative has the Fuel Storage Facility near the west ramp adjacent the Ground Transportation Facilities.

Alternatives 1, 2, 3, and 4 include the Fuel Storage Facilities on the east ramp south of the existing helicopter facility.

Alternative 5 has the Fuel Storage Facility on the west ramp near Haleakala Highway.

Alternative 6 has the Fuel Storage Facility adjacent Alahao Street near the Kalialinui Channel.

o. Transient and Military Apron

Preferred Alternative plus alternatives 3, 4, 5, and 6 have the Transient Apron adjacent to Runway 5/23 near the intersection with Taxiway "A".

Alternatives 1 and 2 include the Transient Apron on the east ramp near the existing T-Hangars.

p. Kanaha Beach Park Improvements

Improvements to Kanaha Beach Park are the same for all alternatives.

q. Improvements to Infrastructure Components

Infrastructure Improvements including the Post Office Access Roadway, General Airfield Improvements, Spine Road, and the Reserve Land for Potential Terminal Expansion are the same for all alternatives, except that the Spine Road is not in Alternative 1.

r. Alahao Street Extension

The Preferred Alternative includes the extension to Alahao Street which is not in any of the other alternatives.

3. Other runway/airfield alternatives include:

   a. Use of declared distances for Runway 2/20

   b. 9,600 foot parallel runway

c . Relocation of Helicopters/General Aviation Operations to an off-airport site

d. Relocation of Night Cargo Flights to Puunene Airport on a temporary/permanent basis

4. Alternative Runway Construction Phasing

5. Intersection alternatives for the Hana Highway - Airport Access Road interchange include:

a. Single-Loop partial cloverleaf

b. Single point diamond interchange

c. Full cloverleaf

d. At-Grade intersection to operate at a Level-of-Service of "F"

e. At-Grade intersection to operate at Travel Demand Management measures

f. Diamond interchange

6. Other transportation modes: The only other practical mode of interisland transportation in Hawaii, other than by air, is by ocean surface vessel. This alternative could not feasibly provide the quality and quantity of service required by residents and visitors to the state.

ENVIRONMENTAL CONSEQUENCES

The potential environmental consequences of each development alternative, including the Preferred Alternative (Proposed Project), have been analyzed and documented in accordance with Federal and State of Hawaii guidelines for a wide variety of impact categories. The thresholds defining a significant impact may vary between federal and state guidelines. In such cases, this document discusses both thresholds. The analyses considered each alternative's impact potential, for the individual components and the alternative as a whole, to determine the component's specific impact potential and the cumulative impact potential of the alternative. This EIS, a joint Federal and State document, provides an analysis and impact assessment in compliance with both Federal and State rules and regulations. The following discussion summarizes the results of the analyses for the applicable impact categories associated with the Proposed Project as it meets the applicable Federal guidelines only:

Noise and Compatible Land Use - The noise analysis involved the development of noise contours using the FAA recommended Day Night Average Sound Level (DNL) metric for both the EIS and the Federal Aviation Regulations (FAR) Part 150 Study. This study showed similar existing impacts on single family residential areas between the 65 DNL and the 75 DNL contours. The State adopted a 60 DNL contour for land use compatibility under FAR Part 150 guidelines which state that ultimately "the

responsibility for determining the acceptability and permissible land uses remains with the local authorities." The Part 150 Study recommended abatement measures for these existing impacts under both guidelines.

The proposed Runway 2/20 extension will have an insignificant effect on non-compatible land uses in the airport environs. The future parallel runway will have potential significant adverse impacts on noise sensitive areas in the airport environs; however, it will not generate new non-compatible land uses compared to the existing non-compatible land uses identified in the Part 150 Study. Since the parallel runway is not planned for construction until beyond the 2009 time frame, the full environmental impacts are not currently known; therefore, a separate environmental document will be prepared to assess the impacts and provide mitigation measures when, or if, the parallel runway is required.

Ground noise analyses conducted for the New Airport Access Road using Federal Highway Administration (FHWA) criteria show that there will be a significant adverse noise impact for residences along Dairy Road between Puunene Avenue and Hukilike Street due to the overall growth in ground vehicle traffic. This impact is less than the impact anticipated under the No-Action alternative but the noise levels for these residences would exceed the FHWA noise criteria. Therefore, a noise barrier will be constructed within the right-of-way to mitigate the impact level to insignificant. There will be a positive impact for areas along Dairy Road which are north of Hukilike Street due to the Proposed Project compared to the No-Action alternative.

Social and Induced Socioeconomic Impacts - The Proposed Project will have insignificant impacts in Phases 1 and 2. The Proposed Project will create a significant short-term effect on construction employment (over 5% increase), but this would not have a long-term impacts on employment. In Phase 3, the future parallel runway would displace some residents in East Sprecklesville and cause the relocation of agricultural activities. The parallel runway is also inconsistent with Maui County's Plans. However, the long range nature (beyond 2016) of the parallel runway makes the determination of significance for these impacts difficult to assess at this time. Therefore, prior to construction of the parallel runway, a separate environmental document will be prepared to assess the impacts and provide mitigation measures as necessary.

Air Quality - An air quality impact analysis was performed for the year 2010 using the Emissions and Dispersion Modeling System (EDMS) and the results compared to both National and State Ambient Air Quality Standards. The entire State of Hawaii is considered to be an attainment area for all national ambient air quality standards; therefore, the FAA is not required to make a conformity determination under Federal Conformity Rules (40 CFR Part 93) issued by the U.S. Environmental Protection Agency. The Governor certified in a letter dated January 21, 1997, that "there is reasonable assurance the State of Hawaii will locate, design, construct, and operate the airport in compliance with all applicable air and water quality standards."

The Proposed Project will not exceed the National Ambient Air Quality Standards at the airport's boundaries. The Proposed Project, without the parallel runway, will exceed the Hawaii State standards for carbon monoxide (1-hour) at certain locations at the airport boundary due to longer aircraft queuing

times. However, future air quality conditions will be better than the No-Action alternative due to the mitigation measures: reduction of airport delays and reduced aircraft queuing. Air quality at certain key roadway intersections would exceed both Federal and State standards for carbon monoxide due to the overall growth in ground vehicle traffic; however, these impacts are less severe than the No-Action alternative, as the Proposed Project reduces traffic congestion at these key intersections. The potential mitigation measures include: increased intersection capacity, reduction in traffic queuing, changes in the speed limit, and providing buffer zones.

Water Quality - There are no significant adverse water quality impacts due to the Proposed Project. The Governor certified in a letter dated January 21, 1997, that "there is reasonable assurance the State of Hawaii will locate, design, construct, and operate the airport in compliance with all applicable air and water quality standards."

Department of Transportation, Section 4(f) - The expansion of Kanaha Beach Park will have beneficial impacts to the existing park. There will be no impact to Kanaha Pond Wildlife Sanctuary or Haleakala National Park except in the potential introduction of alien species. The alien species issue, which is already a major existing concern, is considered a significant cumulative impact. The FAA and U.S. Fish and Wildlife Service (USFWS) completed a Biological Assessment (BA), dated March 10, 1997, on the impact of the Proposed Project on the introduction rate of alien species to Maui. The USFWS issued on July 23, 1997 a "No Jeopardy" Biological Opinion based upon the BA.

Historic, Architectural, Archaeological, and Cultural Resources - Phase 1 of the Proposed Project will have no significant impacts on historic, architectural, archaeological, or cultural resources. The east ramp improvements and the Kanaha Beach Park expansion in Phase 2 may impact archaeological features, especially buried cultural deposits, depending on the extent of subsurface excavation. Some of the Phase 3 improvements (expanded Runway Safety Area for Runway 5/23, extension of the parallel taxiway to Runway 5/23, construction of the perimeter road, and fencing) may disturb subsurface deposits. Other Phase 3 improvements (transient apron, fuel pipeline from Kahului Harbor to Bulk Fuel Storage facility, and parallel runway with associated facilities) may have a significant impact on buried archaeological features. These Phase 3 impacts will be assessed in future environmental documents for these projects prior to construction. A Programmatic Agreement (PA) was prepared by the FAA in consultation with the Hawaii State Historic Preservation Officer, the Advisory Council on Historic Preservation, the Hawaii Department of Transportation (HDOT), the Maui/Lanai Islands Burial Council, and the Office of Hawaiian Affairs for the projects at Kahului Airport included in this EIS. The PA is included in Appendix T

Biotic Communities - The Proposed Project will not create a significant adverse impact on Biotic Communities except in the potential introduction of alien species. The alien species issue, which is already a major existing concern, is considered a significant cumulative impact. The FAA and U.S. Fish and Wildlife Service (USFWS) completed a Biological Assessment (BA), dated March 10, 1997, on the impact of the Proposed Project on the introduction rate of alien species to Maui. The USFWS has issued on July 23, 1997 a "No Jeopardy" Biological Opinion based upon the BA.

Endangered and Threatened Species of Flora and Fauna - There are no endangered or threatened species of flora within the project area. There are three endangered bird species which inhabit Kanaha Pond, and the Blackburn's Sphinx Moth, which lives in the area, has been proposed for listing on the Federal Endangered Species List. There will be insignificant impacts to endangered species of fauna. The alien species issue, which is already a major existing concern, is considered a significant cumulative impact. The FAA and USFWS have completed a Biological Assessment (BA) on the impact of the Proposed Project on the introduction rate of alien species to Maui. The USFWS has issued a "No Jeopardy" Biological Opinion based upon the BA.

Wetlands - Three ephemeral (short-lived) wetlands were delineated on airport property, north of the airport operational area during the preparation of this EIS. Also, Kanaha Pond Wildlife Sanctuary is a major wetland within the airport boundary. However, there are no significant adverse impacts on any wetlands from the Proposed Project.

Floodplains - Portions of the airport are located within a flood and tsunami zone as indicated by the Flood Insurance Rate Maps (FIRM). The Proposed Project will have no significant adverse impacts to floodplains.

Coastal Zone Management Program- Phases 1 and 2 of the Proposed Project have been determined to be consistent with Hawaii Coastal Zone Management (CZM) Program by the Hawaii Department of Business, Economic Development & Tourism (DBEDT). DBEDT has deferred the CZM consistency determination on Phase 3 of the Proposed Project until additional environmental analysis and documentation are completed. The Proposed Project, which is within the existing Maui County Special Management Area (SMA) will conform to the SMA requirements.

Coastal Barriers - In 1993, an area designated as HI-09, near the Kahului-Wailuku Wastewater Treatment facility, was proposed to be added to the Coastal Barrier Resource System (CBRS). A draft Pacific Coastal Barriers Study was prepared by USFWS. A review of this study by HDOT found that the proposed Hawaii Coastal Barrier System would not have any impact on present or future state-wide airport operations.

Farmland - Agricultural land to the south and east of the airport, as well as a portion of the airport, is currently used for sugar cane production. This agricultural land, both adjacent and within the airport boundaries, is classified as prime farmland by the State of Hawaii, if irrigated. Based on the evaluation criteria of The Natural Resource Conservation Service (Soil Conservation Service) Form AD-1006, Farmland Conversion Impact Rating, there will be no significant impacts to farmlands due to the Proposed Project. Form AD-1006 is included in Appendix D.

The agricultural land to be acquired in Phase 2, between the existing airport boundary and Hana Highway, will remain in agricultural production until needed for aviation uses. The long range nature for uses of these lands (beyond 2009) makes the determination of significance for these impacts difficult to

assess at this time. Therefore, prior to construction of the parallel runway or other uses of these lands, a separate environmental document will be prepared to assess the impacts and provide mitigation measures.

Energy Supply and Natural Resources - The Proposed Project will have no significant adverse impacts on energy supply and natural resources.

Light Emissions - There will be an increase in light emissions due to the installation of additional runway lights and highway lighting. The new lighting will not include strobe, multi-directional, or other types of lighting that will shine directly into residences or businesses in the vicinity of the airport. The impacts are considered insignificant.

Solid Waste Impacts - The Proposed Project will have insignificant impacts to the present solid waste collection and disposal system.

Construction Impacts - The Proposed Project will have insignificant impacts due to construction; however, there may be a short-term significant increase in the number of construction workers to Maui. The proposed roadway improvements will cause short-term impact on roadways in the airport environs, especially on Hana Highway and Dairy Road. An 18 month construction period is anticipated for construction of the Airport Access Road, which includes the realignment of Hansen Road.

MITIGATION

A program has been developed and will be implemented to mitigate the adverse environmental impacts resulting from the Proposed Project.

Noise and Land Use Compatibility - HDOT assures that a noise barrier will be constructed along Dairy Road to reduce noise impacts from increased vehicle traffic.

Socioeconomic - There are no significant adverse impacts, without the parallel runway; therefore, no mitigation measures are required. In Phase 3, the future parallel runway would displace some residents in East Sprecklesville and cause the relocation agricultural activities. The parallel runway is also inconsistent with Maui County's Plans. However, the long range nature (beyond 2016) of the parallel runway makes the determination of significance for these impacts difficult to assess at this time. Therefore, prior to construction of the parallel runway, a separate environmental document will be prepared to assess the impacts and provide mitigation measures as necessary.

Air Quality - The Proposed Project, with or without the parallel runway, will improve air quality when compared to the No-Action alternative. State and Federal air quality standards will still be exceeded at certain locations. To mitigate these air quality impacts, HDOT will encourage the use of capacity enhancement techniques to lessen aircraft delay on the airfield.

DOT Section 4(f) - There are no specific measures associated with this impact category. The alien species issue is a significant cumulative impact, mitigation measures are proposed to reduce the "introduction rate" of any alien species, thereby reducing the risk of the establishment of a new alien species and minimizing harm. Mitigation of the increase to the introduction rate of Alien Species will be in accordance with the Biological Assessment prepared by FAA and USFWS and the resultant Biological Opinion from USFWS.

Historic, Architectural, Archaeological, and Cultural Resources - Mitigation of adverse impacts to Historic and Archaeological Resources will be accomplished through implementation of preservation or a data recovery plan in accordance with the Programmatic Agreement between the FAA, the Advisory Council on Historic Preservation, and the Hawaii State Historic Preservation Officer.

Biotic Communities - There are no specific measures associated with this impact category. The alien species issue is a significant cumulative impact, mitigation measures are proposed to reduce the "introduction rate" of any alien species, thereby reducing the risk of the establishment of a new alien species and minimizing harm. Mitigation of the increase to the introduction rate of Alien Species will be in accordance with the Biological Assessment prepared by FAA and FWS and the resultant Biological Opinion from USFWS.

Construction Impacts - The Proposed Project will cause traffic delays on roadways in the airport environs, especially on Hana Highway and Dairy Road. The anticipated construction period for the Airport Access Road is approximately 18 months including the realignment of Hansen Road. The construction work will be designed and scheduled to allow for no lane closures during peak traffic hours. If necessary, some construction may be performed during evening or nighttime hours. To relieve the impact of the realignment of Hansen Road and the closure of Pulehu Road, the new Hansen Road will be completed prior to the closure of these roads.

Specific mitigation measures are provided in Section 3 of the Final EIS for each of the associated impact categories.

PUBLIC INVOLVEMENT

A public involvement program was implemented as part of this EIS in order to keep the public and governmental agencies informed about the EIS and to receive their comments and input throughout the EIS process. The program included the following components:

Scoping Process - The public, governmental agencies, and interested groups and individuals were afforded the opportunity to comment on the scope of issues to be addressed within the EIS. Two public scoping meetings were held in Maui on May 18, 1994, beginning at 10:00 AM and 7:00 PM. Through this process, a number of key issues were identified that have been considered in the preparation of the EIS.

Draft EIS Availability - The Draft EIS was released for public review on April 5, 1996. The 45-day public review period was initially scheduled to end on May 23, 1996; however, the FAA extended the review period an additional 30 days to June 22, 1996, to accommodate requests for extensions. All comments received during this period, including those received at the Public Hearing, have been considered and responded to in the Final EIS.

Public Hearing - A Public Hearing was held on May 8, 1996, at 7:00 PM, to afford the public and interested parties the opportunity to comment on the Draft EIS. As noted above, all comments received at the Public Hearing have been considered and responded to in the Final EIS.

Biological Assessment Technical Panel - During the preparation of the Biological Assessment (BA), the FAA, FWS, and HDOT formed a Biological Assessment Technical (BAT) Panel of recognized alien species specialists consisting of representatives from Federal and State agencies and private organizations. The BAT Panel provided assistance and technical input for the preparation of the BA.

REMAINING ISSUES TO BE RESOLVED

There remain a few issues to be resolved, which include:

Implementation of a Stage 2 aircraft curfew at the airport - The Stage 2 curfew would be integrated into the FAR Part 161 study that is an element of the approved Part 150 Noise Compatibility Program (NCP). The Part 161 study will be pursued by HDOT as the NCP is implemented.

Consistency with State's Coastal Zone Management Program - HDOT will apply for the applicable Special Management Area Permits, as required, for the Proposed Project upon completion of the EIS. Federal coordination has been completed and a CZM Consistency determination has been received.

Extent of environmental monitoring required prior to, during, and after construction - HDOT's engineers and construction managers will ensure that the applicable mitigation measures included in the project specifications for the proposed improvements are followed.

Permit Requirements - The applicable permits will be applied for upon completion of the EIS. Their current status is listed in Table 2-6 of the EIS.

Plan to discourage Hawaiian Stilts from foraging on the airfield after rainfall - HDOT will implement drainage improvements in areas that pond after rainfall and attract Hawaiian Stilts. FWS is monitoring HDOT to ensure that the drainage improvements will be completed and are effective. Also, U.S. Department of Agriculture- Animal Damage Control has obtained a "hazing" permit to haze the Hawaiian Stilt off of the airfield as necessary, to minimize aircraft and Stilt interactions. This issue was not part of the Proposed Project; however, these actions have occurred concurrently.

APPROVAL

After careful and thorough consideration of the facts contained herein and following consideration of the views of those Federal agencies having jurisdiction by law or special expertise with respect to the environmental impacts described, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in Section 101(a) of the National Environmental Policy Act of 1969.

APPROVED: Herman C. Bliss OCT 2 1997

Herman C. Bliss
Manager, Airports Division
Western-Pacific Region

Date

DISAPPROVED: _____ _____

Herman C. Bliss
Manager, Airports Division
Western-Pacific Region

Date

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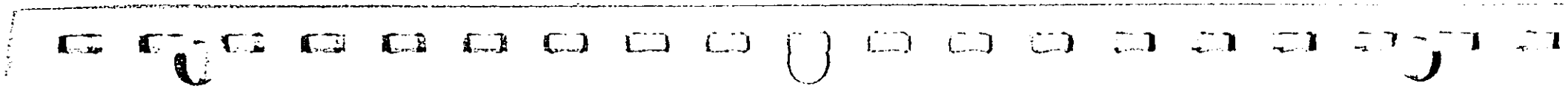

SECTION 1.0
INTRODUCTION

This document is a joint Environmental Impact Statement (EIS) prepared in compliance with the procedural and substantive requirements of: (i) the National Environmental Policy Act (NEPA) (42 USCA § 4321 *et seq.*), and implementing regulations of the Council on Environmental Quality (CEQ) (40 CFR 1500.1 *et seq.*); (ii) Chapter 343 of the Hawaii Revised Statutes (HEPA) and Title 11, Chapter 200 of the State of Hawaii, Department of Health Administrative Rules; (iii) FAA Orders 5050.4A and 1050.1D; (iv) the Stipulated Court Order that was entered into on March 12, 1991 (Appendix B); and (v) the Court Order that was entered into on June 2, 1993 (Appendix B). The Proposed Project is described below in the "Project Summary" and "Project Description" sections of this EIS.

This EIS was prepared by the U.S. Department of Transportation, Federal Aviation Administration (FAA), the State of Hawaii, Department of Transportation, Airports Division (HDOT-AIR), and Edward K. Noda and Associates, Inc. under State Contract No. 38013, State Project No. AM1011-07. Funding for this EIS was provided through the State of Hawaii (State) and a grant from the FAA. The consultants, Edward K. Noda and Associates, Inc. and their project team, was selected by the FAA and HDOT-AIR to prepare this EIS. The selection by the FAA was pursuant to CEQ 1506.5(c). The lead agency for purposes of NEPA is the FAA. The lead agency and applicant for purposes of HEPA is the HDOT-AIR. The accepting agency for HEPA will be the Office of the Governor. The U.S. Department of Transportation, Federal Highway Administration was a cooperating agency for the Draft EIS[1].

This section: (i) contains a brief project summary, (ii) contains a history of the airport planning at Kahului Airport; (iii) describes the scoping process; (iv) summarizes project alternatives; (v) summarizes facilities under consideration; (vi) summarizes impacts and mitigation measures; (vii) discusses areas of controversy and issues to be resolved; (viii) describes other studies and documents incorporated into the EIS; (ix) summarizes the land use compatibility and the major permits and approvals which may be required; and (x) provides the organizational scheme for the EIS.

1.1 PROJECT SUMMARY

Kahului Airport is located in the Wailuku District of Maui, on the northeastern side of the town of Kahului and consists of approximately 1,447 acres of land. The Airport is owned and operated by the State of Hawaii as part of the statewide airport system. The Airport is ranked second to Honolulu International Airport in passenger volume. Kahului Airport is one of three State owned airports operated by the HDOT-AIR on the island of Maui and accommodates both overseas and interisland flights. The other airports are: Hana Airport, which handles mostly commuter and general aviation flights; and Kapalua Airport (Kapalua

[1] The HDOT will not be pursuing ISTEA funds for the construction of the Airport Access Roadway at this time.

West-Maui Airport), which handles commuter flights serving the West Maui area. The Tax Map Keys numbers (TMK) for the existing airport are: 3-8-01: 18 - 20, 45, 73, 76 - 78, 80, 92, 95 - 98, 100 - 105, 121 - 124, 127, 129, 131, 133, 134, 136, 142, 145, 147, 148, 152 - 155, 157 - 162, 166, 168, 173 - 176, 178, 181 -187, 189, 190, 192, 195, 196, 204, 205, 209, 211, 212, 214 - 220, 222 - 228, 236, and 237; and 3-8-79:21.

The 1993 Master Plan for Kahului Airport integrates the short-term developments to meet existing needs with the long-term airfield and terminal area requirements, consistent with forecast aviation demand and anticipated access and parking needs. The Recommended Master Plan is the result of a long planning process of study and interaction with airport users and the community. Specifically, the preliminary development proposals were presented and discussed at technical advisory committee meetings and at public meetings held by the HDOT-AIR. Following review by the HDOT-AIR, FAA, the Kahului Airport Technical and Airport Advisory Committee, the Kahului Airport Citizens Ad Hoc Advisory Committee, and the public, the preliminary recommendations were further refined into the detailed proposed master plan. The recommended 1993 Master Plan consists of a phased program of specific facility improvements at Kahului Airport and is evaluated in this EIS. The Proposed Project for the EIS is described in Section 2.0.

1.2 PROJECT HISTORY

The development program now under consideration at Kahului Airport is the result of a series of plans and studies which date back to at least 1981. As with any airport Master Plan, the planning environment at Kahului Airport is a very dynamic process, and plans can change within a matter of a few years. The history of this extended planning process is relevant to the organization, discussion and analysis provided in this EIS.

1.2.1 1982 KAHULUI AIRPORT MASTER PLAN

In 1982, a Kahului Airport Master Plan was published, which proposed a development program for the Airport based on the assumption that only interisland air traffic would be accommodated (*The Kahului Airport Master Plan*; Section 11.0, Reference 1). This master plan made no provisions to accommodate direct overseas flights. This plan was rendered obsolete almost immediately after publication because of the introduction of scheduled, direct flights from the mainland U.S. to Maui as a result of deregulation of the airline industry.

The 1982 Kahului Airport Master Plan considered three alternative development concepts which: (i) retained the 7,000 ft. length of Runway 2-20; (ii) extended Runway 5-23 by 500 ft.; and (iii) included a new air cargo building, general aviation facilities, scenic tour area, helicopter service area, commuter terminal, and an air traffic control tower, all of which were sited in various locations within the present airport boundary. One of the alternatives considered relocating the passenger terminal facilities on the east side of Runway 2-20, but the concept was rejected because of its high cost.

When the 1982 Kahului Airport Master Plan was published, an associated Environmental Assessment ("EA") was also published (*Environmental Assessment for Kahului Airport Improvements*, Section 11.0, Reference 7). This EA addressed facility improvements which were made in the 1982 to 1988 interim period, prior to publication of the 1989 Kahului Airport Development Plan.

1.2.2 1988 KAHULUI AIRPORT DEVELOPMENT PLAN (REVISED 1989)

In 1988, a Kahului Airport Development Plan was published which proposed a development program for the expansion of facilities to meet both interisland and overseas forecast aviation demand to the year 2005 (*Kahului Airport Development Plan*; Section 11.0, Reference 2). A principal objective of this Development Plan was to provide order and control for the various facility expansion efforts that had been initiated to respond to and accommodate the introduction of direct overseas flights at Kahului Airport.

The 1988 Kahului Airport Development Plan was comprised of a short-term plan that proposed improvements through the year 1990, and a long-term plan that proposed improvements through the year 2005. The short-term plan proposed miscellaneous improvements to the airfield, including: (i) expansion of passenger terminal facilities; (ii) new airline and airport support facilities; and (iii) improvements to the airport roadway system, including a new airport access road. The long-term plan proposed: (i) lengthening both existing runways; (ii) adding a parallel runway; and (iii) expanding passenger terminal and airline/airport support facilities. A revision to the plan was published in 1989 which modified five proposed development actions and added one proposed development action (*Kahului Airport Development Plan, Revision 1*; Section 11.0, Reference 3).

In association with the Kahului Airport Development Plan, a FAR Part 150 Noise Compatibility Program for Kahului Airport was initiated in 1987. In the following year, a Noise Exposure Report was published and presented the aircraft noise impacts of the Development Plan's proposed actions on the Airport and its environs (*FAR Part 150 Noise Compatibility Report, Volume 1, Noise Exposure Report*; Section 11.0, Reference 4). The FAR Part 150 Noise Compatibility Program was not completed at that time due to litigation (described below) and other considerations, and a new program was initiated in early 1994 in conjunction with this EIS. The new Part 150 Noise Compatibility Program (NCP), Volume II, *Noise Compatibility Program Report*, was submitted to the FAA on October 26, 1995 by HDOT-AIR. The Kahului Airport Noise Compatibility Program was approved by the FAA on September 18, 1996.

In 1989, an Environmental Assessment was published in association with the Kahului Airport Development Plan (*Kahului Airport Development Plan Environmental Assessment*; Section 11.0, Reference 8). It was prepared to assess the potential environmental impacts of those short-term development actions of the plan which were intended to satisfy aviation demand to the year 1990. The long-term portion of the plan, which proposed additional development actions to satisfy aviation demand to the year 2005, was not addressed in the Environmental Assessment.

1.2.3 LITIGATION OVER THE KAHULUI AIRPORT DEVELOPMENT PLAN

Following publication of the Environmental Assessment for the Kahului Airport Development Plan in 1989, litigation was brought by a number of Maui citizens and several environmental organizations to halt the expansion of the Airport until a more thorough assessment of the environmental impacts of the proposed development actions had been completed. This litigation resulted in the Court-ordered stipulation entered into on March 12, 1991, in which the parties agreed that the State would:

1. Prepare an EIS pursuant to the procedural, format and content requirements of HEPA and NEPA, including the rules and regulations thereunder covering both the: (i) long term development plan projects; (ii) short term development projects; and (iii) other projects as enumerated in the court ordered stipulation;

2. Analyze the traffic impacts at the Dairy Road and Puunene Avenue intersection;

3. Investigate the feasibility of reactivating the Puunene Airport on a permanent basis for general aviation, as a reliever airport and for night cargo operations;

4. Investigate the reactivation of the Puunene Airport on a temporary basis for night aircraft use during the period of time required to implement the runway strengthening project;

5. Investigate realigning, widening and improving Alahao Street and extending it to the northeast to the Hana Highway as a road which shall be open to public use providing through traffic along the coast side of Kahului Airport;

6. Investigate a recreational area/beach park on airport lands adjoining the County Kanaha Beach Park; and

7. Investigate the findings, alternatives, and recommendations contained in the FAR Part 150 Noise Study.

8. Analyze international flight operations in the EIS, including permanent and temporary (interim) international facilities.

Final court action on the litigation is pending the completion and acceptance of this joint Federal and State EIS for Kahului Airport, including the satisfactory completion of the associated studies.

1.2.4 1993 KAHULUI AIRPORT MASTER PLAN

In 1993, a new Kahului Airport Master Plan was published which updated guidelines for the proposed development at Kahului Airport through the year 2010 (*Kahului Airport Master Plan*; Section 11.0, Reference 5). This plan supersedes the 1989 Kahului Airport Development Plan and provides the basis for the analyses in the FAR Part 150 Noise Compatibility Program, which was submitted to the FAA in October 1995, and the analyses provided in this EIS.

The 1993 Kahului Airport Master Plan (the "Master Plan") considered six alternative development concepts which vary greatly in terms of airfield improvements but are similar in terms of airline/airport support facilities and other improvements. The Master Plan, which is the result of evaluation of the six alternatives, does the following: (i) provides for the extension of Runway 2-20 from its existing length of 7,000 feet to approximately 9,600 feet; (ii) adds a parallel runway; (iii) constructs a new airport access road; and (iv) includes certain related improvements and actions, many of which were included in the 1989 Kahului Airport Development Plan. The Master Plan sets forth all of the development actions currently planned for Kahului Airport by the HDOT-AIR. In order to facilitate the understanding of the development actions within the 1989 Development Plan, the Court-ordered stipulation, and the 1993 Master Plan, a cross reference of the development actions is provided in Table 1-1. Table 1-1 correlates the wording in the Court-ordered Stipulation with the proposed improvements of the 1989 Development Plan and the 1993 Master Plan. The capital letters in the second column (1989 Development Plan) and the third column (1993 Master Plan) refer to the letter-referenced items in Figure 6-1 of the respective plans. The subsections noted in the third column indicate where in the Master Plan the given action is addressed. (Note: Figure 6-1 of the Master Plan coincidentally compares with Figure 6-1 of the Development Plan, Baseline Plan and Revision 1).

The 1991 Court-ordered stipulation required the EIS to address other future projects described in the Long-term Development Plan. In addition, the 1993 Master Plan contains development actions which were not identified in the 1991 Court-ordered stipulation but are part of the recommended airport development (Proposed Project) described in Section 2.0 of this EIS. These additional projects are listed below:

- Construction of a parallel runway (Runway 2R-20L) and associated taxiways.
- New Commercial Aviation/FBO Facilities.
- New Airline Ground Support Equipment Maintenance Facility.
- Kanaha Beach Park Improvements.
- P. O. Site Access Roadway.
- Improvements to airfield facilities, including navigation and landing aids.
- Holding Aprons.
- Jet Blast Protection.
- Interim Helicopter Facility.

Table 1-1
CROSS REFERENCE OF DEVELOPMENT PLAN AND MASTER PLAN IMPROVEMENT

DESCRIPTION	1989 DEVELOPMENT PLAN	1993 MASTER PLAN
A. Development of the commercial development area east of Runway 5-23	M-M	Eliminated
B. Construction of the transient aircraft apron on the west side of Runway 5-23	K	P Subsection 6.3.3.6
C. Construction of the access or ramp service road connecting the transient aircraft parking apron with the new passenger terminal and the east ramp	G-G (Listed as K)	Eliminated
D. Development of new lease sites in the ground transportation subdivision across Kalialinui Gulch	J	G Subsection 6.5.2
E. Construction of a new general cargo facility	G	J Subsection 6.3.2.5
F. Construction of a new hold cargo facility	L	J Subsection 6.3.2.5
G. Provision of a lease site on Airport property for the development of a flight kitchen facility	R	S Subsection 6.3.2.7
H. Provision of a lease site and pipeline right-of-way for the development of the bulk fuel storage facility	Q, U, V	U and B-B Subsection 6.3.2.6
I. Construction or implementation of a new general aviation facility	H (Listed as G)	K, L & N Subsection 6.3.3.1
J. Construction or implementation of the long term phase of the helicopter facility	E	Moved off-site
K. Expansion or improvement of utility and drainage systems on the east ramp to service airport facility development	Note: These were identified on figures 5-7 through 5-10	Subsection 6.6.1
L. Acquisition of approximately 390 acres of additional land for airport development, and for the Kahului Airport land bank, including parcels 135-A and 5-A as identified by the State of Hawaii, DOT; however, excluding approximately 126 acres of land which is necessary for the development of the terminal access roadway, for the widening of Keolani Pl. from the Kahului Airport boundary to Dairy Rd. and the widening of Hana Hwy.		Subsection 6.2.2
M. Construction of the runway strengthening project for Runway 2-20 and the taxiways overlay, not to include emergency repairs necessary to keep the runway open		Subsection 6.3.1.8
N. Construction of Phase 2 of the new passenger terminal building, a long term project identified in the March 1989 Kahului Airport Development Plan and shown as part of the Long Term Development Plan on Figure 6-1	A	Subsection 6.3.2.2 (Possible expansion space beyond 2010)
O. Improvement of terminal facilities for Air Scenic Tour passengers	F	M Subsection 6.3.3.4
P. Construction of Helicopter/Scenic Tour connector taxiways	B-B	Subsection 6.3.1.6
Q. Construction of the Airport passenger terminal access road	X-Y	Subsection 6.5.1.1

In 1994, updated aviation demand forecasts for the State of Hawaii were published in the *Update of Hawaii Aviation Demand Forecasts* (Section 11.0, Reference 6). These updated aviation forecasts are presented in Appendix S. These 1994 forecasts replaced the forecasts of the Hawaii Statewide Airport Systems Plan (SASP), which were published in 1990, and used for the preparation of the 1993 Kahului Airport Master Plan. Compared to the 1990 SASP forecasts, the updated forecasts for Kahului Airport indicate a slower growth trend and therefore, anticipate smaller increases in the number of passengers, amount of air cargo, and number of aircraft operations by 2010. Thus, the phasing of some of the proposed improvements recommended in the 1993 Master Plan has been revised to meet the new forecast aviation demand and is discussed in Section 1.8.3.

In 1992, an Environmental Impact Statement for Kahului Airport was published in conjunction with the master planning effort that was in progress at the time (*Final Environmental Impact Statement, Kahului Airport Master Plan Update*; Section 11.0, Reference 9). The EIS, which was approved by the State of Hawaii, Department of Transportation on July 17, 1992, and accepted by the Governor on August 5, 1992, was intended to serve as an informational and analytical base in that process. The 1992 EIS and the Court stated, that the 1992 EIS complied with HEPA but did not meet the requirements of NEPA as mandated by the Court-ordered stipulation described above.

In addition, on January 18, 1994, a stipulated agreement reached with HDOT suspended the implementation of the 1993 Kahului Airport Master Plan, including: (i) the filing and processing of permits; (ii) changes of land use and zoning; and (iii) other governmental permits and approvals, until completion of a single or joint EIS. In 1994, this joint EIS was initiated to analyze the potentially significant environmental impacts of the development actions proposed by the 1993 Kahului Master Plan, and to satisfy the requirements of the court action described above, including compliance with the procedural and substantive requirements of both NEPA and HEPA. At the time of acceptance of this joint Federal and State EIS, the 1992 State EIS will be superseded. This joint EIS examines all phases of the project including planning, construction and operation of the proposed facilities. The EIS recognizes the fact that the Proposed Project would be implemented over a 20 year or more period, and that conditions may change during that period. As these conditions may change, the implementation of specific elements in Phase 3 of the Proposed Project may require further environmental studies and environmental review.

1.3 THE SCOPING PROCESS

This section: (i) describes the EIS public involvement program; (ii) confirms FAA's and HDOT-AIR's compliance with various Federal, State and local environmental laws, rules, regulations and ordinances; (iii) lists agencies, organizations and individuals who have been consulted in the preparation of this EIS; and (iv) describes the FAA/HDOT-AIR efforts to inform the public about the proposed airport improvements and the public's involvement in the process of identifying significant issues, concerns and possible impacts. Copies of the public notices, letters and newspaper articles that informed the public about the preparation of this EIS are provided in Section 10.0 and Appendix A.

1.3.1 NOTICE OF INTENT

A Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) was published in Volume 59, No. 67 of the Federal Register, April 7, 1994. The State EIS Preparation Notice was published in the May 23, 1994 issue of the State of Hawaii, Office of Environmental Quality Control Bulletin. The governmental agencies, private organizations and individuals that have been consulted, notified or requested to be a "Consulted Party," pursuant to HRS 343, to the preparation of the EIS are listed in Section 10.0.

1.3.2 PUBLIC CONSULTATION

Formal scoping for this EIS was preceded by informal discussions and coordination with various Federal, State and County of Maui agencies and other interested parties. In addition, two public scoping meetings were held on Maui on May 18, 1994, at 10:00 a.m. and 7:00 p.m., where both written and verbal comments were accepted. Written comments on the scope of this EIS were accepted by the FAA and HDOT-AIR until August 31, 1994. Notices of the public scoping meetings were mailed out two and three weeks prior to the meetings and various notices of the meetings were published as news articles or editorials in the Maui News, the Honolulu Advertiser and the Honolulu Star-Bulletin. The notices sent to the public and the newspaper are reproduced in Appendix A. In addition, the comments received during the scoping meetings and the minutes of the scoping meetings are provided in Appendix A. The responses to comments received are provided in Appendix A.

A formal Public Hearing on the Draft EIS was held on May 8, 1996 at 7:00 p.m., where both verbal and written comments were taken. The public notices, public testimony and written comments collected at the Public Hearing, and the corresponding responses are presented in Appendix V. The public notices for the Public Hearing appeared in the Maui News, Honolulu Advertiser and Honolulu Star-Bulletin. In addition, Appendix V contains written comments on the Draft EIS, received during the comment period and the corresponding responses. The comment deadline for the Draft EIS was extended from May 23, 1996 to June 22, 1996 at the request of the public.

As part of the FHWA, NEPA/404 Memorandum of Understanding, meetings were held with the U.S. Army Corps of Engineers (COE), U.S. Department of Commerce, National Marine Fisheries Service, and the U.S. Department of the Interior, Fish and Wildlife Service (USFWS). The COE and USFWS were consulted on the impact of the Proposed Project on the wetlands within the airport boundaries, and they performed the formal wetland delineations. In addition, the USFWS was consulted on the impact of the existing airfield operations and the Proposed Project on listed species. There are three listed species that are known to occur within the Airport's boundary, namely the Hawaiian Stilt, Hawaiian Duck and Hawaiian Coot. Recently, it has been proposed that the Blackburn's Sphinx Moth, which inhabits the Airport's environs, be listed on the Federal Endangered Species list.

In addition for the preparation of this EIS, the following organizations and agencies were consulted: The Nature Conservancy of Hawaii; State of Hawaii, Department of Agriculture; U.S. Department of Agriculture (USDA); USDA, Animal Damage Control; U.S. Department of Interior, National Park Service; Maui/Lanai Island Burial Council; Advisory Council on Historic Preservation, State Historic Preservation Officer; and Hui Malama I Na Kupuna O Hawaii Nei; HDOT, Highways Division; HDOT, Statewide Transportation Planning Office; State of Hawaii, Department of Land and Natural Resources, Forestry and Wildlife Division; County of Maui, Department of Public Works; The Pueo Coalition and A & B Hawaii, Inc. In addition, the preparation of the technical studies included informal consultation with representatives from the travel industry, businesses within the airport environs, representatives of the aviation community, and technical experts, and are referenced in the appropriate technical studies. Section 10.0 provides a list of other federal, state and county agencies, private groups and interested individuals that were consulted in the preparation of this EIS.

During the preparation of the Final EIS, the FAA and HDOT-AIR with the cooperation of the USFWS, developed a biological assessment on the issue of the introduction rate of alien species to Maui. During this time, the FAA, HDOT-AIR, and USFWS formed a Biological Assessment Technical Panel for input into the biological assessment. The members of the Biological Assessment Technical Panel included representatives from the: Bishop Museum; County of Maui; Hawaii Department of Agriculture; Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife; Dr. Richard Lipsey; National Biological Service; National Park Service; The Nature Conservancy of Hawaii; U.S. Customs Service; University of Hawaii, Department of Botany; U.S. Department of Agriculture, Animal Damage Control; and U.S. Department of Agriculture, Plant Protection and Quarantine.

In addition, in 1992, HDOT-AIR prepared and had accepted by the Governor, a Final EIS, under HRS Chapter 343, for the Kahului Airport Master Plan Update. That EIS described the probable environmental effects of various airport improvements that were recommended in the Master Plan Update Study to be implemented between 1992 and 2010. During the preparation of the 1992 EIS, seven federal agencies, 16 state agencies, 10 state legislators, nine Maui County agencies and over 150 private groups or individuals were consulted. These agencies, organizations and individuals were informed of the preparation of this Joint EIS and are listed in Section 10.0. The comments made and incorporated into the 1992 EIS were reconsidered and incorporated into this EIS and project planning, as appropriate. The final product of the Master Plan Update Study was the 1993 Kahului Airport Master Plan, and is discussed in Section 1.2.4 and Section 2.0.

As part of the ongoing public coordination, HDOT-AIR has been participating in the Kahului Airport Expansion Dispute Resolution Committee, and the Kanaha Pond Advisory Committee.

1.3.3 APPLICANT AND COOPERATING AGENCIES

The lead Federal agency is the Federal Aviation Administration (FAA) and the proposing agency is the State of Hawaii, Department of Transportation (HDOT). The approving agencies are the FAA

for the federal actions (NEPA) and HDOT-AIR for the state actions (HEPA). The accepting authority for the State of Hawaii is the Office of the Governor.

The Federal Highway Administration (FHWA) was a cooperating agency[2] for the Draft EIS, because HDOT planned to apply for Intermodal Surface Transportation Efficiency Act (ISTEA) funds for the Airport Access Roadway. A request to be a cooperating agency by the U.S. Department of Interior, National Park Service (NPS) was denied by the FAA for many reasons, including but not limited to the following (Section 11, Reference 10):

- the NPS does not have the authority to approve or veto the proposal,
- the NPS will not finance or approve the Proposed Projects, and
- the NPS has no jurisdiction or "special expertise" within the Airport area, as:
  - *"Haleakala National Park is remote from the airport, i.e., approximately a distance of twenty miles."*
  - *"If impacts on endangered species do become an issue in this EIS, although we do not expect this to be the case, the agency with jurisdiction would be the U.S. Fish and Wildlife Service, rather than the National Park Service."*

Although the National Park Service, was not formally designated as a cooperating agency, they have actively participated in the scoping process, and in the review of the Draft EIS. The FAA and the HDOT used their environmental analysis, comments, and proposals to the maximum extent possible in the preparation of the EIS. In addition, the NPS has been an active participant in the preparation of the Alien Species Biological Assessment that is included in Appendix U.

1.3.4 APPLICABLE ENVIRONMENTAL RULES AND REGULATIONS

The EIS preparation and review process, is pursuant to all applicable federal, state and county environmental statutes, rules, regulations and ordinances that require coordination in the early phases of project planning. This includes, but is not necessarily limited to, the following:

National Environmental Policy Act of 1969
Council on Environmental Quality, National Environmental Policy Act,
Final Regulations, Implementation of Procedural Provisions

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[2] A cooperating agency may be any federal agency other than the lead agency that has "jurisdiction by law" or "special expertise" with respect to the environmental impacts expected to result from a proposal. An agency has "jurisdiction by law" if it has the authority to approve, veto or finance all or part of the proposal. An agency has "special expertise" if it has statutory responsibility, agency mission, or related program experience with regard to a proposal.

Federal Aviation Administration Orders 5050.4A and 1050.1D
Section 7, Endangered Species Act
Section 106, National Historic Preservation Act of 1966, as amended
Executive Order 12372 (July 14, 1982), Intergovernmental Review of Federal Programs
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
Clean Water Act, as amended
Coastal Zone Management Act
Coastal Barriers Resource Act
Section 4(f), Department of Transportation Act
Chapter 343, Hawaii Revised Statutes
Title 11, Chapter 200, State of Hawaii, Department of Health Administrative Rules

1.4 SUMMARY OF PROJECT ALTERNATIVES

The 1993 Kahului Airport Master Plan considered six alternative development concepts which are described in detail in Section 4.0 of this EIS. The alternatives were formulated on the basis of six separate sets of development priorities and constraints, and cover a wide range of proposed development activity. During the master planning process, the alternatives were presented to and discussed at Technical Advisory Committee meetings and at public meetings held by the HDOT-AIR. Following review by the HDOT-AIR, the FAA, the Kahului Airport Technical and Airport Advisory Committees, the Kahului Airport Citizens Ad Hoc Advisory Committee, and the public at-large, the preliminary recommendations were further refined into detailed plans and then presented to and discussed with airport users, government agencies, and members of the community whose comments were used as a basis for the Recommended Master Plan. This plan was adopted by the HDOT and is the Proposed Project (preferred alternative) for this EIS.

The Proposed Project is described in detail in Section 2.0 of this EIS; and the alternatives are described in Section 4.0. Figure 1-1 presents the location of each of the facilities from the Master Plan alternatives. Table 1-2 summarizes the size and general location of each of the facilities in each of the Master Plan alternatives.

In addition to the six alternatives in the 1993 Master Plan, this EIS analyzes the following other alternatives: (i) a No-Action Alternative; (ii) a 9,600 foot parallel runway; (iii) Declared Distances[3]; (iv) Alternate Runway Construction Phasing; (v) several intersections and interchange configurations for the New

[3] The "Declared Distance" alternative uses a stopway at the ends of Runway 2-20 as a substitute for the full strength runway pavement. A "stopway" is defined as a "rectangular surface beyond the end of a runway prepared or suitable for use in lieu of runway to support an airplane, without causing structural damage to the airplane, during an aborted takeoff." FAA Advisory Circular (AC) 150/5300-13 (Section 11, Reference 22).

Airport Access Roadway - Hana Highway intersection; (vi) widening of Keolani Place/Dairy Road; (vii) relocation of Helicopters/General Aviation to an off-airport site; and (viii) other modes of transportation.

Table 1-2
SUMMARY OF SIZE AND LOCATION OF MASTER PLAN ALTERNATIVES

Facilities	Proposed	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Strengthen & Lengthen RWY 2-20	9,600 ft.	7,000 ft.	8,500 ft.	9,500 ft.	10,500 ft.	9,500 ft.	8,500 ft.
Runway 5-23	existing	existing	existing	existing	existing	existing	Closed
Construct Parallel Runway	8,500 ft.	none	3,500 ft.	8,500 ft.	10,500 ft.	8,500 ft.	7,000 ft.
Land Acquisition	yes	yes	yes	yes	yes	yes	yes
Airport Access Roadway	yes	yes	yes	yes	yes	yes	yes
General Aviation Facilities	E	O	W-Hana	E	E	E	E
Air Taxi (Scenic Tour) Facilities	E	E	E	E	E	E	E
Commercial Aviation/FBO Facil.	E	O	W-Hana	E	E	E	E
Air Cargo Facilities - General	W	W	E	E	E	E	RW 5-23
Air Cargo Facilities - Hold	W	W	W	W	W	W	RW 5-23
Helicopter Facilities	E/O	E	O	E	E-Hana	E-Hana	O
Ground Transportation Facilities	W	W	W	W	W	W	W
Flight Kitchen	W	W	W	W	W	W	W
GSE Maintenance Facility	W	W	W	W	W	W	W
Fuel Storage & Loading Facilities	W	E	E	E	E	W	RW 5-23
Transient Aircraft Apron	N-RW 5-23	E	E	N-RW 5-23	N-RW 5-23	N-RW 5-23	RW 5-23
Kanaha Beach Park Improve.	yes	yes	yes	yes	yes	yes	yes
P. O. Site Access Roadway	yes	yes	yes	yes	yes	yes	yes
General Airfield Improvements	yes	yes	yes	yes	yes	yes	yes
Infrastructure Improvements	yes	yes	yes	yes	yes	yes	yes
Spine Road	yes	none	yes	yes	yes	yes	yes
Reserve Land for Potential Terminal Expansion	yes	yes	yes	yes	yes	yes	yes
Alahao Street Extension	yes	none	none	none	none	none	none
ARFF Training Facility (Design)	N-RW 5-23	N-RW 5-23	N-RW 5-23	N-RW 5-23	N-RW 5-23	N-RW 5-23	N-RW 5-23
ARFF Station (Constructed)	yes	none	none	yes	yes	yes	none

E - Facility located on or near East Ramp; W - Facility located on or near West Ramp; N-RW 5-23 - Facility located North of Runway 5-23; W-Hana - Facility located West of Hana Highway; E-Hana - Facility located East of Hana Highway; O-Facility located off-airport; E/O - East Ramp, Long-Term Off-Airport; RW or RWY - Runway; ARFF - Airfield Rescue and Fire Fighting; FBO - Fixed Base Operators; yes - included in the alternative

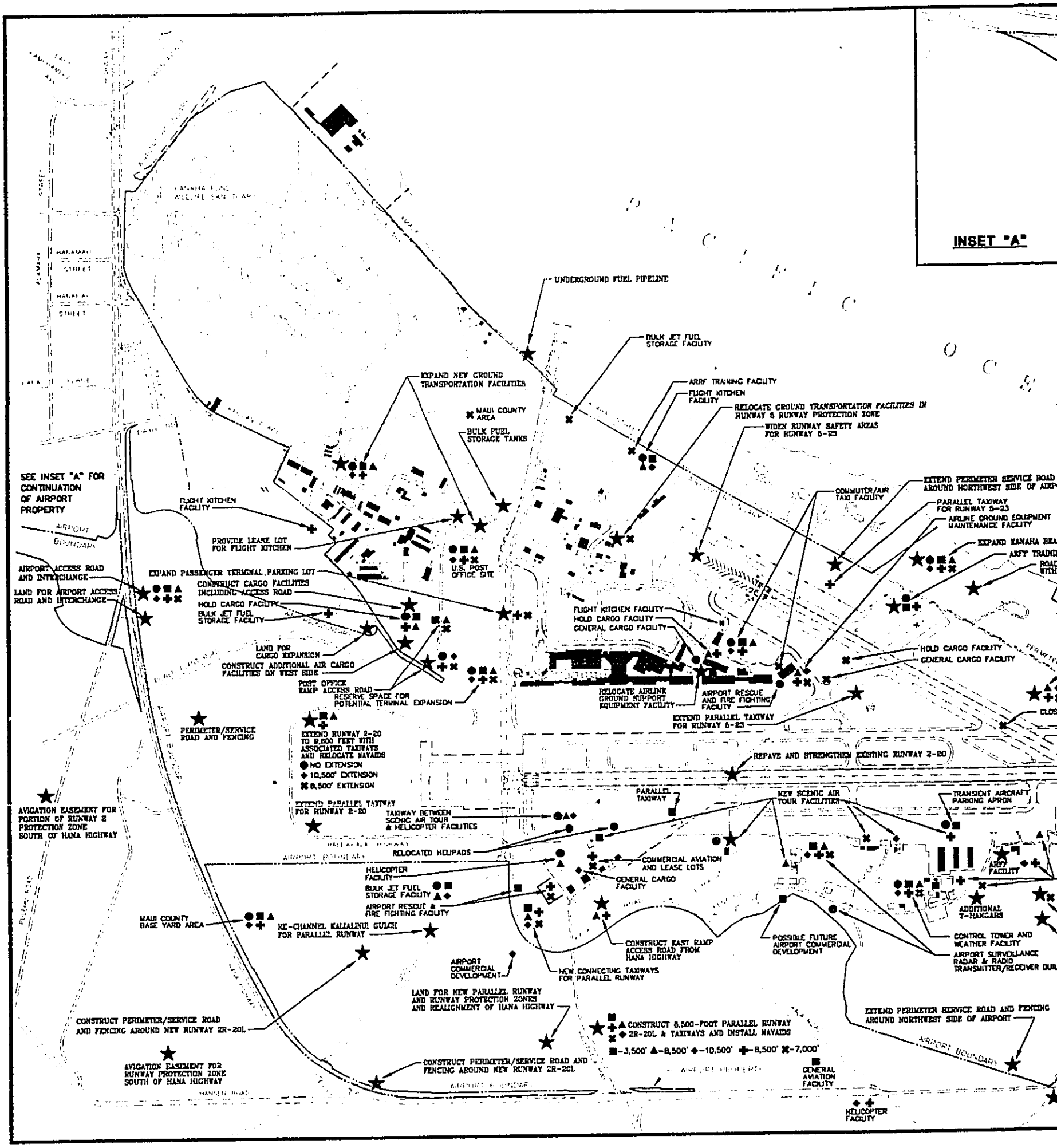
Airport Access Roadway - Hana Highway intersection; (vi) widening of Keolani Place/Dairy Road; (vii) relocation of Helicopters/General Aviation to an off-airport site; and (viii) other modes of transportation.

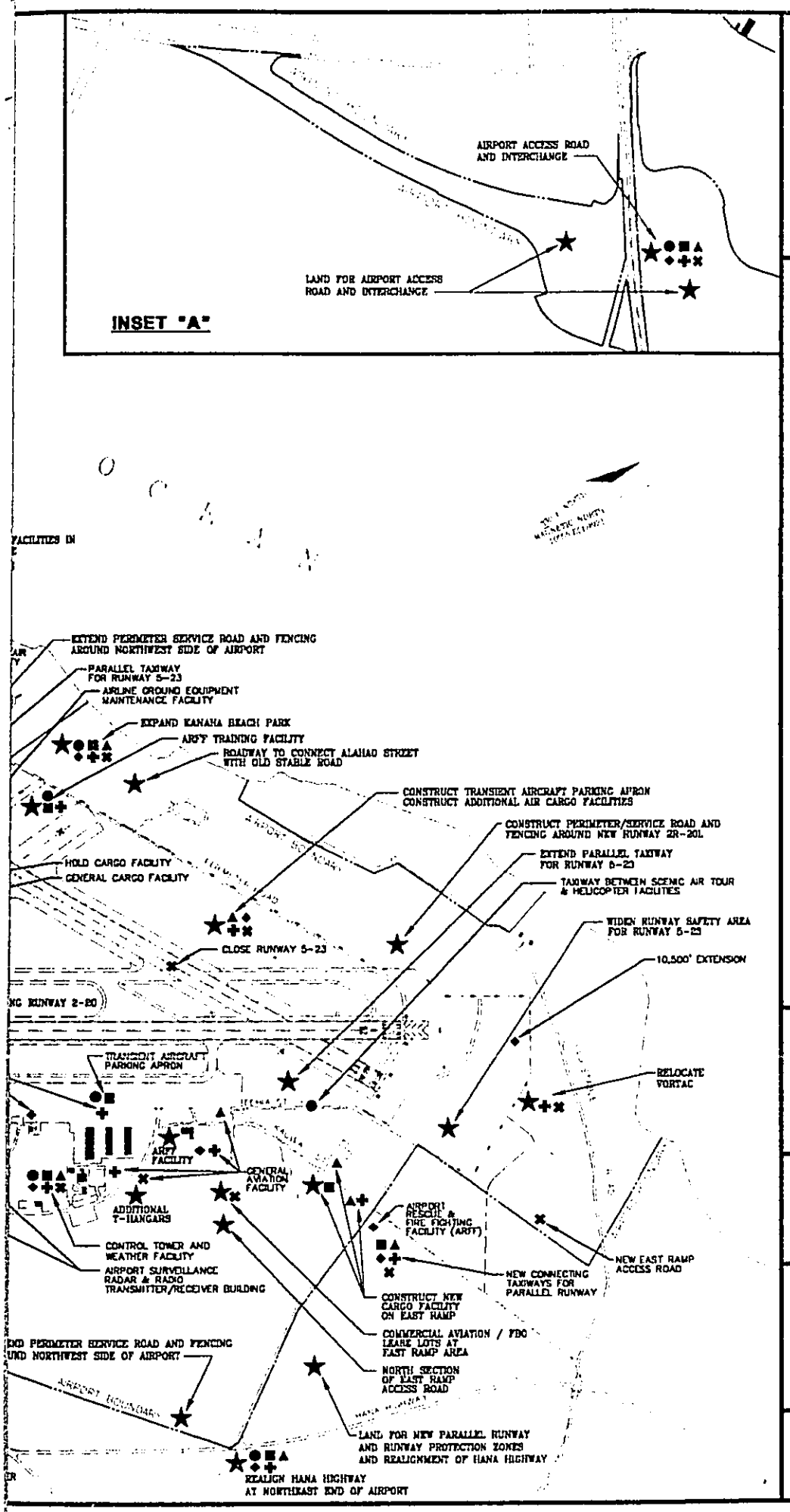
Table 1-2

SUMMARY OF SIZE AND LOCATION OF MASTER PLAN ALTERNATIVES

Facilities	Proposed	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Strengthen & Lengthen RWY 2-20	9,600 ft.	7,000 ft.	8,500 ft.	9,500 ft.	10,500 ft.	9,500 ft.	8,500 ft.
Runway 5-23	existing	existing	existing	existing	existing	existing	Closed
Construct Parallel Runway	8,500 ft.	none	3,500 ft.	8,500 ft.	10,500 ft.	8,500 ft.	7,000 ft.
Land Acquisition	yes	yes	yes	yes	yes	yes	yes
Airport Access Roadway	yes	yes	yes	yes	yes	yes	yes
General Aviation Facilities	E	O	W-Hana	E	E	E	E
Air Taxi (Scenic Tour) Facilities	E	E	E	E	E	E	E
Commercial Aviation/FBO Facil.	E	O	W-Hana	E	E	E	E
Air Cargo Facilities - General	W	W	E	E	E	E	RW 5-23
Air Cargo Facilities - Hold	W	W	W	W	W	W	RW 5-23
Helicopter Facilities	E/O	E	O	E	E-Hana	E-Hana	O
Ground Transportation Facilities	W	W	W	W	W	W	W
Flight Kitchen	W	W	W	W	W	W	W
GSE Maintenance Facility	W	W	W	W	W	W	W
Fuel Storage & Loading Facilities	W	E	E	E	E	W	=RW 5-23
Transient Aircraft Apron	N-RW 5-23	E	E	N-RW 5-23	N-RW 5-23	N-RW 5-23	RW 5-23
Kanaha Beach Park Improve.	yes	yes	yes	yes	yes	yes	yes
P. O. Site Access Roadway	yes	yes	yes	yes	yes	yes	yes
General Airfield Improvements	yes	yes	yes	yes	yes	yes	yes
Infrastructure Improvements	yes	yes	yes	yes	yes	yes	yes
Spine Road	yes	none	yes	yes	yes	yes	yes
Reserve Land for Potential Terminal Expansion	yes	yes	yes	yes	yes	yes	yes
Alahao Street Extension	yes	none	none	none	none	none	none
ARFF Training Facility (Design)	N-RW 5-23	N-RW 5-23	N-RW 5-23	N-RW 5-23	N-RW 5-23	N-RW 5-23	N-RW 5-23
ARFF Station (Constructed)	yes	none	none	yes	yes	yes	none

E - Facility located on or near East Ramp; W - Facility located on or near West Ramp; N-RW 5-23 - Facility located North of Runway 5-23; W-Hana - Facility located West of Hana Highway; O-Facility located off-airport; E/O - East Ramp, Long-Term Off-Airport; RW or RWY - Runway; ARFF - Airfield Rescue and Fire Fighting; FBO - Fixed Base Operators; yes - included in the alternative


INSET "A"
SEE INSET "A" FOR CONTINUATION OF AIRPORT PROPERTY
AIRPORT BOUNDARY
UNDERGROUND FUEL PIPELINE
BULK JET FUEL STORAGE FACILITY
EXPAND NEW GROUND TRANSPORTATION FACILITIES
MAUI COUNTY AREA
BULK FUEL STORAGE TANKS
ARFF TRAINING FACILITY
FLIGHT KITCHEN FACILITY
RELOCATE GROUND TRANSPORTATION FACILITIES IN RUNWAY 5 RUNWAY PROTECTION ZONE
WIDEN RUNWAY SAFETY AREAS FOR RUNWAY 5-23
COMMUTER/AIR TAXI FACILITY
EXTEND PERIMETER SERVICE ROAD AROUND NORTHWEST SIDE OF AIRP
PARALLEL TAXIWAY FOR RUNWAY 5-23
AIRLINE GROUND EQUIPMENT MAINTENANCE FACILITY
EXPAND HANAHA
ARFF TRAINI
ROAD WITH
FLIGHT KITCHEN FACILITY
PROVIDE LEASE LOT FOR FLIGHT KITCHEN
U.S. POST OFFICE SITE
AIRPORT ACCESS ROAD AND INTERCHANGE
LAND FOR AIRPORT ACCESS ROAD AND INTERCHANGE
EXPAND PASSENGER TERMINAL PARKING LOT
CONSTRUCT CARGO FACILITIES INCLUDING ACCESS ROAD
HOLD CARGO FACILITY
BULK JET FUEL STORAGE FACILITY
FLIGHT KITCHEN FACILITY
HOLD CARGO FACILITY
GENERAL CARGO FACILITY
HOLD CARGO FACILITY
GENERAL CARGO FACILITY
LAND FOR CARGO EXPANSION
CONSTRUCT ADDITIONAL AIR CARGO FACILITIES ON WEST SIDE
POST OFFICE RAMP ACCESS ROAD
RESERVE SPACE FOR POTENTIAL TERMINAL EXPANSION
RELOCATE AIRLINE GROUND SUPPORT EQUIPMENT FACILITY
AIRPORT RESCUE AND FIRE FIGHTING FACILITY
EXTEND PARALLEL TAXIWAY FOR RUNWAY 5-23
PERIMETER/SERVICE ROAD AND FENCING
EXTEND RUNWAY 2-20 TO 8,500 FEET WITH ASSOCIATED TAXIWAYS AND RELOCATE NAVAIDS
NO EXTENSION
10,500' EXTENSION
8,500' EXTENSION
REPAVE AND STRENGTHEN EXISTING RUNWAY 2-20
AVIGATION EASEMENT FOR PORTION OF RUNWAY 2 PROTECTION ZONE SOUTH OF HANA HIGHWAY
EXTEND PARALLEL TAXIWAY FOR RUNWAY 2-20
TAXIWAY BETWEEN SCENIC AIR TOUR & HELICOPTER FACILITIES
PARALLEL TAXIWAY
NEW SCENIC AIR TOUR FACILITIES
TRANSIENT AIRCRAFT PARKING APRON
RELOCATED HELIPADS
COMMERCIAL AVIATION AND LEASE LOTS
GENERAL CARGO FACILITY
HELICOPTER FACILITY
BULK JET FUEL STORAGE FACILITY
AIRPORT RESCUE & FIRE FIGHTING FACILITY
ARFF FACILITY
ADDITIONAL T-HANGARS
MAUI COUNTY BASE YARD AREA
RE-CHANNEL KALIALINUI GULCH FOR PARALLEL RUNWAY
CONSTRUCT EAST RAMP ACCESS ROAD FROM HANA HIGHWAY
POSSIBLE FUTURE AIRPORT COMMERCIAL DEVELOPMENT
CONTROL TOWER AND WEATHER FACILITY
AIRPORT SURVEILLANCE RADAR & RADIO TRANSMITTER/RECEIVER BUI
AIRPORT COMMERCIAL DEVELOPMENT
NEW CONNECTING TAXIWAYS FOR PARALLEL RUNWAY
LAND FOR NEW PARALLEL RUNWAY AND RUNWAY PROTECTION ZONES AND REALIGNMENT OF HANA HIGHWAY
CONSTRUCT 8,500-FOOT PARALLEL RUNWAY 2R-20L & TAXIWAYS AND INSTALL NAVAIDS
■-3,500' ▲-8,500' ◆-10,500' ✚-8,500' ✖-7,000'
EXTEND PERIMETER SERVICE ROAD AND FENCING AROUND NORTHWEST SIDE OF AIRPORT
CONSTRUCT PERIMETER/SERVICE ROAD AND FENCING AROUND NEW RUNWAY 2R-20L
AVIGATION EASEMENT FOR RUNWAY PROTECTION ZONE SOUTH OF HANA HIGHWAY
CONSTRUCT PERIMETER/SERVICE ROAD AND FENCING AROUND NEW RUNWAY 2R-20L
GENERAL AVIATION FACILITY
HELICOPTER FACILITY
EXISTADW.DWG



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

CALL-OUT SYMBOL LEGEND

- ★ PREFERRED ALTERNATIVE (RECOMMENDED MASTER PLAN - IN RED)
- ● ALTERNATIVE 1
- ■ ALTERNATIVE 2
- ▲ ALTERNATIVE 3
- ◆ ALTERNATIVE 4
- ✚ ALTERNATIVE 5
- ✖ ALTERNATIVE 6

NOTE : ALTERNATIVES FROM 1993 MASTER PLAN

0 500 1000 1500
GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

SUMMARY OF 1993 MASTER PLAN ALTERNATIVES

DATE	FIGURE
JANUARY, 1997	1-1

1.5 SUMMARY OF FACILITIES UNDER CONSIDERATION

This EIS analyzes the potential environmental impacts of the Proposed Project recommended in the 1993 Kahului Airport Master Plan. The environmental impacts associated with the majority of the proposed development projects are analyzed in this document. However, four of the proposed development projects have been addressed by previous studies and are not reanalyzed (see Section 1.5.2 below) independently, but are analyzed in a cumulative nature.

1.5.1 FACILITIES TO BE ANALYZED

This EIS analyzes the Proposed Project, which includes the following airport development projects, and its alternatives:

PHASE 1

- Acquire avigation easements for portion of Runway 2 Runway Protection Zone south of Hana Highway
- Acquire land on south side of Hana Highway for relocated Runway 2-20 NAVAIDS
- Extend Runway 2-20 to 9,600 feet, construct associated west side taxiways, and relocate NAVAIDS
- Repave and strengthen existing Runway 2-20 and taxiways
- Construct new west side air cargo facilities including access road
- Construct Airport Access Road and Interchange
- Construct perimeter/service road and fencing around extended Runway 2-20
- Construct Post Office ramp access road
- Construct bulk fuel storage facility and connect to apron hydrant system
- Relocate helicopter operation apron (interim helicopter facility)
- Utility and infrastructure improvements including; construct East Ramp sewer system, install underground communications and electrical utilities along Hana Highway, and install non-potable water system

PHASE 2

- Acquire land for new parallel runway and runway protection zones and realignment of Hana Highway
- Acquire avigation easement for runway protection zones for parallel runway south of Hana Highway
- Acquire land for west side cargo area expansion
- Improve commercial aviation lease lots at East Ramp area
- Construct additional cargo facility and related apron improvements on East Ramp
- Construct additional general aviation T-hangars

- New air taxi (scenic air tour) facilities
- Relocate airline ground support equipment maintenance facility
- Expand ground transportation facilities/relocate Ground Transportation Facilities in Runway 5 Runway Protection Zones
- Construct roadway to connect Alahao Street with Old Stable Road (for emergency access only)
- Construct north section of East Ramp access road (Spine Road)
- Extend perimeter/service road and fencing around northwest side of Airport
- Expand Kanaha Beach Park
- Utility and infrastructure improvements

PHASE 3

- Construct 8,500 foot parallel Runway 2R-20L, taxiways, install NAVAIDS, and drainage improvements
- Extend parallel taxiway for Runway 5-23
- Extend east side parallel taxiway for Runway 2L-20R
- Upgrade Runway Safety Areas (RSA) for Runway 5-23
- Relocate helicopter facilities
- Construct transient aircraft parking apron
- Expand west-side air cargo facilities
- Expand ground transportation subdivision
- Expand Passenger Terminal Parking Lot
- Construct East Ramp access road from Hana Highway
- Construct perimeter/service road and fencing around new Runway 2R-20L
- Realign Hana Highway at northeast end of Airport
- Provide lease lot for flight kitchen
- Construct fuel pipeline from Kahului Harbor to bulk fuel storage
- Provide additional commercial aviation lease lots
- Utility and infrastructure improvements

Due to public concern and as required by the Court-ordered stipulation, the following issues are included in this EIS:

- the analysis of the long term development plan projects; short term development projects; and other projects as enumerated in the Court-ordered stipulation;

- analysis of the traffic impacts at the Dairy Road and Puunene Avenue intersection;

- investigating the feasibility of reactivating the Puunene Airport on a permanent basis for general aviation, as a reliever airport and for night cargo operations;

- investigating the reactivation of the Puunene Airport on a temporary basis for night aircraft use during the period of time required to implement the runway strengthening project;

- investigating realigning, widening and improving Alahao Street and extending it to the northeast to the Hana Highway as a road which shall be open to public use providing through traffic along the coast side of Kahului Airport;

- investigating a recreational area/beach park on airport lands adjoining the County Kanaha Beach Park (element of the Proposed Project);

- investigating the findings, alternatives, and recommendations contained in the FAR Part 150 Noise Study; and

- investigating international flight operations including permanent and temporary (interim) international facilities. Note, however, that international arrival facilities are not part of the Proposed Project but are analyzed in Section 8.2 of this document and as a cumulative impact in Section 5.0.

Those facilities which are proposed to be constructed in Phase 3 (2009-2016) -- namely the parallel runway, long-term relocation of the helicopters, fuel supply pipeline from the Harbor to the Airport Bulk Fuel Tanks (beyond 2016), and the transient aircraft apron -- are considered in this EIS, to the extent reasonable and practical. Due to the long range need of these Phase 3 projects, a comprehensive determination of all of the impact's significance may not be possible at this time. Initially, these Phase 3 projects were anticipated to be built ten to twenty years in the future, but they have been pushed further into the future (15 years or more) with the new aviation demand forecasts (See Section 1.8.3). Specifically, the Phase 3 projects, including the transient apron will be constructed, if at all, after 2009. It is anticipated that the parallel runway, long-term relocation of the helicopters, and the fuel supply pipeline from the Harbor to the Airport Bulk Fuel Tanks will be constructed, if at all, after 2016. Also, it is recognized that the Master Plan will be implemented over a 20 year or longer period, and that environmental conditions may change during this period. Therefore, it is very likely that this EIS prepared in 1997, will be considered out-of-date in 2009 or beyond.

Thus, the implementation of the specific elements of Phase 3 will necessitate the preparation of a supplemental or new environmental document at that time. If and when the time approaches that these long range projects are required to prevent deterioration of service at Kahului Airport, the Federal Aviation Administration (FAA) may be required to prepare additional environmental documentation pursuant to applicable federal law to address the environmental effects. Likewise, the State of Hawaii, pursuant to HRS Chapter 343, may need to prepare additional environmental documents for the long-term, Phase 3 projects.

These additional documents may be either supplemental to this EIS or independent studies[4]. By preparing these documents closer to the time when these facilities may actually be constructed, the environmental analysis will necessarily be more accurate and relevant. At that time, additional environmental analysis will be performed and the appropriate environmental documents will be completed. However, if specific elements of Phase 3 such as the parallel runway, fuel pipeline from Kahului Harbor to the Bulk Fuel Storage Facility, and the permanent International Facility are to be constructed, independent or supplemental EIS(s) will be completed.

This EIS analyzes, to the extent reasonable and practicable, the impacts and their significance of all the phases of the Proposed Project both independently and cumulatively. The different phases of the Proposed Project, Phases 1, 2 and 3 have substantial independent utility from each other. In addition, the implementation of one Phase of the Proposed Project does not foreclose the opportunity to consider alternatives for the other Phases or for the long-term projects, and do not irretrievably commit Federal or State funds to the those other Phases or the long-term projects.

Even if the long-term (Phase 3) projects are never implemented, the Phase 1 and Phase 2 projects would still be necessary and would still serve their intended purposes. As the Phase 3 projects are anticipated fifteen years or more into the future or may never be built, the Phase 1 and 2 projects were planned to possess their own self-contained utility. In addition, the implementation of the Phase 1 and Phase 2 projects in no way prevents the consideration of alternatives to the Phase 3 projects, or does not commit Federal or State funds for the implementation of the Phase 3 projects.

1.5.2 FACILITIES ANALYZED IN PREVIOUS ENVIRONMENTAL DOCUMENTS

The impacts for the following 1993 Master Plan were assessed in earlier environmental documentation. Therefore, because these projects are presently in progress or have been completed, their impacts will not be reanalyzed in this document. However, these projects are analyzed for cumulative impacts in Section 5.0.

- **Aircraft Rescue and Fire Fighting (ARFF) Station.** This facility has been constructed on the East Ramp. The Environmental Assessment (Section 11, Reference 11) for this project was completed in November 1991 and found that there would be no significant adverse impacts upon the environment (see Section 1.8.8).

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[4] According to Council on Environmental Quality (CEQ) regulation 1508.28(b), tiering should be used to, "help the lead agency focus on issues that are ripe for decision and exclude from consideration issues already decided or not yet ripe" [emphasis added]. Therefore, the EIS focuses on the short-term (Phase 1) and medium term (Phase 2) projects. An environmental analysis of the Phase 3 projects would provide a more accurate and reliable assessment of the impacts of the Phase 3 projects.

- **ARFF Training Facility.** This facility is currently being designed and will be located north of Runway 5-23 on the existing training facility. The Environmental Assessment for this project was completed in August 1995 (Section 11.0, Reference 12) and found that there would be no significant adverse environmental impacts (see Section 1.8.9).

- **Acquisition of Land for the Airport Access Roadway.** The acquisition of approximately 126 acres of land for the Airport Access Roadway has been completed. The Environmental Assessment for this project was completed in April 1989 (Section 11,0, Reference 8) and found no significant impacts for this project.[5]

- **Relocation of the VORTAC** (Very high frequency omnirange station and a Tactical air navigation equipment). The construction of this facility was completed in 1995, but is currently not operational. The Environmental Assessment for this facility was completed in July 1993 (Section 11.0, Reference 13) and concluded that all impacts would be mitigated to a level of insignificance.

- **Maui County Baseyard.** During the Master Planning Process, a space for the Maui County Baseyard was provided at the request of the County of Maui. The County subsequently decided that potentially available off-Airport locations might be superior, eliminating the need to accommodate this use at Kahului Airport. Because of this, no County Baseyard site is designated on the recommended Airport Master Plan.

1.6 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Table 1-3 presents a summary of the impacts and mitigation measures associated with the *Proposed Project*. A detailed discussion of these impacts are presented in Section 3.0. In the tables and throughout this EIS, the following nomenclature is used in the description of the impacts: a significant impact refers to a significant adverse impact; an insignificant impact refers to an insignificant adverse impact; and a positive impact is a beneficial impact. As seen in the table, the majority of impact categories have no or insignificant impacts to the environment. The analysis of the long-range projects (Phase 3 of the Master Plan) will be performed to the extent practical and feasible. Because these projects are beyond the year 2009 time frame, the full impacts of the larger projects in Phase 3 – namely the parallel runway, relocation of helicopters off-airport, the fuel supply pipeline from Kahului Harbor to the bulk fuel tanks, and transient apron -- may not be known, however to the extent they can be reasonably discussed, the impacts are discussed in this EIS. For land use, the parallel runway will be inconsistent with the County's current land use plans and, therefore, is considered to be a potentially significant adverse impact. In addition, the parallel runway will cause the

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[5] This Environmental Assessment did not address any land use changes. Therefore, the land use issues are being addressed in this joint EIS.

relocation of some homes in Spreckelsville, and potentially significant adverse socio-economic impacts. The Phase 3 developments may have significant adverse impacts on historic, archaeological, and cultural resources. In the category of air quality, the Phase 3 projects will reduce the emission of carbon monoxide, nitrogen oxides and hydrocarbon to below State and Federal levels.

Significant adverse impacts from the Proposed Project, *without the parallel runway*, are expected in the categories of: ground transportation noise; air quality (State standards only); historical, architectural, archaeological & cultural resources; roadway intersections; and bike route.

The noise analysis shows that there will be a significant adverse noise impact along Kuihelani Highway/Dairy Road between Hukilike Street and Puunene Avenue, due to the overall growth in ground vehicle traffic. The noise impact of the Proposed Project will be less than that of the No-Action alternative, but the noise levels for these residences would exceed the FHWA noise criteria. Therefore, to mitigate this impact a noise barrier is recommended to be constructed within the roadway Right-Of-Way. This mitigation measure will reduce the level of significance to insignificant.

For air quality, the Proposed Project, *without the parallel runway*, will exceed the State Standard for carbon monoxide (1-hour) at certain locations at the airport boundary due to the longer aircraft queue times. Nevertheless, future air quality conditions will be better with the Proposed Project, *without the parallel runway*, than with the No-Action alternative. Potential mitigation measures would include: the reduction of airport delays; and reducing aircraft queuing. In addition, air quality at certain key roadway intersections would exceed both State and Federal standards for carbon monoxide due to the overall growth in ground vehicle traffic. However, these air quality impacts are less severe with the Proposed Project, than with the No-Action alternative, as the Proposed Project lessens traffic congestion at the key intersections. The potential mitigation measures proposed for these impacts include: increasing the intersection capacity; reduction in traffic queuing; changes in the speed limit; and providing buffer zones. During construction activities, the contractor shall have an adequate and effective dust control plan and will comply with Hawaii Administrative Rules, Section 11-60.1-33 on Fugitive Dust.

The significant adverse impacts for historical, architectural, archaeological & cultural resources are associated with the long-term improvement projects (Phases 2 and 3). The proposed mitigation measures include the retention of an on-call archaeologist to monitor construction activity, and the relocation of the proposed improvements to avoid impacting these resources. For those improvements that cannot be relocated, surface and subsurface testing and data recovery will be performed. The FAA and Hawaii State Historic Preservation Officer (SHPO) have prepared a Programmatic Agreement in consultation with the Advisory Council on Historic Preservation, HDOT, Maui/Lanai Islands Burial Council, Office of Hawaiian Affairs, and Hui Malama I Na Kupuna O Hawaii Nei. The Programmatic Agreement ensures that the FAA and HDOT-AIR will implement the appropriate studies and, if necessary, mitigation measures on the eligible historic sites. In addition, the HDOT-AIR has resized the transient apron and established a Preservation Plan for Site 1798. Both the Programmatic Agreement and the Preservation Plan for Site 1798 are presented in Appendix T. The level of significance after mitigation will be reduced to insignificant.

Table 1-3
SUMMARY OF IMPACT SIGNIFICANCE AND PROPOSED MITIGATION MEASURES FOR THE ENTIRE PROJECT (Non-Cumulative)

EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE	MITIGATION
Aircraft Noise Ground Traffic Noise	Increased or Decreased noise levels	Insignificant/Significant* Significant	Part 150 Noise Compatibility Program/Noise barriers
Land Use	Change in Land Use, Incompatible Land Use	Insignificant/Significant*	None
Geology, Physiography, Agricultural Potential & Earthquakes	Potential to increase damage due to earthquakes, decrease Agricultural Potential	Insignificant	Compliance with applicable building code requirements, and rules and regulations
Social-Economic Impacts	Increase jobs, population, use of public facilities	Insignificant/Significant*	None
Induced Socio-Economic and Economic Impacts	Shift in population centers, changes in business and employment	Insignificant	Design consultation with HDOA on cargo facilities
Air Quality, Climate and Meteorology	Changes in air quality, exceedance of standards	Significant** Positive/Significant at road intersections	Reduce aircraft delays, lessen queuing time, reduce curbside idling, increase intersection capacity, reduce queuing, and dust mitigation.
Water Quality	Changes in water quality or exceedance of standards	Insignificant/Significant cumulative	Oil/water separators, erosion and sediment control, Best Management Practices
Department of Transportation, Sec. 4(f)	Taking or alteration of public recreational facilities	Insignificant/Positive	Construct Kanaha Beach Park expansion
Historic, Architectural, Archaeological & Cultural	Alteration, removal or destruction of features	Potentially Significant***	Relocate facilities, data recovery/recordation, preservation as required, Programmatic Agreement, and Site 1798 Preservation Plan.
Terrestrial Flora	Removal or destruction	Insignificant	Landscaping
Terrestrial Fauna	Removal or destruction	Insignificant	Landscaping and light shields
Alien Species	Increase of Introduction Rate	Insignificant/Significant cumulative	Facilities design, increased inspection & cooperation with HDOA and COAPS, and mitigation measures per the biological opinion.
Marine Flora and Fauna	Removal or destruction	Insignificant	None
Wetlands	Removal or degradation of water quality	Insignificant	None
Hydrology, Floodplain Management and Drainage	Increase runoff or alteration to existing features	Insignificant	Drainage improvements, floodplain design standards
Coastal Zone Management (CZM) Program	Inconsistent development with CZM objectives and policies.	Insignificant	None
Wild and Scenic Rivers	Not applicable	Not Applicable	Not Applicable
Coastal Barriers	Inconsistent development	Insignificant	None
Farmland	Loss of Prime agricultural acreage	Insignificant/Possibly Significant*	None
Energy Analysis	Increased energy demand beyond system capabilities.	Insignificant	None
Light Emissions	Increased effects outside of airport area	Insignificant	Shielding of lights, landscaping
Solid Waste, Hazardous/Toxic Waste and Waste Wash Water	Increase beyond system capabilities or exposure levels	Insignificant	Compliance with applicable rules and regulations
Visual Effects	Alteration of scenic vistas, view plans, natural beauty or open space.	Insignificant	Landscaping, proper facility design considerations
Public Facilities, Infrastructure, Airport Safety and Public Services	Increase beyond system capacity. Increase safety hazard on bikeways or routes	Significant: Bike Route, certain intersections/ Insignificant or Positive: other categories	Install non-potable water system, salt tolerant and drought resistant plants, intersection improvements, bike route crossing at ramps. Others: None required

* Proposed Project with parallel runway and associated facilities

** Under the Proposed Project, *without the parallel runway*, air quality emissions will exceed State of Hawaii Standards for Carbon Monoxide (1-hour) at the airport boundary. However, the number and extent of exceedances under the No-Action alternative will be greater. The Proposed Project would have insignificant impacts under the Federal air quality standards.

*** These features may be disturbed in the Phase 2 and 3 project improvements only.

The new Airport Access Roadway would have beneficial traffic impacts as it would relocate traffic and improve the level-of-service at certain intersections. However, certain intersections and two ramps may have poor level-of-service. Mitigation measures include the use of a signalized intersections, additional turning lanes, or providing adequate lane separation. In addition, there will be a significant adverse impact with regard to the safety of the Hana Highway Bike Route as the new Airport Access Roadway ramps will intersect with bike route[6]. Mitigation measures for this impact will be to maintain the bike route along Hana Highway and design of bike route crossings at the ramps to insure safety for bicyclists and motorist, and portions of the Airport Access Roadway leading into the Airport will be designated as a bike route.

The impacts for the No-Action alternative and the other alternatives to the Proposed Project are analyzed and described in Section 4.0. The following is a summary of the significant impacts that would result under the *No-Action* alternative, based on the evaluation criteria established in Section 3.0 and on the forecast increase in aviation demand and surface traffic. The *No-Action* alternative would have significant impacts in the categories of: (i) ground transportation noise; (ii) secondary socio-economics; (iii) air quality; and (iv) ground vehicle traffic. For ground transportation noise, the noise levels along Dairy Road would exceed the FHWA noise criteria and will be greater than the noise impacts with the Proposed Project. For the secondary socio-economic impacts, the *No-Action* alternative will not relieve the existing weight penalties which are imposed on outgoing overseas aircraft. In addition, the *No-Action* alternative would create significant aircraft operating delays that would average about 7 minutes per aircraft by 2010, and the potential for construction jobs and related economics would be lost. In the area of air quality, it is predicted that there will be exceedences of the air quality standards along the airport boundary and also at the major roadway intersections. In fact, these exceedances will be greater than those with the Proposed Project. The traffic congestion which is an existing problem will worsen and become a significant problem within the Airport's environs. The traffic congestion is greater and therefore the Level-of-Service will degrade without the Proposed Project.

Table 1-3A has been reproduced from Section 4.0 and provides a comparison of impacts for the various alternatives, including the Proposed Project and No-Action. All of the alternatives would have significant cumulative impacts. These significant cumulative impacts were identified in the areas of water quality, health care facilities, water supply and introduction rate of alien species. The mitigation measures for water quality under the Proposed Project include controlling of runoff from the airport and using best management practices. To reduce the use of potable water, HDOT, as part of the Proposed Project, will install a non-potable water system for irrigation and use drought-resistant and salt tolerant landscaping.

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[6] The Hana Highway bike route is an integral part of the Maui Transportation System. A bike route is defined as any street or highway so designated for the shared use of bicycles and motor vehicles or pedestrians or both. Bike routes are of two types: (i) a widened curb lane in an urban-type areas; or (ii) a paved right shoulder in a rural-type areas.

TABLE 1-3A
SUMMARY OF POTENTIAL IMPACTS OF ALTERNATIVES ANALYZED
(NON-CUMULATIVE)

ALTERNATIVE	ENVIRONMENTAL ISSUE AREA/LEVEL OF SIGNIFICANCE*																					
	Noise	Land Use	Geol/Physiog/Soils/ Ag. Potential	Socio-economics	Secondary Socio-economic Effects	Air Quality	Water Quality	DOT Sec. 4(f)	Historic/Archaeology	Biotic Communities	Wetlands	Hydro/Floodplain Management	CZM Program	Wild/Scenic Rivers	Coastal Barriers	Farmland	Energy Analysis	Light Emissions	Solid/Liquid Wastes	Visual Effects	Public Facilities	Traffic
PROPOSED PROJECT	I/S	I/S	I	I/S	I	P/S	I	I/P	I/S	I	I	I	I	N/A	I	I	I	I	I	I	I	S/P
NO-ACTION	I/S	N	N	I	S	S	N	N	N	I	N	N	N	–	N	N	–	–	I	N	I	S
MASTER PLAN ALTERNATIVES																						
Alternative 1	--	I	I	I	S	S	I	I	I	I	I	S	--	--	--	I	--	--	--	--	--	S/P
Alternative 2	--	--	I	I	I	P/S	I	I	I	I	I	S	--	--	--	I	--	--	--	--	--	S/P
Alternative 3	--	I	--	I/S	I	--	I	N	--	--	--	S	--	--	--	--	--	--	--	--	--	S/P
Alternative 4	S	S	I	I/S	I	--	S	S	S	--	--	S	S	--	--	I	--	--	--	S	--	S/P
Alternative 5	--	I/S	I	I/S	I	--	I	N	--	--	--	--	--	--	--	I	--	--	--	S	--	S/P
OTHER RUNWAY ALT.																						
9,600 Foot Parallel	S	S	I	S	I	P	I	S	S	I	--	I	S	--	--	I	S	I	I	S	--	S/P
HANA HWY/ACCESS																						
At-grade Intersection	I	--	--	--	--	S	--	--	--	--	--	I	--	--	--	--	--	--	--	I	--	S
Diamond Interchange	I	I	--	--	--	S	--	--	--	--	--	I	--	--	--	--	--	--	--	I	--	I

* Level of Significance: P = Positive; S = Significant Negative; I = Insignificant; N = None; -- = The impact is the same (identical) as Proposed Project

NOTES:

1. Noise - significant noise impacts for the Proposed Project and the No Action Alterative are due to the surface traffic on Dairy Road.
2. Air Quality - exceedances of the State Ambient Air Quality Standard

To reduce the introduction rate of alien species, the FAA's biological assessment and the biological opinion by the USFWS detailed a mitigation program for the Proposed Project. Mitigation measures for Pre-entry include: (i) HDOT-AIR will support the CGAPS in their educational role of informing the traveling public of the dangers of alien species; (ii) HDOT-AIR, as a member of CGAPS, will keep CGAPS informed of any new proposed domestic or international routes to Maui.; and (iii) HDOT-AIR will develop a voluntary program for all airlines serving Kahului Airport using a non-chemical best practical pesticide/pest prevention treatment program for aircraft cargo spaces. Mitigation measures at the Port-of-entry include: (i) HDOT-AIR shall support efforts by CGAPS and others to adequately and effectively inform arriving passengers of the dangers posed by alien species, the nature of quarantine restrictions, and the penalties for violations; (ii) HDOT-AIR will plan and implement a voluntary education program for airport personnel to recognize and report smuggled animals and plants/fruit, stowaway snakes and insects, and new alien species on airport grounds; (iii) HDOT -AIR will provide infrastructure and equipment to support HDOA and USDA inspection needs at the Airport; (iv) HDOT-AIR will fund one additional inspection dog and three additional agriculture inspector positions, one of which will act as a handler for the dog; (v) HDOT-AIR will design and construct the new air cargo building to include facilities for U.S. Customs, USDA and HDOA; (vi) HDOT-AIR will design and fund, on an ongoing basis, a comprehensive program to monitor the efficacy of the alien species interdiction system at Kahului Airport. Mitigation measures for Early detection/response and other measures include: (i) HDOT-AIR will encourage the Kahului Airport Security Committee to include alien species control as an element under its purview; (ii) HDOT-AIR will review the Brown Tree Snake Control Plan (Aquatic Nuisance Species Task Force 1996) to determine its applicability to all airports within the State; and (iii) HDOT-AIR will, on an ongoing basis, contract with a consultant in entomological pest identification to assist Animal Damage Control in conducting semi-annual monitoring of the airport environs to detect early establishment of new alien insects, particularly social hymenoptera (ants and wasps) and biting diptera (midges, flies and mosquitoes); and (iv) HDOT-AIR will assist HDOA and USDA with manpower, resources and funds in the eradication of any detected population within the Kahului Airport boundary.

The significant impacts associated with the Airport Access Roadway and interchange with the Proposed Project are: (i) the ground traffic noise in the vicinity of Dairy Road and Puunene Avenue; (ii) exceedances at roadway intersections of ambient air quality standards; and (iii) interference with a proposed bike route along Hana Highway. With or without the Proposed Project, the noise levels at the residential boundary lines along Dairy Road exceeds the FHWA noise criteria. The proposed mitigation measure under the Proposed Project of building a sound attenuation wall would reduce the noise impacts to an insignificant level. The air quality impacts at the new intersections, can be mitigated under the Proposed Project by increasing the intersection capacity and improving the level-of-service. The mitigation measures for the impact of the interchange on the proposed Hana Highway bike route will be the addition of crossings at the ramps which will be designed for the safety of both motorist and bicyclist. In addition, portions of the Airport Access Roadway would be designated as a bike route to allow access to the airport. There will be no significant adverse impacts of DOT Section 4(f) land or wetlands. Table 1-4 summarizes the impacts and mitigation measures for the Airport Access Road and intersection/interchange with Hana Highway for FHWA. A detailed description of the impacts from the Proposed Project is presented in Section 3.0.

Table 1-4
SUMMARY OF IMPACT SIGNIFICANCE AND PROPOSED MITIGATION MEASURES FOR THE AIRPORT ACCESS ROAD AND INTERCHANGE (Non-Cumulative)

EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE	MITIGATION
Noise - Ground Traffic	Increased or Decreased noise levels	Significant	Noise barrier
Land Use	Change in Land Use, Incompatible Land Use	Insignificant	None
Geology, Physiography, Agricultural Potential & Earthquakes	Potential to increase damage due to earthquakes, decrease Agricultural Potential	Insignificant	Compliance with applicable building code requirements
Social-Economic Impacts	Increase jobs, population, use of public facilities	Insignificant	None
Induced Socio-Economic and Economic Impacts	Shift in population centers, changes in business and employment	Insignificant	None
Air Quality, Climate and Meteorology	Changes in air quality, exceedance of standards	Positive/Significant*	Reduce idling, increase intersection capacity, speed limit changes
Water Quality	Changes in water quality or exceedance of standards	Insignificant	None
Department of Transportation, Sec. 4(f)	Taking or alteration of public recreational facilities.	Insignificant	None
Historic, Architectural, Archaeological & Cultural	Alteration, removal or destruction of features	Insignificant	None
Terrestrial Flora	Removal or destruction	Insignificant	None
Terrestrial Fauna	Removal or destruction	Insignificant	None
Marine Flora and Fauna	Removal or destruction	Insignificant	None
Wetlands	Removal or degradation of water quality	Insignificant	None
Hydrology, Floodplain Management and Drainage	Increase runoff or alteration to existing features	Insignificant	Drainage improvements
Coastal Zone Management (CZM) Program	Inconsistent development with CZM objectives and policies.	Insignificant	None
Wild and Scenic Rivers	Not applicable	Not Applicable	Not Applicable
Coastal Barriers	Inconsistent development	Not Applicable	Not Applicable
Farmland	Loss of Prime agricultural acreage	Insignificant	None
Energy Analysis	Increased energy demand beyond system capabilities.	Insignificant	None
Light Emissions	Increased effects outside of airport area	Insignificant	Landscaping, barrier
Solid Waste, Hazardous/Toxic Waste and Waste Wash Water	Increase beyond system capabilities or exposure levels	Insignificant	None
Visual Effects	Alteration of scenic vistas, view plans, natural beauty or open space.	Insignificant	None
Public Facilities, Infrastructure, Airport Safety and Public Services	Increase beyond system capacity. Increase risk of the public.	Significant: Bike Route certain intersections / Positive or insignificant: other intersections	Marked crossings at ramps for Bike route, bike route on ramps, & increase intersection capacity.

* Also, overall air quality is a significant adverse impact as stated in Table 1-3 for CO 1-hour State of Hawaii emission level.

1.7 AREAS OF CONTROVERSY/ISSUES TO BE RESOLVED

1.7.1 AREAS OF CONTROVERSY

The Proposed Project has served as a focal point of community views regarding the future development of Maui. The socio-economic impact study performed for this EIS (Appendix E) has shown that the Proposed Project does not induce growth; rather, the Proposed Project more efficiently accommodates existing needs and forecast increases in air service demand. Nevertheless, some residents feel that the airport improvements will increase tourism and, therefore, spur additional development of the island. Secondly, many residents feel that Maui's infrastructure is not adequate to meet current and anticipated needs. During the scoping process for this EIS, members of the Maui community expressed seven broad concerns:

1. Whether the airport improvements will cause increased development;
2. Whether there is a need for infrastructure development to precede new economic development;
3. Whether the airport improvements will make it difficult to manage growth;
4. Whether the State should invest in facilities to assure Maui's competitive position;
5. Whether the proposed improvements will facilitate the introduction of alien species to Maui.[7]
6. Whether the proposed improvements will increase international flight operations and passengers.
7. The effect of increased airport development as it relates to Hawaiian sovereignty.

1.7.2 ISSUES TO BE RESOLVED

The HDOT-AIR and FAA are aware of many questions and public concerns at this time regarding the Proposed Project. The FAA and State will continue to work with, the residents of and businesses in the area, as well as administrative and elected officials, to ensure that the final development plans meet the objectives of the proposed improvements and satisfactorily address the concerns that have been raised to-date as well as those that may be raised during public review of this EIS.

The following are issues to be resolved and a discussion as to how these issues will be resolved:

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[7] The subject of alien species is being studied on a statewide level and has led to the formation of the Alien Species Action Plan (ASAP). A copy of ASAP can be obtained from "The Nature Conservancy of Hawaii," and is presented in Appendix Q. An outcome of the ASAP is the Coordinating Group on Alien Pest Species (CGAPS). Additional information about Alien Species is contained Appendix U.

- Implementation of a Stage 2 aircraft curfew at the airport.
  Discussion: The Noise Compatibility Program recommends that HDOT-AIR continue to evaluate the impact of imposing a Stage 2 curfew. This would need to be performed in accordance to the applicable FAA rules and regulations, including FAR Part 161. Briefly, the FAR Part 161 requirements include:

  - An analysis of the anticipated or actual costs and benefits of the proposed noise or access restriction;
  - A description of alternative restrictions;
  - A description and a cost and benefit comparison of alternative non-aircraft measures considered (measures that do not involve aircraft noise or access restrictions); and
  - If the restriction is applicable to aircraft weighing less than 75,000 pounds, a separate analysis for these aircraft must be prepared (the HDOT-AIR proposed rule was applicable to aircraft weighing under 75,000 pounds).

- Project's consistency with the State's Coastal Zone Management Program.
  Discussion: The FAA received a consistency determination for Phases 1 and 2 of the Proposed Project on July 2, 1997 (Section 11, Reference 36), from the Office of State Planning. The Office of State Planning has deferred their review of the Phase 3 projects until additional environmental analysis and documentation is completed. The HDOT-AIR will apply for the applicable Special Management Area permits from Maui County, as needed, for specific elements of the Proposed Project upon completion of the EIS;

- Extent of environmental monitoring required prior to, during and following construction.
  Discussion: The proposed mitigation measures will be included in the Proposed Project, and incorporated, as applicable, into the construction plans and specifications. The timing of the implementation of the specific mitigation measures is discussed in the specific impact categories in Section 3.0 of this EIS. HDOT-AIR's engineers and construction managers will ensure that the construction-related mitigation measures are followed;

- Permit requirements (as applicable, see Table 2-6).
  Discussion: The applicable permits will be applied for upon completion of the EIS and their current status is listed in the table; and

- Plan to discourage Hawaiian Stilts from foraging on the airfield after rainfall. **Discussion:** HDOT-AIR is working on drainage improvements in the areas of the airfield that currently pond and are attractors to the Hawaiian Stilt. The USFWS is monitoring HDOT-AIR to ensure that the drainage improvements will be completed and effective. Also, USDA-ADC has obtained a "hazing" permit to haze the Hawaiian Stilt off of the airfield, as necessary, to minimize aircraft and Hawaiian Stilt interactions.

1.8 INCORPORATION OF STUDIES AND OTHER DOCUMENTS

Various studies, reports and other documents are referenced in this EIS and form its informational base. A list of these documents is presented in Section 11.0. The following documents are incorporated by reference and are summarized in the following subsections. These documents are available for review by appointment at the: State of Hawaii, Department of Transportation, Airports Division; 400 Rodgers Boulevard, Suite 700; Honolulu, Hawaii 96819. Please contact Mr. Ben Schlapak to review these documents.

1.8.1 KAHULUI AIRPORT – FAR PART 150 NOISE COMPATIBILITY PROGRAM, VOLUME II, NOISE COMPATIBILITY PROGRAM REPORT (Appendix O)

The *FAR Part 150 Noise Compatibility Program, Volume II, Noise Compatibility Program Report*, has been incorporated in this EIS per the Court-ordered stipulation of March 12, 1991; its findings, alternatives and recommendations have been analyzed in this EIS. The *Noise Compatibility Program Report* was completed in September 1995 by Belt Collins Hawaii and Y. Ebisu & Associates for the HDOT-AIR. Subsequently, the HDOT-AIR submitted the report to the FAA on October 26, 1995. This report conforms with the Federal Aviation Regulation Part 150 regulations, and includes the base year (1993) Noise Exposure Map for Kahului Airport and the five (5) year future (1998) Noise Exposure Map. These maps were generated using the FAA's Integrated Noise Model, Version 4.11. Based on the Noise Exposure Maps, the report recommends the following Noise Compatibility Program (NCP) to reduce the incompatible Land Uses within the Kahului Airport environs.

- Nighttime Prohibition on Stage 2 Aircraft[8]

[8] HDOT-AIR has recently suspended amending Hawaii Administrative Rules Chapter 19-28. The proposed rules change was suspended due to objections from several Maui businesses, and challenges to the validity of the process prescribed by the Federal Aviation Regulations and HDOT-AIR's benefit/cost analysis. Furthermore, the "nighttime prohibition of stage 2 aircraft" cannot be imposed until the FAR Part 161 requirements are met.

HDOT-AIR is presently pursuing an amendment to the Hawaii Administrative Rules Chapter 19-28, which would add a new section, § 19-28-3.1, which states:

§ 19-28-3.1 Additional restrictions at Kahului. No aircraft shall take off or land at Kahului Airport between the hours of 10:00 p.m. and 6:00 a.m. as of December 31, 1995 unless it is a stage 3 airplane.

The NCP recommends that HDOT-AIR continue to evaluate the impact of imposing a "nighttime prohibition on Stage 2 aircraft" as part of the continuing effort to amend Chapter 19-28, Hawaii Revised Statutes.

- Clarification of Informal Runway Use Program. The intent of this measure is to reduce the incidence of light aircraft overflights of homes in Spreckelsville. This measure would reword the existing Informal Runway Use Program to clarify the departure routes from Runways 5-23 and 2.

- Negotiate with private landowners in West Spreckelsville enclosed by the 75 DNL Contour to purchase the private properties or avigation easements (currently underway).

- Initiate a Sound Attenuation Program for remaining residences in East and West Spreckelsville.

- Offer to purchase private properties that are between the 60 and 75 DNL contours whose owners do not wish to participate in the Sound Attenuation Program.

- Continue monitoring of development proposals in the Kahului Airport environs, disclosing airport noise exposure maps to the community.

- Design, install, and operate a noise monitoring system at Kahului Airport.

- Annually monitor aircraft noise levels and operations at Kahului Airport, and conduct public informational meetings on the progress of the Part 150 Noise Compatibility Program.

1.8.2 SITE SELECTION REPORT, MAUI GENERAL AVIATION STUDY (Appendix R)

A long-term alternative recommendation of the 1993 Kahului Airport Master Plan was to relocate the helicopter operations to an off-airport location. In addition, the March 12, 1991, Court-ordered stipulation requires the investigation of the feasibility of reactivating Puunene Airport on a permanent basis

for general aviation reliever airport, and for night cargo operations. These actions prompted the HDOT-AIR to do a site selection report for moving helicopters, general aviation and night cargo operations to an off-airport site, including Puunene Airport. The report was preformed by: Edward K. Noda and Associates, Inc.; P&D Aviation; and R. T. Tanaka Engineers, Inc. The site selection report was completed in December 1995 and is included in Appendix R.

The site selection study analyzed the feasibility of using existing airports, the Puunene Airport (Old Maui Airport), and several other locations to serve as a general aviation reliever airport, or for helicopter or night cargo operations. After a thorough evaluation of ten new airport/heliport alternatives, the following were the findings and conclusions of the site selection effort for the Maui General Aviation Study.

- Due to airspace conflicts with Kahului Airport aviation traffic, community impacts, potential environmental impacts, and/or costs, none of the new utility airport alternatives nor the transport airport alternative appears to be feasible. The preferred recommendation of the study is to keep general aviation at Kahului Airport within the planning horizon.

- In the interim, the helicopter operating area would be moved to an area immediately east of the present location. This interim location will provide a separation of at least 1,000 feet between the helicopter facilities and the centerline of Runway 2-20. Also, the interim facility would improve the line-of-sight from the Air Traffic Control Tower

- In the long-term, should the parallel runway be constructed, the helicopter operations would need to be relocated to an off-airport site. The Maui General Aviation Site Selection Study recommends that the new long-term helicopter facility be located at the Old Puunene Airfield Site (TMK 3-8-08:1).

1.8.3 UPDATE OF HAWAII AVIATION DEMAND FORECASTS (Appendix S)

The State of Hawaii, Department of Transportation, Airports Division, prepared a revision of aviation demand forecasts for the sixteen (16) State airports in October 1994. These demand forecasts supersede the SASP demand forecasts which were used in the 1993 Kahului Airport Master Plan. These updated forecasts reflect changes in the worldwide economic situation and its effect on the Hawaii visitor industry. The updated 2010 passenger forecast which are used as a basis for the impact analysis for this EIS is presented in the *Update of Hawaii Aviation Demand Forecasts* (Section 11, Reference 6 and Appendix S) and presented in Table 1-5. The aviation demand forecasts are presented in Table 1-6.

As the 1993 Master Plan's recommendations were based on the SASP, the updated forecasts will affect the phasing of the Proposed Project. The updated forecasts do not affect the Master Plan's recommendation for the facilities needed. This is because the Master Plan involves a complex planning process which determines the type and characteristics of new aviation facilities. This planning process uses the aviation demand forecasts as a part of the overall process. In general, the aviation demand forecasts are used to determine if and when new facilities are needed in the future to accommodate forecast demand.

Table 1-5
KAHULUI AIRPORT PASSENGER FORECAST
1992 - 2010

	PASSENGER ARRIVALS AND DEPARTURES			
	1992 (actual)	2000	2005	2010
Overseas	1,281,797	1,557,000	1,796,000	2,041,000
- Mainland	0	0	0	511,000
- International*	3,900,713	4,744,000	5,344,000	5,436,000
Interisland				
Total	5,182,510	6,301,000	7,140,000	7,988,000

* Passengers which are processed through Federal Inspection Services (Immigration and Customs), and does not include pre-cleared international passengers.

Table 1-6
KAHULUI AIRPORT AVIATION DEMAND FORECAST
1992 - 2010

	AVIATION DEMAND (Operations)			
	1992 (actual)	2000	2005	2010
Air Carrier	57,159	66,900	73,900	80,700
Commuter/Air Taxi	68,832	90,000	101,200	112,300
General Aviation	47,281	41,000	45,000	49,000
Military	5,480	12,000	11,700	11,700
Total	178,752	209,900	231,800	253,700
Based Aircraft	75	82	88	94

It should be noted that this change in forecast does not affect non-demand-related facilities of the Proposed Project. These facilities are planned to correct existing deficiencies at the Airport as described in Section 2.1.2. These non-demand-related projects are scheduled to be completed in Phase 1 of the Proposed Project and include: (i) the strengthening and extending Runway 2-20, and associated taxiways; (ii) new airline ground support equipment maintenance facility; (iii) installation of new fuel storage and loading facilities; and (iv) the interim relocation of the helicopter apron.

However, the updated forecasts, when compared to those of the SASP, does shift the need for future demand-related facilities by six (6) years into the future. Therefore, if a facility in the 1993 Master Plan was needed to meet a demand in the year 2010, this demand has now shifted to the year 2016.

Therefore, the new phasing for the Master Plan projects are as follows:

Phase 1, will shift from "1992 to 1996" to "present to 2002."

Phase 2, will shift from "1996 to 2002" to "2003 to 2008."

Phase 3, will shift from "2003 to 2010" to "2009 to 2016."

1.8.4 FINAL ENVIRONMENTAL IMPACT STATEMENT, KAHULUI AIRPORT MASTER PLAN UPDATE

A Final State of Hawaii EIS was published in July, 1992 to meet the HRS 343 requirements for the 1993 Kahului Airport Master Plan (Section 11.0, Reference 5). This 1992 Final State of Hawaii EIS analyzes many of the projects that are analyzed in this joint EIS.

1.8.5 KAHULUI AIRPORT MASTER PLAN, JUNE 1993 (Section 11.0 Reference 5)

This Master Plan provides the basis for the analyses in this EIS. The major alternatives included in this EIS are taken from the 1993 Master Plan. In addition, the technical studies in the Master Plan form the basis for the facility requirements and phasing of the Proposed Project. The 1993 Master Plan used the 1990 SASP aviation forecast as a basis for the future facility requirements. The recommended Master Plan, which is the result of evaluation of the six alternatives, lengthens Runway 2-20; adds a parallel runway; constructs a new airport access road; and generally includes most of the other proposed improvements of the 1988 Kahului Airport Development Plan.

1.8.6 KAHULUI AIRPORT DEVELOPMENT PLAN, ENVIRONMENTAL ASSESSMENT, APRIL 1989 (Section 11.0, Reference 8)

This document evaluated the potential environmental impacts of the short-term development program for Kahului Airport as described in the Kahului Airport Development Plan, 1988 (Section 11.0, Reference 2).

1.8.7 ENVIRONMENTAL ASSESSMENT, INSTALLATION OF VORTAC FACILITY, KAHULUI AIRPORT, MAUI, JULY 1993 (Section 11.0, Reference 13)

The purpose of this Environmental Assessment was to evaluate the environmental impacts resulting from the relocation, construction and operation of the FAA's Very High Frequency Omnidirectional Range/Tactical Air Navigational (VORTAC) facility at Kahului Airport. The Environmental Assessment found no significant environmental impacts for this project.

1.8.8 ENVIRONMENTAL ASSESSMENT FOR PROPOSED RELOCATION OF AIRPORT RESCUE AND FIRE FIGHTING STATION AT KAHULUI, MAUI, HAWAII, NOVEMBER 1991 (Section 11.0, Reference 11)

This Environmental Assessment was performed for the construction of a new Airport Rescue and Fire Fighting (ARFF) Station on the East Ramp of Kahului Airport. The Environmental Assessment stated that there would be no significant impacts associated with this project.

1.8.9 AIRPORT RESCUE AND FIRE FIGHTING (ARFF) TRAINING FACILITY ENVIRONMENTAL ASSESSMENT, AUGUST 1995 (Section 11.0, Reference 12)

This Environmental Assessment was prepared for the construction of a new ARFF Training Facility at the existing training site. The facility includes a Fuel Spill Fire Trainer, 8-inch off-site water line, underground fuel and water separation system, underground leak detection system, holding pond, control shed and related improvements. The Environmental Assessment determined that the facility would not result in any significant environmental impacts.

1.8.10 ENVIRONMENTAL ASSESSMENT, WILDLIFE MANAGEMENT AT KAHULUI AIRPORT (Section 11.0, Reference 30)

This Environmental Assessment was prepared by the United States Department of Agriculture, Animal and Plant Health Inspection Service, Animal Damage Control for conducting wildlife hazard management to protect human safety, aircraft, and airport property from wildlife hazards at Kahului Airport. The Environmental Assessment recommends the current program as the best alternative for the

wildlife management at Kahului Airport. A Decision and Finding of No Significant Impact was rendered in May 1997.

1.9 SUMMARY OF LAND USE COMPATIBILITY AND PERMITS AND APPROVALS

The proposed improvements are generally consistent with: (i) the applicable Hawaii State Plan and various Functional Plans; (ii) the County General Plan; and (iii) the Wailuku-Kahului Community Plan goals, policies and standards relating to the future growth in the airport area. The proposed improvements provide facilities which will promote efficient, economical, safe and convenient movement of people and goods for existing and forecast future demand. For Maui's visitor market, the proposed improvements will provide transportation facilities which efficiently accommodate existing and forecast aviation demands. It will allow Maui to diversify its visitor market mix and supports the County in maintaining a quality visitor product. The extension of Runway 2-20 to 9,600 feet is supported by Maui County, however, the parallel runway is not supported by Maui County at this time.[9] Detailed discussions of the relationship of the Proposed Project are included in Section 2.1.1 and Section 7.0.

This EIS will be used in connection with various Federal, State and Maui County permit applications. The major approvals and permits which may be required are discussed in Section 2.7 and include: (i) Special Management Area Permit; (ii) County's Airport Zone Designation; (iii) Wailuku-Kahului Community Plan Amendment; (iv) Land Use Boundary Amendment; (v) Historic Sites Review; (vi) CZMP Consistency Determination (completed); (vii) Water Quality Certification; (viii) NPDES; (ix) Farmland Conversion Impact Rating; (x) Biological Assessment (completed); and (xi) Airport Layout Plan Approval. Other approvals and permits which may be required for the proposed improvements in addition to those permits and approvals listed. Upon analysis of the Proposed Project, a Section 404 permit is not required at this time, since there will be no discharge of dredged or fill material into waters of the United States.

1.10 ORGANIZATION OF THIS EIS

This Kahului Airport Environmental Impact Statement is contained in the following five (5) volumes:

- Volume I: EIS Report
- Volume II: Comments Received during Scoping and Preconsultation Periods, Legal Documents and Technical Studies
- Volume III: Technical Studies
- Volume IV: Technical Studies and Comments Received on Draft EIS, Public Hearing Transcripts and Response to Comments

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[9] County of Maui, Planning Department, Testimony by Brian Miskae, Planning Director at scoping meeting at Kahului Airport on May 18, 1994.

- Volume V: Comments Received on Draft EIS, Public Hearing Transcripts and Response to Comments (continued)

The organization of this report is as follows:

- **Section 1.0: Introduction and Summary.** This section gives a history of planning and environmental studies for Kahului Airport; describes the EIS scoping process; lists associated documents; and summarizes issues, impacts and mitigation measures identified by the EIS.

- **Section 2.0: Project Description.** This section describes the Proposed Project analyzed by the EIS; discusses the purposes and needs for the Proposed Project; and lists approvals and permits needed for its implementation.

- **Section 3.0: Affected Environment, Potential Impacts and Mitigation Measures.** This section describes the environment affected by the Proposed Project and analyzes impacts caused by the project.

- **Section 4.0: Alternatives to the Proposed Project.** This section describes and analyzes alternatives to the Proposed Project and the potential impacts and mitigation measures for these alternatives.

- **Section 5.0: Cumulative Impacts.** This section discusses potential cumulative effects of the Proposed Project.

- **Section 6.0: Growth Inducing Impacts.** This section discusses features of the Proposed Project which may induce growth in the community and the environmental impacts of that growth.

- **Section 7.0: Other HEPA and NEPA Sections.** This section discusses other HEPA and NEPA requirements for the analysis of environmental impacts; and lists environmental effects considered not to be significant.

- **Section 8.0: Other Related Issues.** This section provides an analysis of items required by the Court-ordered stipulation but which are not part of the 1993 Kahului Airport Master Plan, namely, international flight operations and a public thoroughfare between Alahao Street and Old Stable Road (not an emergency road).

- **Section 9.0: List of Preparers.** This section lists the principal preparers of the EIS.

- **Section 10.0: Agencies, Organizations and Persons Consulted.** This section lists the significant persons and entities that were consulted during the EIS preparation process.

- **Section 11.0: References.** This section lists major documents which are referred to in the EIS.

- **Section 12.0: Index.** This section gives an index of terms used in the EIS.

- **Section 13.0: Glossary of Terms.** This section contains definitions of terms used in the EIS.

1.11 COMPLIANCE WITH FAA ORDER 5050.4A

This Environmental Impact Statement has been written to comply with NEPA, the FAA Order 5050.4A, *Airport Environmental Handbook*, and HRS, Chapter 343. The general EIS format under the requirements of HRS, Chapter 343 has been followed. For those familiar with the NEPA/FAA Order 5050.4A format, this section is included as an aid to those reviewers who need the information contained herein in the format designated in FAA Order 5050.4A.

A. **PURPOSE AND NEED FOR ACTION:** A detailed description of the purpose and need for the Proposed Project is in Section 2.0.

B. **ALTERNATIVES, INCLUDING THE PROPOSED ACTIONS:** The detailed discussion of the impacts, significance criteria and mitigation measures for the Proposed Project are presented in Section 3.0, while the discussion of the impacts and mitigation measures for the alternatives to the Proposed Project are presented in Section 4.0.

C. **AFFECTED ENVIRONMENT:** The description of the environment of the areas(s) to be affected are described in Section 3.0 for the Proposed Project and Section 4.0 for the alternatives.

D. **ENVIRONMENTAL CONSEQUENCES:**

a. Noise

AIRCRAFT NOISE: The existing aircraft noise impacts were studied in this EIS and the recent FAR Part 150 Study. Both studies show similar existing impacts on single family residential areas between the 60 DNL to 75 DNL noise contours. The FAR Part 150 Study recommends abatement measures for these existing impacts on noise sensitive

receptors. The proposed Runway 2-20 extension will have an insignificant effect on incompatible land uses in the Airport's environs. In fact, it may reduce some noise impacts in the East Spreckelsville community. The parallel runway will have potential significant adverse impacts on redistributing the noise in the Airport environs. However, it will not generate new incompatible land uses when compared to the existing incompatible land uses identified in the Kahului Airport NCP.

Other land-based airport noise sources would have insignificant impacts due to the Proposed Project. The existing conditions, impacts and mitigation measures for the Proposed Project is present in Section 3.2.1. The impacts due to the alternatives to the Proposed Project are described in Section 4.2, 4.3 and 4.4.

GROUND TRANSPORTATION NOISE: The noise analysis shows that there will be a significant impact for the residences along Dairy Road, between Puunene Avenue and Hukilike Street. This impact is less than the impact anticipated under the No-Action alternative. There will be a positive impact for areas along Dairy Road which are north of Hukilike Street, due to the Proposed Project when compared to the No-Action alternative. The noise impact from ground transportation due to the Proposed Project is described in Section 3.2.2. The noise impacts for the No-Action alternative is covered in Section 4.2.

b. Land Use: The land use analysis conducted for this EIS, in conjunction with the recently completed FAR Part 150 Noise Compatibility Program study identifies insignificant impacts on land use due to the Proposed Project, except when the parallel runway is constructed. However, because the parallel runway is scheduled to be constructed beyond the 2010 time frame, the full impacts are not known, and therefore, cannot be assessed properly at this time. Prior to construction of these long-range projects additional environmental analysis will be completed in order to determine what, if any, further environmental documentation is required. The impacts for the Proposed Project on land use are addressed in Section 3.3.

c. Social Impacts: The Proposed Project is expected to have insignificant impacts in the first two phases of development. The Proposed Project will create a significant short-term effect as construction employment will probably increase above 5 percent, but would not have long-term impacts on employment. However, the parallel runway could cause the relocation of residences and agricultural activities. In addition, the parallel runway is currently inconsistent with Maui County's Plans. However, the speculative and long range nature of the parallel runway, makes the determination of significance for these impacts difficult to assess at this time. Therefore, prior to construction of the parallel runway an environmental document will be completed to assess the impacts and provide mitigation

measures, if applicable. The social impacts from the Proposed Project are described in Section 3.5, and the impacts on public services are discussed in Section 3.22.

d. Induced Socioeconomic Impacts: The Proposed Project would have an insignificant impact on induced (secondary) socio-economic impacts. However, the speculative and long range nature of the parallel runway makes the determination of significance of impacts difficult to assess at this time. Therefore, prior to construction of the parallel runway and other Phase 3 projects, further environmental assessment and review may be completed, to the extent required by law, to assess the environmental impacts and provide mitigation measures, if applicable. The impacts of the Proposed Project are described in Section 3.6.

e. Air Quality: It has been determined that the Proposed Project impacts on sensitive receptors would be insignificant. As for air quality impacts at off-site roadway intersections, the Proposed Project (with or without the parallel runway) would have *positive* impacts on roadway carbon monoxide emissions when compared to the No-Action alternative. The air quality impacts for the Proposed Project are described in Section 3.7 while the impacts for the No-Action alternative are described in Section 4.2.7.

f. Water Quality: The Proposed Project will not result in any significant discharge into any water body. Thus no significant adverse water quality impacts are due to the Proposed Project. This issue is described in Section 3.4 and 3.8.

g. Department of Transportation Act, Section 4(f): Section 4(f) applies to the project due to the location of Kanaha Pond Wildlife Sanctuary, proximity to Haleakala National Park, and the proposed expansion of Kanaha Beach Park. There will be no impact to the Kanaha Pond Wildlife Sanctuary and Haleakala National Park. However, the National Park staff is concerned about the continued impact of alien species on Haleakala National Park, and its native species and ecosystems The proposed Kanaha Beach Park improvements are considered to be a beneficial impact to the existing Kanaha Beach Park. The Section 4(f) impacts of the Proposed Project are described in Section 3.9 and the recreational impacts of the Proposed Project are described Section 3.22.7.

h. Historic, Architectural, Archaeological, and Cultural Resources: Phase 1 of the Proposed Project will not have significant adverse impacts on archaeological, cultural and historical features. However, the East Ramp improvements and the Kanaha Beach Park Improvements in Phase 2 of the Proposed Project may impact archaeological features, especially buried cultural deposits, depending on the amount of subsurface excavation needed. The Phase 3 improvements, such as the expanded runway safety areas for Runway 5-23, the extension of the Runway 5-23 parallel taxiway, construction of the

perimeter road and fencing may disturb subsurface deposits. In addition, the transient apron, fuel pipeline from Kahului Harbor to the Bulk Fuel Storage facility, and the parallel runway and associated facilities which occur in Phase 3 of this project may have a significant impact on buried archaeological features. These impacts will be assessed in future environmental documents for these projects. The detailed description of the impacts and proposed mitigation measures are in Section 3.10. The description of impacts on alternatives to the Proposed Project is presented in Section 4.3. The FAA and the Hawaii State Historic Preservation Officer have prepared a Programmatic Agreement in consultation with the Advisory Council on Historic Preservation, HDOT, Maui/Lanai Islands Burial Council, Office of Hawaiian Affairs, and Hui Malama I Na Kupuna O Hawaii Nei. HDOT-AIR has established a Preservation Plan for Site 1798. Both documents are presented in Appendix T.

i. Biotic Communities: The Proposed Project is not expected to create a significant adverse impact on Biotic Communities, except in the introduction of alien species. The alien species issue is considered a significant cumulative impact. A discussion of impacts to biota is presented in Section 3.11. The introduction of alien species (pests) is presented in Section 3.11 and in Section 5.1.5. The FAA and USFWS have completed a biological assessment on the impact of the Proposed Project on the introduction rate of alien species to Maui. A biological opinion with a no jeopardy assessment was issued by the USFWS. The biological assessment and biological opinion is presented in Appendix U.

j. Endangered and Threatened Species of Flora and Fauna: A discussion of endangered and threatened species is presented within the discussion of the biotic communities, Section 3.11. There will be insignificant impacts to endangered or threatened species of fauna. There are no endangered or threatened species of flora within the project area. A biological assessment of the Proposed Project on the introduction rate of alien species to Maui, was completed by the FAA and included in Appendix U. In addition , the "no jeopardy" biological opinion for the biological assessment is included in Appendix U.

k. Wetlands: During the course of the EIS, several wetlands were delineated north of the majority of the airport developments. In addition, Kanaha Pond Wildlife Sanctuary is a major wetland within the airport boundary. However, it was determined that the Proposed Project will not create adverse impacts on wetlands. A discussion on the wetlands is presented in Section 3.12.

l. Floodplains: Portions of the airfield is located within a flood and tsunami zone as indicated by the Flood Insurance Rate Maps (FIRM). However, the FIRM has not been updated since the construction of the Kalialinui Gulch Improvements were completed and

therefore, the flood zone delineation in that area is not applicable. The Proposed Project will not create significant adverse impacts to floodplains. A discussion of the floodplain impacts are presented in Section 3.13.

m. Coastal Zone Management Program and Coastal Barriers: The proposed project will conform to all State of Hawaii Coastal Zone Management (CZM) and the Maui County Special Management Area (SMA) requirements. The proposed project will be within the existing SMA boundary. The CZM program is discussed in Section 3.14 and Section 7.6.2. The Proposed Project will not impact the Coastal Barrier area designated as HI-09, at the Kahului-Wailuku Wastewater Treatment facility. A consistency determination was issued on July 2, 1997 by the State, Office of Planning, for Phases 1 and 2 of the Proposed Project. The State has deferred their review of the Phase 3 projects until additional environmental analysis and documentation is completed.

n. Wild and Scenic Rivers: There are no wild or scenic rivers within the project area and, therefore, this section is not applicable.

o. Farmland: The agricultural land within the airport boundaries is classified as prime farmland by the State of Hawaii. A description of the soil types and agricultural potential found within the project area is presented in Section 3.4 and the Soil Conservation Service form is included in Appendix D. The Phases 1 and 2 of the Proposed Project will not create significant adverse impacts on farmland. The significance of the impact of the Phase 3 projects cannot be fully assessed at this time. Therefore, prior to construction of the Phase 3 projects, an analysis will be completed to assess the impacts and provide mitigation measures, if applicable. A discussion on the farmlands is presented in Section 3.17.

p. Energy Supply and Natural Resources: The Proposed Project will create no significant adverse impacts on energy supply or natural resources. The description of the commitment of energy and resources is presented in Section 3.18.

q. Light Emissions: There will be an increase in light emissions due to the installation of additional runway lighting aids and highway lighting. These impacts are considered to be insignificant and are discussed in Section 3.19.

r. Solid Waste Impacts: The Proposed Project is not expected to significantly affect the present solid waste collection or disposal system. The impacts are considered insignificant and described in Section 3.20.

s. Construction Impacts: The construction impacts are described in their corresponding sections within Section 3. For example, the construction impacts on the noise environment are presented in Section 3.2. In general, impacts identified with the construction of the Proposed Project are considered insignificant. However, there will be a significant increase in the number of construction workers to Maui for the short-term. Standard building practices and the applicable Federal, State and County rules and regulations will be followed.

t. Design, Art and Architectural Application: The Proposed Project is not expected to create significant adverse visual impacts. Buildings and facilities will be designed to meet HDOT-AIR standards. This issue is addressed in the section for visual impacts, Section 3.21.

E. **ADVERSE IMPACTS WHICH CANNOT BE AVOIDED, SHORT TERM USES AND LONG TERM PRODUCTIVITY, AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**: *These issues are discussed* in Section 7.0 of this EIS.

F. **LIST OF PREPARERS, LIST OF PARTIES TO WHOM SENT**: The list of preparers are presented in Section 9.0. The parties receiving the scoping meeting notice and the HRS 343 Preparation Notice are presented in Section 10.0. The comments received during the scoping and EIS preparation periods are presented in Appendix A. The Public Hearing minutes; and the comments received on the Draft EIS, and their corresponding responses are included in Appendix V.

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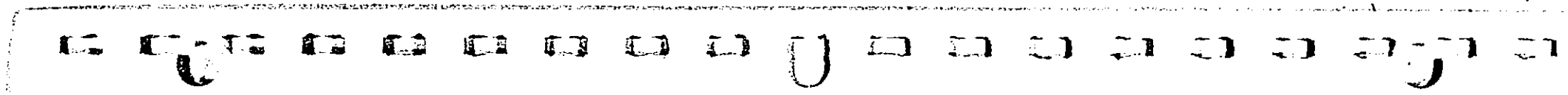

SECTION 2.0
PROJECT DESCRIPTION

Kahului Airport is one of sixteen (16) airports that comprise Hawaii's Airport System. It is owned by the State of Hawaii and operated by HDOT-AIR. This section describes: (i) the proposed development project that is the subject of this Environmental Impact Statement; (ii) the proposed phasing of the project; (iii) the approvals and permits that must be obtained before the project can proceed; (iv) the uses of this Environmental Impact Statement; and (v) the existing social and environmental setting of the Airport.

2.1 PURPOSES AND NEEDS OF THE PROPOSED PROJECT AND STATEMENT OF OBJECTIVES

The 1993 Kahului Airport Master Plan recommends that a number of improvements be made to the Airport during the period of 1994-2010. *This section presents the purposes and needs for the Proposed* Project (or preferred alternative) and its component facilities (Figure 2-1). The general purposes and needs for the Proposed Project as a whole are the following:

- To create an airport infrastructure which will support the present and future goals and objectives of the County and State.
- To continue to provide safe, efficient, economical and convenient air transportation facilities for passenger and air cargo service to the residents of, and visitors to, the State and Maui through the year 2010 in a manner which accommodates existing and forecast aviation demands.

These overall goals are discussed in Section 2.1.1. Sections 2.1.2 and 2.1.3 provide a discussion of the purposes and needs for the individual component facilities proposed for the various airport functions.

2.1.1 RELATIONSHIP OF THE PROPOSED PROJECT TO THE GOALS AND OBJECTIVES OF THE STATE AND COUNTY

The HDOT-AIR wishes to avoid overburdened airport facilities such as those existing at Kahului Airport in the decades of the 1970's and 1980's which minimally met the county's and state's goals and objectives at that time.

The ***Hawaii State Plan (revised 1991)***, establishes the goals and objectives for the state through a variety of functional plans, including the ***Tourism Functional Plan (revised 1991)***, and the ***Transportation Functional Plan (revised 1991)***. In addition, the ***Maui County General Plan, 1991*** provides objectives that the County has established for the Maui community. These State and County plans are available at the Office of State Planning and Maui County Planning Department for review.

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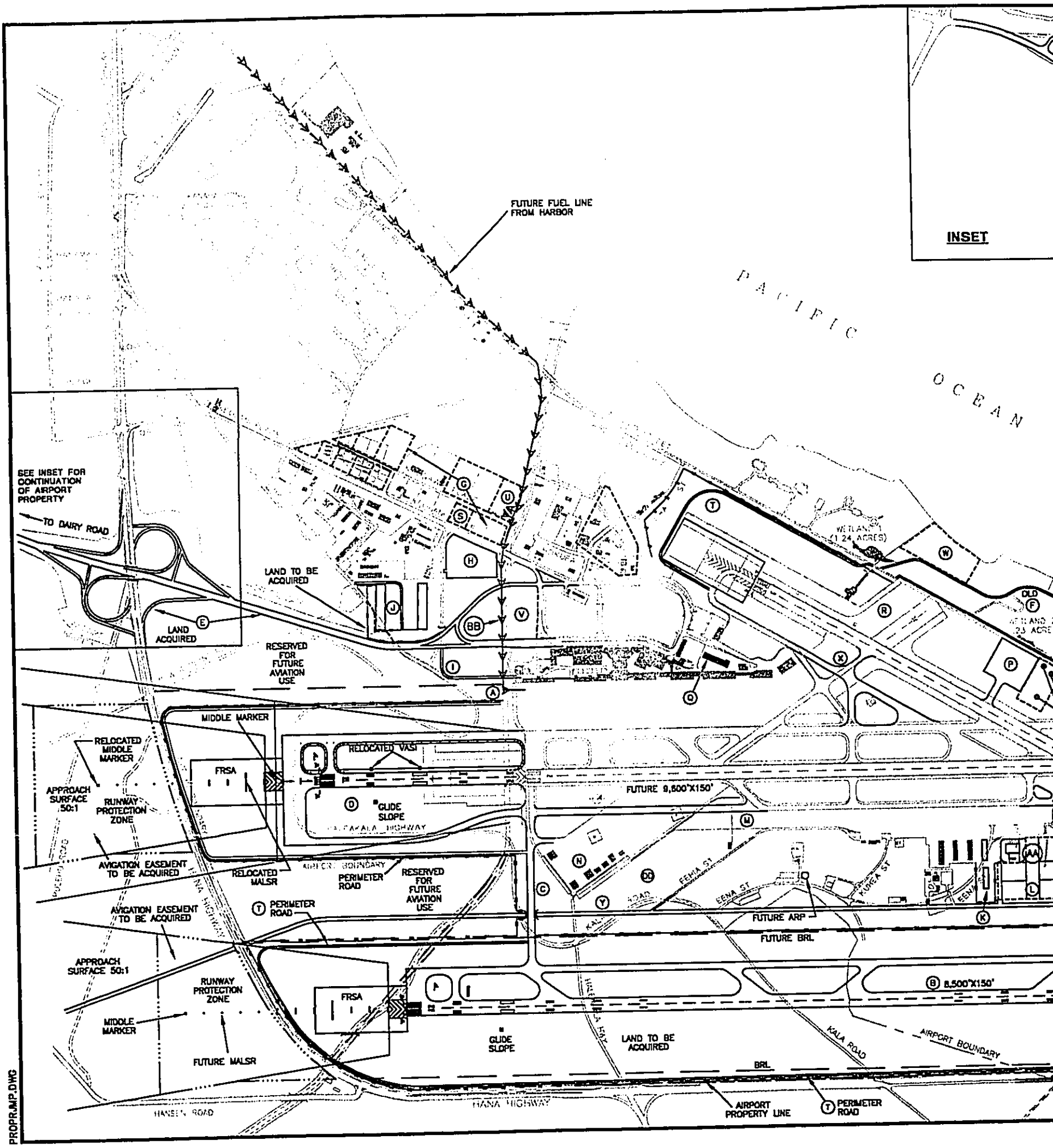
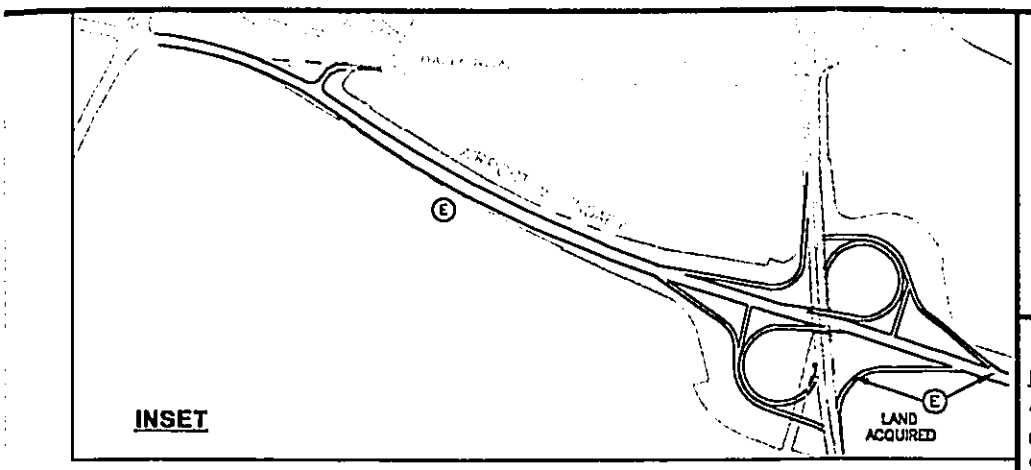
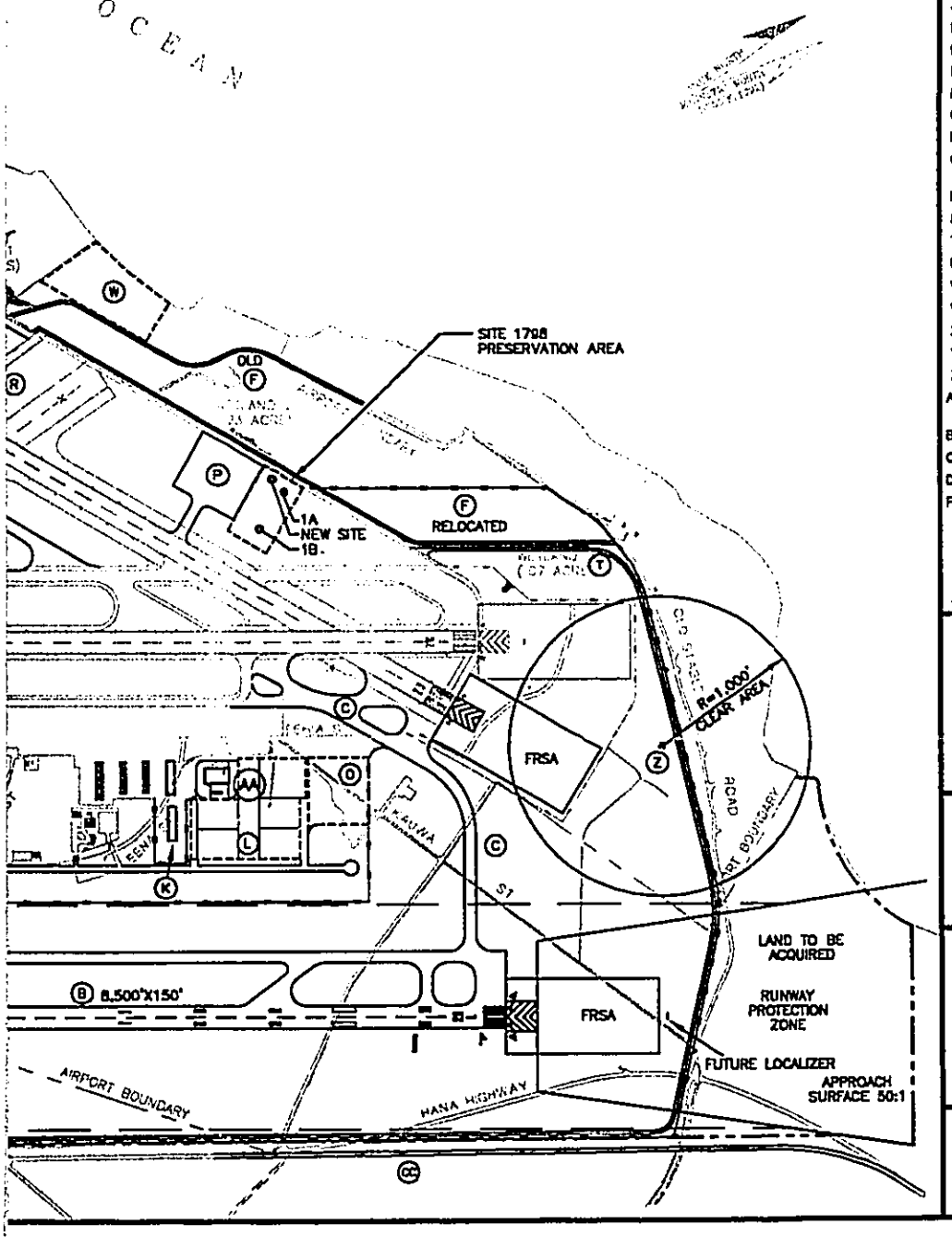

INSET
FUTURE FUEL LINE FROM HARBOR
PACIFIC
OCEAN
SEE INSET FOR CONTINUATION OF AIRPORT PROPERTY
TO DAIRY ROAD
LAND ACQUIRED
LAND TO BE ACQUIRED
RESERVED FOR FUTURE AVIATION USE
MIDDLE MARKER
RELOCATED MIDDLE MARKER
RELOCATED VASI
FRSA
APPROACH SURFACE 50:1
RUNWAY PROTECTION ZONE
GLIDE SLOPE
FUTURE 9,500'X150'
AVIGATION EASEMENT TO BE ACQUIRED
RELOCATED MALSR
AIRPORT BOUNDARY
PERIMETER ROAD
RESERVED FOR FUTURE AVIATION USE
FUTURE ARP
FUTURE BRL
8,500'X150'
FUTURE MALSR
LAND TO BE ACQUIRED
KALA ROAD
AIRPORT BOUNDARY
BRL
HANSEN ROAD
HANA HIGHWAY
AIRPORT PROPERTY LINE
PERIMETER ROAD
WETLANDS (1.24 ACRES)
OLD
FEMA ST
KUKEA ST
KALA ROAD

PROPR.MP.DWG





DEPARTMENT OF TRANSPORTATION • STATE OF HAWAII •

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

EXISTING FACILITIES

LEGEND FOR FUTURE FACILITIES

- A - RESERVE LAND FOR POTENTIAL PASSENGER TERMINAL EXPANSION
- B - 8,500' PARALLEL RUNWAY (2R-20L)
- C - CONNECTING TAXIWAYS FOR PARALLEL RUNWAY
- D - RUNWAY 2L-20R 2,600'EXTENSION & STRENGTHENING
- E - AIRPORT ACCESS ROAD AND INTERCHANGE
- F - ALAHAO STREET/OLD STABLE ROAD EMERGENCY ACCESS (RELOCATED)
- G - EXPANDED GROUND TRANSPORTATION SUBDIVISION
- H - U.S. POST OFFICE SITE - LEASE LOT
- I - POST OFFICE RAMP ACCESS ROAD
- J - CARGO FACILITY
- K - GENERAL AVIATION T-HANGAR
- L - COMMERCIAL AVIATION LEASE LOTS
- M - NEW SCENIC AIR TOUR FACILITY
- N - *COMMERCIAL AVIATION LEASE LOTS*
- O - CARGO FACILITY
- P - LARGE TRANSIENT AIRCRAFT PARKING APRON
- Q - RELOCATED AIRLINE GROUND EQUIPMENT MAINTENANCE
- R - ARFF TRAINING FACILITY (UNDER DESIGN)
- S - FLIGHT KITCHEN FACILITY - LEASE LOT
- T - PERIMETER ROAD
- U - BULK JET FUEL STORAGE FACILITY
- V - ADDITIONAL PARKING LOT
- W - KANAHA BEACH PARK IMPROVEMENTS
- X - RUNWAY 8-23 TAXIWAY REALIGNMENT
- Y - EAST RAMP ACCESS ROAD
- Z - RELOCATED VORTAC SITE (COMPLETED)
- AA - NEW AIRCRAFT RESCUE AND FIRE FIGHTING FACILITY (ARFF) (COMPLETED)
- BB - FUEL LINE TO RAMP
- CC - REALIGN HANA HIGHWAY
- DD - INTERIM HELICOPTER APRON (ADDED)
- FRSA - FUTURE RUNWAY SAFETY AREA

0 500 1000 1500

GRAPHIC SCALE IN FEET
SOURCE: KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED PROJECT (RECOMMENDED MASTER PLAN)

DATE	FIGURE
AUGUST, 1997	2-1

2.1.1.1 TOURISM FUNCTIONAL PLAN

Tourism has been and is expected to remain the major economic industry in the State. The Tourism Functional Plan is a guide to help the various sectors of government and private industry coordinate their efforts to achieve the objectives of the Hawaii State Plan. The Tourism Functional Plan also expresses the legislature's policy toward tourism.

One of the Tourism Functional Plan's main goals is to "*diversify* [the State's] *market mix of visitors to reduce dependence on traditional markets.*" The major objectives of the state's plan include:

- development and maintenance of a well-designed, high quality visitor product;
- maintenance of a high consumer awareness of Hawaii as a visitor destination in desired markets;
- maintenance of visitor markets to support desired levels of economic activity; and
- diversification of markets to provide a secure economic base.

The Proposed Project will meet the Tourism Functional Plan's goals and objectives. Specifically, the Proposed Project will provide facilities which will efficiently accommodate the existing and forecast large jet aircraft typically used by scheduled air passenger and air cargo carriers servicing destinations outside the State of Hawaii. This will allow the County of Maui to diversify its market mix of visitors and provide a more secure economic base. In addition, by providing facilities which better accommodate existing and forecast demand for future air carrier service at Kahului Airport, the State will be able to continue to develop and maintain a well-designed, high quality visitor product to support forecast levels of economic activity.

2.1.1.2 TRANSPORTATION FUNCTIONAL PLAN

The State's Transportation Functional Plan establishes the State's objectives for the transportation system. The major objectives of the State's Transportation Functional Plan include:

- an accessible, integrated, multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods; and

- a statewide transportation system consistent with planned growth objectives throughout the state.

The State's *1992 and 1993 Amendments to the Hawaii State Plan Chapter 226, HRS*, Section 226-17, also includes certain objectives and policies for facility systems and transportation. These include:

> *"(a)(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.*
>
> *(b)(12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives."*

The Proposed Project will meet the Transportation Functional Plan's objectives by providing more efficient and economical air carrier service at Kahului Airport, and by providing ground transportation improvements which will promote the efficient, economical, safe and convenient movement of people and goods in a manner which accommodates forecast future demand. In addition, the Proposed Project is consistent with the planned growth objectives in the State Functional Plans and the Maui County General Plan as discussed in this Section.

2.1.1.3 MAUI COUNTY GENERAL PLAN

The *Maui County General Plan* (the "General Plan") establishes objectives for various elements affecting the community, including economic and transportation objectives. General Plan objectives relevant to the Proposed Project include the following:

Economic Objectives:

- To provide an economic climate which will encourage controlled expansion and diversification of the County's economic base; and

- To provide a balance between visitor industry employment and non-visitor employment for a broader range of employment choices for the County's residents.

Transportation Objective:

- To support an advanced and environmentally sensitive transportation system which will enable people and goods to move safely, efficiently and economically.

The Proposed Project will meet Maui County General Plan's objectives by accommodating an economic climate which will support Maui's needs for the encouragement of controlled expansion and diversification of the County's economic base. Specifically, by accommodating the forecast air carrier service to destinations outside the State of Hawaii, the County will be able to reduce its reliance on traditional markets and plan strategically for its economic future. In addition, the Proposed Project will meet the County's General Plan transportation objectives by providing transportation facility improvements, including a new Airport Access Roadway and additional ground transportation facilities needed to meet existing and forecast aviation demand. The Proposed Project should improve the economics for Maui's diversified agriculture by providing new cargo facilities and potentially increase the amount of cargo space available, for agricultural products, on overseas flights departing Kahului.

2.1.2 PROVIDE SAFE, EFFICIENT, ECONOMICAL AND CONVENIENT AIR TRANSPORTATION FACILITIES

The proposed improvements at Kahului Airport, as well as the acquisition by the Airport of surrounding land parcels, are necessary to ensure safe, efficient, economical and convenient air transportation facilities for the residents of, and visitors to, the State and the island of Maui through the year 2010. The proposed improvements are consistent with planned growth throughout the State, and will accommodate existing and forecast aviation demands. Specifically, the following 1993 Master Plan components are necessary for Kahului Airport to remain an efficient and effective transportation facility into the year 2010 and beyond.

Strengthening and Extending Runway 2-20, and Associated Taxiways. Kahului Airport has only one runway - Runway 2-20 - that can accommodate the heavy jet aircraft typically used by passenger airlines and cargo carriers. Runway 2-20 is 7,000 feet in length, which is sufficient for all aircraft presently *arriving* at the Airport. However, the relatively short length of the runway and the weight restrictions due to the pavement strength impose significant *takeoff* restrictions on overseas aircraft using the Airport, especially the DC-10 and the L-1011 - two of the most frequently used transoceanic/ transcontinental aircraft. A detailed analysis of the aircraft operating range for different runway lengths are presented in Appendix N. As a result of the short runway and limited pavement strength, the Airport can only provide limited service to destinations outside the State of Hawaii. Specifically, the existing runway is not long enough and does not have adequate pavement strength to allow the existing flights from Kahului to the West Coast and other mainland airline hubs to depart with a full load of passengers, cargo and fuel. At present, these carriers and other charter flights can fly to the West Coast with partial passenger loads, only. The majority of Delta and United Airlines' flights refuel in Honolulu to reach the West Coast. American Airlines' flights refuel in Honolulu on the return flight from Kahului to their hub in Dallas-Ft. Worth, Texas. For example: (i) on the 1995 annual survey day Kahului Airport accommodated nine direct overseas arrivals and two one-stop, through Honolulu, overseas arrivals, and there were six direct overseas departures and five overseas one-stop departures through Honolulu; and (ii) on the 1994 annual survey day Kahului Airport accommodated twelve direct overseas arrivals and three one-stop (via Honolulu) overseas arrival, and five direct overseas departures and ten one-stop (via Honolulu) overseas departures.

These kinds of redundant flight operations (stopovers in Honolulu International Airport or Keahole International Airport) are not only economically inefficient, they impose longer travel times on travelers and increase the likelihood of air-to-ground and ground-to-air flight mishaps. In addition, the stopover flights at Honolulu add to the demand at Honolulu International Airport, which is forecast to have long aircraft delays in the near future because of the limited runway capacity. Therefore, direct overseas flights from Kahului would benefit the Statewide Airport System by removing the stopover flight demand at other airports, such as Honolulu International Airport, thereby delaying Honolulu International Airport's need for additional runway capacity.

By providing additional runway length and a strengthened runway, the Proposed Project will permit the Airport to: (i) better accommodate those air carriers which *currently* serve destinations outside the State of Hawaii, including mid-west, east coast and future international hubs; (ii) better accommodate *future* projected increases in passengers and cargo leaving Maui for destinations outside the State of Hawaii; (iii) improve the efficiency and flexibility of aircraft use at the Airport and within the State; and (iv) reduces the need for one-stop flights of overseas aircraft.

The health and vitality of the local economy depends on the ability of air carriers to provide efficient air passage of travelers and cargo to and from Kahului Airport. The State has publicly emphasized the importance of air service to Maui's economy for this and other reasons. Although estimates of the local economic value of passenger service from Maui to destinations outside of the State of Hawaii vary, aviation experts, economic consultants, and State officials (including the Hawaii Visitors Bureau) agree that tourism injects approximately $2 billion per year into the local economy (See Appendix E). Therefore, the proposed airport improvements are essential to maintain a viable local economy.

In addition, the Proposed Project may provide for additional flexibility to develop runway use procedures which would allow an increase in airfield capacity during dry weather and tradewind conditions in a safe and efficient manner. The following operational procedures could be developed in connection with a longer runway to reduce aircraft delay for the existing and forecast aviation demands, and defer the need for a parallel runway. These procedures will need to be studied and approved by the FAA prior to implementation.

- The longer runway lengths may allow for the simultaneous arrivals on Runways 2 and 5 for all aircraft classes at Kahului Airport.

- The longer runway lengths may allow for intersection departures on Runway 2-20 to increase the departure capacity of the airfield.

New Airline Ground Support Equipment Maintenance Facility. The airlines currently perform heavy maintenance on their ground support equipment in a substandard facility that is located improperly with respect to the Building Restriction Line of Taxiway "F". To correct these deficiencies, the

Proposed Project would make the existing air cargo site available to the airlines for heavy equipment maintenance operations.

Installation of New Fuel Storage and Loading Facilities. All passenger aircraft are currently fueled at Kahului Airport by trucks that must cross active runways to reach the passenger terminal apron. This is an operationally undesirable practice. Truck fueling has also become economically less attractive than hydrant fueling, which recently was made possible by a distribution system installed beneath the terminal apron. However, the distribution system is not in operation and not tied into the main distribution system. The Proposed Project includes the installation of a new bulk fuel storage facility and connection of this storage facility to the apron hydrant lines. These facilities are to be constructed and operated by the airline's fuel consortium [Hawaii Fueling Facilities Corporation, (HFFC)], and will eliminate runway crossings and potentially provide fuel at lower prices. Presently, HFFC's initial construction will consist of two (2) - 8,500 barrel above-ground storage tanks with berms to contain the liquid in the event of a spill. The design will incorporate all applicable Federal and State rules and regulations.

In addition, in the future (beyond 2016), a fuel supply pipeline will be constructed from Kahului Harbor to the new fuel storage facilities. The proposed fuel pipeline will eliminate the need to transport the fuel by trucks on the local roadways from the Harbor to the Airport. HDOT-AIR will lease to HFFC a right-of-way for the supply pipeline along Alahao Street to the on-airport storage tanks. The supply pipeline itself will be constructed and operated by HFFC.

Transient and Military Aircraft Apron. As the number of aircraft operations increase, the demand for aircraft parking and gates will likewise increase. Because the number of gates is limited, the increased demand can only be absorbed by relocating remaining "overnight" aircraft and those aircraft with long turn-around periods to a remote parking area. Military aircraft are often in these categories. The proposed transient apron will serve this purpose and provide for better gate utilization.

Interim Relocation of Helicopter Apron. The close proximity of the helicopter operating apron to Runway 2-20 (less than 1,000 feet) causes missed approaches for aircraft arriving on Runway 2-20. Also, there is a limited line-of-sight of the helicopter apron from the FAA ATCT. Therefore, it is proposed that the helicopter operating apron be relocated to an area east of the helicopter hangar area. This would provide a greater separation between the fixed-wing aircraft arrivals on Runway 2-20 and the majority of helicopter takeoffs and landings, and would provide a clearer line-of-sight from the FAA ATCT. The relocated apron would be used for the majority of the passenger loading/unloading operations associated with helicopter air scenic tours. The existing apron would still be used for takeoffs and landings, but less frequently, thereby increasing the margin of safety at the Airport. This facility is not part of the 1993 Master Plan, but is an interim solution to alleviate the interaction between the aircraft and helicopters. It is also a recommendation of the Maui General Aviation Site Selection Study (Appendix R). The size of the interim helicopter operating apron will be smaller than proposed in the study due to the urgent need for the facility and the limited land availability in that area.

Improvements to Infrastructure Components. To support the other planned facility improvements and to meet the forecasted demand at Kahului, airport roadways and utilities systems must be constructed, expanded and updated as follows:

- Construct a postal and cargo service road;
- Connect Alahao and Old Stable roads (emergency use only);
- Construct ground transportation subdivision roads;
- Construct airfield perimeter roads;
- Construct a spine road prior to building a parallel runway;
- Expand and improve the water/irrigation systems;
- Expand and improve the sewerage system;
- Expand and improve the storm water drainage system; and
- Expand and improve the electric power and communication systems.

2.1.3 PROVIDE AIR TRANSPORTATION FACILITIES FOR CARGO AND PASSENGER SERVICE CONSISTENT WITH PLANNED GROWTH AND IN ORDER TO ACCOMMODATE DEMAND

The 1993 Recommended Master Plan for Kahului Airport (the "Master Plan") used the Statewide Airport System Plan (SASP) forecasts, which were based on 1989 data. The SASP projected annual passenger activity to increase from 6,203,000 in 1995 to approximately 9,059,000 by 2010. Over the same time period, annual air cargo and mail tonnage is expected to increase from 44,000 tons to 64,000 tons. The annual aircraft operations and based aircraft are projected to increase from 235,000 to 306,000 and from 56 to 75, respectively. The Recommended Master Plan (Proposed Project) used these forecasts as a base for developing the facility requirements and for planning the facilities necessary to meet these increases in aviation activity. The aviation demand forecast have been recently revised. The revised forecasts shift the need for some of these projects by about six years into the future as discussed in Section 1.8.3.

2.1.3.1 AVIATION FACILITIES NEEDED TO ACCOMMODATE AVIATION DEMAND

Construction of a Parallel Runway (Runway 2R-20L), and Associated Taxiways. The SASP forecasts indicate that aviation demand will exceed acceptable limits of both the hourly capacity and the annual service volume of the existing airfield by the year 2010. This will result in rapid deterioration of the level of service at the Airport and many aircraft that use the Airport will experience excessive delays. The revised forecasts moves the need for this facility beyond the 2016 timeframe. The construction of a new runway parallel to Runway 2-20 and separated from it by at least 2,500 feet would:

- Accommodate the forecast airfield capacity needs and avoid the forecasted aircraft delays and therefore, maintain an efficient and safe airport operation; and

- Provide an alternative runway for the use of large aircraft when existing Runway 2-20 is closed for emergencies or maintenance.

In addition, associated taxiways would be constructed and a portion of Hana Highway would be realigned.

General Aviation Facilities. According to the HDOT-AIR 1994 waiting list for hangar accommodations, there are currently 11 persons awaiting hangar space at Kahului Airport. Therefore, hangar and apron space for parking general aviation aircraft is severely limited at the Airport and cannot meet existing or forecast demand. At present, there are 34 tiedowns and 30 hangar spaces. The number of aircraft based at Kahului is projected to grow substantially to 75 based and 60 itinerant aircraft by 2010 as stated in the SASP. The number of based aircraft was updated to 105 in the revised aviation demand forecasts for the year 2010 (see Appendix N). The Proposed Project will provide additional T-hangars and apron facilities to satisfy current demand and help meet anticipated future growth.

Air Taxi (Scenic Air Tour) Facilities. Existing deficiencies in the facilities at the Airport include restricted apron parking and the terminal building which is located improperly within the BRL of Runway 2-20. The terminal building is inadequate both in terms of size and amenities to meet existing and forecast demand. The Proposed Project will provide additional apron parking for scenic air tour aircraft and a new terminal building to better accommodate both existing and forecast growth.

Commercial Aviation/FBO Facilities. There is a current shortage of leasable land for Fixed Base Operators ("FBO's") and other commercial aviation operations at Kahului Airport. Forecasts indicate that substantial growth in general aviation and associated activities will occur between 1995 and 2010. The demand for FBO services correspondingly will increase and will require additional and/or improved facilities. The Proposed Project will provide improved lease lots to accommodate existing and forecast FBO demand. In the future, additional space will be provided at the helicopter facilities site after the relocation of the helicopters to an off-airport location, and would be associated with the construction of the parallel runway.

Air Cargo Facilities. The annual quantity of air cargo to and from Maui is predicted to nearly double by the year 2020 (revised forecast). Existing facilities do not have adequate capacity to accommodate this growth. As a result, additional handling facilities are required at the Airport. Air cargo is critically important to the economy of the island, and is carried in the holds of passenger aircraft (belly cargo) and in all-cargo aircraft. The Proposed Project will provide new facilities for both hold and all-cargo operations to accommodate existing and forecast demand, and to ensure that economical and timely air cargo service is available to Maui's residents and industries. The Proposed Project has a cargo facility

located on the East Ramp and one on the West Ramp. As part of the mitigation measures and as requested by Hawaii Department of Agriculture (HDOA), HDOT-AIR will coordinate the plan, design and implementation of the new cargo facility improvements with the State Department of Agriculture to benefit the shipment of agricultural products. Such improvements include: (i) covered storage areas for agricultural produce awaiting shipment, and (ii) facilities for the State Department of Agriculture's and US Department of Agriculture's alien species interception/inspection program, including positive air pressure control facilities for the inspection of air cargo containers, office and facilities for U.S. Customs, United States Department of Agriculture (USDA) and HDOA, a joint USDA/HDOA laboratory, walk-in freezer, incineration facilities, and provision for X-Ray of cargo containers, and computer facilities for an alien species data base system.

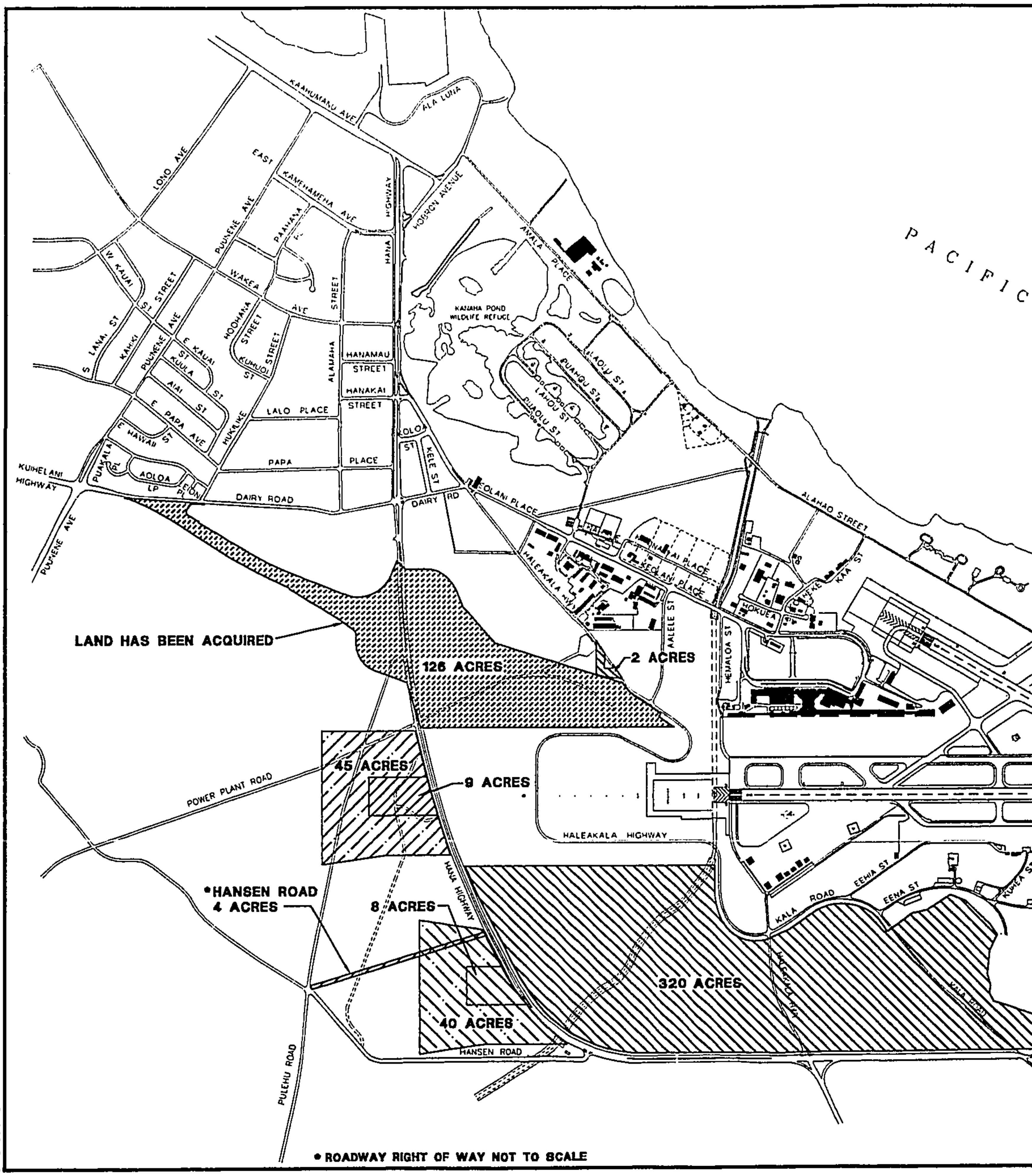
New/Relocated Helicopter Facilities. According to the SASP forecast, the number of helicopters operating at Kahului Airport was expected to increase from 25 in 1989 to 35 by the year 2010 based on the SASP forecasts. Presently, there are 36 based helicopters at Kahului and the updated forecasts predict the number of based helicopters will reach 46 by 2010 (See Appendix N). In the short-term, the Airport will attempt to accommodate the demand on the Airport itself. However, the site and size of a long-term helicopter facility was studied as part of the Maui General Aviation Site Selection Study (Appendix R). The study concluded that in the long-term, due to the construction of the parallel (third) runway, the helicopter operations would need to be relocated to an off-airport site. The Maui General Aviation Study, recommends that the new site be at the Old Puunene Airfield Site. Due to the long range nature of this facility, an environmental analysis for this Puunene site will be analyzed prior to design in order to determine what, if any, additional environmental documentation is required. To the extent reasonable and feasible, this EIS discusses potential significant impacts for these long-range projects.

Flight Kitchen Facilities. Facilities for the preparation of in-flight meals for aircraft departing from Kahului Airport are presently located at an off-airport site. In order to better accommodate existing and projected demand, the Proposed Project will provide an on-airport site for a flight kitchen. The flight kitchen facility would be develop by others. The on-airport flight kitchen will provide more efficient catering service to the airlines and reduce catering truck traffic on off-airport roadways. The new facility will be constructed and operated on an improved lease lot by a private catering firm.

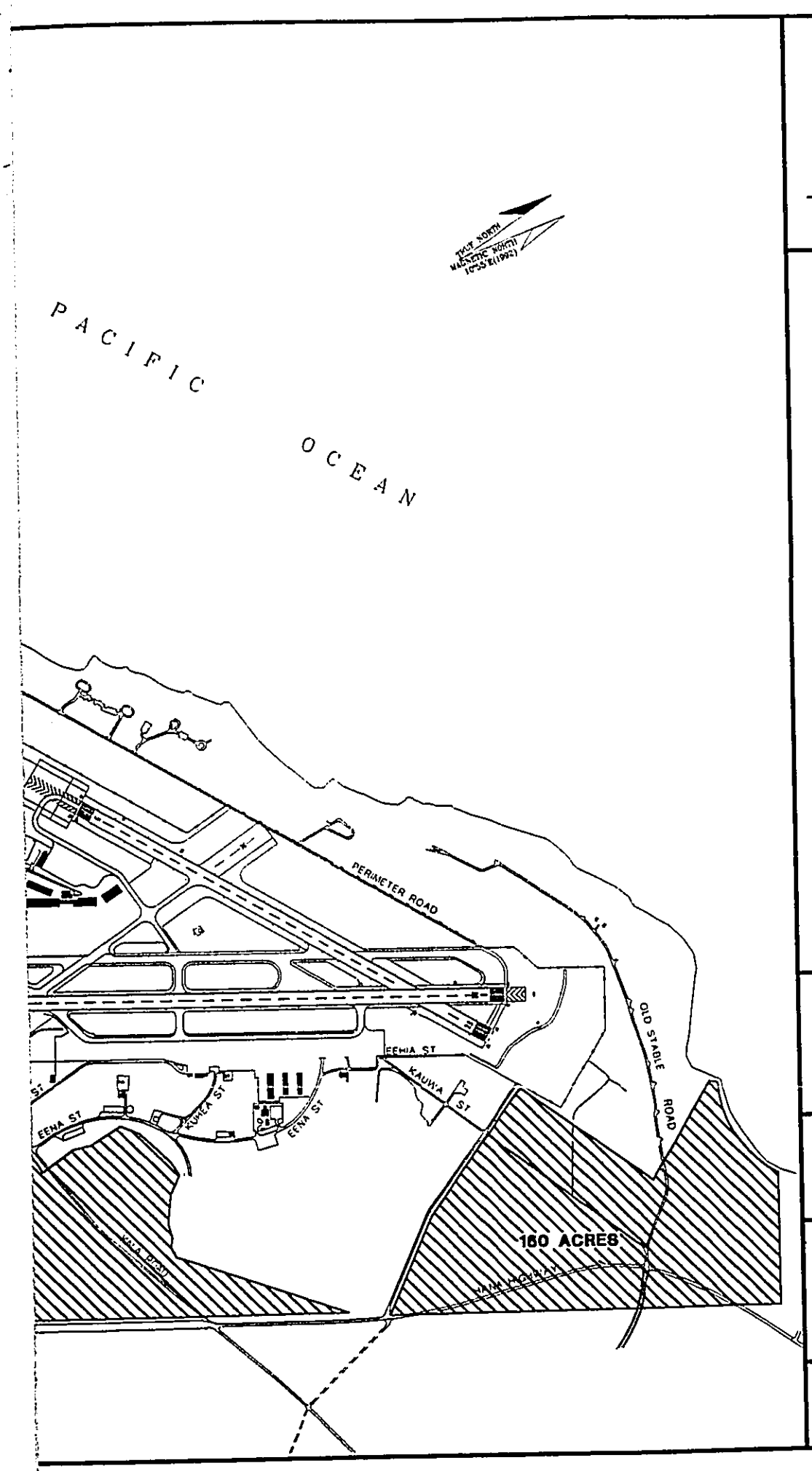
2.1.3.2 PROPERTY ACQUISITION TO ACCOMMODATE DEMAND

To accommodate the expansion of the Airport and to prevent encroachment on the Airport by future non-airport uses, the Master Plan specifies the acquisition of neighboring land parcels. The property acquisition will assist in ensuring the efficient and safe operation of the Airport. Approximately 503 acres[1] (see Figure 2-2) will be acquired for Airport purposes in three phases. In addition, 85 acres will be acquired for avigation easements needed for airspace and navigational purposes. The 126 acres for the Airport Access Road has been acquired. In Phase 1, the property acquisition includes: (i) four (4) acres for

[1] The land for the new Airport Access Roadway, approximately 126 acres, has been acquired and is not included in the acreage to be acquired in this EIS.


PACIFIC
LAND HAS BEEN ACQUIRED
126 ACRES
2 ACRES
45 ACRES
9 ACRES
*HANSEN ROAD
4 ACRES
8 ACRES
40 ACRES
320 ACRES
KAHULUI AVE
KAAHUMANU AVE
ALA LUNA
LONO AVE
EAST KAMEHAMEHA AVE
HOBRON AVENUE
HANA HIGHWAY
AMALA PLACE
KANAHA POND WILDLIFE REFUGE
WAKEA AVE
PUUNENE AVE
LALO PLACE
PAPA PLACE
DAIRY ROAD
KUIHELANI HIGHWAY
KEOLANI PLACE
ALAHAO STREET
HALEAKALA HWY
AALELE ST
HALEAKALA HIGHWAY
POWER PLANT ROAD
HANSEN ROAD
PULEHU ROAD
KALA ROAD
EEHIA ST
EENA ST
• ROADWAY RIGHT OF WAY NOT TO SCALE

LANDACO.DWG



DEPARTMENT OF TRANSPORTATION
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STATE OF HAWAII

LEGEND

- PHASE I LAND TO BE ACQUIRED
- PHASE I LAND ACQUIRED
- PHASE II LAND TO BE ACQUIRED
- PHASE I AVIGATION EASEMENTS
- PHASE II AVIGATION EASEMENTS

AREAS PROVIDED ARE ESTIMATES AND ARE FOR PLANNING PURPOSES ONLY.

0 500 1000 1500 2000
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED LAND ACQUISITION

DATE	FIGURE
JANUARY, 1997	2-2

the new Hansen Road; (ii) nine (9) acres of property for the Runway 2-20 NAVAIDS; and (iii) 45 acres for an avigation easement for the Runway 2-20 Runway Protection Zone. In Phase 2, the property acquisition includes: (i) 488 acres for land banking and in the future for the proposed parallel runway (2R-20L), (ii) two (2) acres for the expansion of the West Side cargo area; and (iii) 40 acres for an avigation easement for the Runway 2R-20L Runway Protection Zone.

2.1.3.3 GROUND TRAFFIC AND TRANSPORTATION FACILITIES TO ACCOMMODATE DEMAND

New Airport Access Road. At present, the principal access to the Airport for vehicular traffic is via Keolani Place. The traffic study prepared for this EIS (Appendix M) indicates that Keolani Place and its intersections with other roadways carrying traffic to, from and around the Airport will become severely congested by the year 2010. Previous studies and the traffic impact study (Appendix M) performed for this EIS, shows that the Airport Access Roadway (Keolani Place) and other major arterial roadways which link to and from Keolani Place are operating at or below Level-of-Service (LOS) E or F (See Table 2-1). The analysis was based on the traffic volumes for the "design day," which is the average day of the busiest month of the year. The Proposed Project calls for the construction of a new Airport Access Road from the Airport to Puunene Avenue with an interchange located at Hana Highway. The new Airport Access Road and interchange will relieve future congestion by providing greater lane capacity and relieve congestion at other at-grade intersections within the Airport's environs. If HDOT-AIR pursues ISTEA funding for the Airport Access Road and interchange, these projects will need to be included in the Federally required Statewide Transportation Improvement Program (STIP)[2].

To apply for ISTEA funding for the construction of the Airport Access Road (including the new Hansen Road and the interchange), HDOT conducted a separate analysis to assess roadway traffic congestion and to determine the appropriate interchange configuration for the year 2020 (Appendix P). This analysis is based on the traffic volumes for the "average day" of the year. The intersection LOS values are presented in Table 2-1. This additional analysis uses the 2020 planning horizon which is more than twenty years after the planned completion of the Airport Access Roadway Project, which includes the relocation of Hansen Road. The traffic volumes for the roadway links were based on the "2020 Committed Roadway" network from the "Maui Island-Wide Long Range Land Transportation Plan Study" (Section 11, Reference 15).

In addition, the study area for the ISTEA (2020) requirements were reduced from the Master Plan study to focus on the area impacted by the new Airport Access Road. The study area

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[2] The Hawaii Statewide Transportation Improvement Program (STIP) provides a listing of State and County transportation projects and identified phases of projects which are anticipated to be initiated during Fiscal Years. The STIP is a multi-year, multi-modal transportation improvement program that has been developed utilizing existing transportation plans and policies, and current highway, transit and transportation programming processes.

includes the intersections from Puunene Ave/Dairy Road to the south and the Airport to the north, and from Dairy Road/Keolani Place/Hana Highway to the west and Hana Highway/Haleakala Highway to the east.

Both the 2010 and 2020 analysis showed similar results for the existing 1994 and forecast traffic volumes at the roadway intersections. A detailed description of the analysis and results are present in Appendices M and P. The minor variations in the existing LOS are because the "design day" peak hour traffic levels are approximately 5 percent greater than the "average day" peak hour traffic levels.

Table 2-1
LEVELS OF SERVICE (LOS) AT KEY INTERSECTIONS
EXISTING CONDITIONS (YEAR 1994)

Intersection		Traffic Control Device	2010 LOS (DESIGN DAY)		2020 LOS (AVERAGE DAY)	
N-S Street	E-W Street		A.M.	P.M.	A.M.	P.M.
Hobron Ave.	Amala Pl.	Stop Sign	A	A	NA	NA
Kaahumanu Ave.	Hana Hwy.	Stop Sign	F	E	NA	NA
Hobron Ave.	Kaahumanu Ave.	Stop Sign	A	B	NA	NA
Hobron Ave.	Hana Hwy.	Stop Sign	F	F	NA	NA
Haleakala Hwy.	Hana Hwy.	Stop Sign	F	D	F	D
Dairy-Keolani Pl.	Haleakala Hwy.	Stop Sign	D	F	D	F
Dairy Rd.	Hana Hwy.	Signal	D	F	C	E
Dairy-Kuihelani	Puunene Ave.	Signal	D	E	D	E
Pulehu Rd.	Hana Hwy.	Stop Sign	C	E	C	E
Pulehu Rd.	Hansen Rd.	Stop Sign	B	B	B	B
Hansen Rd.	Hana Hwy.	Stop Sign	D	F	D	F
Haleakala Hwy.	Hana Hwy.	Signal	E	C	E	C
Old Stable Rd.	Hana Hwy.	Stop Sign	E	E	NA	NA

Note: The intersections with the LOS marked NA were not analyzed in the 2020 traffic study, as these intersections are not directly impacted by the New Airport Access Road.

Additional Ground Transportation Facilities. Demand for rental car, limousine and bus transportation is projected to grow in approximate relationship to forecast increases in passenger volume at the Airport. To accommodate this projected demand, additional land for vehicle operations and maintenance facilities will be required. The Proposed Project will provide an additional five acres of Ground Transportation Subdivision leased land which will be made available to private sector companies to accommodate additional ground transportation services. These additional five acres consists of existing airport property and no land acquisition is required.

2.2 THE PROPOSED PROJECT (preferred alternative)

The Proposed Project (preferred alternative) is the "Recommended Airport Master Plan" described in the 1993 Kahului Airport Master Plan (Section 11.0, Reference 5). The Master Plan integrates short-term and long-term airfield and terminal area requirements with forecast aviation demand and access and parking needs. It represents a guide for Airport development through the year 2010 and indicates possible developments beyond that date for which land should be reserved at this time. The updated aviation forecasts have shifted the need to accommodate forecast demand by six years. This shift in project phasing is explained in Section 1.8.3.

The recommended Airport Master Plan is the result of a long process of study and interaction with Airport users and the community. First, preliminary Master Plan recommendations were prepared based on the comments received on various development concepts. These were presented and discussed at Technical Advisory Committee meetings and at public meetings held by HDOT-AIR. Following review by the HDOT-AIR, FAA, Kahului Airport Technical and Airport Advisory Committees, Kahului Airport Citizens Ad Hoc Advisory Committee, and public, these preliminary recommendations were further refined into the six detailed plans which are described in Section 4.0 of this EIS: "Alternatives to the Proposed Project." The Proposed Project (preferred alternative) is shown on Figure 2-1, and the environmental analyses of the Proposed Project contained in Section 3.0 of this EIS.

2.2.1 PROPOSED LAND USE PLAN

This section describes and illustrates the major land uses proposed under the preferred alternative within the Kahului Airport property. It also identifies the changes in State and County land use designations that would be required to implement the Proposed Project (preferred alternative). The land use designations take into account existing and planned uses for the airfield and terminal areas. In addition, this section identifies lands required for other aviation and non-aviation facilities and airport support activities proposed under the preferred alternative. The future land use area allocations are based on the projected demands and requirements described later in this EIS.

The Proposed Project (preferred alternative) identifies the areas that are needed for the land uses proposed for Kahului Airport through the year 2016, based on the revised forecast. The most significant land use aspects of the plan are the proposed runway extension and new Airport Access Road on the west

side of the Airport. The Proposed Project also provides additional space and/or facilities for air cargo, general aviation, commercial aviation/fixed base operators, ground transportation operator baseyards, bulk fuel storage, and other support activities. In addition to providing space for all the facilities that are expected to be needed for Airport related activities through 2016, the preferred alternative preserves land for potential Airport expansion beyond that year, including land needed for possible development of a parallel runway on the east side of the Airport, additional runway extension, reserving land for potential terminal facilities expansion, and other airport-related activities or operations.

2.2.2 PROPOSED LAND ACQUISITION

Implementation of the Proposed Project (preferred alternative) would require the acquisition of additional land neighboring the existing Airport property. The locations and acreage of the land to be acquired are shown in Figure 2-2, and the purpose of the recommended acquisitions are described below.

Relocation of Hansen Road. The proposed relocation of Hansen Road will require the acquisition of about four (4) acres of land. It would be a portion of TMK 3-8-01:2 and is owned by A&B Properties.

South of Runway 2-20. The proposed 2,600 foot extension of Runway 2-20 and runway safety area relocation to the south are entirely within existing Airport property. However, an avigation easement for the extended runway's RPZ would need to be obtained for approximately 45 acres of land south of Hana Highway. In addition, the State would need to acquire fee title to approximately nine (9) acres of additional land within the runway protection zone that is needed for the relocation of the MALSR, middle marker, and non-directional beacon and a roadway to allow access to those navigational aids. This acquisition would also be part of TMK 3-8-01:2, and is owned by A&B Properties.

Parallel Runway. The proposed parallel runway will require the acquisition of land to the east of the existing airport. The proposed land acquisition encompasses the area between the existing Airport boundary and Hana Highway. There will be a small area east of Hana Highway acquired for the planned realignment of Hana Highway for the new parallel runway. In addition, an avigation easement for the runway protection zone for the parallel runway south of Hana Highway will be acquired. The land to be acquired would be approximately 488 acres and the avigation easement would be approximately 40 acres. This would be the land areas within TMK 3-8-01: por. 2, 3, 4, 5, 15, and 135, and is owned by A&B Properties and would also serve as a land buffer (land bank) for the airport. The construction of the parallel runway could require the acquisition of TMKs 3-8-02: 8, 9, 10, 33 & 47, in the future. The acquisition of these parcels and others, will be determined in future airport and environmental analysis, as these acquisitions are related directly to the parallel runway. As the parallel runway is presently scheduled for construction at or beyond the year 2016, future environmental analysis and appropriate documentation will be performed.

West Side Cargo Area Expansion. Acquire approximately 2 acres for the expansion of the west side cargo area (por. TMK 3-8-79:13), and is owned by A&B Properties.

2.2.3 PROPOSED STATE AND COUNTY LAND USE CHANGES

Kahului Airport is primarily within the State "Urban" Land Use District and has the General Plan and County Zoning designations appropriate for existing Airport uses and facilities. Virtually all of the land recommended for acquisition is presently designated for agricultural use. To facilitate the eventual development of the recommended facilities, the State Land Use District boundaries, Maui County General Plan, Wailuku-Kahului Community Plan, and County Zoning District boundaries should be amended, as described below. This EIS is one of the primary informational and environmental clearance documents required for the processing of the land use changes. Therefore, the land use changes will be obtained upon the completion of this EIS and as needed for each of the elements of the Proposed Project.

State Land Use District Boundary Amendment. The land to the south and east of the existing Airport boundary that would be acquired under the Proposed Project (preferred alternative) is currently in the State Agricultural District. A State land use district boundary amendment (from Agricultural to Urban) is currently being sought for the area needed to extend Runway 2-20 by 2,600 feet to the south (to a total length of 9,600 feet). Urban designation is also being sought for the portion of the area adjacent to the East Ramp that is used by and needed for general aviation, commercial aviation, and other airport-related facilities. All land use changes will be completed upon completion of this EIS.

Also located in this Agricultural District, is the new Airport Access Road and the area reserved for "Future Aviation Uses", between the Airport Access Road and the extended Runway 2-20. The Airport Access Road is a permissible use in the Agricultural District, which means that no State land use district boundary amendment is needed. Urban designation, however, would be needed before any other urban-type uses could be developed in the "Future Aviation Uses" area.

Most of the area east of Runway 2-20 is within the State Agricultural District. This includes land presently occupied by the FAA ATCT, the Airport Surveillance Radar, the National Weather Service facilities, existing general aviation facilities, and other airport support facilities. Urban designation is currently being sought for the area within which these existing facilities are located, as well as for the additional general aviation and commercial aviation facilities that the Proposed Project recommends be constructed adjacent to the East Ramp.

Wailuku-Kahului Community Plan. The land within the existing Kahului Airport boundary is designated "Airport" on the Wailuku-Kahului Community Plan. Nearly all of the surrounding land that is needed for the preferred alternative is designated for Agricultural use on the Community Plan. Under the preferred alternative, the designation of this land would need to be changed to "Airport" once it has been acquired for the Airport. The "Airport" designation is intended for commercial air service and general aviation airports, as well as related transportation and industrial uses. The facilities that are proposed are fully consistent with this designation.

Maui County Zoning. Section 19.28.010 of the Maui County Zoning Ordinance states that *"Runways, taxiways, cleared safety areas, aircraft parking and loading aprons, . . . vehicular roads, . . ."* and other Airport-related uses are permitted within the Airport District. All of the uses which the Airports Division proposes to develop are included in the list of permitted uses contained in the Ordinance.

Section 19.28.020 provides that each lot within the Airport District shall have a minimum area of not less than 20,000 square feet and an average lot width of not less than 100 feet. It also provides that building heights must comply with the height limitations established by the State airport zoning board (the airport zoning board's function has been transferred to HDOT-AIR).

An application covering the rezoning of the land needed for the proposed extension of Runway 2-20 was filed with Maui County in the Spring of 1993. The completion of the rezoning is pending the completion of this Environmental Impact Statement.

2.2.4 PROPOSED AIRFIELD DEVELOPMENTS

Figure 2-3 shows the proposed changes to airfield facilities including runways; taxiways; holding aprons; shoulders; blast pads; navigational aids; and associated runway safety areas and protection zones.

Runway Developments. Under the Proposed Project (preferred alternative), existing Runway 2-20 (Runway 2L-20R) would be extended 2,600 feet to the south (to a total length of 9,600 feet) and maintained at the present 150 foot width.[3] Runway pavements would be strengthened to support operation of maximum gross weight aircraft. The recommended runway length would accommodate unrestricted overseas passenger aircraft operations to the U.S. Midwest (*e.g.*, Chicago, Dallas, and Denver) and the east coast. As analyzed and presented in Appendix N, the 9,600 foot runway length will allow: (i) DC10-30, MD11, B777-200 and B747-400 aircraft to depart Kahului fully loaded (a full load of passengers, baggage and cargo) to New York; (ii) L1011 to depart fully loaded to Los Angeles; (iii) B747-200 and B767-200ER to depart fully loaded to Dallas; and (iv) B767-300ER to depart fully loaded to Dallas, Chicago and Atlanta.

When compared to the existing runway length and strength, the DC10-30 and L1011 can only depart on a non-stop flight to Los Angeles or San Francisco with a substantial weight penalty (partial load of passengers, baggage and/or cargo), or perform a one-stop departure through Honolulu International Airport prior to departing to the overseas destinations. The B767-200 currently used by Air Canada can depart fully loaded to Vancouver.

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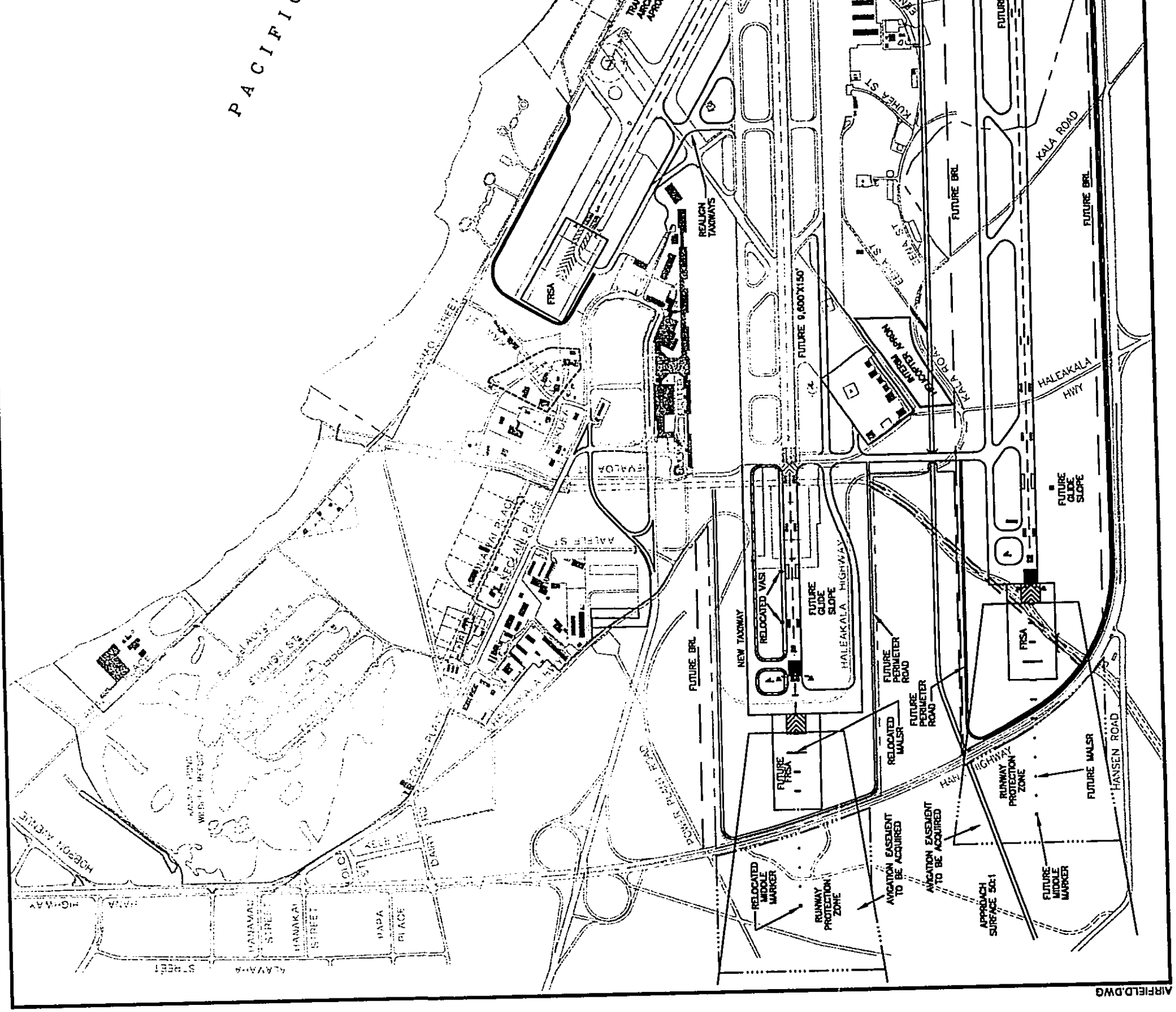
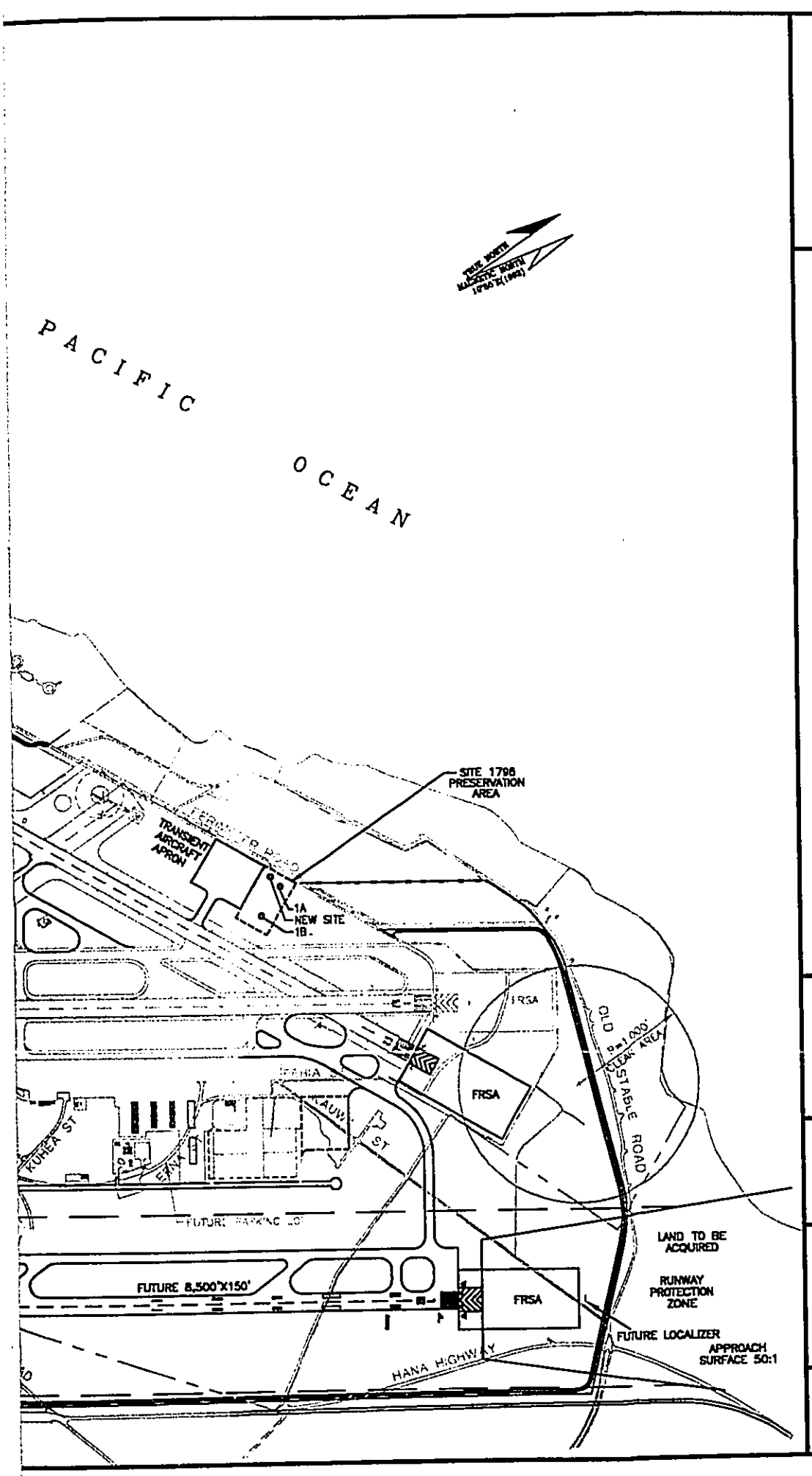
[3] The upgrading of the runway safety areas at the ends of Runway 2-20 (2L-20R) was proposed in the 1993 Kahului Airport Master Plan to meet current FAA standards. However, upon subsequent analysis by the FAA, it was concluded that the existing runway safety area at the end of Runway 20 meets the current criteria and no further construction is needed to expand the RSA at the Runway 20 end (Refer to Airport Certification Manual dated May 7, 1997).


PACIFIC
FUTURE 9,600'X150'
FUTURE BRL
KALA ROAD
HALEAKALA HWY
FUTURE GLIDE SLOPE
NEW TAXIWAY
RELOCATED VASI
FUTURE PERIMETER ROAD
RELOCATED MALSR
FUTURE MALSR
RUNWAY PROTECTION ZONE
AVIGATION EASEMENT TO BE ACQUIRED
APPROACH SURFACE 50:1
RELOCATED MIDDLE MARKER
FUTURE MIDDLE MARKER
HANSEN ROAD
AIRFIELD.DWG



DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

FRSA – FUTURE RUNWAY SAFETY AREA

0 500 1000 1500
GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED AIRFIELD DEVELOPMENTS

DATE	FIGURE
AUGUST, 1997	2-3

An 8,500 foot long, 150 foot wide parallel Runway 2R-20L may eventually be constructed 2,500 feet to the east of the existing runway, including a 1,000 foot long by 500 foot wide safety areas at each end. The parallel runway would allow unrestricted overseas passenger flights to the west coast and simultaneous VFR operations by some aircraft, as well as some staggered parallel instrument operations and precision instrument landings under certain conditions.

Under the Proposed Project (preferred alternative), existing Runway 5-23 would be maintained at its existing 4,990 feet length and 150 feet width, with a expanded 1,000 foot long by 500 foot wide safety area at each end. Runway 5-23 will continue to be used by general aviation and commuter/air taxi aircraft, but it will also serve as a backup runway for interisland air carrier aircraft during periods when other runways are unavailable.

Building Restriction Lines And Object Free Zones. Building Restriction Lines (BRL) are proposed to prevent the construction of buildings in areas where they would interfere with the operation of the airfield. The Proposed Project (preferred alternative) would retain the BRL at 1,000 feet to the west and 750 feet to the east of the centerline of existing Runway 2-20 (2L-20R). The BRLs would be extended past the ends of the runways to the point where they intersect the runway protection zones. Both of these provisions are consistent with current FAA recommendations. The existing Air Taxi building, which is only 650 feet east of the Runway 2-20 centerline, does not meet the 750 foot criterion and will be removed.

The preferred alternative would also establish a BRL at least 750 feet to the east and west of the centerline of the future parallel Runway 2R-20L.

The preferred alternative would retain the existing BRL for Runway 5-23, which is situated 553 feet on either side of the runway centerline. The existing ground transportation support buildings that are within the runway protection zone for Runway 5 would be relocated to comply with the latest FAA criteria. The existing airline ground equipment building is within the Taxiway "F" Object Free Area.

Airport Reference Point. Implementation of the preferred alternative would change the airport reference point (ARP) for Kahului Airport. The new ARP would be 20°53'51" North latitude and 156°25'53" West longitude. The magnetic declination at Kahului Airport for 1997 is estimated at 10°28' East of true North.

Taxiways. The proposed 2,600-foot extension of Runway 2-20 (2L-20R), 8,500-foot parallel runway (Runway 2R-20L), and other recommended improvements would require the development of new and extended taxiways to provide access to and from the airfield as shown on Figure 2-3. Parallel Taxiway "A" would be extended to the south to the new recommended end of Runway 2 (2L). New entry/exit taxiways are also proposed to connect the extended Runway 2-20 (2L-20R) to the extended Taxiway "A". The unnamed taxiway (apron edge taxiway) that parallels Runway 2-20 (2L-20R) on the east side would be extended to both the north and south to connect to the ends of extended Runway 2 (2L).

Taxiway "F" would be extended northeast to Taxiway "A" at the end of Runway 23 to provide a full-length parallel taxiway on the southeast side of Runway 5-23. A centerline separation distance of 400 feet would be provided between the taxiway and the centerline of Runway 5-23 to accommodate Group III aircraft (e.g., B-737 and DC-9). These aircraft use the runway on an infrequent basis when Runway 2-20 (2L-20R) is not available for use. Additional entry/exit taxiways would also be provided.

New taxiways would also be constructed connecting the parallel runway and associated taxiways to the existing airfield, the large transient aircraft parking apron to Taxiway "A"[4], and the future general aviation and commercial aviation areas to an extended Taxiway "E". Additional taxiway fillets may be considered near the runway/taxiway intersections to expedite aircraft onto the exit taxiways. The exact dimensions and placement of these fillets will be determined during the design phase.

The taxiways serving air carrier aircraft would be 75 feet wide. A width of 35 feet will be considered for taxiways serving areas (such as the general aviation area east of Runway 2L-20R) to be used only by small aircraft (i.e., those with gross weights of 12,500 pounds or less).

Holding Aprons. Several new holding aprons, or wider taxiways, are recommended under the preferred alternative. They would be located at the south end of extended Taxiway "A"; at the north and south ends of parallel Runway 2R-20L; and at the northeast end of extended Taxiway "F" near the end of Runway 23. These holding aprons are to facilitate runway departures and are proposed primarily for use by small propeller aircraft. Holding aprons at these locations will also facilitate aircraft movement to the runways by aircraft cleared for takeoff.

Pavement Strength. Under the preferred alternative, Runways 2-20 (2L-20R) and 2R-20L would be designed to accommodate dual tandem wheel gear (*e.g.*, DC-10, L-1011) aircraft with a gross weight of up to 600,000 pounds and double dual tandem wheel aircraft (*e.g.*, B-747) with a gross takeoff weight of up to 900,000 pounds of strength. All taxiways serving air carrier aircraft would be capable of accommodating aircraft with these gross weights, as well. This would require an asphalt overlay for existing Runway 2-20 (2L-20R) and taxiways. Further testing during the design phase may be necessary to determine the exact pavement requirements for the individual runway and taxiway overlays.

Jet Blast Protection. The primary means used to reduce the effects of jet blast include stabilized (paved) shoulders and blast pads. Presently, the airfield has 35-foot wide stabilized shoulders along Runway 2-20 (2L-20R) and associated taxiways. Fifty (50) foot shoulders would be provided along the extensions of Runway 2-20 (2L-20R) and associated taxiways and for the parallel Runway 2R-20L and associated taxiways. This shoulder dimension satisfies FAA Airplane Design Group V standards. These facilities would be constructed as part of the Runway 2-20 extension and strengthening project and with the parallel runway, as applicable.

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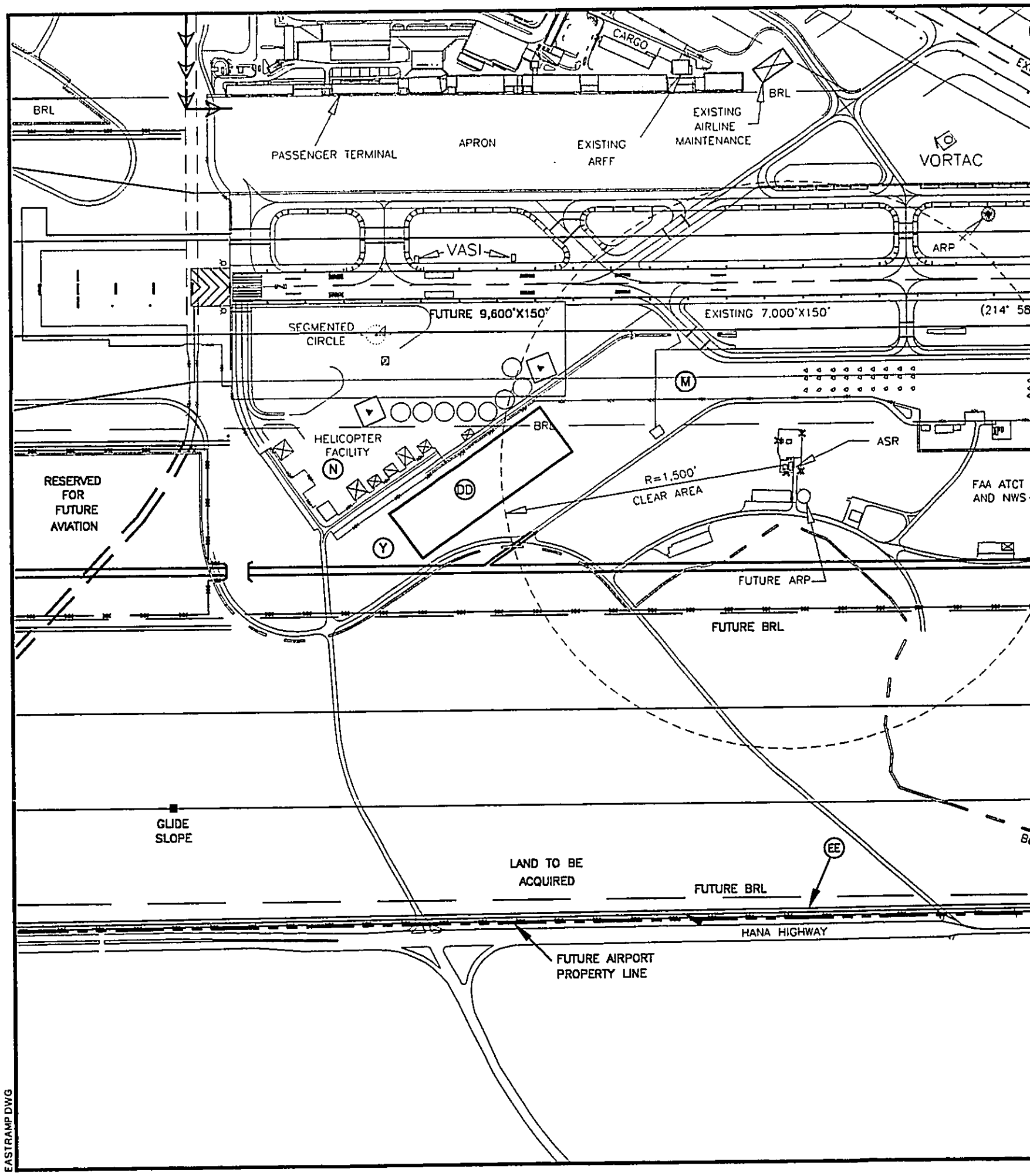
[4] The size and access to the transient apron has been modified to protect the archaeological site in the area.


CARGO
BRL
BRL
EXISTING
AIRLINE
MAINTENANCE
PASSENGER TERMINAL
APRON
EXISTING
ARFF
VORTAC
VASI
ARP
FUTURE 9,600'X150'
EXISTING 7,000'X150'
(214° 58
SEGMENTED
CIRCLE
M
HELICOPTER
FACILITY
N
BRL
ASR
RESERVED
FOR
FUTURE
AVIATION
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R=1,500'
CLEAR AREA
FAA ATCT
AND NWS
Y
FUTURE ARP
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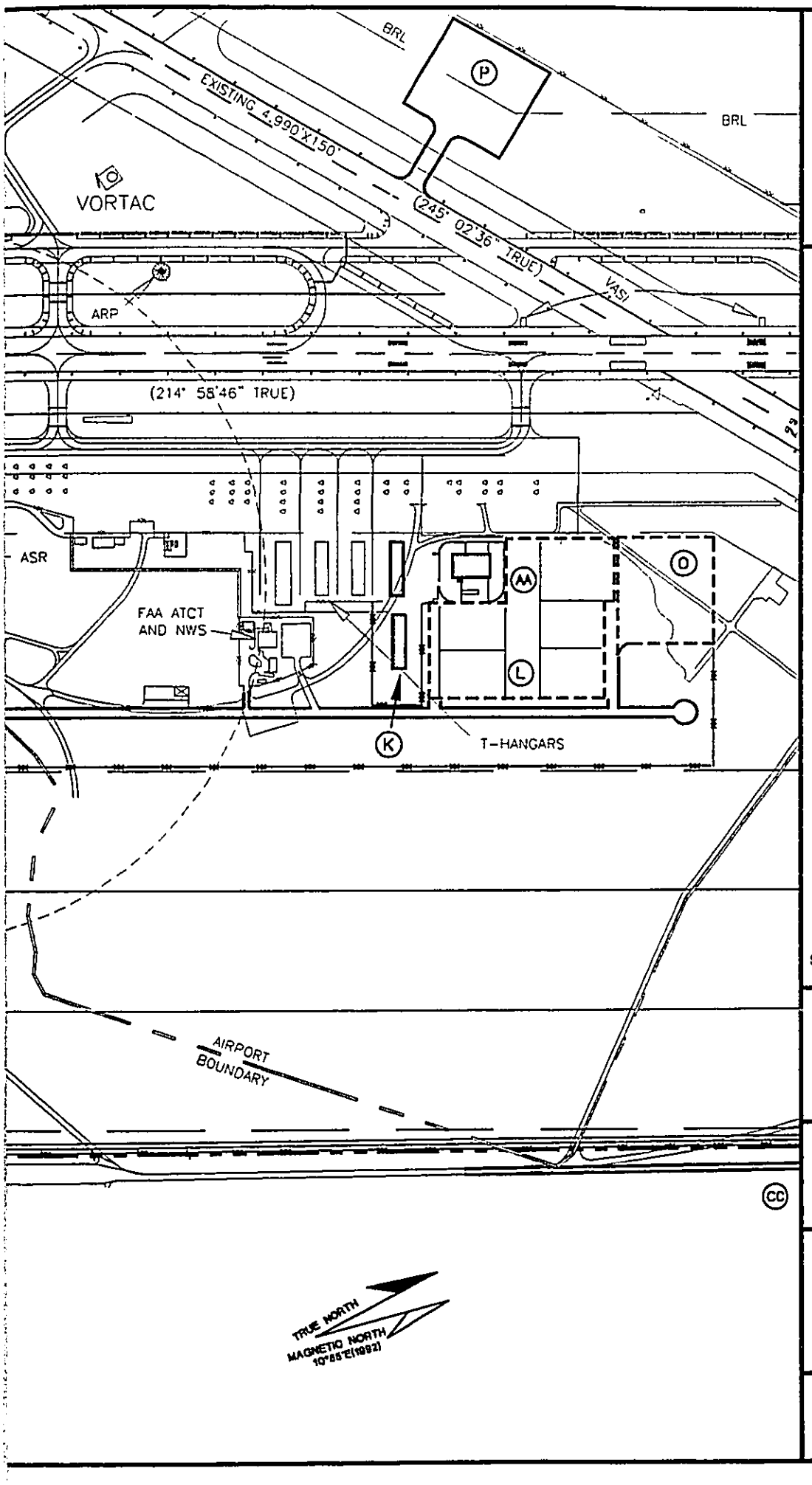
FUTURE BRL
HANA HIGHWAY
FUTURE AIRPORT
PROPERTY LINE
EASTRAMP DWG



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LEGEND FOR FUTURE DEVELOPMENT

- K - GENERAL AVIATION T-HANGERS
- L - COMMERCIAL AVIATION LEASE LOTS / FBO
- M - NEW SCENIC AIR TOUR FACILITY
- N - COMMERCIAL AVIATION LEASE LOTS
- O - CARGO FACILITY
- P - TRANSIENT LARGE AIRCRAFT PARKING APRON
- Y - EAST RAMP ACCESS ROAD
- AA - NEW AIRCRAFT RESCUE AND FIRE FIGHTING FACILITY (COMPLETED)
- CC - REALIGN HANA HIGHWAY
- *DD - INTERIM HELICOPTER APRON (ADDED)*
- EE - NEW PERIMETER ROAD

0 300 600 900
GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED EAST RAMP DEVELOPMENTS

DATE	FIGURE
FEBRUARY, 1997	2-5

The Proposed Project (preferred alternative) recommends that at least a 200-foot wide by 200-foot long blast pad be provided at the ends of extended Runway 2-20 (2L-20R) and for the parallel Runway 2R-20L. This satisfies FAA requirements for aircraft approach categories C and D, and Airplane Design Group IV (*e.g.*, DC-10 and L-1011).

Navigation and Landing Aids. The following additional navigation and landing aids are recommended in conjunction with the other Airport improvements recommended under the Proposed Project (preferred alternative):

- High intensity runway lights (HIRL) are recommended for the proposed future extension of Runway 2-20 (2L-20R) and for the proposed future parallel Runway 2R-20L;

- Medium intensity taxiway lights (MITL) are recommended for the proposed new extended taxiways, parallel, east-west connecting, entry/exit, and other new taxiways included in the Airport Master Plan;

- Distance-to-go markers are recommended for all runways;

- The precision instrument approach system (glide slope facility), middle marker, and MALSR approach lights are recommended to be relocated when Runway 2 (2L) is extended to the south;

- A precision instrument landing system (ILS) is recommended for Runway 2R or consideration should be given to relocating the ILS from Runway 2L when the parallel runway is built;

- The VASI-4 visual approach slope indicator should be relocated when Runway 2L is extended to the south;

- A precision approach path indicator (PAPI) and runway end identifier lights (REIL) should be installed on Runway 23 and at both ends of the new parallel Runway 2R-20L;

- A 1,500-foot clear area should be maintained around the Airport Surveillance Radar (ASR) east of Runway 2L-20R to protect the facility from encroachment by structures or other objects that could adversely impact the radar. Similarly, a 1,000-foot clear area should be maintained around the new VORTAC location east of Runway 2L-20R to protect the facility from encroachment by structures or other objects that could adversely impact its performance; and

- An omnidirectional approach lighting system (ODALS) is recommended for Runway 20R.

Helicopter Apron. In the interim, to increase the margin of safety between aircraft operating on Runway 2-20 and the helicopter operations, the operating apron for passenger pick-up and drop-off will be relocated east of the existing helicopter hangars. In addition, it would improve the apron surveillance from the FAA ATCT. Its existing position is poorly positioned for line-of-sight from the FAA ATCT. The interim position is not part of the 1993 Kahului Airport Master Plan.

The interim location would place it between two active runways once the recommended parallel runway is constructed. This would increase the frequency of undesirable interactions between helicopter and fixed-wing aircraft operations. Consequently, it has been recommended under the Proposed Project (preferred alternative) that the helicopter facility be relocated to an off-airport location once the parallel runway is built. After relocation to an off-airport site, this helicopter area will be developed into a Commercial Lease Lot/FBO area (N).

Transient Aircraft Apron/Military Facilities. Under the Proposed Project, a transient aircraft apron for both civil and military aircraft parking would be constructed north of Runway 5-23. Temporary shelters for military use are planned to be located adjacent to the apron with the principal access from the airfield and with roadway access from Alahao Street.

2.2.5 PROPOSED WEST RAMP DEVELOPMENTS

Figure 2-4 shows proposed changes to facilities on the west side of the Airport (the alphabets in parenthesis correspond to those in Figure 2-4). Existing passenger terminal facilities for both air carrier and commuter airlines are adequate to accommodate forecast traffic to the year 2016 with the possible exception of a small amount of additional vehicle parking in the terminal area. The existing airport base maintenance facilities will also be adequate for the planning period. The following facilities are proposed to be constructed, relocated or expanded as part of the Proposed Project (preferred alternative).

Air Cargo Facilities (J). The Proposed Project recommends new air cargo facilities, intended primarily for cargo carried by passenger aircraft, to be located south of the main passenger terminal[5]. However, cargo carried by all-cargo aircraft, such as the "Quick Change" passenger/cargo aircraft used by Aloha Airlines and other all-cargo carriers, could also be handled there. A 12-acre site has been provided that is large enough for up to 100,000 square feet of storage space, as well as truck and other vehicular parking and truck docks.

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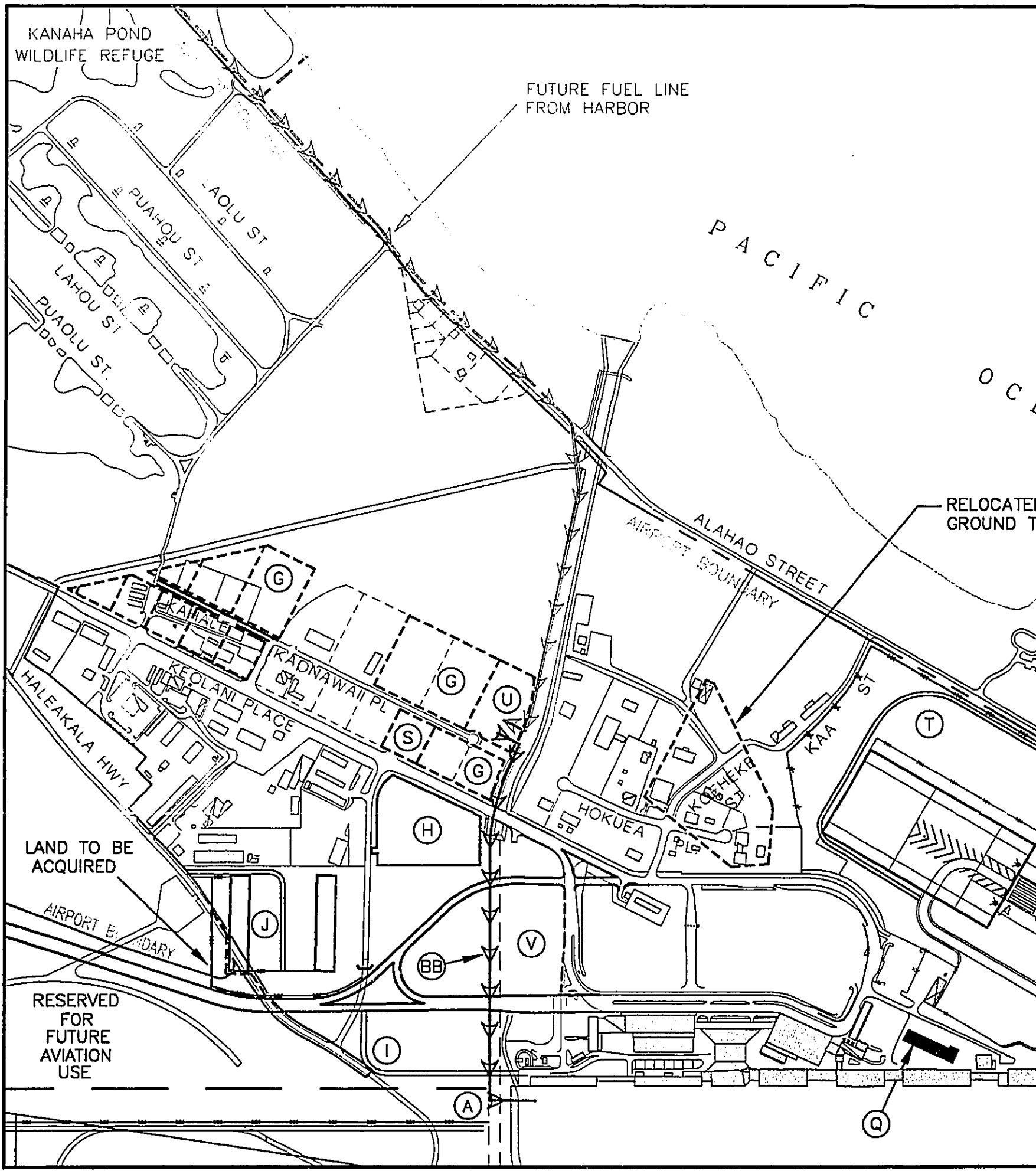
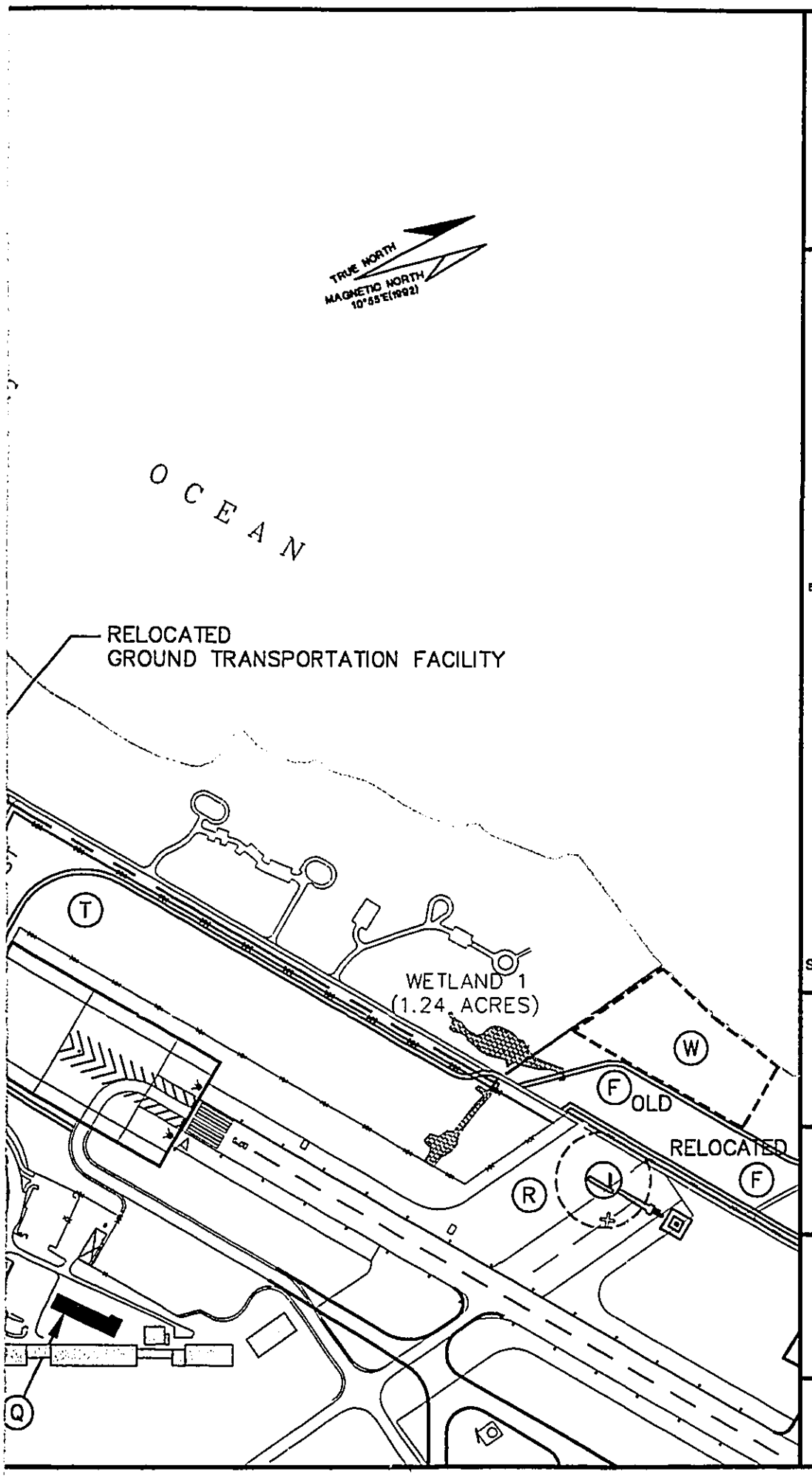
[5] This cargo is often referred to as "belly cargo" or "hold cargo" because it is carried in the bellies of the passenger aircraft. Cargo carried by all-cargo aircraft is typically referred to as "general cargo."



WESTRAMP.DWG



DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND FOR FUTURE DEVELOPMENT

- A - RESERVE SPACE FOR POTENTIAL PASSENGER TERMINAL EXPANSION
- F - ALAHAO STREET/OLD STABLE ROAD EMERGENCY ACCESS
- G - EXPANDED GROUND TRANSPORTATION SUBDIVISION
- H - U.S. POST OFFICE SITE - LEASE LOT
- I - POST OFFICE RAMP ACCESS ROAD
- J - CARGO FACILITY
- Q - RELOCATED AIRLINE GROUND SUPPORT EQUIPMENT MAINTENANCE
- R - ARFF TRAINING FACILITY
- S - FLIGHT KITCHEN FACILITY - LEASE LOT
- T - PERIMETER ROAD
- U - BULK JET FUEL STORAGE FACILITY
- V - ADDITIONAL PARKING LOT
- W - KANAHA BEACH PARK IMPROVEMENTS
- SS - FUEL LINE TO RAMP

0 300 600 900

GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED WEST RAMP DEVELOPMENTS

DATE	FIGURE
FEBRUARY, 1997	2-4

The aircraft carrying cargo to and from this west-side cargo facility would generally use existing apron space fronting the main passenger terminal. It would be transferred between the cargo facility and the passenger terminal apron by tugs and dollies using the perimeter service road. If necessary, all-cargo aircraft could also be parked on the apron in front of the passenger terminal when those positions are not required for passenger aircraft operations. Since the majority of the all-cargo interisland aircraft movements are at night, when the apron fronting the passenger terminal is normally vacant, the dual use of the apron appears to be practical and cost effective.

As part of the mitigation measures and as requested by Hawaii Department of Agriculture, HDOT-AIR will coordinate the plan, design and implementation of the new cargo facility improvements with the State Department of Agriculture to benefit the shipment of agricultural products and the interception of the introduction of alien species. Such improvements include: (i) covered storage areas for agricultural produce awaiting shipment, and (ii) facilities for the State Department of Agriculture's and US Department of Agriculture's alien species interception/inspection program, including positive air pressure control facilities for the inspection of air cargo containers, office and facilities for U.S. Customs, United States Department of Agriculture (USDA) and HDOA, a joint USDA/HDOA laboratory, walk-in freezer, incineration facilities, and provision for X-Ray of cargo containers, and computer facilities for an alien species data base system.

Trucks carrying cargo to and from this area would use Haleakala Highway. This routing would keep them from mixing with passenger vehicles on Keolani Place, the proposed Airport Access Road, and the terminal loop road. Access between the cargo area and the airfield would be provided by the proposed Post Office Access Road.

Fuel Storage and Loading Facilities (U & BB). A variety of potential locations for aircraft fuel storage facilities were identified and evaluated during the master planning process. The Proposed Project (preferred alternative) recommends that the bulk fuel storage facilities be constructed on the southern side of Kalialinui Gulch opposite the existing ground transportation subdivision. It would be set back one lot from Keolani Place, keeping the storage tanks out-of-sight from most airport users. It is readily accessible to tanker trucks carrying fuel to the Airport from Kahului Harbor, is adjacent to the Kalialinui Gulch Drainage Channel right-of-way (within which a pipeline between the storage tanks and the passenger terminal apron could be constructed), and is adjacent to low-density uses.

Flight Kitchen Facility (S). An improved site for this facility is provided for a private sector development of a flight kitchen facility.

Airline Ground Support Equipment Maintenance Facility (Q). Under the Proposed Project (preferred alternative), the existing air cargo building and site would be modified and refitted by the airlines for ground support equipment maintenance use.

Ground Transportation Subdivision (GTS) (G). Under the Proposed Project (preferred alternative), the GTS would be expanded to accommodate additional lease lots for rental car, limousine and tour bus operations.

2.2.6 PROPOSED EAST RAMP DEVELOPMENTS

Figure 2-5 shows the proposed changes to facilities on the east side of the airport. The existing ATCT, NWS, ASR, and FAA radio transmitter/receiver facilities are adequate for the planning period. The following facilities are proposed to be constructed, relocated or expanded under the preferred alternative.

General Aviation Facilities (K & L). The Proposed Project (preferred alternative) supplements the existing general aviation facilities east of Runway 2-20 (2L-20R) to accommodate the 40 based fixed-wing aircraft and 60 itinerant fixed-wing aircraft that the forecasts indicate will be using the Airport by the year 2010. Under the Proposed Project (preferred alternative), over 350,000 square feet of apron would be provided. The general aviation aircraft at the Airport are forecast to continue to be predominantly small single-engine and light twin-engine aircraft of up to 12,500 pounds maximum gross takeoff weight; therefore, most of this apron would be designated with these aircraft in mind. A limited number of large business jets also use the Airport; therefore, some of the pavement would be constructed so that it can support itinerant general aviation aircraft of 60,000 to 170,000 pounds maximum gross takeoff weight.

The Proposed Project (preferred alternative) provides sufficient space on the east side of the general aviation area for hangars accommodating over forty (40) aircraft. The State would construct T-hangars containing spaces that could be leased to individual aircraft owners for this purpose. The preferred alternative also provides space for individual executive-type (*e.g.* business jets) hangars to be developed by lessees, as needed, and for future expansion.

Approximately twelve (12) acres would also be provided for commercial aviation and general aviation fixed-base operator lease lots east of Runway 2L-20R. Each lot would have access to both the airfield and roadway system. Space would be provided within each lease lot for automobile parking for employees and visitors. HDOT-AIR's current property development standards call for two-acre minimum lot sizes for commercial aviation/fixed base operator lots. However, to meet the needs of the small general aviation operators in the State, the preferred alternative recommends that the subdivision layout provide at least some one-acre lease lots for general aviation operators. The lease lots would be assigned so that those operators who need a larger area can lease contiguous parcels for their purposes.

The Proposed Project (preferred alternative) also provides space in the general aviation area for a future aircraft wash rack and associated wastewater disposal facilities. A pilots' lounge or ready room could be provided within a fixed base operator's hangar and office building or at the end of a row of hangars. New taxiways would be provided to connect the expanded general aviation aircraft apron and hangar areas.

Air Cargo Facilities (O). The second new air cargo area provided under the Proposed Project (preferred alternative) is located at the northern end of the East Ramp. A four acre area that is part of the proposed new East Ramp lease lots would be made available to air cargo operators for their facilities. Unlike the air cargo facilities proposed for the western side of the Airport, these are intended for use by all-cargo aircraft. Initially, access to the new facilities would be via existing roads; ultimately this area would be serviced by the proposed new East Ramp spine road.

Air Taxi (Scenic Air Tour) Facilities (M). The existing air scenic tour aircraft (fixed wing only) parking apron provides space for over 20 aircraft. Under the Proposed Project (preferred alternative), space has been reserved for expansion of the air-tour fixed wing aircraft parking area to the south if additional apron area is needed for more and/or larger air taxi aircraft. A small new air taxi passenger terminal with limited facilities (*e.g.*, waiting area, concessions, and restrooms) is planned to replace the old facility that is now closed. Sufficient space is available on the landside of the recommended site for automobile and tour bus parking.

2.2.7 PROPOSED NORTH SIDE FACILITIES

The Kanaha Beach Park Recreational Facilities are shown on Figure 2-4, and is along the northern portion of the Airport.

Kanaha Beach Park Recreational Facilities (W). Under the Proposed Project (preferred alternative), additional recreational facilities adjacent to the eastern side of Kanaha Beach Park would be provided. These facilities include vehicle parking, roadway access from Alahao Street, and passive recreational facilities such as picnic areas. Ownership of the area would remain with the HDOT, but facilities would complement the existing County facilities and their operation would be coordinated by the County.

2.2.8 PROPOSED ROADWAY SYSTEM

The roadway system within the Airport boundary and in its environs will be improved and expanded under the Proposed Project (preferred alternative) as shown on Figure 2-6.

Airport Access Road. Under the preferred alternative, a new four lane access road would be provided, including a partial cloverleaf interchange at its intersection with Hana Highway. This new Airport Access Road would help maintain adequate access to the main passenger terminal and other facilities on the western side of the Airport. As part of this project, a portion of Hansen Road from Hana Highway to Pulehu Road will be relocated. The relocated Hansen Road will form a single intersection with Hana Highway and the new Spine Road. The Spine Road will be developed to connect the East Ramp to Hana Highway for public access, if and when, the parallel runway is constructed. A portion of the Spine Road is constructed in Phase 2 to connect the new lease lots to the existing roadway system.

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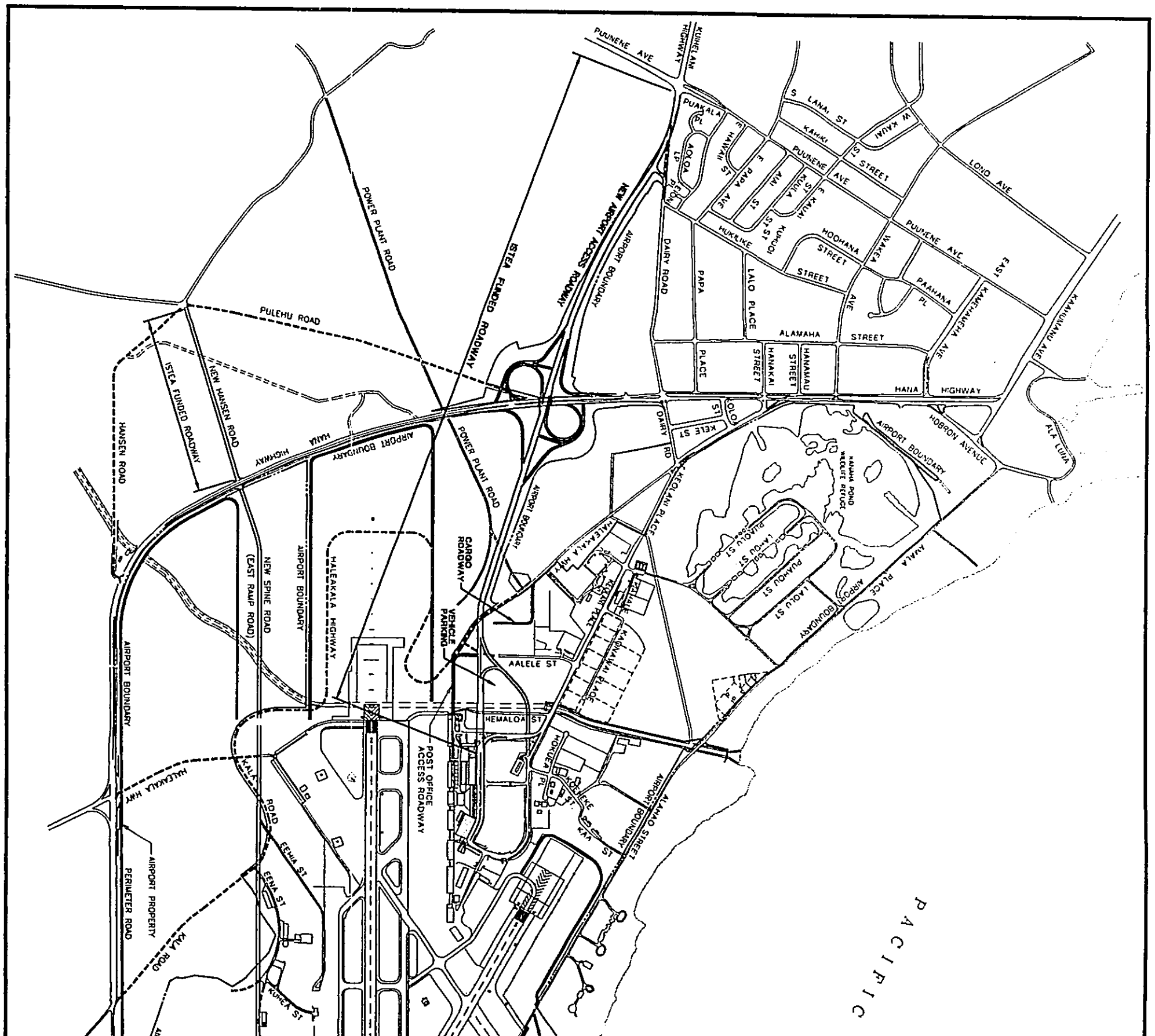
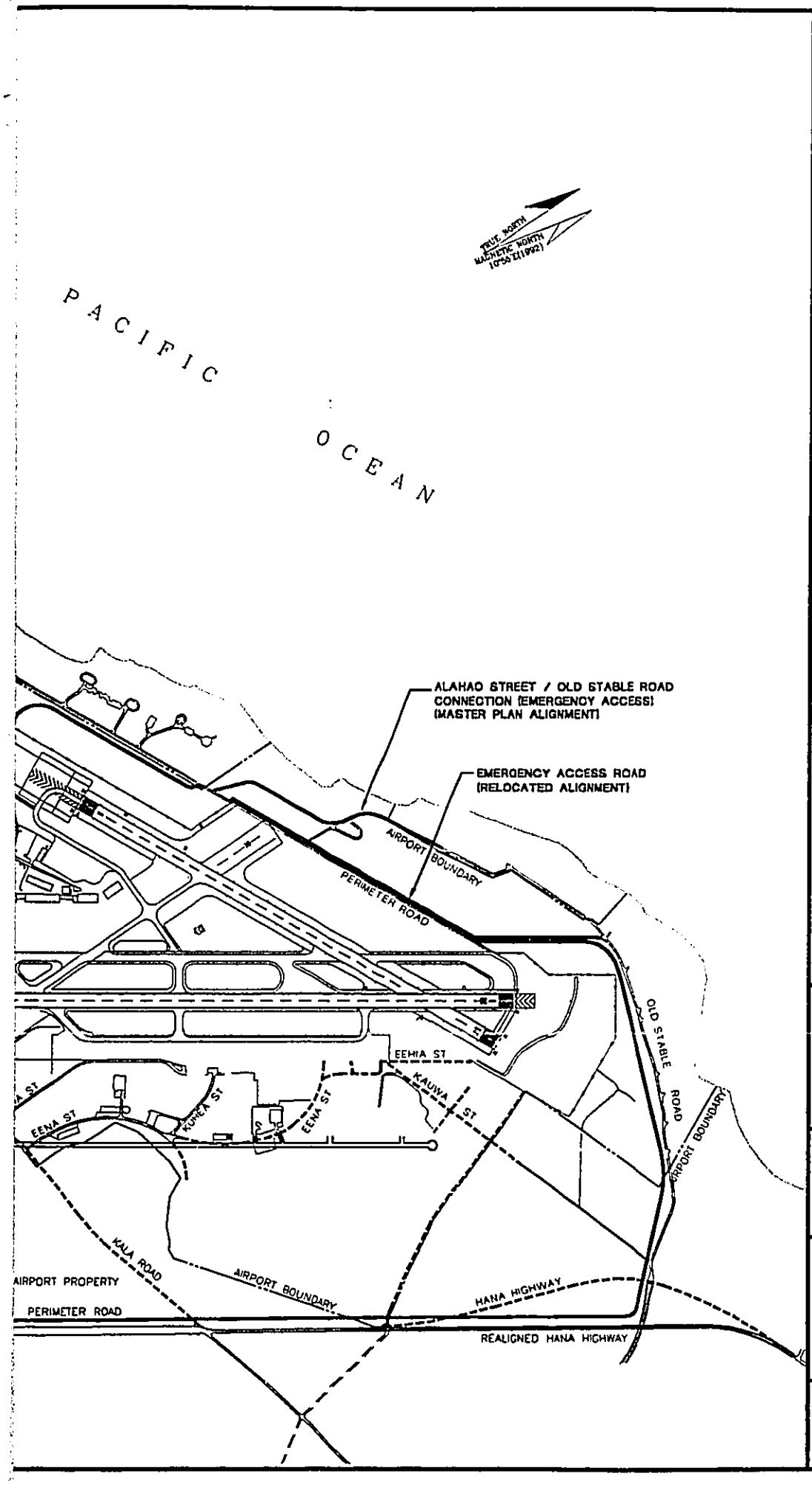
PROPROAD.DWG





DEPARTMENT OF TRANSPORTATION · STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

- ROADWAY TO BE REMOVED
- PROPOSED NEW ROADWAY
- EXISTING ROADWAY

0 500 1000 1500 2000
GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED ROADWAY SYSTEM DEVELOPMENTS

DATE	FIGURE
FEBRUARY, 1997	2-6

Hana Highway Realignment. A portion of Hana Highway adjacent to the northeastern corner of the Airport would also be realigned under the preferred alternative in order to accommodate the runway protection zone for proposed parallel Runway 2R-20L.

Public Streets and Service Roads. The preferred alternative proposes construction of new internal roadways to serve the proposed new and reconfigured development. The areas that would be served by these new roads include the additional lots for ground transportation operators, bulk fuel storage facilities, and the lease lots along the northwestern side of Keolani Place. These streets are proposed to be of residential development quality, with curbs, lighting, and storm drain systems. They would be designed to accommodate moderate traffic volumes and have a design speed of 25 miles per hour. Most of the traffic on these roads would consist of passenger cars, bus vans, buses, trucks, and other vehicles would use them, and the roadway geometry and pavement would be designed accordingly.

The proposed Alahao Street/Old Stable Road connection is a two-lane roadway. It would be open to pedestrians and bicycles at all times, but would be open to vehicular traffic only in emergencies. The pavement and road section would be designed with this specialized function in mind. The 1993 Master Plan showed a roadway alignment which connected the new Kanaha Beach Park access roadway to the West Spreckelsville access roadway. The current planned roadway alignment is along the north (makai) side of the Airport perimeter fence, along the existing gravel roadway alignment, with a new connection to the Old Stable Road.

In addition to these public streets, the preferred alternative also proposes construction of new internal service roads. These include a new perimeter road and additional service roads to the new facilities. The perimeter road would be developed in phases, beginning with segments around the existing runways. It would be extended when Runway 2-20 (2L-20R) is extended, and when the proposed parallel runway is constructed.

A service road would also be constructed linking the U.S. Post Office and air cargo facility sites south of the passenger terminal directly to the aircraft operating area. The baggage tugs, carts, and container transporters that would use this road have a small ground clearance and are unable to negotiate steep grades. The volume of traffic moving over this road will be low throughout the planning period and speeds would be well below 25 miles per hour. The pavement geometry, load carrying capability, vertical grades, and vertical clearance at-grade separations (*e.g.*, the underpass beneath the proposed new Airport Access Road) would be designed and constructed with these requirements in mind.

When Runway 2L-20R is extended as proposed under the preferred alternative, the portion of Haleakala Highway west of the runway would be terminated at the proposed new air cargo facilities. Public access to the cargo buildings would be from the south; the apron storage areas on the one side of each cargo building would be included within the airport operating area, which will be open to permittees only. Therefore during Phase 1, Haleakala Highway will be closed to the public from the East Ramp to the intersection of Power Plant Road. In addition, a portion of Hansen Road and Pulehu Road will be closed.

With the construction of the parallel runway, the remaining portions of Haleakala Highway from Hana Highway to East Ramp, Kala Road and the other roadways within the sugar cane lands east of the Airport will be closed. These roadway modifications are shown on Figure 2-6.

Vehicle Parking. Preliminary calculations indicate that additional vehicular parking may be needed near the main passenger terminal if present vehicle usage rates continue and passenger volumes increase as forecast. However, the deficiencies are not forecast to appear for well over a decade, and there are many factors that could delay the parking shortfall even further. Because of this, construction of additional parking spaces before 2016 is not recommended. Instead, the preferred alternative reserves an area to the south of the existing parking lot for possible future development of additional parking facilities. HDOT-AIR will monitor parking lot usage on an annual basis using data collected by the parking lot concessionaire. This data will be reviewed at least every other year and the HDOT-AIR will begin developing plans for additional facilities when daily use of the existing facilities exceeds 80 percent of capacity more than seven times in any one year.

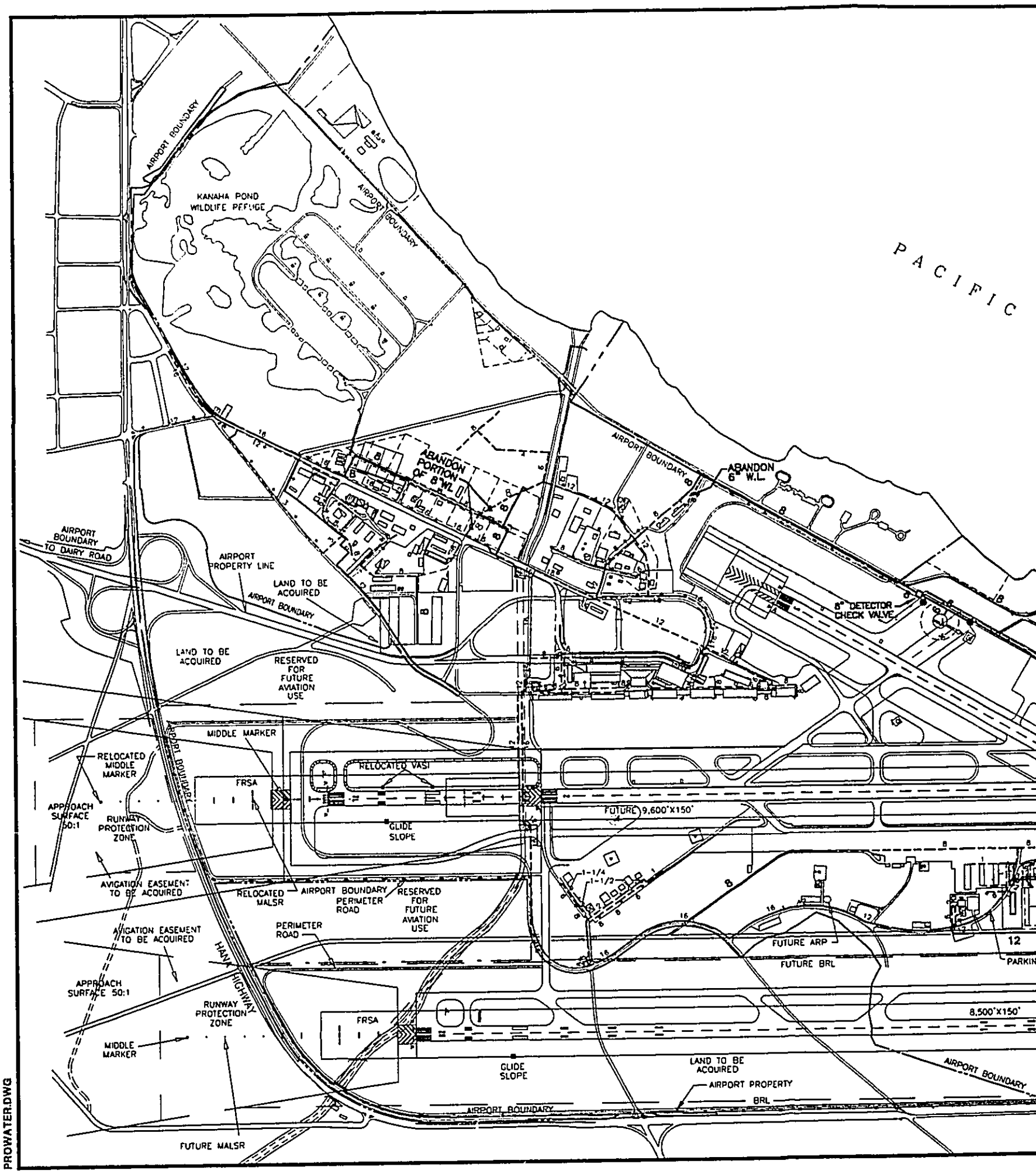
Ground Transportation Facilities. Having all of the rental car baseyard operations concentrated in one portion of the Airport helps passengers find the facilities and simplifies transport between the terminal and baseyards. Because of this, under the preferred alternative, the existing subdivision would be expanded southward across Kalialinui Gulch. From an operational standpoint, the preferred arrangement would be to extend Mokauea Place across Kalialinui Gulch. However, bridging the Gulch will require substantial fill and a relatively expensive engineered structure. Hence, it would be more economical to develop the additional ground transportation lease lots as a separate unit on the southern side of the Gulch. A portion of the land in the area south of the Gulch has already been improved, and all of the existing lots are leased for various purposes. Therefore, development of ground transportation lots in this area must be completed in two phases, one on either side of the existing improved lots.

2.2.9 PROPOSED UTILITIES AND DRAINAGE SYSTEMS

Under the Proposed Project (preferred alternative), the water, irrigation, sewerage, drainage, electric power and communication systems would be improved and expanded to provide service to new facility developments. These systems are shown on Figures 2-7 to 2-10 and are briefly described below. A more detailed presentation is included in Appendix L.

Water/Irrigation System. The recommended improvements to the existing water system are described below and illustrated on Figure 2-7. They are intended to meet both domestic and fire protection requirements.

East Ramp. The existing 8-inch water line along the edge of the apron fronting the east ramp would be extended to the south to provide for better fire protection flow and to meet domestic demand. This portion of the system would be configured to connect back into the existing 16-inch waterline to provide a loop system.



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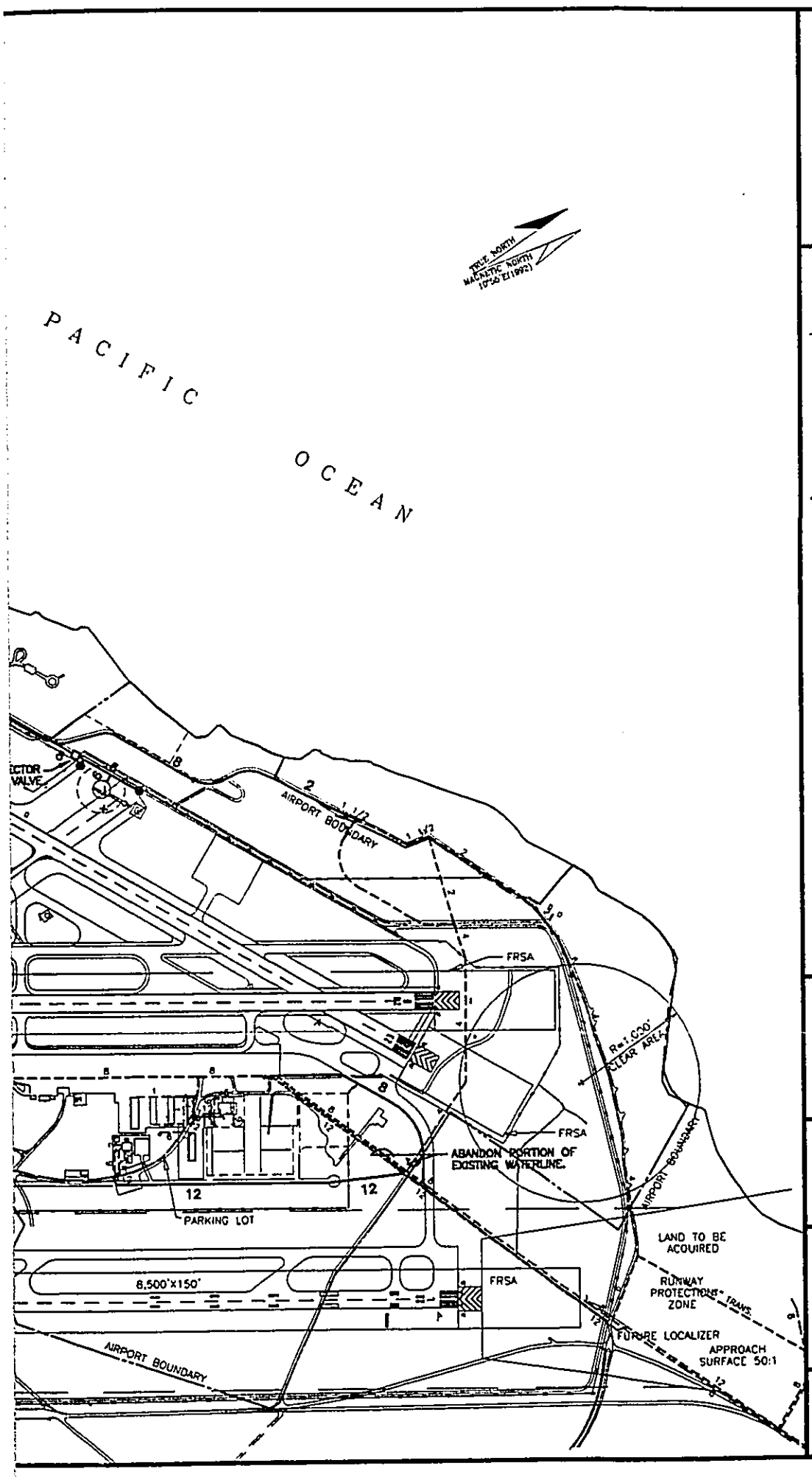


DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND – EXISTING WATERLINE

8 ------- WATERLINE W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED)

FIRE HYDRANT

LEGEND – NEW WATERLINE

8 ——— WATERLINE W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED).

FIRE HYDRANT

0 500 1000 1500
GRAPHIC SCALE IN FEET

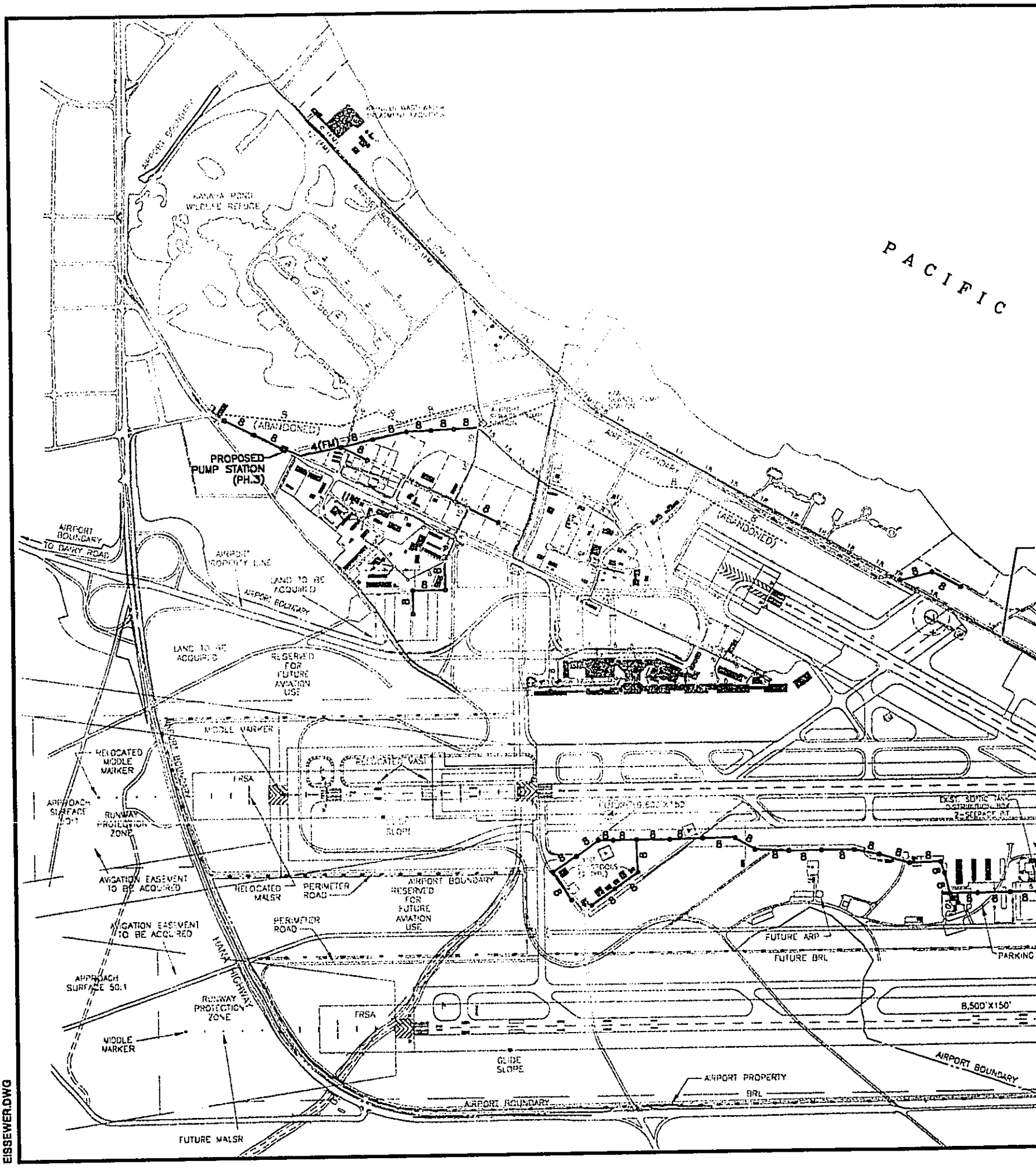
SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED WATER SYSTEM DEVELOPMENTS

DATE	FIGURE
JANUARY, 1997	2-7



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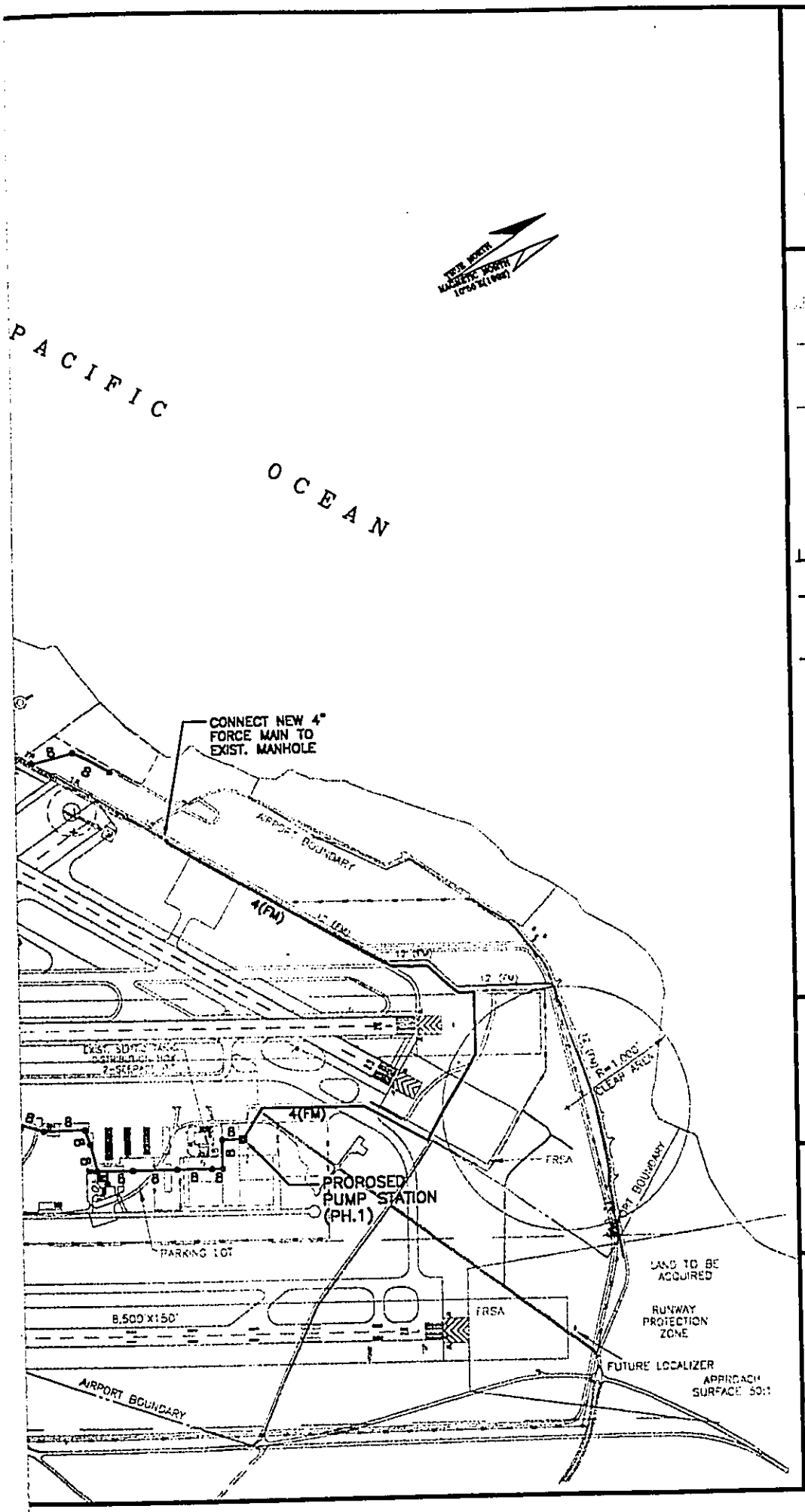

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STATE OF HAWAII

LEGEND:

- 8 — SEWERLINE W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED).
- 4 (FM) — SEWER FORCE MAIN LINE W/ SPECIFIED SIZE. (IN INCHES, UNLESS NOTED).
- ○ SEWER MANHOLE, UNLESS NOTED.

LEGEND – NEW SEWERLINE:

- 8 — SEWERLINE W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED).
- 4 (FM) — SEWER FORCE MAIN LINE W/ SPECIFIED SIZE. (IN INCHES, UNLESS NOTED).
- ○ SEWER MANHOLE
- ⊠ PUMP STATION

0 500 1000 1500
GRAPHIC SCALE IN FEET

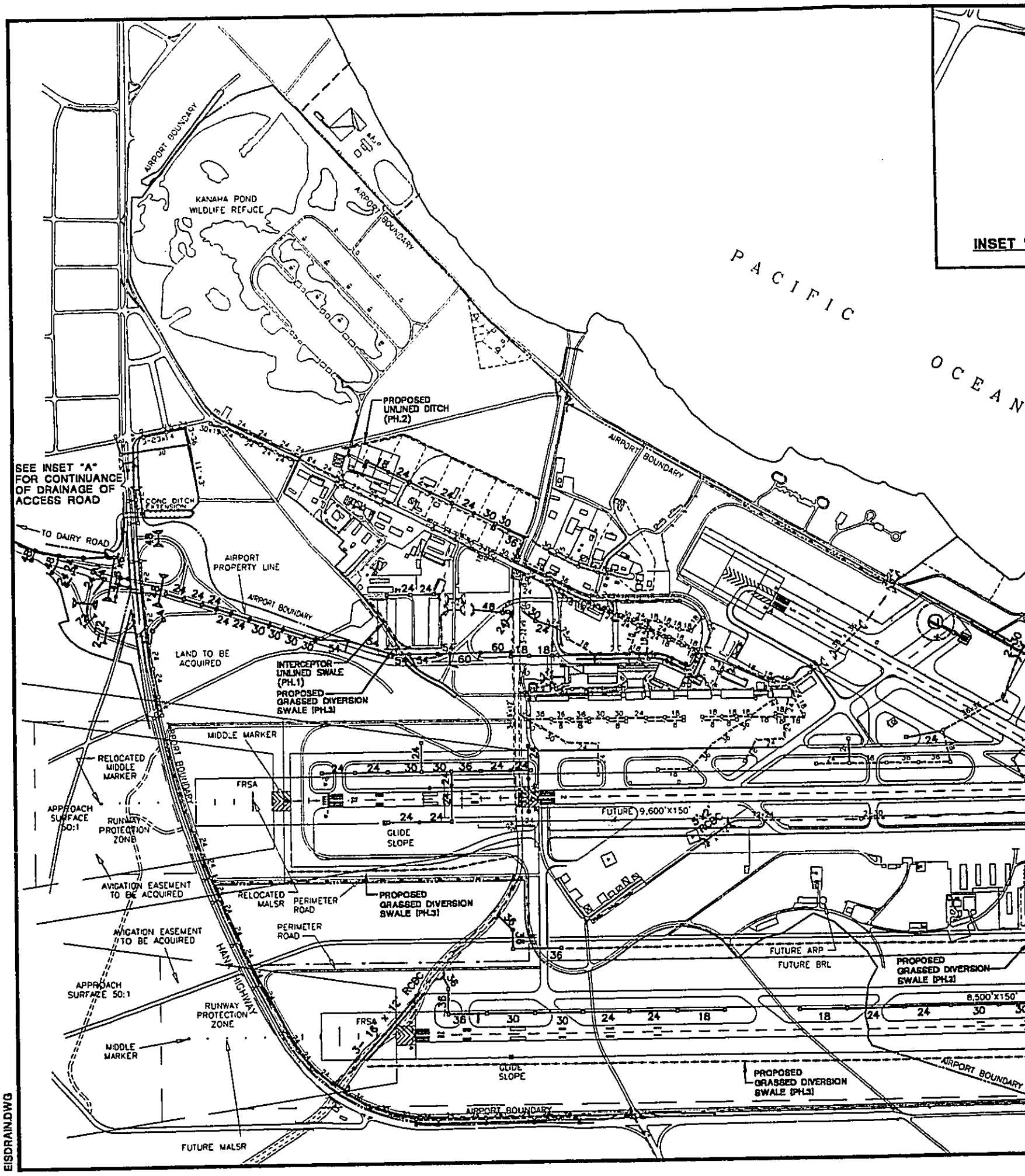
SOURCE:
KAHULUI AIRPORT MASTER PLAN

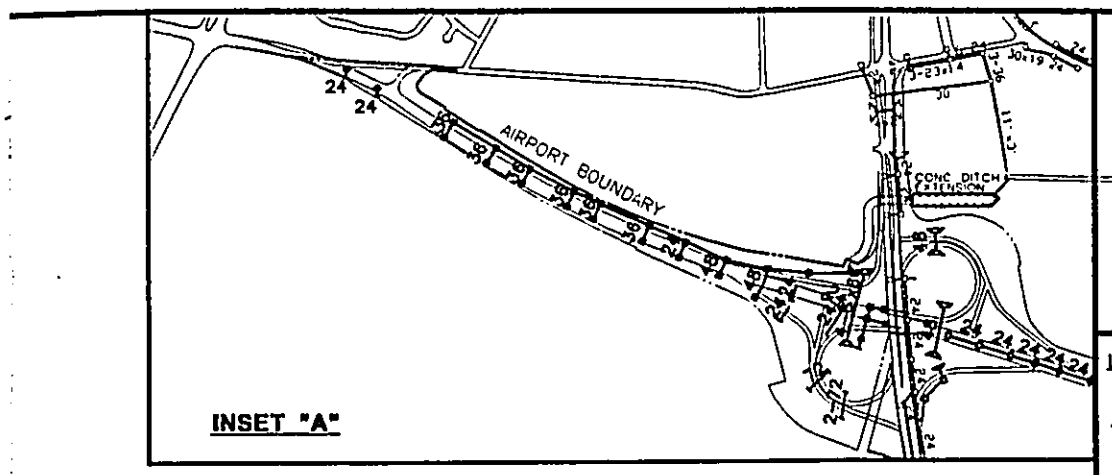
Edward K. Noda and Associates, Inc.

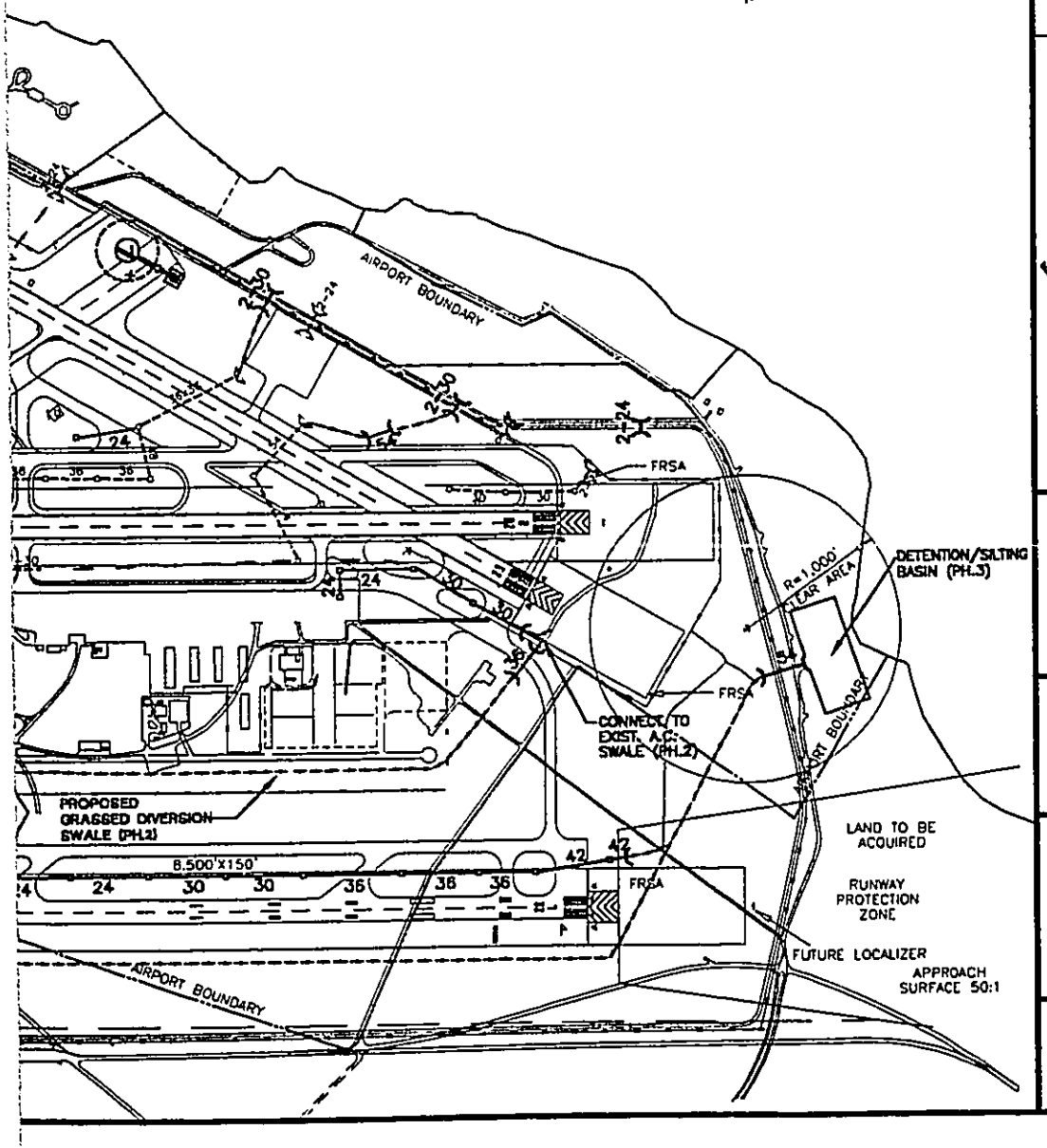
KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED SEWER SYSTEM DEVELOPMENTS

DATE	FIGURE
JANUARY, 1997	2-8


KANAHA POND WILDLIFE REFUGE
AIRPORT BOUNDARY
PACIFIC
OCEAN
INSET
PROPOSED UNLINED DITCH (PH.2)
SEE INSET "A" FOR CONTINUANCE OF DRAINAGE OF ACCESS ROAD
TO DAIRY ROAD
CONC DITCH EXTENSION
AIRPORT PROPERTY LINE
LAND TO BE ACQUIRED
INTERCEPTOR UNLINED SWALE (PH.1)
PROPOSED GRASSED DIVERSION SWALE (PH.3)
MIDDLE MARKER
RELOCATED MIDDLE MARKER
APPROACH SURFACE 50:1
RUNWAY PROTECTION ZONE
FRSA
GLIDE SLOPE
FUTURE 9,600'X150'
AVIGATION EASEMENT TO BE ACQUIRED
RELOCATED MALSR
PERIMETER ROAD
HANK HIGHWAY
FUTURE ARP
FUTURE BRL
8,500'X150'
FUTURE MALSR
EISDRAIN.DWG





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DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND - EXISTING DRAINAGE FACILITIES:

- 24 — CULVERT W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED).
- OPEN LINED DITCH OR CHANNEL
- OPEN UNLINED DITCH/SWALE
- DRAIN INLET
- DRAIN INLET OR OUTLET
- DRAIN MANHOLE

LEGEND - NEW DRAINAGE FACILITIES:

- OPEN UNLINED DITCH/SWALE
- DRAIN INLET
- 24 — DRAIN LINE W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED)
- DRAIN MANHOLE
- 16'X12' — CONC. BOX CULVERT W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED).
- OPEN DRAIN CHANNEL

0 500 1000 1500
GRAPHIC SCALE IN FEET

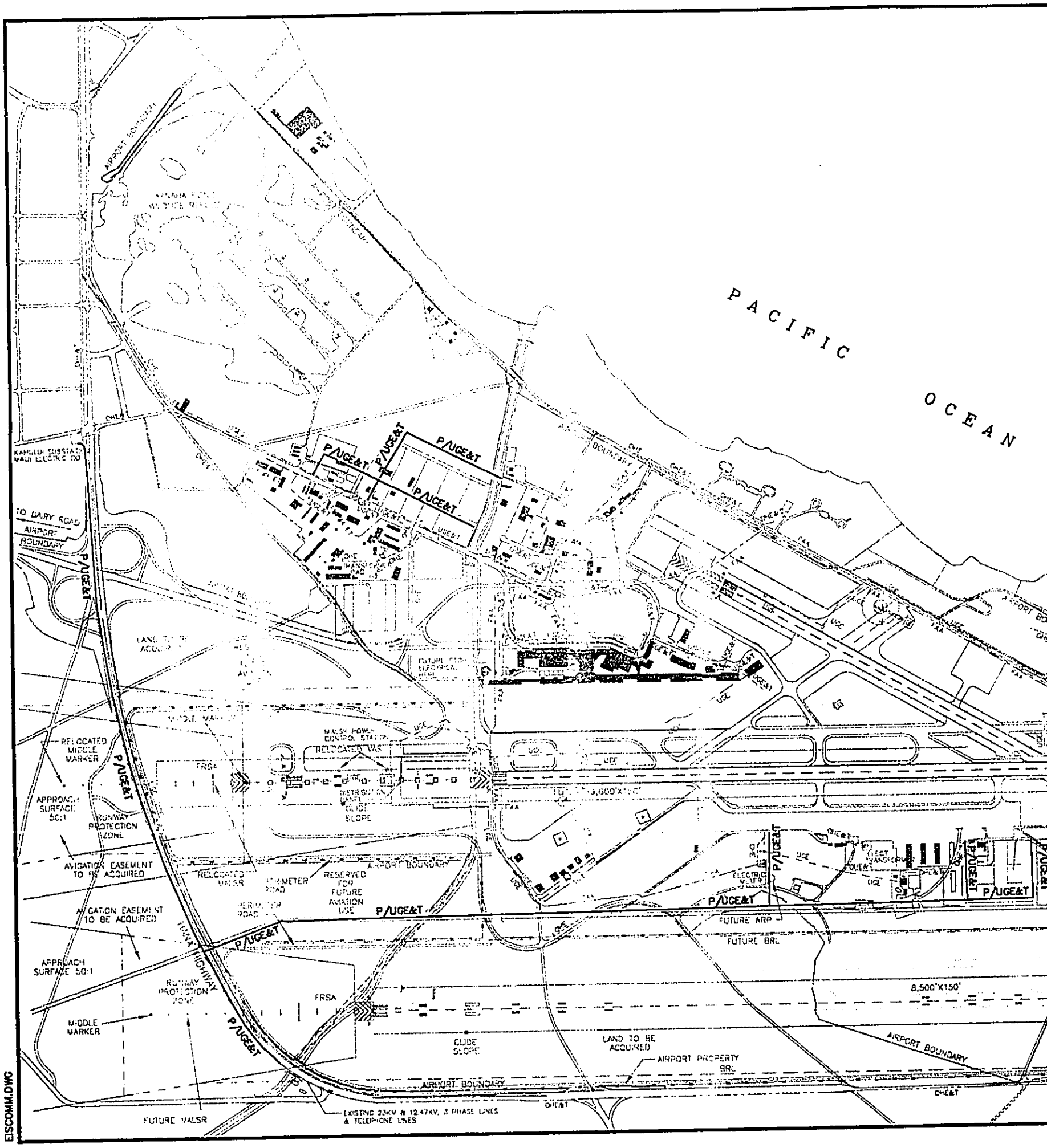
SOURCE:
KAHULUI MASTER PLAN

Edward K. Noda and Associates, Inc.

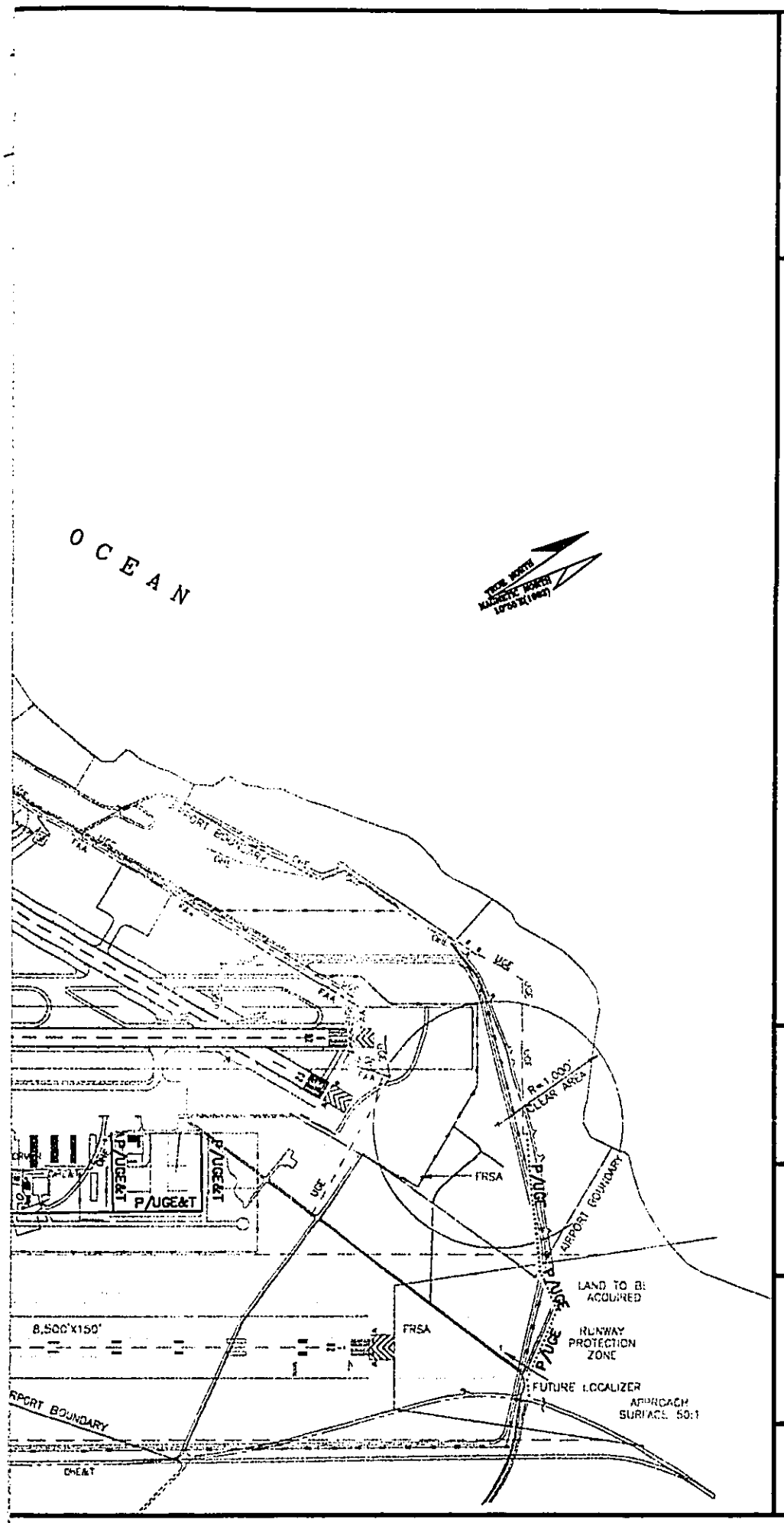
KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED DRAINAGE SYSTEM DEVELOPMENTS

DATE	FIGURE
JANUARY, 1997	2-9


PACIFIC
OCEAN
AIRPORT BOUNDARY
KAHULUI SUBSTATION
MAUI ELECTRIC CO
TO DAIRY ROAD
AIRPORT
BOUNDARY
P/UGE&T
RELOCATED
MIDDLE
MARKER
APPROACH
SURFACE 50:1
RUNWAY
PROTECTION
ZONE
AVIGATION EASEMENT
TO BE ACQUIRED
RELOCATED
WALSR
PERIMETER
ROAD
RESERVED
FOR
FUTURE
AVIATION
USE
FUTURE ARP
FUTURE BRL
8,500'X150'
FRSA
HIGHWAY
MIDDLE
MARKER
GLIDE
SLOPE
LAND TO BE
ACQUIRED
AIRPORT PROPERTY
BRL
FUTURE WALSR
EXISTING 23KV & 12.47KV, 3 PHASE LINES
& TELEPHONE LINES
OHE&T
UGE
FAA

EISCOMM.DWG



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

- EXISTING OVERHEAD POWER LINE
- EXISTING UNDERGROUND POWER LINE
- EXISTING UNDERGROUND TELEPHONE LINE
- EXISTING OVERHEAD POWER/TELEPHONE LINE
- EXISTING UNDERGROUND POWER/TELEPHONE LINE
- EXISTING FEDERAL AVIATION & ADMINISTRATION LINES
- EXISTING APPROACH LIGHTS
- ELECTRICAL TRANSFORMER
- P/UGE..... PROPOSED UNDERGROUND POWER LINE
- P/UGE&T PROPOSED UNDERGROUND POWER/TELEPHONE LINE

0 500 1000 1500
GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED ELECTRIC POWER & COMMUNICATION SYSTEM DEVELOPMENTS

DATE	FIGURE
JANUARY, 1997	2-10

New lines would be installed at the northern end of the east ramp to accommodate the proposed air cargo, T-hangars, the ARFF (completed), and the commercial aviation lease lots that are proposed for this area. The existing 8-inch line from Hana Highway would be re-routed so that it follows the alignment of the proposed connecting taxiway. The existing 12-inch line along the northern part of Eena Street would be re-routed along the alignment of the proposed spine road and connected to the existing 12-inch Kaua Street line from Hana Highway. New 6-inch lines would be provided within the roadways of the commercial aviation lease lot subdivision.

Future Ground Transportation and Industrial Lease Lots. The existing 8-inch water line along Kaonawai Place would be extended to serve the new lots. The new lines would be connected to the existing 16-inch line on Keolani Place and to the 8-inch line at the Kalialinui Gulch channel. Existing lines which are no longer needed and which would interfere with the economical development and use of these lots would be removed.

Future Air Cargo Facilities. An 8-inch line would be installed along the service road and connect to an existing 8-inch water line at the DLNR Baseyard. This line would be adequate to serve for the expansion of the cargo facilities.

Future Non-potable Irrigation System. The existing areas which could be converted to non-potable irrigation includes the landscaping along Keolani Place, in the parking areas, along the frontal roadways and in the commuter facilities. In addition, the landscaping for the proposed Airport Access Roadway and the Kanaha Beach Park expansion would be applicable areas for non-potable irrigation.

Sewer System. The recommended changes to the Airport sewerage system under the preferred alternative are shown on Figure 2-8. All sewage would ultimately be conveyed to the Kahului Wastewater Treatment Plant. The recommended improvements identified on Figure 2-8 are briefly described below.

East-Side Facilities. Under the preferred alternative, a sewage collection system would be constructed to serve existing and proposed facilities on the East Ramp. This would include a gravity line along the eastern side of the apron and a sewer pump station east of Runway 20. This system would be connected to the Maui County sewer manhole north of Kanaha Beach Park via a new force main. When the new system is operable, the cesspools now serving the helicopter, general aviation, and other uses in this area would be abandoned and "closed"[6] pursuant to the State of Hawaii, Department of Health rules and regulations.

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[6] Typically, "closure" of a cesspool involves removal of the remaining waste, laboratory analysis of the waste and proper disposal of the waste depending on the laboratory results. Once this operation is completed the cesspool is filled.

Ground Transportation Subdivision Area. The existing 8-inch gravity sewer line is extended to serve the proposed extension of the ground transportation subdivision and the Keolani Place lease lots.

Stormwater Drainage System. Recommended improvements to the Airport's Storm Drainage System are shown on Figure 2-9. Relatively small changes are called for on the west side of Keolani Place to accommodate the proposed expansion of the ground transportation subdivision. Open-channel diversion ditches would also be needed on the north side of Runway 5-23 to carry runoff currently discharged into that area, away from the proposed transient aircraft parking apron. Runoff from the proposed Airport Access Road interchange would be directed toward the existing Kalialinui drainage channel.

If the proposed parallel runway is eventually built, a new drainage system for this runway would need to be constructed. There are several options which could be implemented to accommodate the increased runoff from the proposed parallel runway. These options include an ocean outlet, detention basins and a series of catch basins located between the runway and parallel taxiway which would be channeled into Kalialinui Gulch. The recommended plan calls for a drainage system to Kalialinui Gulch for handling runoff from the western portion (a third of the runway system), but adverse topography makes this impractical for runoff from the remainder of the parallel runway/taxiway system. Instead, storm runoff from those areas would be collected in catch basins and ditches and conveyed in a northerly direction toward the ocean or into detention basins. If detention basins are to be used, it would require a design which would not be an attraction to birds or other hazards to aviation. Due to the long range nature of this project, a final determination cannot be made at this time. As the need for a parallel runway becomes necessary, additional planning and design studies will be completed to determine the adequate drainage system. At that time, additional environmental documentation may be required to evaluate any environmental impacts of the new drainage system for the Phase III projects.

Electric Power System. The improvements that are recommended to the electrical power distribution system on the Airport are shown on Figure 2-10. Because the two 12.47 kV, 3-phase circuits that serve Kahului Airport have sufficient capacity for the additional loads imposed by the proposed facilities, most of the recommendations are for the rerouting and extension of existing power lines. The required changes are summarized below.

To accommodate proposed development east of Runway 2L-20R, the existing 12.47 kV and 4.16 kV overhead lines would be replaced by underground lines of the same capacity. The new lines would run along the new spine road proposed for this area, connecting to the existing power system at that road's intersection with Hana Highway. These underground 12.47 kV lines would consist of two separate feeders.

To accommodate the extension of present Runway 2L-20R and the new parallel runway, portions of the existing 23 kV, 12.47 kV and 69 kV overhead lines along Hana Highway would be placed underground and/or rerouted to be below the runway approach surfaces. Rerouting and/or undergrounding would also be needed to allow for the proposed realignment of a portion of Hana Highway northeast of the parallel runway. The interim helicopter apron will require the placement of utility lines underground.

Communication System. Recommended improvements to the communication network on the Airport are shown on Figure 2-10. The main telephone distribution system feeding Kahului Airport may require the addition of telephone cables to serve new facilities. Since the additional cables can take advantage of existing poles and ducts, the proposed projects should not incur costs for work on the main telephone distribution system. However, costs would be incurred for the following rerouting and extension of existing telephone lines to accommodate new and expanded development. Areas where additional facilities or modifications to existing facilities would be needed include:

- New underground lines serving the expanded ground transportation subdivision;
- New lines serving the proposed new development on the westside and eastside of Runway 2L-20R;
- Rerouting and/or undergrounding of existing lines along Hana Highway to avoid the runway approach surfaces and to accommodate the straightening of Hana Highway at the northwestern corner of the Airport; and
- Constructing new data communications lines to the relocated VORTAC (completed).
- Construction of the interim helicopter operating apron will require the rerouting or undergrounding of existing FAA lines.

2.3 PROJECT PHASING

The Proposed Project is planned to be completed, as per the 1993 Kahului Airport Master Plan, in three development phases: Phase 1 (1992-1996); Phase 2 (1997-2002); and Phase 3 (2003-2010). The phasing of the Proposed Projects are based on the need to accommodate forecast demand. The actual design for these improvements, especially those in Phases 2 and 3, will be initiated as actual aviation demand exceeds critical demand levels, typically 75 percent or greater of design capacity, and the necessary funding is available. Planned development actions within each phase are shown on Figures 2-11 to 2-13, respectively. Based on the revised aviation demand forecast the need for future demand-related facilities is shifted by six (6) years into the future. Therefore, if a facility was needed to accommodate a forecast demand in the year 2010, this demand has now shifted to the year 2016. Therefore, the new phasing for the Master Plan projects are as follows: Phase 1 will shift from "1992 to 1996" to "present to 2002;" Phase 2 will shift from "1996 to 2002" to "2003 to 2008;" and Phase 3 will shift from "2003 to 2010" to "2009 to 2016."

It should be noted that this change in forecast does not affect non-demand-related facilities, which are planned in the Proposed Project. These projects are planned to fulfill existing deficiencies at the Airport and not necessarily to accommodate future demand requirements as described in Section 2.1.2. Most of these non-demand-related projects are scheduled to be completed in Phase 1 of the Proposed Project and include: (i) the strengthening and extending Runway 2-20 and associated taxiways; (ii) new airline ground support

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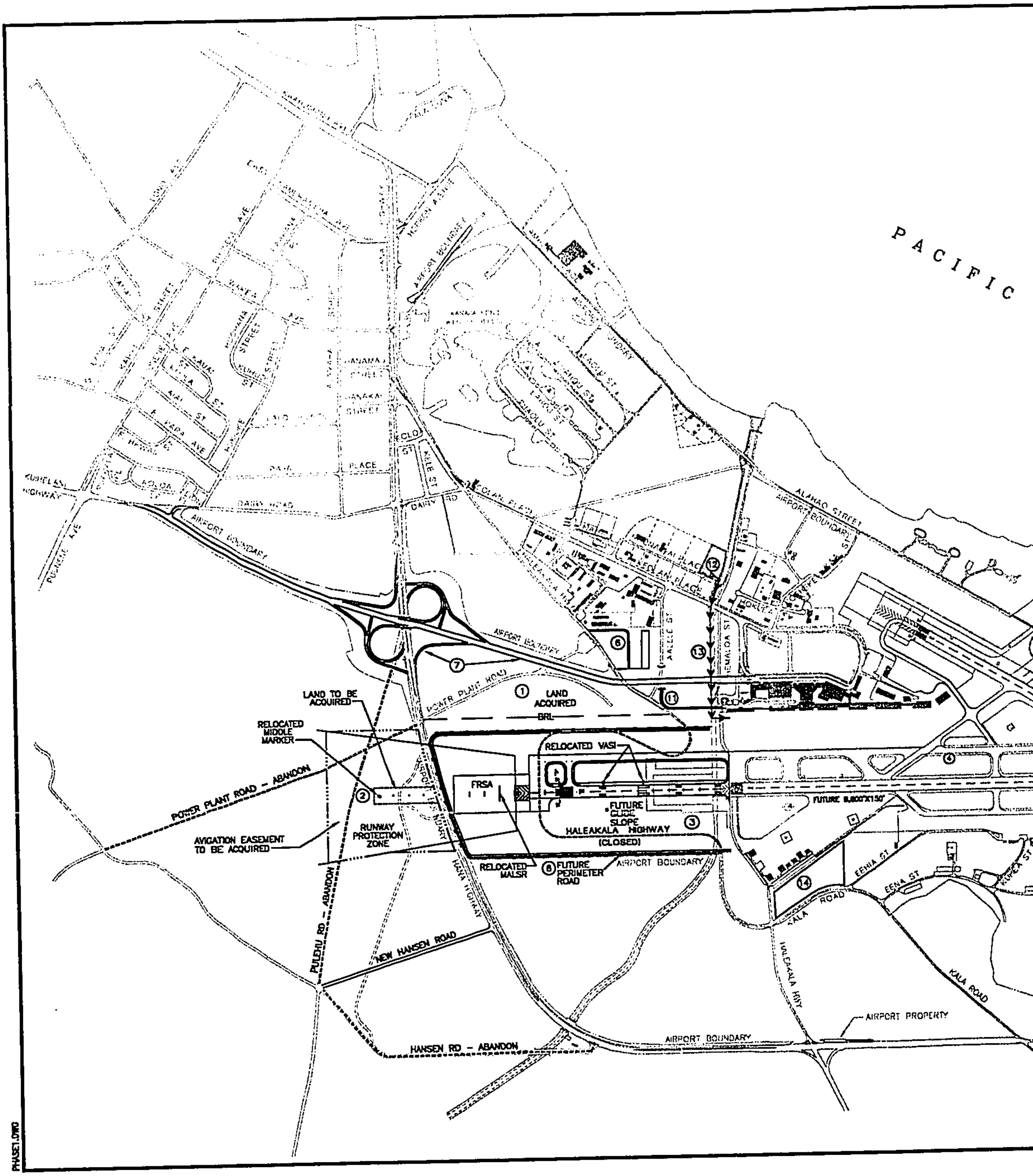
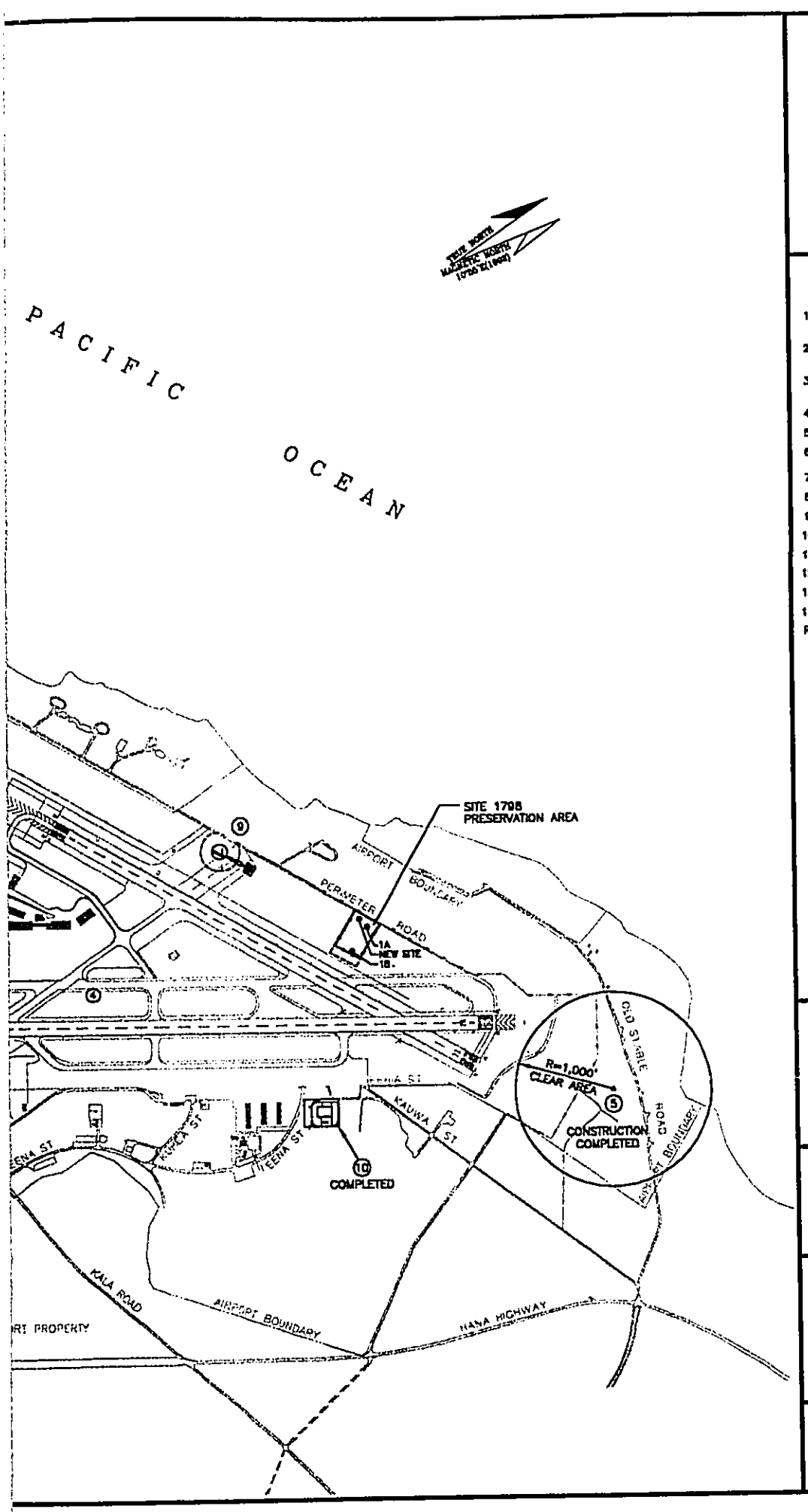

PACIFIC
LAND TO BE ACQUIRED
RELOCATED MIDDLE MARKER
POWER PLANT ROAD - ABANDON
AVIGATION EASEMENT TO BE ACQUIRED
RUNWAY PROTECTION ZONE
PULEHU RD - ABANDON
NEW HANSEN ROAD
HANSEN RD - ABANDON
LAND ACQUIRED
POWER PLANT ROAD
BRL
RELOCATED VASI
FRSA
FUTURE GLIDE SLOPE
HALEAKALA HIGHWAY (CLOSED)
RELOCATED MALSR
FUTURE PERIMETER ROAD
AIRPORT BOUNDARY
FUTURE 8,600'X150'
HANA HIGHWAY
HALEAKALA HWY
AIRPORT PROPERTY
KALA ROAD
EENA ST
ALAHAO STREET
AIRPORT BOUNDARY
DAIRY ROAD
DAIRY RD
KUIHELANI HIGHWAY
PUUNENE AVE
AALELE ST
KEOLANI PLACE
HOKU ST
PHASE1.DWG



DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND FOR FUTURE DEVELOPMENT

1 LAND FOR THE AIRPORT ACCESS ROAD AND INTERCHANGE (COMPLETED)
2 AVIGATION EASEMENT FOR PORTION OF RUNWAY 2 PROTECTION ZONE SOUTH OF HANA HIGHWAY
3 EXTEND RUNWAY 2-20 TO 9,600 FEET WITH ASSOCIATED TAXIWAYS AND RELOCATE NAVAIDS
4 REPAVE AND STRENGTHEN EXISTING RUNWAY 2-20
5 RELOCATE VORTAC (CONSTRUCTION COMPLETED)
6 CONSTRUCT CARGO FACILITIES INCLUDING ACCESS ROAD
7 AIRPORT ACCESS ROAD AND INTERCHANGE
8 PERIMETER/SERVICE ROAD AND FENCING
9 ARFF TRAINING FACILITY (UNDER DESIGN)
10 ARFF FACILITY (COMPLETED)
11 POST OFFICE RAMP ACCESS ROAD
12 BULK FUEL STORAGE TANKS
13 UNDERGROUND FUEL PIPELINE
14 INTERIM HELICOPTER FACILITY
RSA - FUTURE RUNWAY SAFETY AREA

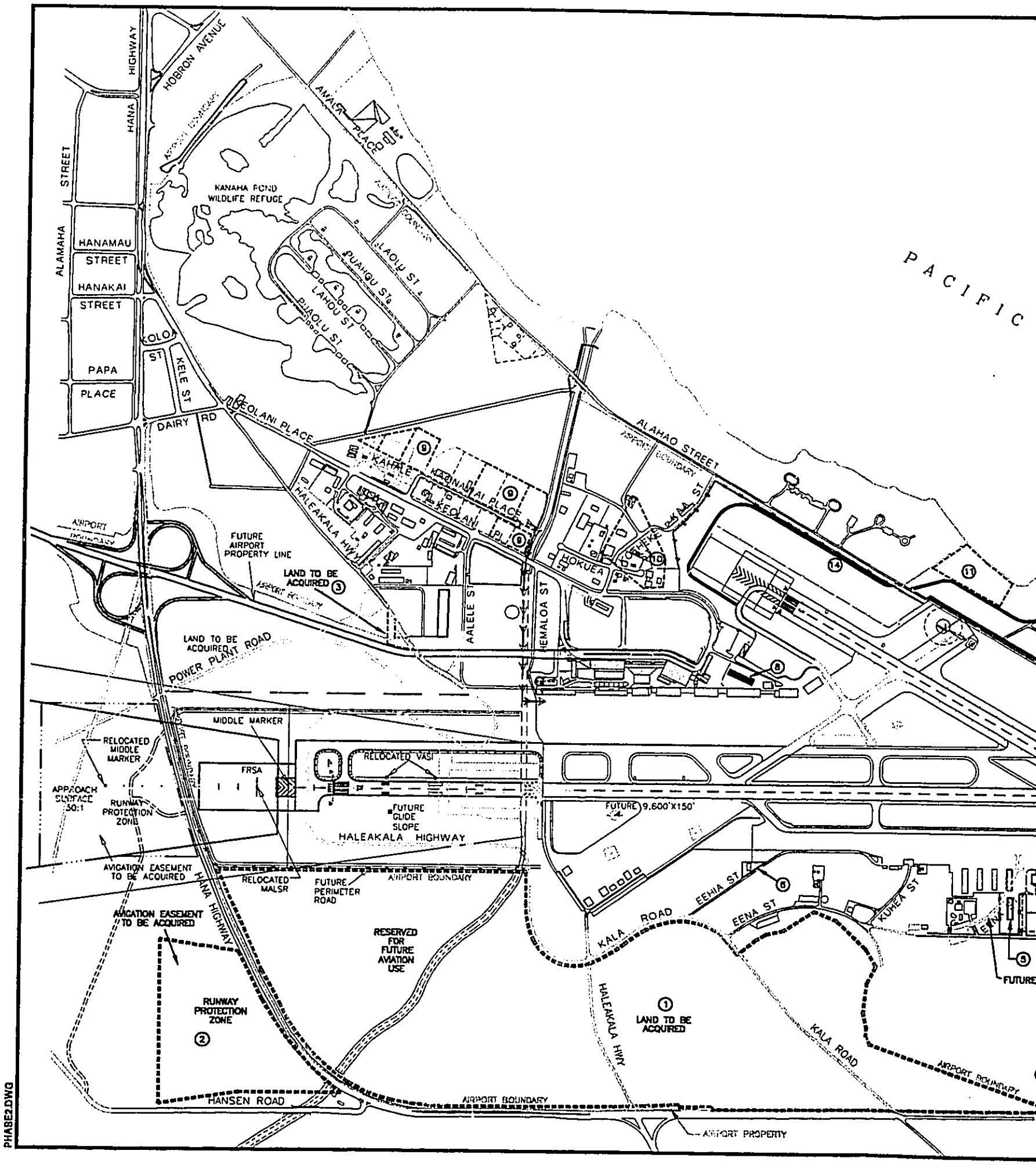
0 500 1000 1500 2000
GRAPHIC SCALE IN FEET

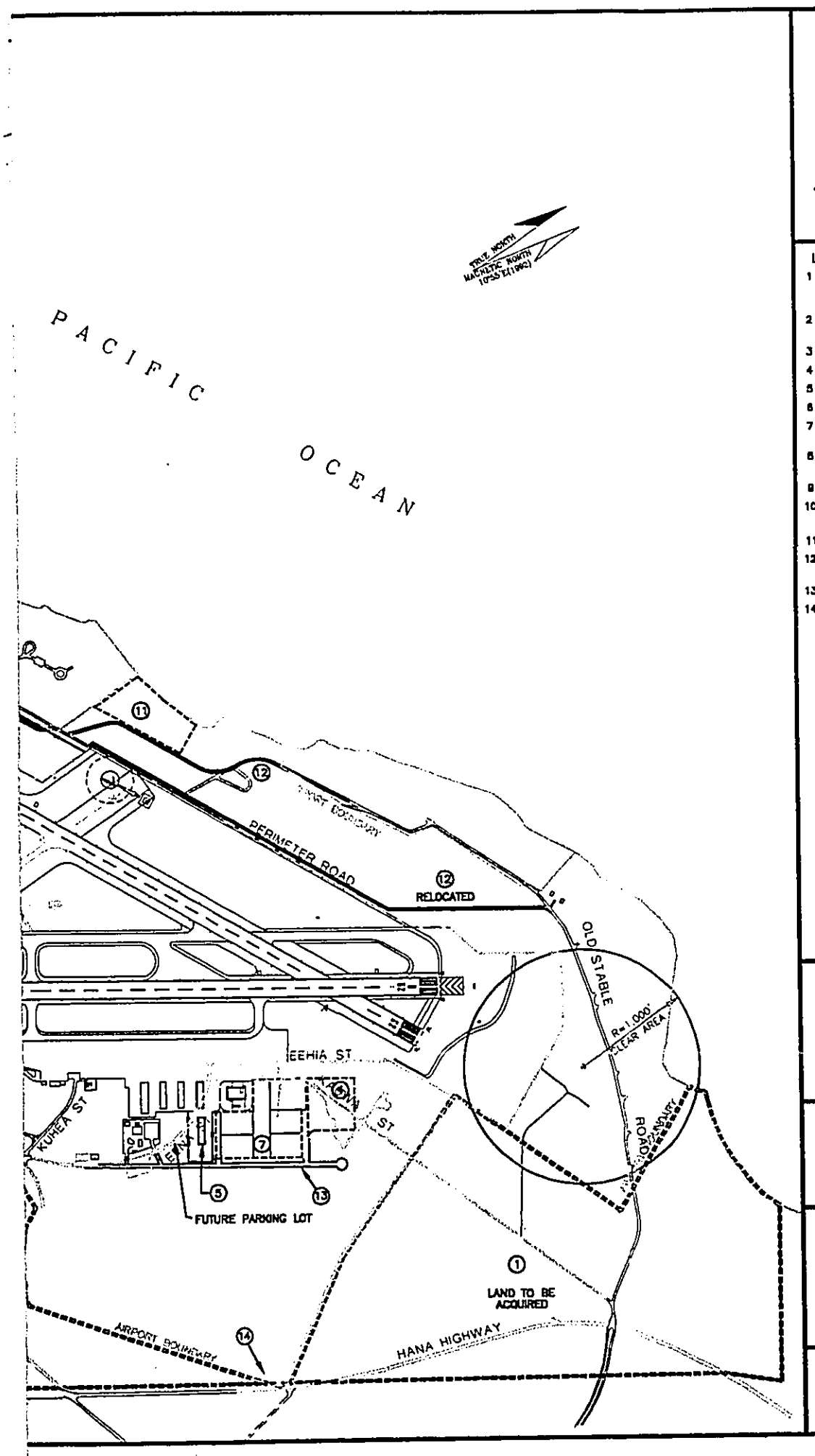
Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED PHASE 1 DEVELOPMENTS

DATE	FIGURE
FEBRUARY, 1997	2-11


HANA HIGHWAY
HOBRON AVENUE
AMALA PLACE
ALAMAHA STREET
HANAMAU STREET
HANAKAI STREET
PAPA PLACE
OLO ST
KELE ST
DAIRY RD
MOOLANI PLACE
KANAHA POND WILDLIFE REFUGE
PUAHOU ST
LAOLU ST
LAHOU ST
PUAOLU ST
PACIFIC
ALAHAO STREET
KAHALE PLACE
KEOLANI PL
HALEAKALA HWY
AALELE ST
HEMALOA ST
HOKUEA
FUTURE AIRPORT PROPERTY LINE
LAND TO BE ACQUIRED
POWER PLANT ROAD
MIDDLE MARKER
RELOCATED MIDDLE MARKER
APPROACH SURFACE 50:1
RUNWAY PROTECTION ZONE
FRSA
RELOCATED VASI
FUTURE GLIDE SLOPE
HALEAKALA HIGHWAY
FUTURE 9,600'X150'
AVIGATION EASEMENT TO BE ACQUIRED
RELOCATED MALSR
FUTURE PERIMETER ROAD
AIRPORT BOUNDARY
RESERVED FOR FUTURE AVIATION USE
KALA ROAD
EEHIA ST
EENA ST
KUHEA ST
HANSEN ROAD
AIRPORT PROPERTY
PHABE2.DWG



DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND FOR FUTURE DEVELOPMENT

1. LAND FOR NEW PARALLEL RUNWAY AND RUNWAY PROTECTION ZONES AND REALIGNMENT OF HANA HIGHWAY
2. AVIGATION EASEMENT FOR RUNWAY PROTECTION ZONE SOUTH OF HANA HIGHWAY
3. LAND FOR CARGO EXPANSION
4. CONSTRUCT NEW CARGO FACILITY ON EAST RAMP
5. ADDITIONAL T-HANGARS
6. NEW SCENIC AIR TOUR FACILITIES
7. COMMERCIAL AVIATION LEASE LOTS AT EAST RAMP AREA
8. RELOCATE AIRLINE GROUND SUPPORT EQUIPMENT FACILITY
9. EXPAND GROUND TRANSPORTATION FACILITIES
10. RELOCATE GROUND TRANSPORTATION FACILITIES IN RUNWAY 8 RUNWAY PROTECTION ZONE
11. EXPAND KANAHA BEACH PARK
12. ROADWAY TO CONNECT ALAHAO STREET WITH OLD STABLE ROAD (EMERGENCY ONLY)
13. NORTH SECTION OF EAST RAMP ACCESS ROAD
14. EXTEND PERIMETER SERVICE ROAD AND FENCING AROUND NORTHWEST SIDE OF AIRPORT

0 500 1000 1500
GRAPHIC SCALE IN FEET

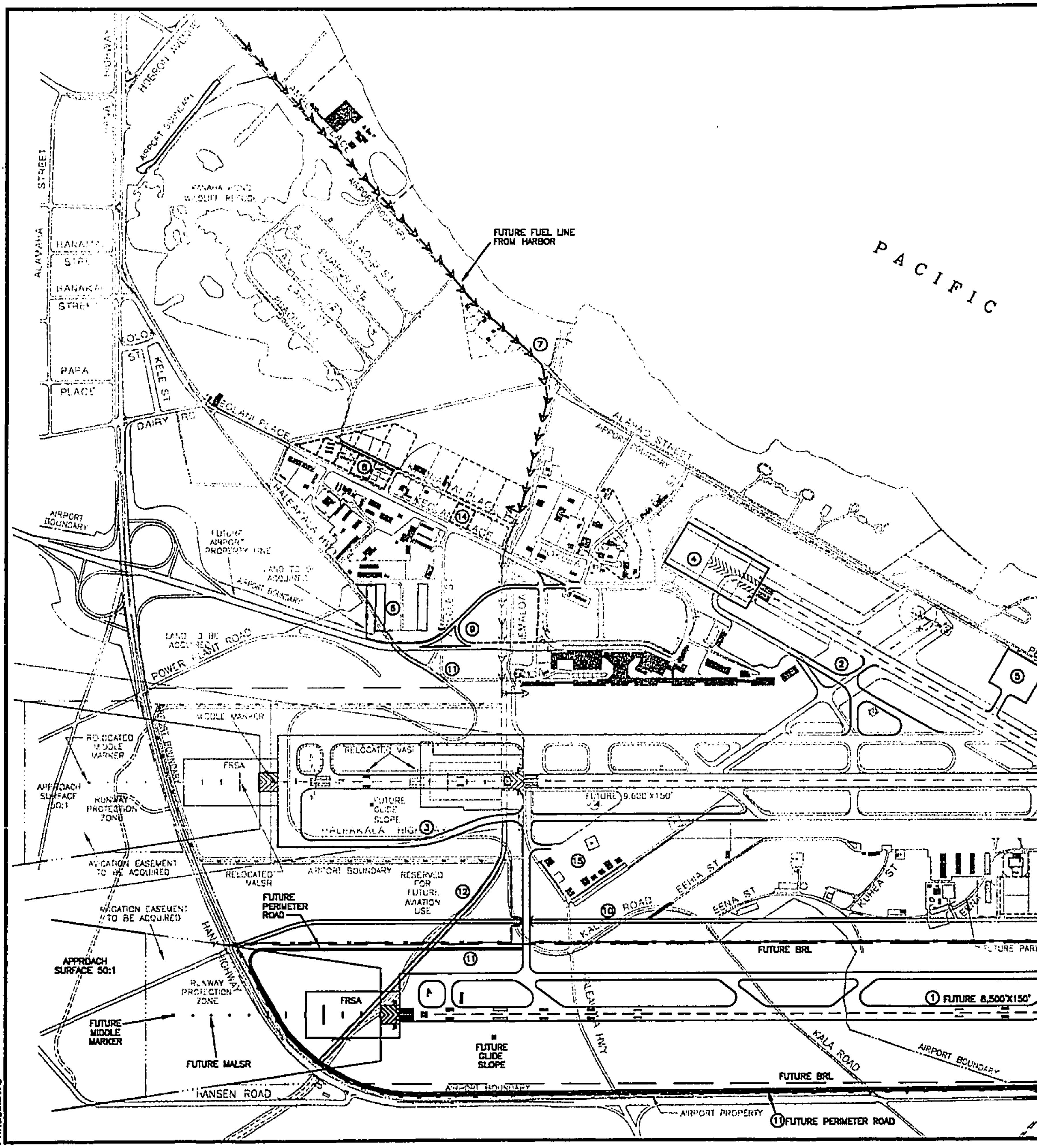
SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

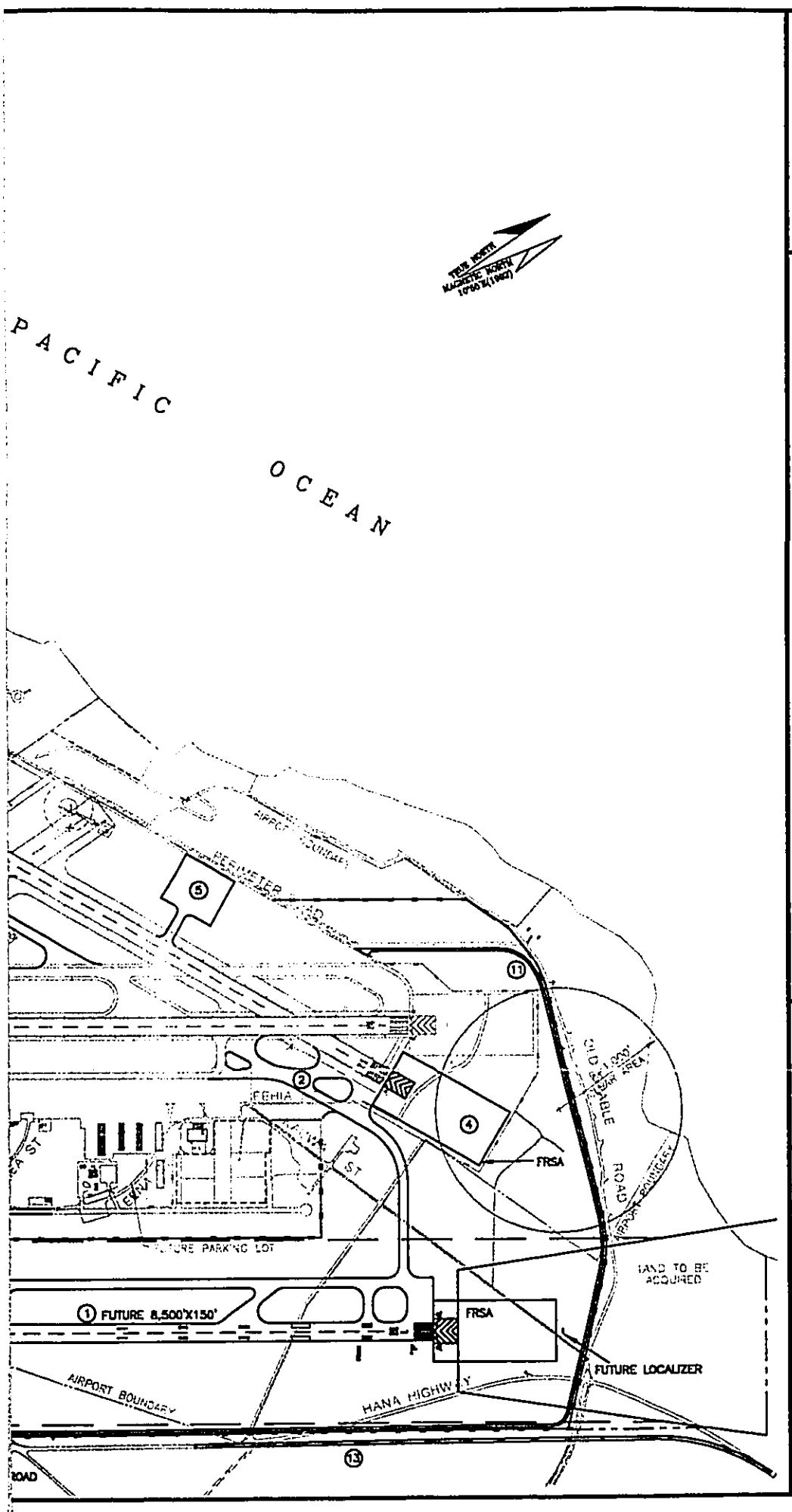
PROPOSED PHASE 2 DEVELOPMENTS

DATE	FIGURE
FEBRUARY, 1997	2-12



FUTURE FUEL LINE FROM HARBOR
PACIFIC
ALAVAHA STREET
HANAKAI STREET
PAPA PLACE
DAIRY RD
KELE ST
KEOLANI PLACE
HALEAKALA HWY
ALAHAO STREET
AIRPORT BOUNDARY
FUTURE AIRPORT PROPERTY LINE
LAND TO BE ACQUIRED
POWER PLANT ROAD
MIDDLE MARKER
RELOCATED MIDDLE MARKER
APPROACH SURFACE 50:1
RUNWAY PROTECTION ZONE
FRSA
RELOCATED VASI
FUTURE GLIDE SLOPE
FUTURE 9,600'X150'
AVIGATION EASEMENT TO BE ACQUIRED
RELOCATED VALSR
RESERVED FOR FUTURE AVIATION USE
FUTURE PERIMETER ROAD
KALA ROAD
EEHIA ST
EENA ST
KUHEA ST
FUTURE BRL
FUTURE MIDDLE MARKER
FUTURE MALSR
FUTURE 8,500'X150'
HANSEN ROAD
AIRPORT PROPERTY
FUTURE PERIMETER ROAD

PHASE3.DWG



DEPARTMENT OF TRANSPORTATION · STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND FOR FUTURE DEVELOPMENT

1. CONSTRUCT 8,500-FOOT PARALLEL RUNWAY 3R-20L AND TAXIWAYS AND INSTALL NAVAIDS
2. EXTEND PARALLEL TAXIWAY FOR RUNWAY 8-23
3. EXTEND EAST SIDE PARALLEL TAXIWAY FOR RUNWAY 3L-20R
4. WIDEN RUNWAY SAFETY AREAS FOR RUNWAY 8-23.
5. CONSTRUCT TRANSIENT AIRCRAFT PARKING APRON *
6. CONSTRUCT ADDITIONAL AIR CARGO FACILITIES ON WEST SIDE
7. FUEL LINE FROM HARBOR
8. EXPAND NEW GROUND TRANSPORTATION FACILITIES
9. EXPAND PASSENGER TERMINAL PARKING LOT
10. CONSTRUCT EAST RAMP ACCESS ROAD FROM HANA HIGHWAY
11. CONSTRUCT PERIMETER/SERVICE ROAD AND FENCING AROUND NEW RUNWAY 3R-20L
12. RE-CHANNEL KALIALINUI GULCH FOR PARALLEL RUNWAY
13. REALIGN HANA HIGHWAY AT NORTHEAST END OF AIRPORT
14. PROVIDE LEASE LOT FOR FLIGHT KITCHEN
15. COMMERCIAL AVIATION LEASE LOTS

0 500 1000 1500
GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN
* (PER MITIGATION MEASURE)

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED PHASE 3 DEVELOPMENTS

DATE	FIGURE
JULY, 1997	2-13

equipment maintenance facility; (iii) installation of new fuel storage and loading facilities; and (iv) the interim relocation of the helicopter apron.

The proposed airport improvements, with the exception of the aircraft fuel facilities, will be funded by aviation funds through the FAA and State Airport funds. The State airport system is funded through a special revenue fund that has income generated from fees on airline tickets, commercial aircraft landing at the State's airports, airport concessionaires rents, and other aviation user fees. These funds are to be used for airport purposes, as stated in the Airport and Airway Improvement Act of 1982, as amended, 49 USC 47107 (b). The Act states that, "*all revenues generated by the airport, if it is a public airport, and any local taxes on aviation fuel (other than taxes in effect on the date of the enactment of the Airport and Airway Safety and Capacity Expansion Act of 1987) will be expended for the capital or operating costs of the airport, the local airport system, or other local facilities which are owned or operated by the owner or operator of the airport and directly and substantially related to the actual air transportation of passengers or property; ....*"

To finance the New Airport Access Roadway Project, the State may be applying for federal ISTEA funds from the FHWA. If ISTEA funds are used, the HDOT will provide the matching State funds for the Airport Access Roadway Project. The Airport Access Roadway Project, includes the Airport Access Roadway proper, the interchange, and the relocation of Hansen Road. The relocation of Hansen Road will require negotiations with the County of Maui and A&B Properties. The Airport Access Roadway will be from the intersection of Dairy Road/Kuihelani Highway/Puunene Ave. to the internal Airport Terminal Road[7] (see Figure 2-6). The aircraft fueling facilities will be funded by the Hawaii Fuel Facilities Corporation (HFFC). Those facilities which are eligible for Federal funds will typically be funded at a 75 to 80 percent level, with the remaining 20 to 25 percent being State matching funds.

The proposed Phase 1 improvements and their respective estimated costs from the 1993 Master Plan are presented in Table 2-2. The following Phase 1 projects have been or are being completed: (i) acquisition of land for the Airport Access Road and interchange; (ii) relocation of the VORTAC; (iii) construction of the ARFF training facility (under design); and (iv) construction of the ARFF station.

The proposed Phase 2 improvements and their respective estimated costs from the 1993 Master Plan are presented in Table 2-3. The proposed Phase 3 improvements and their respective estimated costs from the 1993 Master Plan are presented in Table 2-4.

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[7] The terminus of the FHWA funding would be at the: (i) tie-in of the new Airport Access Roadway and the existing airport circulation road; and (ii) prior to the intersection of Kuihelani Hwy/ Puunene Ave./ Dairy Road.

Table 2-2

COST ESTIMATES FOR PROPOSED PROJECT - PHASE 1

PROJECT DESCRIPTION	ESTIMATED COSTS (dollars)
LAND ACQUISITION	
Acquire avigation easement for portion of Runway 2 RPZ south of Hana Highway	1,440,000
Acquire land on south side of Hana Highway for relocated Runway 2-20 NAVAIDS	650,000
AIRFIELD	
Extend Runway 2-20 to 9,600 feet, construct associated west side taxiways, and relocate NAVAIDS.	37,900,000
Repave and strengthen existing Runway 2-20 and taxiways	10,000,000
TERMINAL AREA COMPLEX	
Construct new west side air cargo facilities	7,011,000
AIRPORT SUPPORT AND INFRASTRUCTURE	
Construct Airport Access Road and Interchange	49,930,000
Construct perimeter/service road and fencing around extended Runway 2-20	1,300,000
Construct Post Office ramp access road	200,000
Construct bulk fuel storage facility and connect to apron hydrant system	1,366,000
Relocate helicopter operation apron (interim helicopter facility)	Undetermined
UTILITY IMPROVEMENTS including:	
Construct East Ramp sewer system	2,817,000
Install underground communications and electrical utilities along Hana Highway	1,400,000
Install non-potable water system	3,400,000

Source: 1993 Kahului Airport Master Plan: [*Capital Improvement Program for Hawaii State Airports & Airfields: Preliminary Budget, FY 1994-1999* (M&E Pacific, August 24, 1992); *Kahului Airport Development Plan* (Project Managers Hawaii and KFC Airport, Inc. June 1988 and March 1989, Revision 1); *Extension of Runway 2-20 and Taxiway and the Parallel Runway at Kahului Airport*, (R.T. Tanaka Engineers, Inc., February 1991); and estimates from Belt Collins Associates.]

Table 2-3
COST ESTIMATES FOR PROPOSED PROJECT - PHASE 2

PROJECT DESCRIPTION	ESTIMATED COSTS (dollars)
LAND ACQUISITION	
Acquire land for new parallel runway and runway protection zones and realignment of Hana Highway	7,490,000
Acquire avigation easement for runway protection zone for parallel runway south of Hana Highway	1,260,000
Acquire land for west side cargo area expansion	100,000
TERMINAL AREA COMPLEX	
Improve commercial aviation lease lots at East Ramp area	5,510,000
Construct additional cargo facility and related apron improvements	10,065,000
Construct additional general aviation T-hangars	400,000
New air taxi (scenic tour) facilities	1,278,000
Relocate airline ground support equipment maintenance facility	800,000
AIRPORT SUPPORT AND INFRASTRUCTURE	
Expand ground transportation facilities/relocate Ground Transportation Subdivision	925,000
Construct roadway to connect Alahao Street with Old Stable Road	5,111,000
Construct north section of East Ramp access road	1,020,000
Extend perimeter/service road and fencing around northwest side of Airport	570,000
Expand Kanaha Beach Park	3,868,000
Utility Improvements	Undetermined

Source: 1993 Kahului Airport Master Plan: [*Capital Improvement Program for Hawaii State Airports & Airfields: Preliminary Budget, FY 1994-1999* (M&E Pacific, August 24, 1992); *Kahului Airport Development Plan* (Project Managers Hawaii and KFC Airport, Inc. June 1988 and March 1989, Revision 1); *Extension of Runway 2-20 and Taxiway and the Parallel Runway at Kahului Airport*, (R.T. Tanaka Engineers, Inc., February 1991); and estimates from Belt Collins Associates.]

Table 2-4

COST ESTIMATES FOR PROPOSED PROJECT - PHASE 3

PROJECT DESCRIPTION	ESTIMATED COSTS (dollars)
AIRFIELD	
Construct 8,500 parallel Runway 2R-20L, taxiways, NAVAIDS, drainage improvements	107,340,000
Extend parallel taxiway for Runway 5-23	2,400,000
Extend east side parallel taxiway for Runway 2L-20R	6,000,000
Upgrade of RSAs for Runway 5-23	500,000
Relocate helicopter facilities	10,800,000[1]
TERMINAL AREA COMPLEX	
Construct transient aircraft parking apron	18,355,000
Expand west-side air cargo facilities	1,700,000
AIRPORT SUPPORT AND INFRASTRUCTURE	
Expand ground transportation subdivision	640,000
Construct East Ramp access road from Hana Highway	4,080,000
Construct perimeter/service road and fencing around new Runway 2R-20L	3,200,000
Realign Hana Highway at northeast end of Airport	3,400,000
Provide lease lot for flight kitchen	653,000
Provide additional commercial lease lots	Undetermined
Expand Passenger Terminal Parking Lot	Undetermined
Utility Improvements	Undetermined
Construct fuel pipeline from Kahului Harbor to bulk fuel storage	Undetermined

Source: 1993 Kahului Airport Master Plan: [*Capital Improvement Program for Hawaii State Airports & Airfields: Preliminary Budget, FY 1994-1999* (M&E Pacific, August 24, 1992); *Kahului Airport Development Plan* (Project Managers Hawaii and KFC Airport, Inc. June 1988 and March 1989, Revision 1); *Extension of Runway 2-20 and Taxiway and the Parallel Runway at Kahului Airport*, (R.T. Tanaka Engineers, Inc., February 1991); and estimates from Belt Collins Associates.]

1. The cost for the relocation of the helicopter operators to an off-airport site, will be negotiated at the time of relocation.

The analysis of the long-range projects (Phase 3 of the Master Plan) will be performed to the extent practical and feasible. Because these projects are beyond the year 2009 time frame, the full impacts of the larger projects in Phase 3 -- namely, the parallel runway and associated facilities, relocation of helicopters off-airport, the fuel supply pipeline from Kahului Harbor to the bulk fuel tanks, and transient apron -- may not be known and therefore cannot be properly assessed at this time. Therefore, this EIS will discuss the potential significant impacts of the long-range (Phase 3) Proposed Projects to the extent practical and feasible. In addition, the plan reserves space for potential terminal expansion and passenger parking facilities beyond Phase 3.

2.4 PROJECT SETTING

Kahului Airport is located on the north shore of the island of Maui, between the West Maui mountains and Haleakala Crater, about two and one-half miles east of the town and port of Kahului. Other residential and commercial areas in the vicinity of the Airport are Wailuku, Paia, Puunene and Spreckelsville (see Figures 2-14 and 2-15). The Airport is located on the eastern side of the coastal plain on which the commercial center of Maui is located and has been one of its key elements for nearly five decades.

Kahului Airport was first constructed as the U.S. Naval Air Station - Kahului (NASKA) in 1942, and became Maui's commercial airport in 1947. However, full commercial airline operation did not begin until mid-1952. In 1958, the U. S. Government transferred the Naval Air Station to the Territory of Hawaii at no cost. The land is owned in fee by the State and there are no Ceded Lands within the Airport's boundary.[8]

The Airport boundary presently encompasses approximately 1,447 acres, including Kanaha Pond. Kanaha Pond has an area of approximately 235 acres, and is designated a State Wildlife Sanctuary and National Natural Landmark. The Airport is bordered to the north by the Pacific Ocean, to the west by the light industrial areas of Kahului, and to the south and east by sugar cane fields. Kanaha Beach Park and the Spreckelsville Beach Lot Properties occupy ocean frontage along the Airport's northern boundary. At one time the Airport encompassed over 1,500 acres, but in 1968, the Department of Transportation (HDOT) transferred, with FAA approval, approximately 66 acres to the County of Maui for use as Kanaha Beach Park. Another 24 acres was transferred in 1969 from HDOT, with FAA approval, to the County of Maui for the Kahului-Wailuku Wastewater Treatment Plant. Recently, an additional 43 acres of Airport property, neighboring the Kahului-Wailuku Wastewater Treatment Plant, was turned over to the Department of Land and Natural Resources (DLNR). In addition, HDOT reached an agreement with DLNR in 1994 delineating the boundary of Kanaha Pond Wildlife Sanctuary (KPWS), establishing the size of KPWS at approximately 235 acres. The boundary of KPWS is shown on Figure 2-15.

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[8] The 1986 Legislative Auditor's report states that there are Ceded Lands within the Kahului Airport boundary. However, further research by HDOT-AIR has shown that there are no Ceded Lands within the Airport's boundary.

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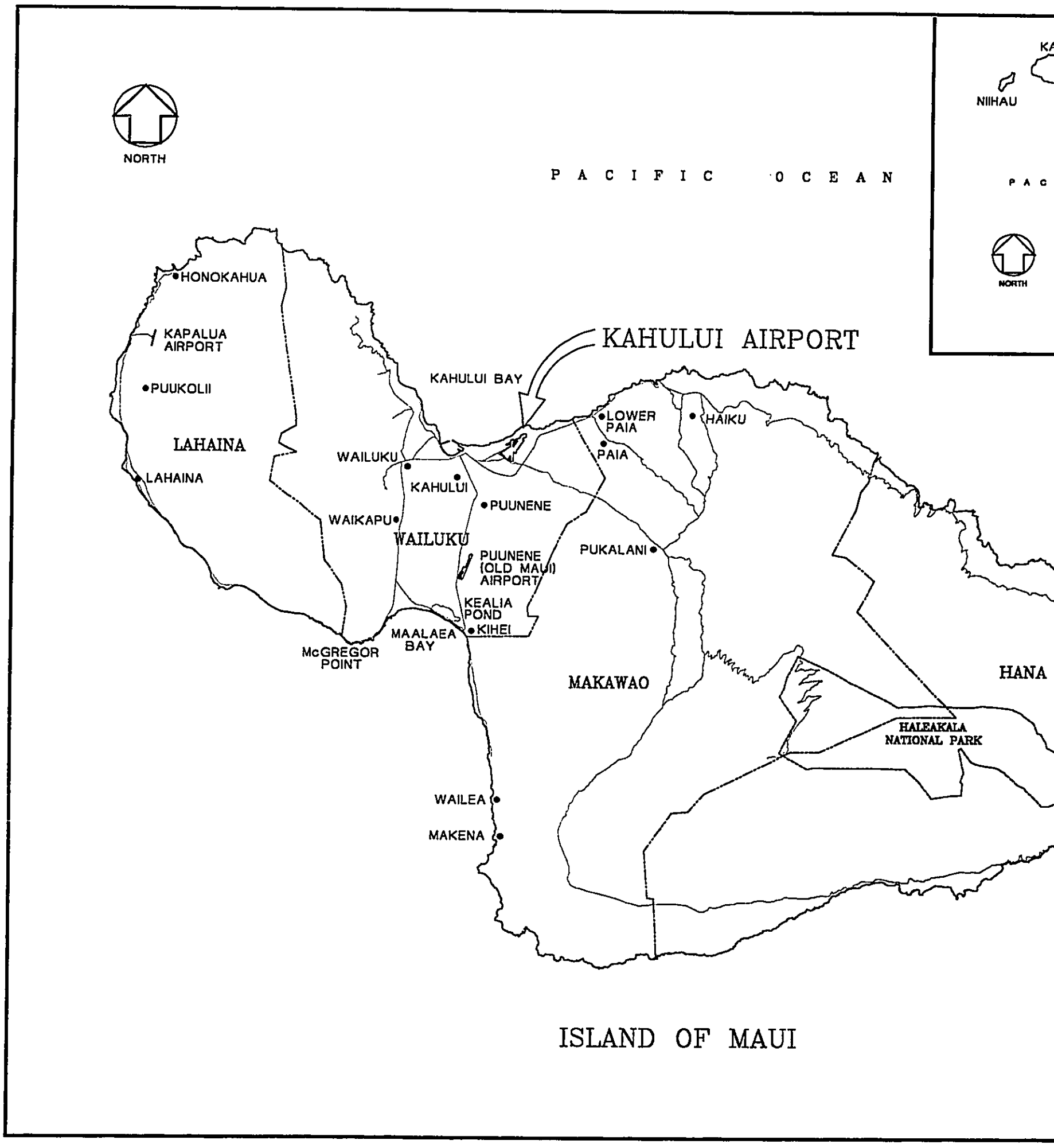
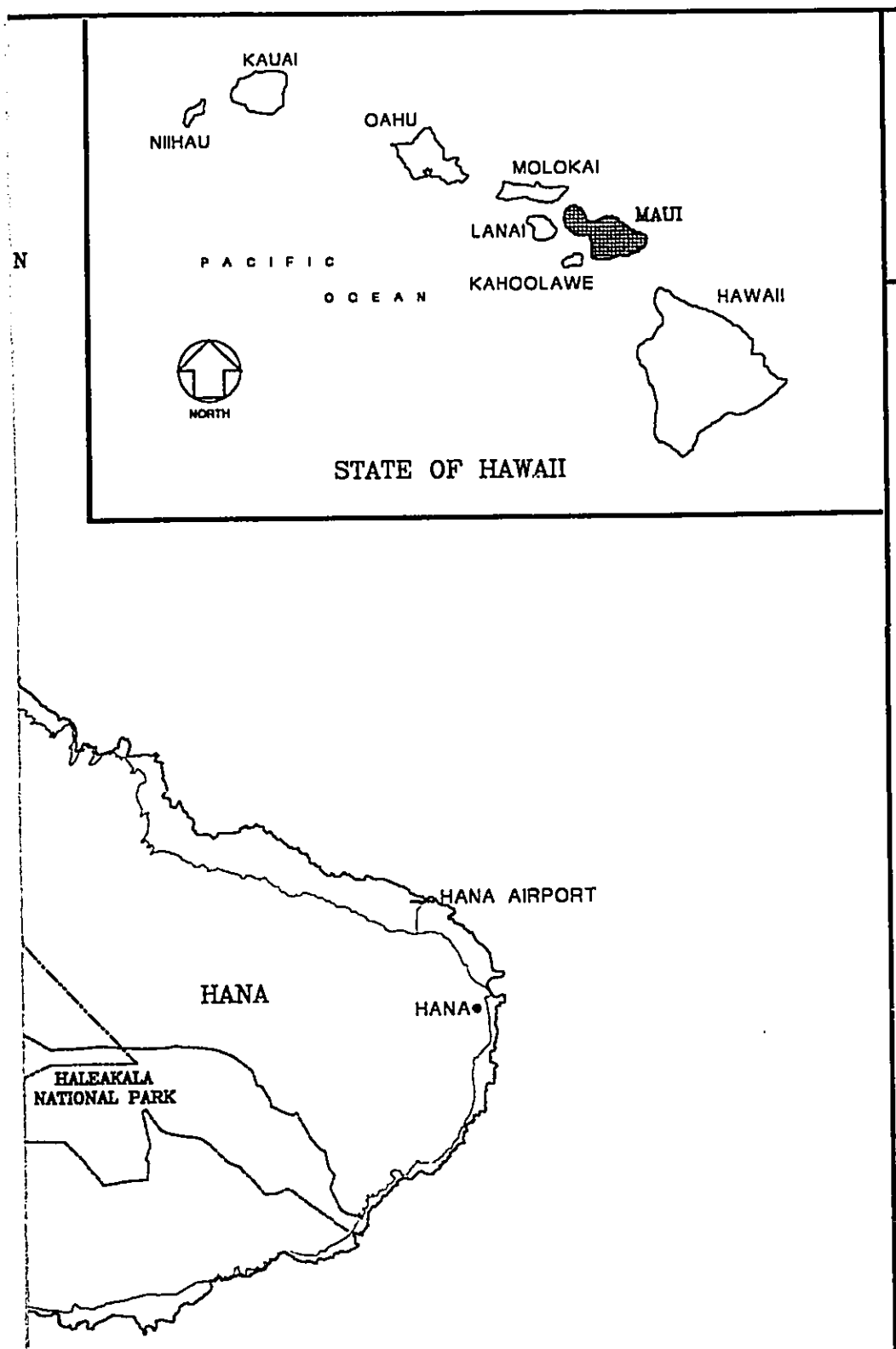

NORTH
P A C I F I C O C E A N
HONOKAHUA
KAPALUA AIRPORT
PUUKOLII
LAHAINA
LAHAINA
KAHULUI AIRPORT
KAHULUI BAY
WAILUKU
KAHULUI
PUUNENE
WAIKAPU
WAILUKU
PUUNENE (OLD MAUI) AIRPORT
KEALIA POND
KIHEI
MAALAEA BAY
McGREGOR POINT
LOWER PAIA
PAIA
HAIKU
PUKALANI
MAKAWAO
HANA
HALEAKALA NATIONAL PARK
WAILEA
MAKENA
NIIHAU
NORTH
ISLAND OF MAUI



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

DISTRICT BOUNDARY

HALEAKALA NATIONAL PARK BOUNDARY

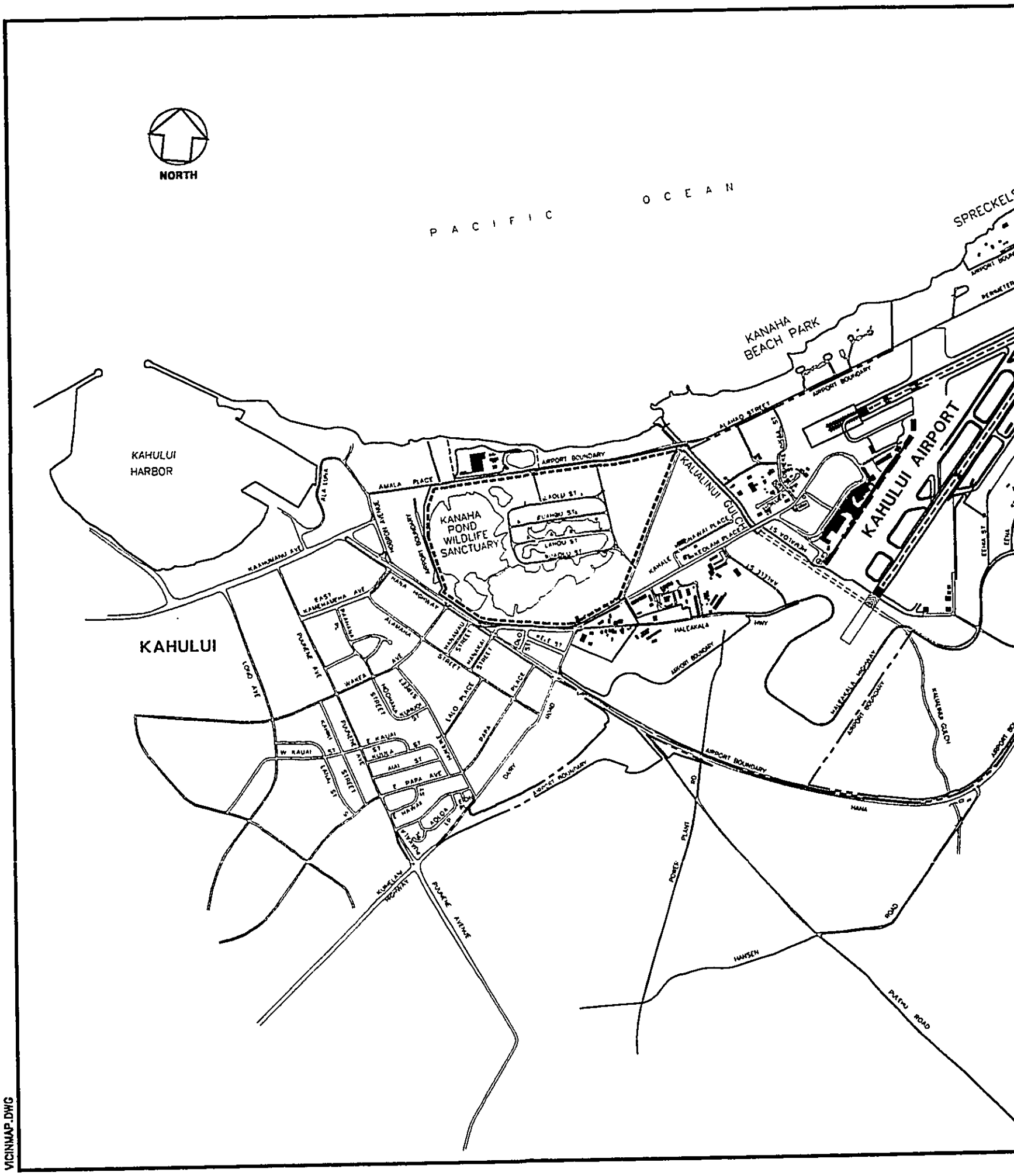
0 1 2 3 4 5 6
GRAPHIC SCALE IN MILES

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

LOCATION MAP

DATE	FIGURE
JULY, 1997	2-14



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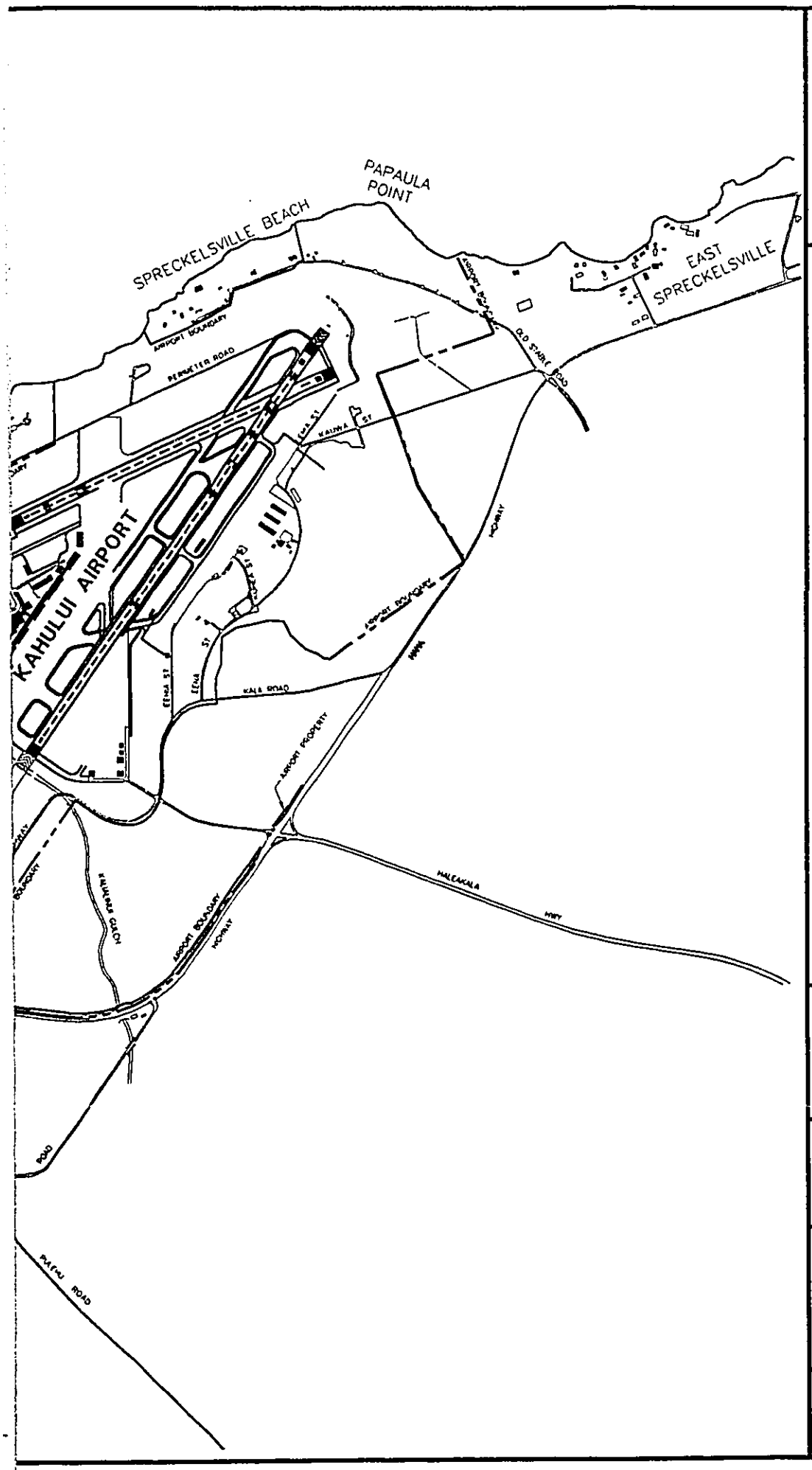

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

---------- KANAHA POND WILDLIFE SANCTUARY BOUNDARY

— - - — AIRPORT BOUNDARY

0 1000 2000 3000
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

VICINITY MAP

DATE	FIGURE
JANUARY, 1997	2-15

2.5 EXISTING CONDITIONS

2.5.1 RUNWAYS

Kahului Airport has two operating runways: Runway 2-20 and Runway 5-23; and one closed runway: Runway 17-35. Their physical characteristics are described below.

Runway 2-20. Runway 2-20 is 7,000 feet long, 150 feet wide, and has 35-foot-wide stabilized asphaltic concrete shoulders (see Figure 2-16). The runway safety area shown in the FAA approved Airport Certification Manual (dated May 7, 1997) is 500 feet wide and extends 1,000 feet beyond both ends of Runway 2-20.[9] The ends of Runways 2 and 20 are 54 feet and 12 feet above mean sea level, respectively. The average runway slope from southwest to northeast is 0.60 percent. The runway is painted with all-weather precision markings.

According to the February 1991 edition of the FAA Airport Master Record, the generalized gross load pavement strength for unlimited numbers of operations is 130,000 pounds for single-wheel aircraft and 170,000 pounds for dual-wheel aircraft.

The FAA's published pavement strength data sheets for the runway (WE Form 5335-1, dated July 9, 1992) indicate the following gross load capacities (design gross takeoff weight) for specific aircraft currently using the runway:

Aircraft	Design Gross Takeoff Weight[10]	Main Landing Gear Configuration
B747-100	550,000 pounds	Double Dual Tandem
DC10-10	360,000 pounds	Dual Tandem
DC10-30	460,000 pounds	Dual Tandem (additional center landing gear)
L1011-100	360,000 pounds	Dual Tandem

However, the maximum *allowable* gross takeoff weights of these aircraft exceeds the pavement strengths by a considerable amount. Signs of pavement distress have been observed on portions of Runway 2-20. Therefore, HDOT-AIR is currently limiting DC-10-10 and DC-10-30 aircraft to gross takeoff weights of 405,000 pounds and 430,000 pounds, respectively (Section 11.0, Reference 5).

Runway 5-23. Runway 5-23 is 4,990 feet long and 150 feet wide. Because portions of it cross an abandoned intersecting runway (old Runway 17-35), the width of its asphaltic concrete shoulders varies; however, in all instances they are at least 35 feet wide. The runway safety area shown in the Airport

---

[9] The area off the south end of Runway 2 has been designed to meet the full FAA design standards for runway safety areas.

[10] The runway pavement design is a function of many variables, including the life cycle of the pavement, gross weight of the design aircraft and the estimated annual aircraft departures.

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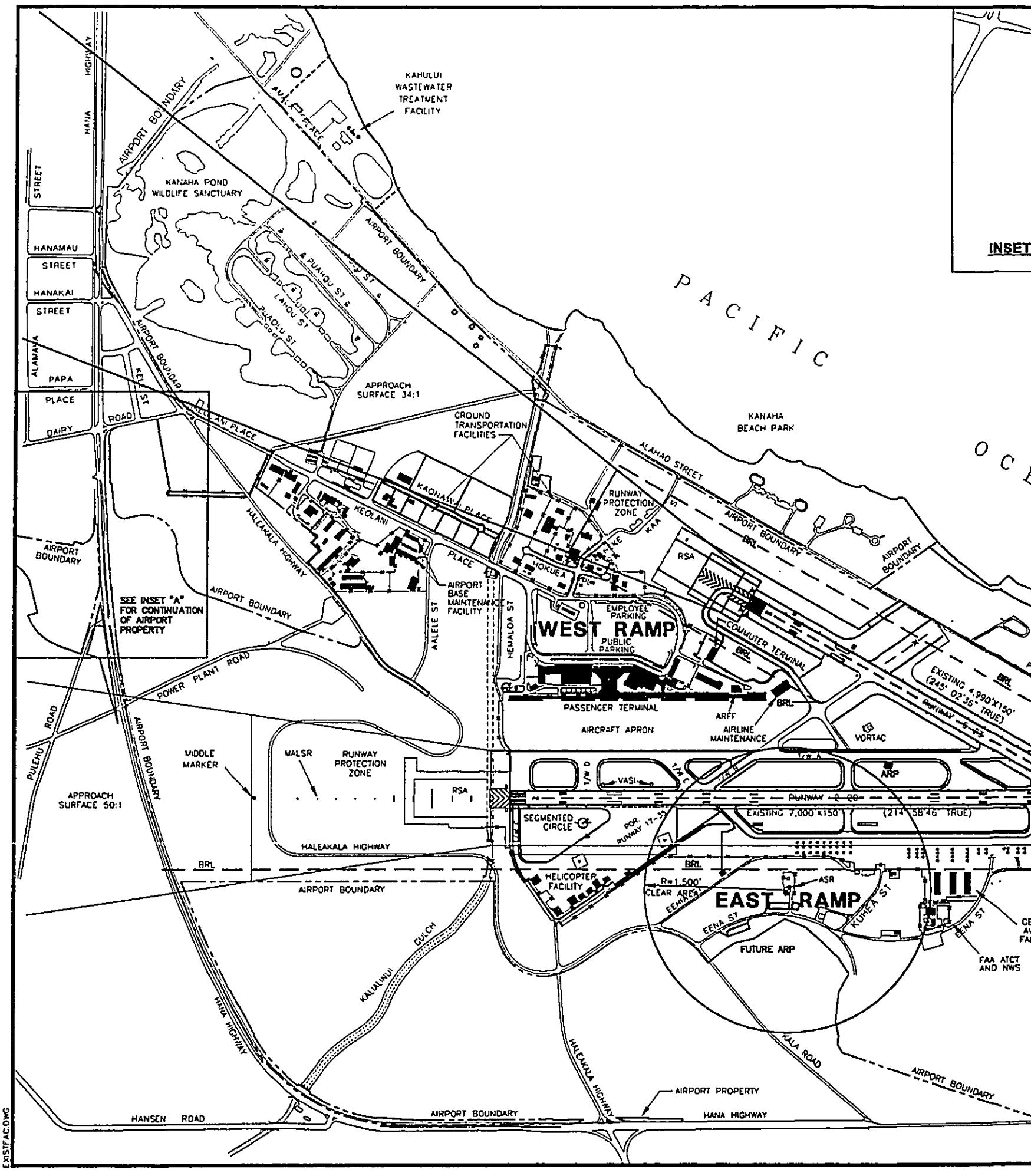
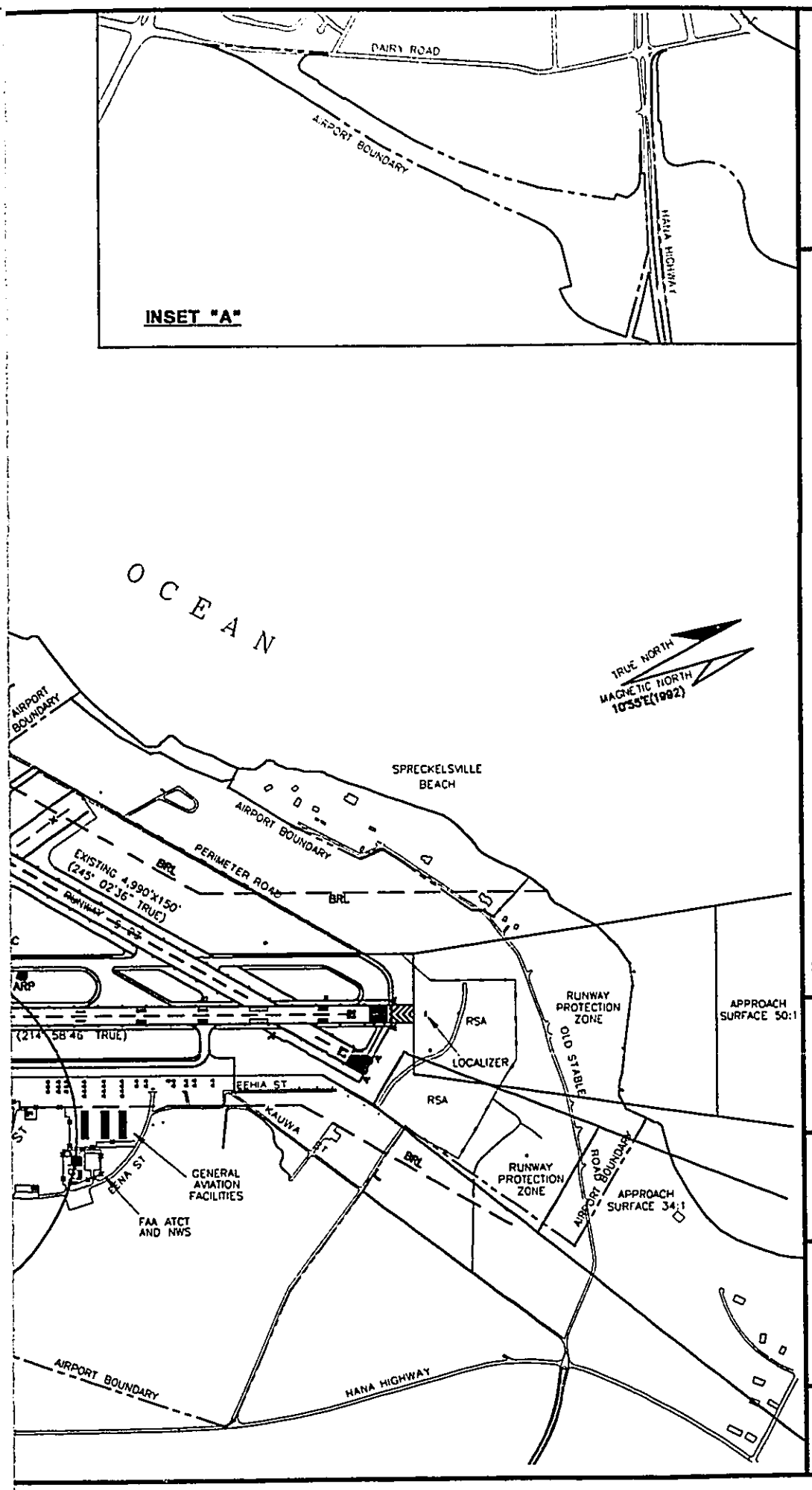


EXISTFAC.DWG



DEPARTMENT OF TRANSPORTATION • STATE OF HAWAII

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STATE OF HAWAII

0 500 1000 1500
GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING FACILITIES (1993 MASTER PLAN)

DATE	FIGURE
JANUARY, 1997	2-16

Certification Manual is 370 feet wide and extends 1,000 feet beyond both ends of Runway 5-23.[11] The threshold elevations for Runways 5 and 23 are 20 feet and 16 feet above mean sea level, respectively. The average gradient from west-to-east is 0.08 percent. Runway 5-23 is painted with non-precision markings and there are no instrument approach aids.

The gross load limits listed on the FAA Airport Master Record (February 1991) for the runway are 130,000 pounds, 170,000 pounds, and 270,000 pounds for single-wheel, dual-wheel, and dual-tandem wheel aircraft, respectively. This is adequate to accommodate forecast demand for all of the aircraft that are capable of operating on the existing runway length. No signs of pavement distress have been observed on this runway except for where it crosses Runway 2-20.

Runway 17-35. Former Runway 17-35 has been closed and parts of it are used for aprons and other airfield operational purposes.

2.5.2 TAXIWAYS

The locations of the designated taxiways at Kahului Airport are illustrated on Figure 2-16; their characteristics are summarized in Table 2-5. Taxiway "B", Taxiway "E", Taxiway "F", and Taxiway "G" have variable widths ranging from 50 to 400 feet wide. Taxiway "A", Taxiway "C", and Taxiway "I" are each 75 feet wide while Taxiway "D" is approximately 200 feet wide. Taxiway "H" and the unnamed taxiway that runs parallel to Runway 2-20 on the east side are each 50 feet in width.

The pavement strengths of Taxiways "A" through "H" indicated on the FAA's WE Form 5335-1 for single-wheel, dual-wheel, and dual-tandem-wheel aircraft are 130,000, 170,000 and 270,000 pounds, respectively. The corresponding pavement strengths for Taxiways "I" and portions of "F" are 30,000 pounds, 40,000 pounds, and 65,000 pounds, respectively.

The HDOT-AIR considers the taxiway pavement strengths to be generally adequate for the runways they serve, and most are in reasonably good condition. An exception is the portion of Taxiway "A" near the northern end of Runway 2-20, where some distress has been noticed on portions used by widebody aircraft.

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[11] The area off the west end of Runway 5 has been designed to meet the full FAA design standards for runway safety areas.

Table 2-5
DESIGNATED TAXIWAYS

TAXIWAY	DESCRIPTION
A	Parallel taxiway to Runway 2-20 on west side with 75-foot wide asphaltic concrete pavement and 25-foot wide asphaltic concrete shoulders.
B	Diagonal connecting taxiway from a point 2,000 feet from the southern end of Runway 2-20 to the main passenger terminal apron and Runway 5-23. Pavement width ranges from approximately 50 feet to over 75 feet.
C	Exit taxiway at the end of Runway 2 that connects to the helicopter operating area. Pavement width is 75 feet.
D	Exit taxiway that connects the passenger terminal apron with Runway 2-20 approximately 1,000 feet from the southern end of the runway. Pavement width is approximately 200 feet.
E	The portion northwest of Runway 2-20 is a diagonal exit taxiway connecting the passenger terminal apron with Runway 2-20 approximately 2,000 feet from its southern end. This portion's pavement is approximately 125 feet wide.
F	Exit taxiway connecting Runway 2-20 with Taxiway "B" and Taxiway "H" at the western end of Runway 5-23. A portion of the taxiway connects the general aviation apron with Runway 2-20. Pavement width is 75 feet between Runway 2-20 and Taxiway "A", and between the general aviation apron and Runway 2-20; 50 feet between Taxiway "A" and Taxiway "B"; and variable between Taxiway "B" and Runway 5-23.
G	Exit taxiway connecting northern part of Runway 2-20 with Taxiway "A". Pavement width varies from 125 to 400 feet.
H	Exit taxiway at the end of Runway 5-23 that connects the commuter terminal apron with the approach end of Runway 5. Pavement width is approximately 50 feet.
I (K)	Exit taxiway that connects the northern end of the general aviation apron with Runway 2-20. Pavement width is 75 feet. (recently renamed to Taxiway K)
Unnamed:	Connecting Taxiway, parallel to Runway 2-20 on east side, that connects the runway to the East Ramp parking apron. Pavement width is 50 feet.

Source: Section 11.0, Reference 5

2.5.3 AIRCRAFT PARKING APRONS

Kahului Airport has several aircraft parking aprons. The main apron is the passenger terminal apron and is located between the terminal building and Taxiway "A". The commuter/air taxi terminal aircraft parking apron is located northeast of the terminal building on the inland side of Runway 5-23. The "East Ramp" apron east of Runway 2-20 serves general aviation aircraft, helicopters, and air taxi operations. The characteristics of these aprons are described below.

Passenger Terminal Apron. The apron fronting the passenger terminal measures approximately 2,900 feet by 500 feet. The concrete hardstand portion is approximately 2,800 feet long and 150 feet wide. The hardstand was reconstructed as part of the passenger terminal expansion project and is designed to accommodate all of the widebody aircraft presently using the Airport.

Commuter Terminal Apron. The commuter terminal apron measures approximately 600 feet by 400 feet. Airport records indicate that it is designed to accommodate single-wheel aircraft with gross weights up to 75,000 pounds and dual-wheel type landing gear aircraft with gross weights up to 145,000 pounds. This is more than adequate to accommodate the type of aircraft that use the commuter/air taxi terminal.

East Ramp Apron. The "East Ramp" apron consists of two distinct areas. The first consists of the southern end of an abandoned runway (formerly Runway 17-35). This area measures approximately 1,200 feet long by 400 feet wide and is now used for helicopter operations. The second area parallels Runway 2-20. It is approximately 3,400 feet long by 200 feet wide, and is used for general aviation and air taxi aircraft parking. The pavement strength for single-, dual-, and dual-tandem-landing gear aircraft for most of the apron are 30,000, 40,000 and 65,000 pounds, respectively.

2.5.4 RUNWAY PROTECTION ZONES, ENCROACHMENTS, AND OBSTRUCTIONS

Runway Protection Zones. Runway protection zones (RPZ), formerly called clear zones, are based on Federal Aviation Regulations (FAR) Part 77 approach surface dimensions. These RPZs extend to the point at which the approach surface is 50 feet above the runway threshold or 50 feet above the underlying terrain, whichever is less. The width of the runway end of the RPZ is determined by the most precise approach standard applicable to the runway. For example, if an instrument (IFR) approach is maintained at one end and a visual (VFR) approach at the other, the IFR inner width minimum is applicable at both ends.

Runway 2 (which is equipped with an Instrument Landing System, or ILS) has a precision instrument approach requiring an inner width of 1,000 feet for both ends of Runway 2-20. Based on the most precise approach procedure, only a nonprecision instrument RPZ with a 34:1 approach slope is required for Runway 20. However the Airports Division maintains a more restrictive instrument runway protection zone for the runway. The approach surface slopes for Runways 2 and 20 are 50:1 for the first 10,000 feet from the runway threshold. The slope of the remaining 40,000 feet of these approach surfaces is 40:1. This meets the FAA's standard for precision instrument approaches to runways.

Runway 5-23 has only visual approaches to both ends requiring an inner width of 500 feet and an outer width of 1,010 feet. Based on the most precise approach procedure, only a visual runway protection zone with a 20:1 approach slope is required for Runway 5-23. However the Airports Division maintains more restrictive nonprecision runway protection zones - with a 34:1 approach slope for Runways 5 and 23. This meets the FAA criteria for non-precision approaches for large aircraft with visibility

minimums of more than three-quarters of a mile. Because the runway is occasionally used by jet air carrier (interisland) aircraft when Runway 2-20 is not available (e.g., when it is closed for maintenance or when crosswinds preclude its use), the more restrictive approach slope provides an added margin of safety.

Except for portions over the Pacific Ocean to the north and a small portion for Runway 23 to the northeast, all of the runway protection zones lie entirely within Airport property (see Figure 2-16).

Encroachments on the Building Restriction Line. The building restriction lines (BRL) on either side of Runway 2-20 are 1,000 feet to the west and 750 feet to the east of the runway centerline. Analysis of a recent aerial photograph of Kahului Airport indicates that there are a few existing intrusions into the BRL area. These include the old air taxi terminal east of Runway 2-20.

The BRL on either side of Runway 5-23 is 553 feet from the runway centerline. This is based on the centerline of the taxiway serving the runway being set back 400 feet from the runway centerline, and the BRL being set back 153 feet from the taxiway centerline. There are no intrusions on these lines within the runway length. However, FAA standards call for the BRL to extend past the ends of the runway to the point at which they intersect the runway protection zones, and several relatively new buildings in the ground transportation baseyard area to the west of the runway threshold do not meet this criteria (Shown on Figure 2-16). In addition, the existing airline ground equipment maintenance building penetrates the object free area and the BRL for Taxiway "F".

Obstructions. Both the FAA Airport Master Record and the Airport Obstruction Chart published by the National Oceanic and Atmospheric Administration (NOAA) were reviewed to identify obstructions as defined by Federal Aviation Regulations (FAR) Part 77: *Objects Affecting Navigable Airspace*. FAR Part 77 establishes "imaginary surfaces" related to airports and their runways. These imaginary surfaces are used to identify obstructions.

The Runway 2 imaginary approach surface is penetrated by two groups of objects. The first penetration is by Kealoloa Ridge of the West Maui Mountains, which penetrates a portion of the 7:1 transitional surface between 8 and 10 miles south of the runway threshold. The second penetration is by the tallest (252 feet above mean sea level) of the five stacks at the Puunene Sugar Mill. This stack is located approximately 9,800 feet south of the Runway 2 threshold and extends almost 6 feet into the approach surface (Section 11.0, Reference 5).

Some trees penetrate the approach surface to Runway 20, but they are 475 feet off the Runway centerline.

2.5.5 NAVIGATIONAL FACILITIES AND LIGHTING

Kahului Airport has an FAA Airport Traffic Control Tower (ATCT) which typically operates between 6:00 a.m. and 10:00 p.m. The Airport also has an Airport Surveillance Radar (ASR) for

control of aircraft within the Airport Radar Service Area. The ASR is located on the Airport, but is controlled remotely from the Honolulu Air Route Traffic Control Center (ARTCC) which provides radar approach/departure control services. The FAA radio transmitter/receiver building for airport traffic control is located on the east of Runway 2-20 near the existing ASR facility. The Airport is equipped with a lighted wind indicator, a segmented circle and wind cones, and a rotating beacon. Nondirectional beacons are located at McGregor Point (identification call sign letters "MPH") and at the middle marker (identification call sign letters "VYI").

The Airport is equipped with a VHF Omni-Directional Range/Tactical Air Navigation (VORTAC) radio navigational aid system (Maui VORTAC) to assist aircraft in determining azimuth and distance. The VORTAC is located 500 feet from Runway 5-23 and 638 feet from Runway 2-20. The FAA recommended that it be relocated to an area at the approach end of Runways 20 and 23 to eliminate signal problems that are believed to be related to new construction in the terminal area. The construction of the relocated VORTAC at the north of the intersection of the Runways was completed in 1995. Runway 2 has an ILS (Instrument Landing System) with a backcourse system for Runway 20. Both runways are lighted and equipped for radio activation during night time and unattended hours. An ATCT, FAA radio transmitter/receiver building, Airport Surveillance Radar (ASR), and National Weather Station (NWS) are located on the east ramp. The ATCT is usually manned from 6:00 a.m. to 10:00 p.m.

Runway 2-20 has precision runway markings and high intensity runway lights (HIRL). Both ends of the runway are equipped with Visual Approach Slope Indicators (VASI-4). Runway 2 has an Instrument Landing System (including Middle and Outer Markers), and a medium intensity approach lighting system with runway alignment indicator lights (MALSR).

Runway 5-23 is painted with nonprecision runway markings and equipped with medium intensity runway lights (MIRL). Runway 5 has a VASI-4 visual approach slope indicator. All entry/exit taxiways and parallel taxiways to both runways are equipped with medium intensity taxiway lights (MITL). The airfield lighting vault is located in the new passenger terminal building.

2.5.6 METEOROLOGICAL CONDITIONS

The average annual temperature at Kahului Airport is 74°F. During the summer, the average monthly high is 82°F and the average low is in the low 70°s. Winter temperatures are about ten degrees cooler. The highest temperature on record is 91°F and the lowest is 55°F, while the average maximum daily temperature for the hottest month is 84°F.

Rainfall at Kahului is quite low, averaging less than 20 inches per year. The majority of this occurs during the winter as large-scale frontal systems move past the island. Despite the relatively low annual average, storms can generate intense rainfall over short periods of time, and the runoff from these events must be accommodated by the Airport's drainage system. The *Rainfall Frequency Atlas of the*

Hawaiian Islands, published by the U.S. Department of Commerce (1962), estimates that the average 24-hour rainfall having a recurrence interval of 50 years is approximately 7 inches.

Winds at Kahului Airport are influenced by a variety of factors. These include: (i) the strong prevailing tradewinds; (ii) the physical presence of large mountain masses to the east (Haleakala) and west (West Maui Mountains) of the Airport; and (iii) the nighttime drainage winds that carry cool air from the mountain slopes to the coastal areas of Kahului. These winds have a significant effect on the operations of the Airport.

Based on data collected at the Airport between January 1970 and December 1979, the wind coverage for 13 knots crosswinds is 96.1 percent for Runway 2-20 and 98.4 percent for Runway 5-23. The combined coverage for both runways is 99.8 percent for 13 knot crosswinds.

Wind speeds are greater than 10 knots for more than two-thirds of the time during the day; however at night, winds in excess of 10 knots occur less then one third of the time. Moderate to brisk tradewinds (easterly winds greater than 6 knots) occur approximately 77 percent of the time during the day and 50 percent of the time during the night. Winds less than 6 knots occur approximately 17 percent of the time during the day and 48 percent of the time during the night. In general, winds from the south tend to occur more frequently during the night than during the day, and southerly winds most often have speeds of less than 6 knots.

Under normal tradewind air traffic patterns, air carrier aircraft approach Runway 2 by flying south of McGregor Point and approaching through Maalaea Bay, intersecting the runway centerline near the Puunene Mill. As a general rule, heavy aircraft, such as the DC-10 and L-1011 will approach Runway 2 east of Paia, fly over the westerly slopes of Haleakala and turn their base leg over Puunene. Air carrier takeoffs from Runway 2 are directed over the ocean. Under Kona wind conditions, air carrier landings and takeoffs on Runway 20 are made with an approach over the ocean and takeoffs over the isthmus. Commuter and general aviation aircraft fly routes which avoid the air carrier flight routes and use Runway 5-23 to a greater extent. A significant amount of commuter and general aviation aircraft arrive from and depart to the northwest, but also use flight routes to the south and northeast. In addition, commuter and general aviation aircraft approach Runway 5 by crossing the shoreline between Waiehu and Kahului Harbor and passing over Wailuku and Kahului. During Kona wind conditions, commuter and general aviation aircraft will also use Runway 20. Helicopters mainly operate from the East Ramp and their major traffic routes are to the west and southeast.

2.5.7 PASSENGER TERMINAL COMPLEX

The first increment of Phase 1 of the new passenger terminal complex was completed in October 1990. It contains new passenger ticketing/check-in counters, baggage handling facilities, six passenger hold rooms (*i.e.*, waiting areas), and eight passenger loading bridges. In addition, the terminal complex contains automobile and tour bus parking areas, concessions, a realigned roadway system, and an

aircraft parking apron. Passengers enplane and deplane at the second level through passenger loading bridges. Construction of the second increment of the new passenger facilities was completed in 1993. The second increment involved the conversion of the old passenger terminal into a baggage claim area and the construction of additional passenger hold rooms along the airfield site of the complex.

The passenger terminal apron can accommodate up to 20 interisland-size (DC-9/B-737) aircraft in a single row with power-in/push back operation. Currently, eight positions are marked for overseas DC-8, DC-10, L-1011 aircraft which reduces the total number of positions available. The apron contains provisions for fueling from below-grade hydrants, but the fuel storage and supply lines for them has not yet been installed. Hence, aircraft continue to be fueled from trucks.

2.5.8 COMMUTER TERMINAL

The commuter terminal is located north of the air carrier passenger terminal. The commuter terminal building includes space for ticketing/check-in, baggage claim, waiting, airline offices, and restrooms. The commuter aircraft parking apron can accommodate up to 12 de Havilland DHC-6 type aircraft. It is connected to the southern end of Runway 5-23 by Taxiway "F" and "H", and also to Taxiway "B" via taxiway "F" approximately 1,500 feet from the approach end of Runway 5. Aircraft are fueled from trucks.

2.5.9 AIR CARGO FACILITIES

Most air cargo is processed at the cargo facilities located north of the passenger terminal just to the west of the (old) Aircraft Rescue and Fire Fighting (ARFF) Station and adjacent to the passenger terminal. This building was completed in 1983 and accommodates air cargo from most interisland and overseas air carriers, as well as some air taxis. In the past, a small volume of air cargo was handled from facilities at the northern end of the East Ramp. UPS operations were being conducted from a portion of the ground equipment maintenance building north of the old ARFF building. Currently, UPS is conducting its operations in a new facility located on Hemaloa Street. The existing air cargo facilities cannot accommodate forecast demand.

2.5.10 GENERAL AVIATION FACILITIES

General aviation facilities are located east of Runway 2-20. These facilities include three T-hangar buildings (with a total of 30 spaces) that are owned by the State and leased to individual aircraft owners. The 34 tiedowns presently situated on the East Ramp occupy an 800-foot by 200-foot area immediately adjacent to the T-hangars and are used by based and itinerant aircraft. The general aviation facilities cannot meet existing or forecast demand. Because of the absence of other suitable on-airport space, the State's guidelines for use of the T-hangars have been broadly interpreted. Consequently, some of the T-hangar spaces are used for activities for which they were not intended, including aircraft maintenance.

Century Aviation operates a number of facilities on the East Ramp, and is currently the primary fuel vendor at the Airport. In addition to the fueling services, this company also provides a full range of services for corporate (executive) aircraft that visit Kahului. Century Aviation has a reception office and employee areas, a maintenance shop and storage shed, and fuel storage tanks.

American Pacific Air, Inc. occupies one of the T-hangar spaces. This company operates a fleet of 12 aircraft used for aircraft rentals and flight training, and is presently severely constrained by the lack of suitable space. A similar situation exists for Air Molokai which owns three aircraft and also operates out of a T-hangar.

2.5.11 AIR TAXIS

The scenic air taxi aircraft that visit Kahului have aircraft parking facilities located on the East Ramp apron. Aircraft are fueled on the apron by Century Aviation. Parking space is provided adjacent to the apron for tour buses and vans that carry passengers around Maui. A small terminal building, with only basic amenities for passengers, is also located on the site but is not currently in use.

2.5.12 HELICOPTERS

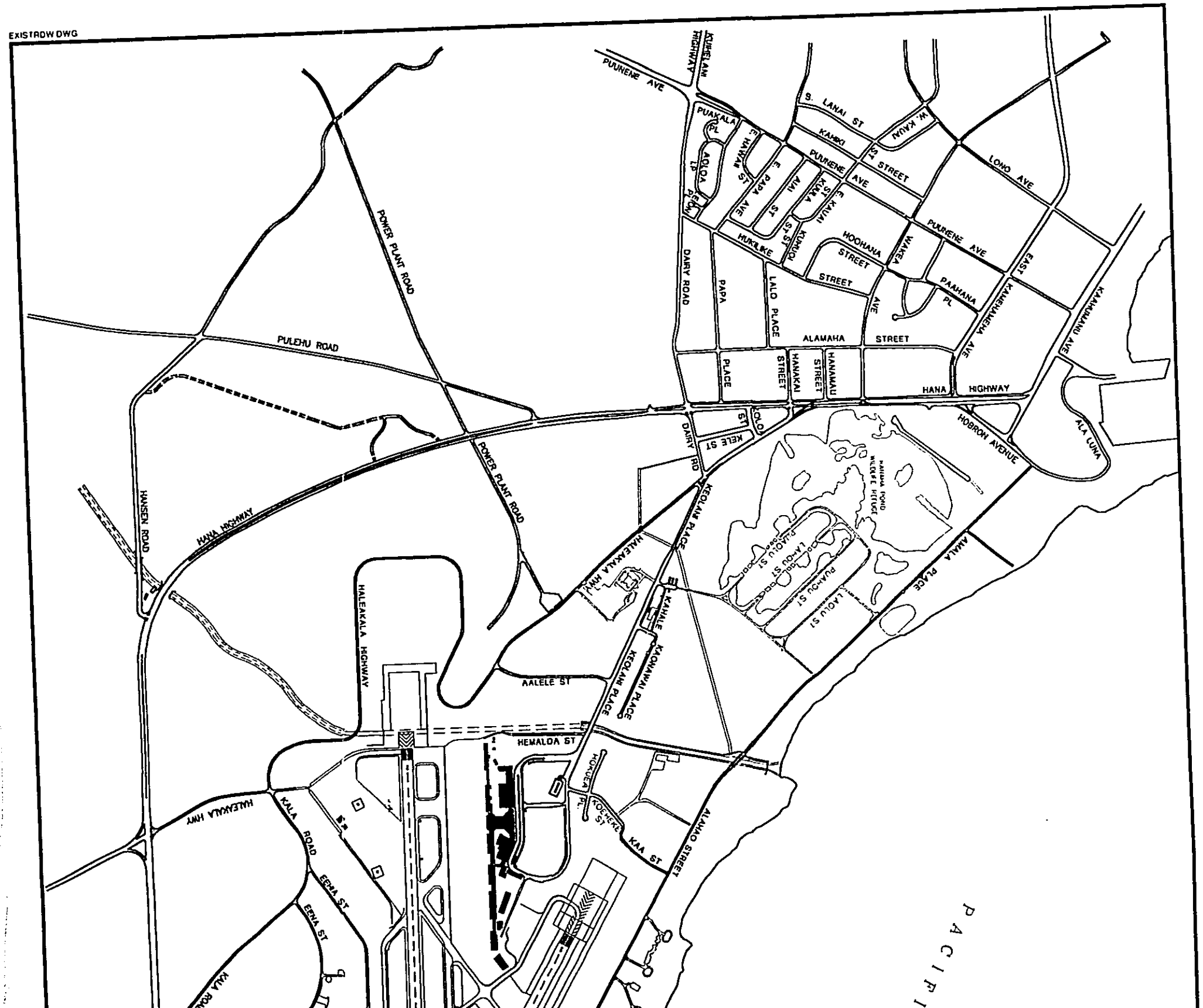
Helicopter operations at Kahului Airport are concentrated at the southeastern corner of the Airport. This area includes two landing and takeoff helipads, as well as an apron area for helicopter parking and passenger loading and unloading. Small plots along the edge of the apron are leased to the helicopter operators who have erected buildings containing reception areas, offices, and aircraft storage space. Helicopters are fueled on the apron by Century Aviation or, in some cases, from operator-owned fuel trucks or from the two underground fueling tanks located on the East Ramp and maintained by Papillon Hawaiian Helicopters and Hawaii Helicopters.

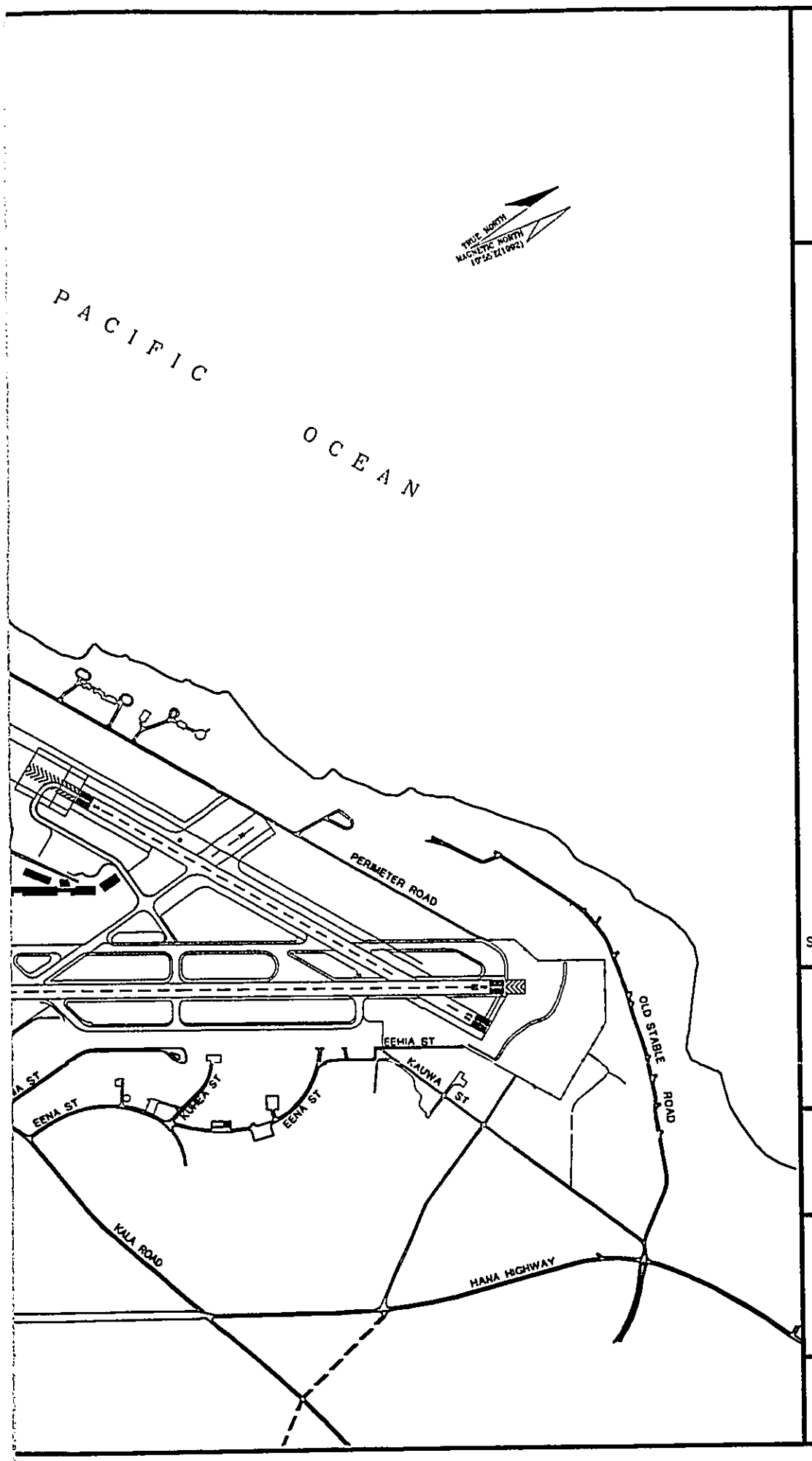
2.5.13 AIRPORT ACCESS, PARKING, AND GROUND TRANSPORTATION

Airport Access. Keolani Place is a 4-lane roadway that provides vehicular access to the main passenger terminal, the parking areas, the rental car ready/return area west of the terminal, as well as to the air cargo facilities, the commuter/air taxi terminal, and other facilities west of the passenger terminal. It provides a direct connection with Hana Highway for vehicles traveling between the Airport and Wailuku and Kahului. This street provides four lanes between Haleakala Highway and the Airport terminal loop roadway, with a speed limit of 30 mph. Figure 2-17 presents the key roadway system within the Airport's environs.

The facilities adjacent to the East Ramp (general aviation, helicopter facilities, ATCT) are reached from Hana Highway via Kala Road and Haleakala Highway. At present, Haleakala Highway continues around the southern end of Runway 2-20, terminating at the intersection of Keolani Place and Dairy Road. Therefore, these facilities can also be readily accessed from the west side of the Airport. Also,

EXISTADW DWG





DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

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GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING ROADWAY SYSTEM

DATE	FIGURE
JULY, 1997	2-17

Haleakala Highway links the Upcountry areas to Hana Highway and to Kahului Airport. However, the State has announced plans to close the portion of Haleakala Highway west of Runway 2-20 if the runway is extended. Upon closure of Haleakala Highway, the east segment of the roadway will only serve the East Ramp development. The parallel runway would eliminate the remaining portion of Haleakala Highway from the Airport to Hana Highway. At that time, the access to the East Ramp will be via the new Spine Road.

While not intended as a major access route, Kocheke Street intersects Keolani Place opposite the main passenger terminal parking area and provides access to the rental car baseyards and Airport industrial area, and extends to Alahao Street. Amala Place/Alahao Street is a narrow, two-lane roadway which runs along the west side of the Airport and serves the recreational areas and other facilities located along the shoreline adjacent to the Airport. At one time Alahao Street crossed what is now Airport property into West Spreckelsville; however, it now ends at a fence along the Airport boundary.

Other key streets and highways relevant to the proposed airport improvements are:

- Hana Highway: This State highway is the principal east-west roadway through the study area.

- Dairy Road: A two-lane roadway with a 30 mph speed limit between Haleakala Highway and Puunene Avenue.

- Hobron Street: A short two-lane roadway connecting Hana Highway and Kaahumanu Avenue to Amala Place and to Kahului Harbor.

- Old Stable Road: This is a privately-owned, unimproved two-lane roadway that provides access to the West Spreckelsville residential area and to the adjacent beach area.

- Puunene Avenue: This State roadway extends from the Kahului Harbor area south to the Puunene community.

- Pulehu Road: A two-lane minor roadway that parallels Haleakala Highway between the Airport and Kula areas.

- Hansen Road: Hansen Road connects Puunene to Hana Highway at the south boundary of the Airport. The two-lane roadway is primarily used by traffic between the East Maui/Maui Upcountry areas and the Kihei area.

Vehicular Parking. The principal vehicular parking area at the Airport is located on the northwestern side of the passenger terminal. It contains 1,172 parking stalls for use by the public and 742 parking stalls for use by employees of Federal and State agencies, tenants, concessionaires, and airlines. A

limited number of parking stalls are also located adjacent to the cargo facility, the rental car counters and commuter terminal north of the passenger terminal, and to the general aviation and helicopter facilities which are adjacent to the East Ramp. Parking at the main parking area is under the operation of a concessionaire. The other areas are patrolled by Airport security personnel.

Ground Transportation. At present, approximately 23 acres of land along the western side of Keolani Place is made available for lease by rental car operators. The parcels, which range in size from one-quarter of an acre to four acres, are used to store and service the vehicles. Convenient public access to the lease sites is provided from Keolani Place and Koeheke Street. Other ground transportation activities are interspersed with rental car activities in this area. The State provides improved streets, level lots, and utilities. The operators are responsible for constructing and maintaining their own facilities.

The rental car counters are situated in a relatively new, State-owned building constructed for that purpose opposite the northern end of the main passenger terminal parking area. As previously noted, a limited number of parking stalls are situated immediately north of the rental car counters for ready and return vehicles.

2.5.14 AIRPORT SUPPORT FACILITIES

FAA Airport Traffic Control Tower. The FAA Airport Traffic Control Tower complex, which includes offices for the FAA and the National Weather Service, was completed in 1988. It is located east of the general aviation T-hangars. Underground communication lines link the FAA ATCT with the Airport Surveillance Radar (ASR), new Radio Transmitter/Receiver Building, and new Airfield Lighting Vault.

Because of the ATCT's location relative to terrain and buildings that have been constructed adjacent to the East Ramp, certain portions of the apron used by helicopters cannot be seen by controllers. This complicates the task of controlling the ground movement of these aircraft. The northernmost portion of the new passenger terminal obstructs the controllers' views of Taxiway "H", portions of Taxiway "F", and the commuter terminal apron.

Aircraft Rescue and Fire Fighting (ARFF). At the time of the 1993 Master Plan, the Aircraft Rescue and Fire Fighting (ARFF) facility abutted the apron on the west side of Runway 2-20. It has direct access to the aircraft operating area which helps ARFF crews to respond quickly to fires in the passenger terminal complex area. Completed in 1978, the structure is in relatively good condition. Airfield access, however, from the station has been compromised by the new holdrooms.

The ARFF has been relocated to the north end of the East Ramp. The construction of this facility was completed in 1994. This location allows fire and rescue crews to meet response time criteria for both the existing runways and a possible future parallel runway from a single facility using regular service roads and taxiways. It was designed to meet all present Airport needs for ARFF station facilities. A fire

lane clear of parked aircraft is maintained on the apron fronting the ARFF to facilitate fire fighting equipment access to the service road and taxiway system. Six fire fighting and rescue trucks are assigned to the station. These include two 3,000-gallon and two 1,500-gallon capacity fire fighting trucks, one rescue truck, and one 4-wheel drive utility vehicle.

The training area for the ARFF crew is located on the west side of Runway 5-23. It is a remote area and well-screened by vegetation from public view. This training area is readily accessible from the aircraft operating area, as well as from the Airport via Alahao Street. The prevailing winds blow smoke generated by practice operations away from the passenger terminal.

HDOT Maintenance Baseyard Facility. The HDOT maintenance baseyard and associated buildings are located in the industrial area on the east side of Keolani Place. The industrial area has a number of other tenants. These include the State Highways Division, Hawaii Air National Guard, Department of Land and Natural Resources, Maui County Water Department, and various private businesses.

Airline Ground Equipment Maintenance. The airlines at Kahului Airport use a portion of the ramp located to the east of the intersection of Taxiway "B" and Taxiway "F" and leading to the commuter aircraft parking apron, to maintain ground support equipment. Because of the area's proximity to the VORTAC navigational facility, maintenance shelters have been constructed of wood to minimize electromagnetic interference.

U.S. Post Office Access Roadway. At present, there are no on-site postal facilities at Kahului Airport. However, the U.S. Postal Service has title to a 3.5-acre site located along Keolani Place southwest of the new passenger terminal. Its current plans call for a new facility to be constructed there. This proposed facility is projected to include approximately 40,000 to 50,000 square feet of work area and to handle all mail processing for the Island of Maui. Mail carrier operations might also be relocated to the Airport facility. In order to facilitate operations, the facility will need direct road access to the aircraft apron adjacent to the passenger terminal. No construction date for the facility has been set and will be completed by the U.S. Postal Service. The Proposed Project will consist of completion of the direct access roadway only to the baggage makeup area and apron, within the passenger terminal area.

National Weather Service. The National Weather Service has an office in the lower level of the FAA ATCT. Weather balloons are launched three times daily from the roof of a small structure located near the control tower. The current location provides a clear view of the ends of all runways -- a prerequisite for safe and efficient operation -- but the terrain and intervening buildings partially obscure the helicopter operating area at the southern end of the East Ramp.

Fuel Storage and Loading Facilities. Fuel storage and loading at Kahului Airport is decentralized. Century Aviation has four above-ground storage tanks, with only three presently in use. The two largest tanks are used for jet fuel with 23,000-gallon and 28,000-gallon capacities, respectively. The third tank, with a 10,000-gallon capacity, is used for Avgas. The fourth tank, with a capacity of

approximately 8,000 gallons, is presently unused. Fuel is brought to these tanks by the company's tanker trucks. Trucks resupplying the tanks travel between the large oil company fuel storage tanks located at Kahului Harbor and the Airport via Hana Highway, Haleakala Highway, Kala Road, and Eena Street. Currently, the tanker trucks used for aircraft refueling are based on the East Ramp. Because there is no suitable Airport service road, they must cross Runway 2-20 to reach the air carrier aircraft parking apron adjacent to the passenger terminal. This requires clearance from the FAA ATCT.

The only other large fuel tank on the Airport is a 50,000-gallon capacity above- ground storage tank that Hawaiian Airlines constructed to store fuel for its aircraft but is not currently in use. The tank is located at the intersection of Aalele Street and Haleakala Highway. When it was in use, it was resupplied by trucks that followed an Aalele Street/Keolani Place/Hana Highway route between the harbor storage facilities and the Airport. Hawaiian Airlines refueling trucks traveled via Aalele Street and Keolani Place past the passenger terminal to gate 1, entering the Airport operating area at that point.

In addition to these on-site fuel tanks, two of the helicopter operators based on the East Ramp have their own small fuel underground storage tanks. These are refilled by trucks that follow essentially the same route used by the Century Aviation tanker trucks to and from the Airport.

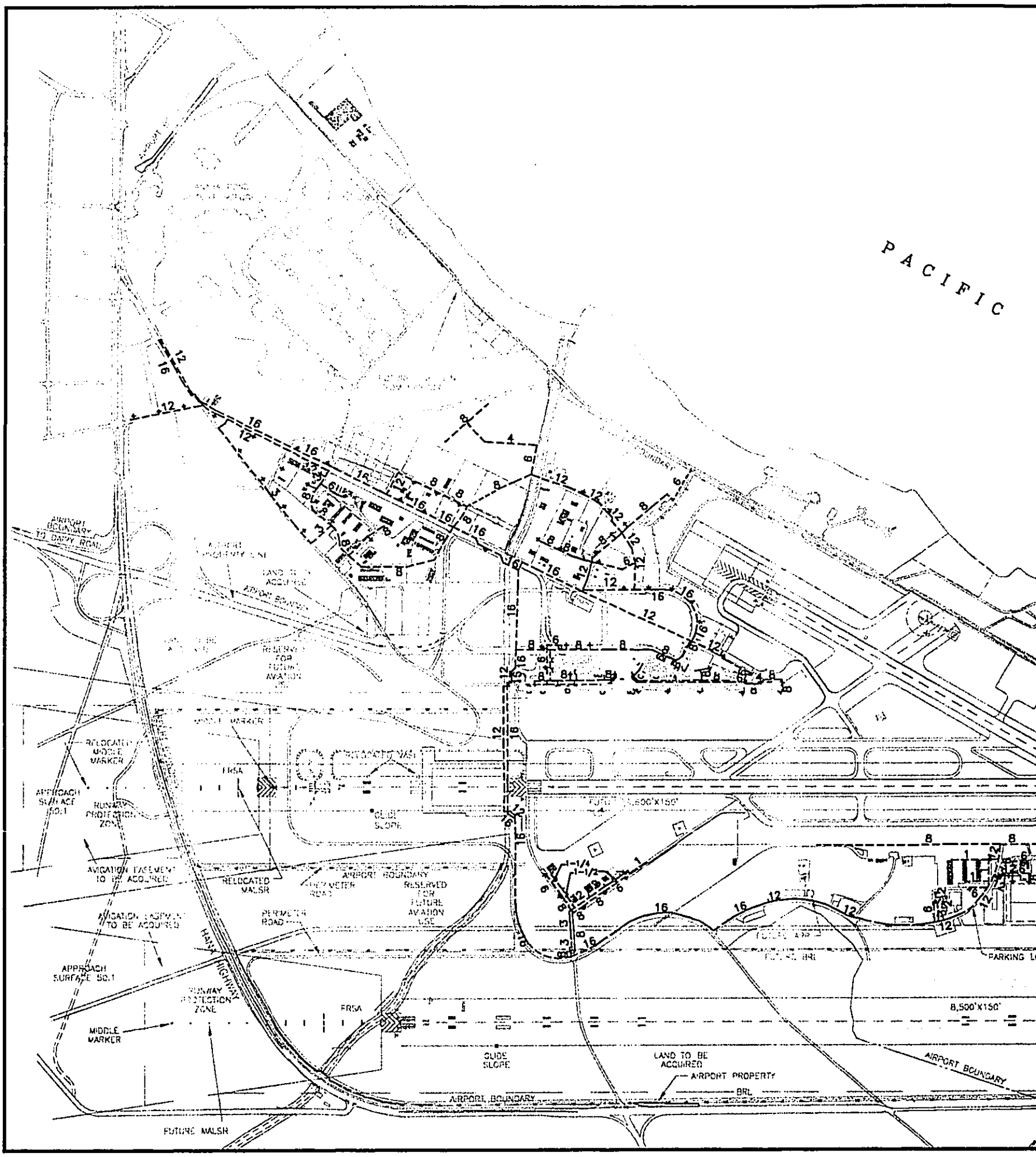
Airport Industrial Area. Two areas within the Airport boundary presently contain industrial uses. The largest of these is the area west of Aalele Street (including structures accessed via Haleakala Highway, Kaonawai Place, and Halai Street). The other is the area west of the ground transportation subdivision, which contains a mixture of activities, many of which are not directly related to airport operations.

All major airport facilities, other than the airfield facilities described above, are located on either the West or East Ramps. The West Ramp, which has the principal Airport roadway access, is dominated by passenger terminal and parking facilities for both air carrier and commuter airlines. In addition, there is an air cargo building, airline maintenance facility, and a ground transportation subdivision located along the access road. An Airport's Base Maintenance Facility and site for a Post Office are also in this area. The East Ramp has facilities for an Aircraft Rescue and Fire Fighting (ARFF) station, general aviation, air scenic tours, helicopters, air cargo and aviation fuel storage. An ARFF Training Facility is located north of Runway 5-23.

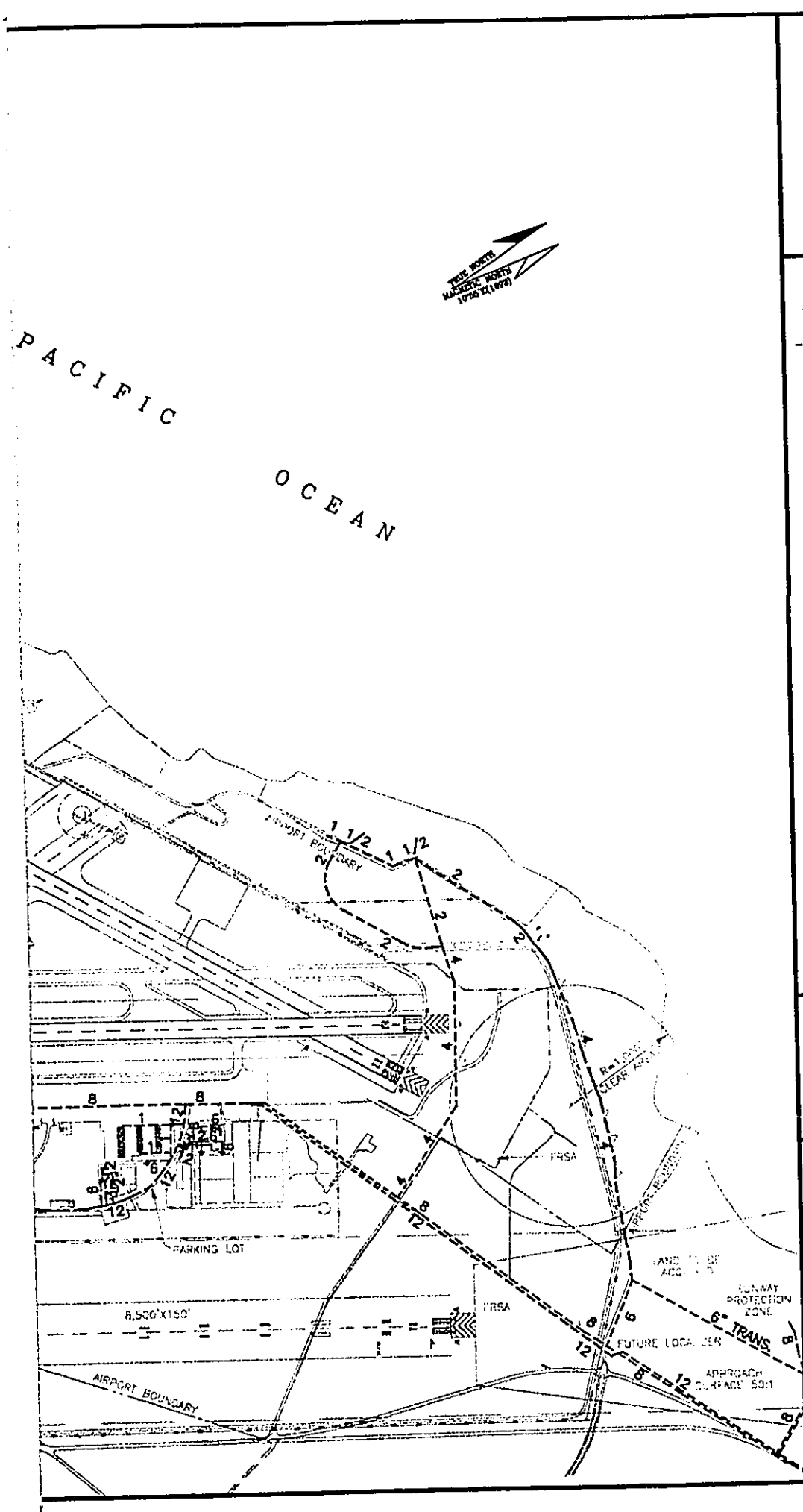
2.5.15 INFRASTRUCTURE

This section briefly describes Kahului Airport's utility and drainage systems. All of these systems are connected to the large public systems serving the Island of Maui.

Water/Irrigation System. The potable water system serving the Airport is shown on Figure 2-18. It consists of a network of 6-inch to 16-inch pipelines, many of which were installed several decades ago. A number of old water lines on the property have been abandoned but are still in place. The newest


PACIFIC
AIRPORT BOUNDARY
TO DAIRY ROAD
RESERVED FOR FUTURE AVIATION USE
LAND TO BE ACQUIRED
AIRPORT BOUNDARY
RELOCATED MIDDLE MARKER
MIDDLE MARKER
RELOCATED MALSR
ERSA
APPROACH SURFACE 50:1
RUNWAY PROTECTION ZONE
GLIDE SLOPE
AVIGATION EASEMENT TO BE ACQUIRED
PERIMETER ROAD
RESERVED FOR FUTURE AVIATION USE
HARRY HIGHWAY
FUTURE MALSR
8,500'X150'
LAND TO BE ACQUIRED
AIRPORT PROPERTY
BRL
AIRPORT BOUNDARY
PARKING

EXWATER DWG



DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND – EXISTING WATER LINE

8 ---------- WATER LINE W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED)

FIRE HYDRANT

0 500 1000 1500

GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING WATER SYSTEM

DATE	FIGURE
JANUARY, 1997	2-18

additions to the system are the 16-inch water mains that extend from Eena Street to Hana Highway via Kala Road, Haleakala Highway, and Keolani Place; 12-inch and 8-inch lines at Halai Street and Kaonawai Place; and a 16-inch extension line from the Keolani Place bridge to the entrance of the old passenger terminal.

Kahului Airport is in a relatively dry part of the island. Because of the limited rainfall in the area and the substantial urban development that has occurred in central Maui over the past two decades, the sources that supply the system are near capacity. Because of this, the County has asked the State to limit its water use at the Airport as much as possible. Presently, the Airport uses approximately 136,000 gallons per day (gpd) of potable water for landscape irrigation.

Sewer System. The existing sewer lines, sewer pump stations, and other wastewater collection and disposal facilities at Kahului Airport are shown on Figure 2-19. The collection system currently serves the terminal area, ground transportation subdivision, and the light industrial area located in the western portions of the Airport. A system of gravity lines transports wastewater from these areas to a sewer pump station located between Kalialinui Gulch and Kanaha Pond Wildlife Sanctuary. From there it is pumped through an 8-inch force main to the County's Kahului Wastewater Treatment Plant on the shoreline opposite Kanaha Pond Wildlife Sanctuary.

All of the facilities, such as the helicopter facilities, T-hangars and ATCT, located on the east side of Runway 2-20 are currently served by cesspools. A system of sewer mains once collected wastewater from this area and transmitted it to an injection well located near the existing ARFF station. However, these lines are quite old and have been abandoned for some time. The new ARFF station on the East Ramp, is equipped with a septic tank and two seepage pits.

A 12- to 18-inch sewer main crosses the west side of the Airport along Alahao Street and Old Stable Road. It connects the towns of Spreckelsville, Paia, and Kuau with the Kahului Wastewater Treatment Plant.

Drainage System. Figure 2-20 shows the existing drainage system within the Airport boundary - including major inlets, box and circular culverts, trench drains, and open channels. Major elements of the system include:

- Runoff from the new passenger terminal and the adjacent aircraft parking apron is collected in a system of drains and underground pipes. The inland portion of this network drains toward Kalialinui Gulch. The west part drains towards the shoreline, passing beneath Runway 5-23 via culverts and discharging into open land on the west side of the runway.

- Runoff from the passenger terminal parking area, the ground transportation subdivision, and the portions of Keolani Place near the parking lot is collected in an

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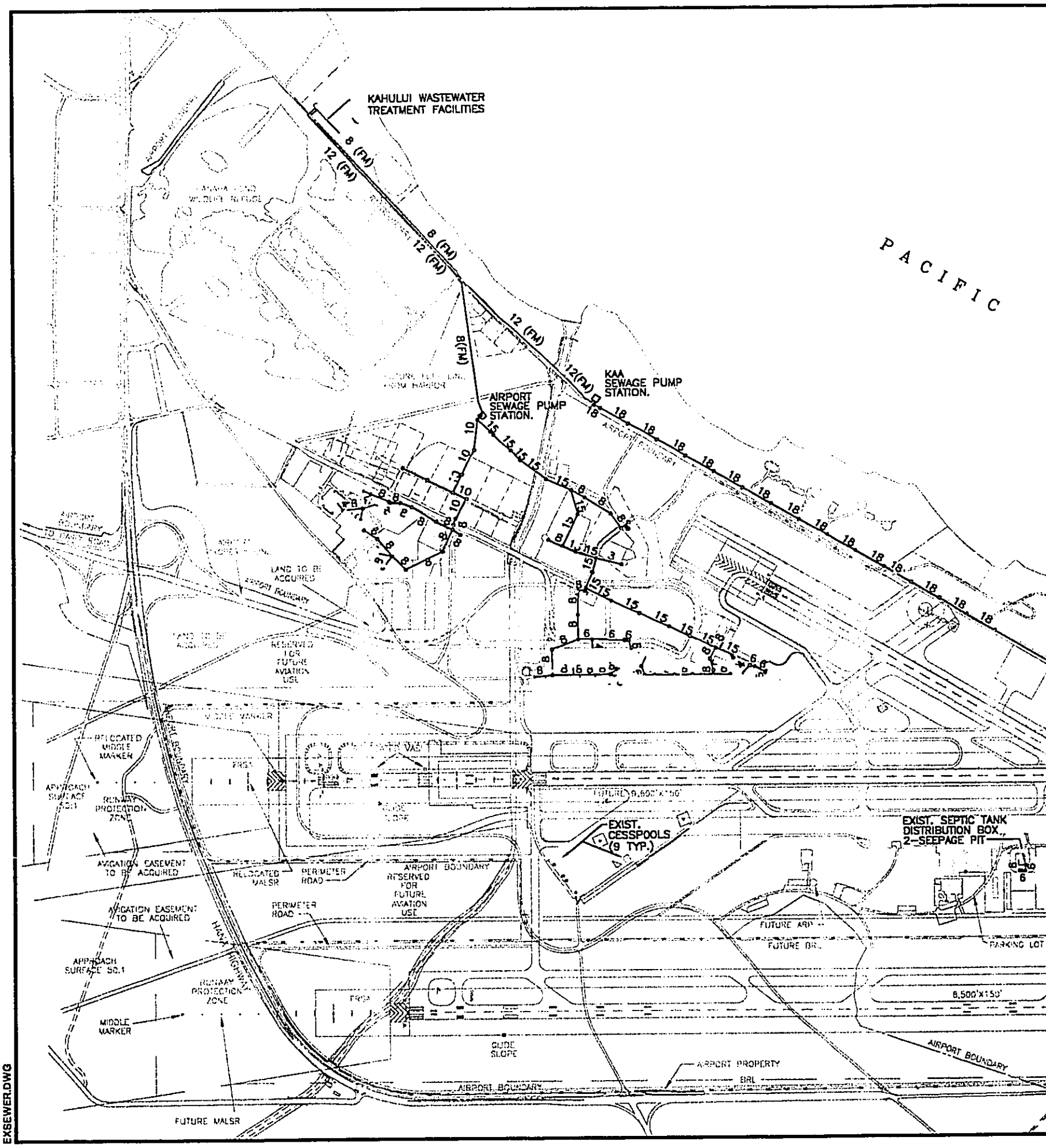
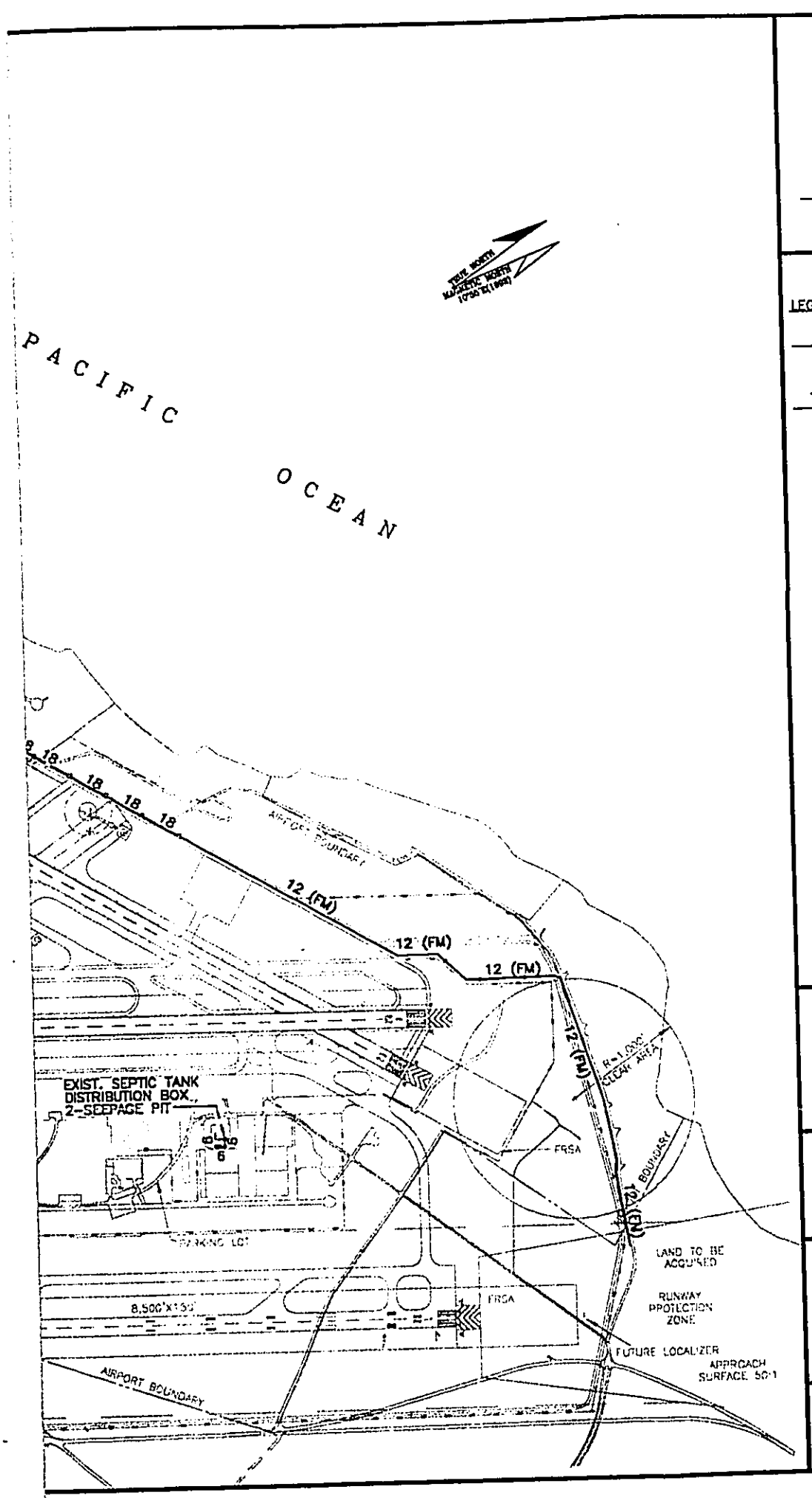

KAHULUI WASTEWATER TREATMENT FACILITIES
8 (FM)
12 (FM)
8 (FM)
12 (FM)
8(FM)
12 (FM)
12(FM)
KAA SEWAGE PUMP STATION.
AIRPORT SEWAGE PUMP STATION.
PACIFIC
AIRPORT BOUNDARY
LAND TO BE ACQUIRED
AIRPORT BOUNDARY
RESERVED FOR FUTURE AVIATION USE
VOR/DME MARKER
RELOCATED MIDDLE MARKER
APPROACH SURFACE SO.1
RUNWAY PROTECTION ZONE
FRST
GLIDE SLOPE
FUTURE 9,500'X150'
EXIST. CESSPOOLS (9 TYP.)
EXIST. SEPTIC TANK DISTRIBUTION BOX., 2-SEEPAGE PIT
AVIGATION EASEMENT TO BE ACQUIRED
RELOCATED MALSR
PERIMETER ROAD
AIRPORT BOUNDARY
RESERVED FOR FUTURE AVIATION USE
AVIGATION EASEMENT TO BE ACQUIRED
PERIMETER ROAD
HANA HIGHWAY
FUTURE ARP
FUTURE BRL
PARKING LOT
APPROACH SURFACE SO.1
RUNWAY PROTECTION ZONE
FRST
8,500'X150'
MIDDLE MARKER
GLIDE SLOPE
AIRPORT PROPERTY
BRL
AIRPORT BOUNDARY
AIRPORT BOUNDARY
FUTURE MALSR
EXSEWER.DWG



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND – EXISTING SEWER LINE:

8 — SEWER LINE W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED).

12 (FM) — SEWER FORCE MAIN LINE W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED).

o — SEWER MANHOLE, UNLESS NOTED.

0 500 1000 1500
GRAPHIC SCALE IN FEET

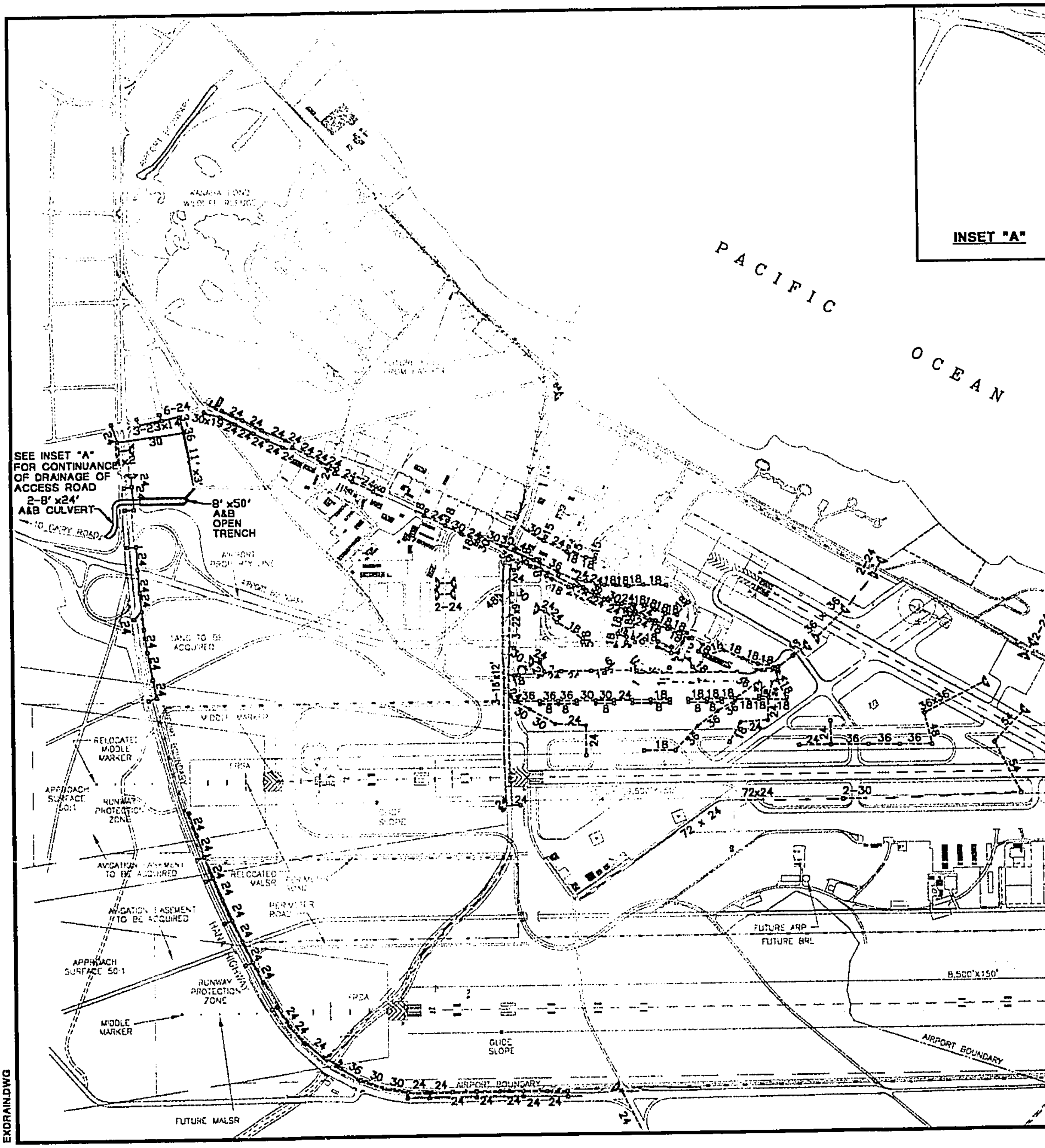
SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

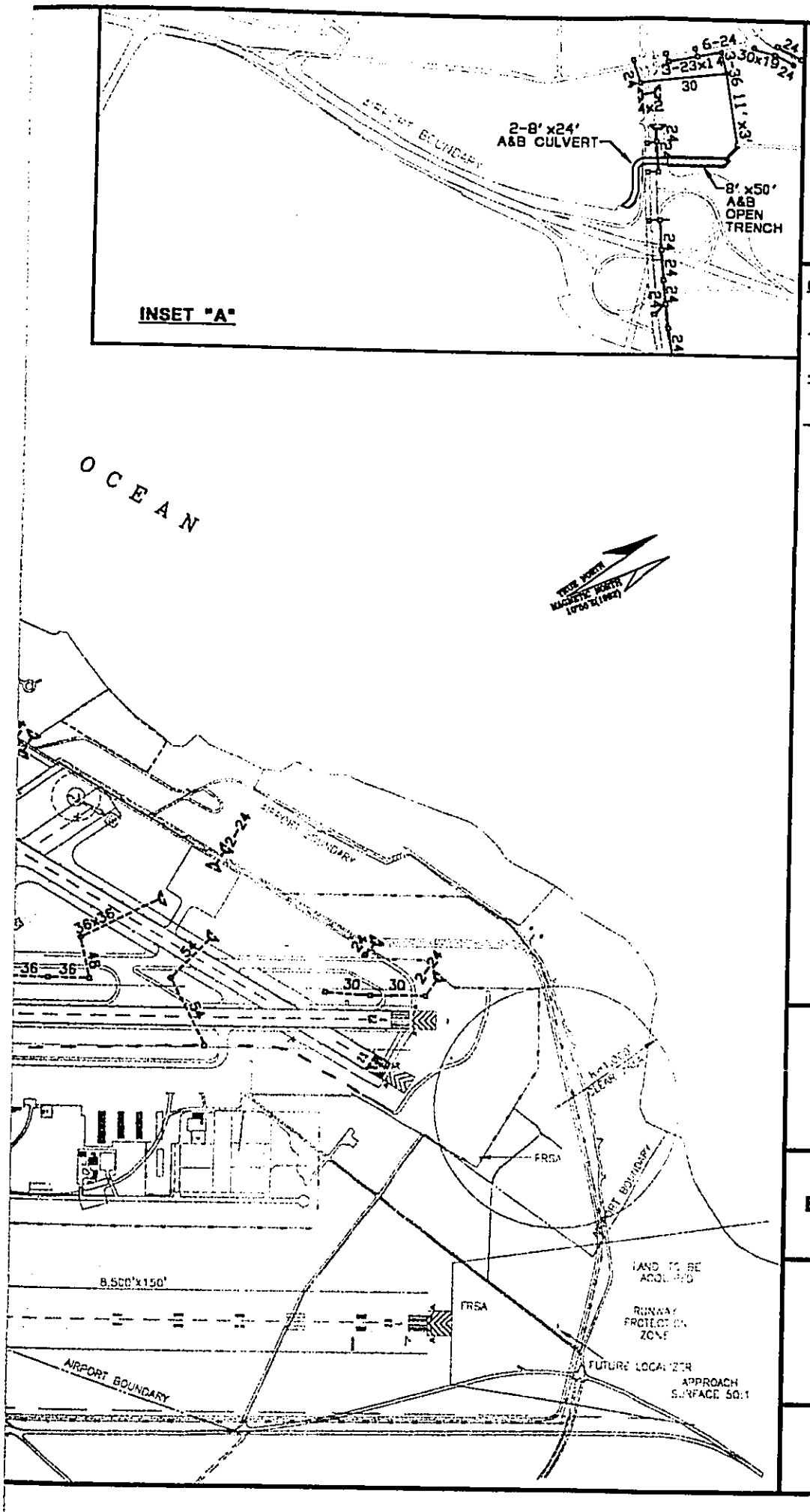
KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING SEWER SYSTEM

DATE	FIGURE
JANUARY, 1997	2-19


PACIFIC
OCEAN
INSET "A"
SEE INSET "A" FOR CONTINUANCE OF DRAINAGE OF ACCESS ROAD
2-8' x24' A&B CULVERT
8' x50' A&B OPEN TRENCH
HANA HIGHWAY
RUNWAY PROTECTION ZONE
MIDDLE MARKER
GLIDE SLOPE
AIRPORT BOUNDARY
FUTURE MALSR
FUTURE ARP
FUTURE BRL
8,500'x150'

EXDRAIN.DWG



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND - EXISTING DRAINAGE FACILITIES:

- 24 ---------- CULVERT W/ SPECIFIED SIZE (IN INCHES, UNLESS NOTED).
- OPEN LINED DITCH OR CHANNEL
- — — — — OPEN UNLINED DITCH/SWALE
- □ DRAIN INLET
- DRAIN INLET OR OUTLET
- ○ DRAIN MANHOLE

0 500 1000 1500
GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING DRAINAGE SYSTEM

DATE	FIGURE
MARCH, 1998	2-20

underground pipe network and discharged into Kalialinui Gulch via culverts and an open channel.

- Runoff from the lands south of Kalialinui Gulch that flows toward Kanaha Pond Wildlife Sanctuary is intercepted by a swale that directs the flow toward Kalialinui Gulch.

- Runoff from lands to the east of Runway 2-20 is intercepted by a system of swales and lined channels and diverted to the northeastern end of the East Ramp. From there it is carried underground across Runways 2-20 and 5-23 before being discharged into the open land on the west side of Runway 5-23.

- Stormwater accumulating between the middle portion of Runway 2-20 and the parallel taxiway (Taxiway "A") is collected by drains and channeled underground beneath the taxiways and Runway 5-23 before being discharged into the open area on the west side of Runway 5-23.

The only storm runoff from the Airport that reaches the ocean is that which enters the recently completed Kalialinui Gulch storm drainage channel. The remainder is dissipated on an undeveloped area of airport property west of Runway 5-23.

Historically, flooding regularly occurred at the intersection of Keolani Place and Hemaloa Street. This was due to overflow from Kalialinui Gulch caused by a flow restriction imposed by the old Keolani Place bridge. During high-intensity storms, the overflow would cross Keolani Place and become a hazard. This problem has been largely eliminated by a concrete ditch that was recently constructed along Keolani Place to divert flows back to Kalialinui Gulch, thereby preventing intermediate size storm flooding of the existing Ground Transportation subdivision area and adjacent areas on the Airport.

Electric Power Distribution System. Kahului Airport receives electric power from Maui Electric Company (MECO) via two 12.47kV, 3-phase lines. According to MECO, the existing 4.16kV, 3-phase line near Kahului Airport may become a possible feeder line to the Airport in the future. Figure 2-21 shows the electrical power distribution system for the Airport. The 12.47kV circuits are fed by MECO's Kanaha Substation located at the intersection of Hana Highway and Dairy Road. The 4.16kV circuit originates from MECO's Paia Substation.

One 12.47kV circuit is routed underground along Keolani Place and feeds the ground transportation subdivision, the air cargo building, the aircraft rescue and fire fighting station, and other facilities in the vicinity of the main passenger terminal. Two 12.47kV underground feeder lines were installed along Keolani Place in conjunction with the construction of the new passenger terminal.

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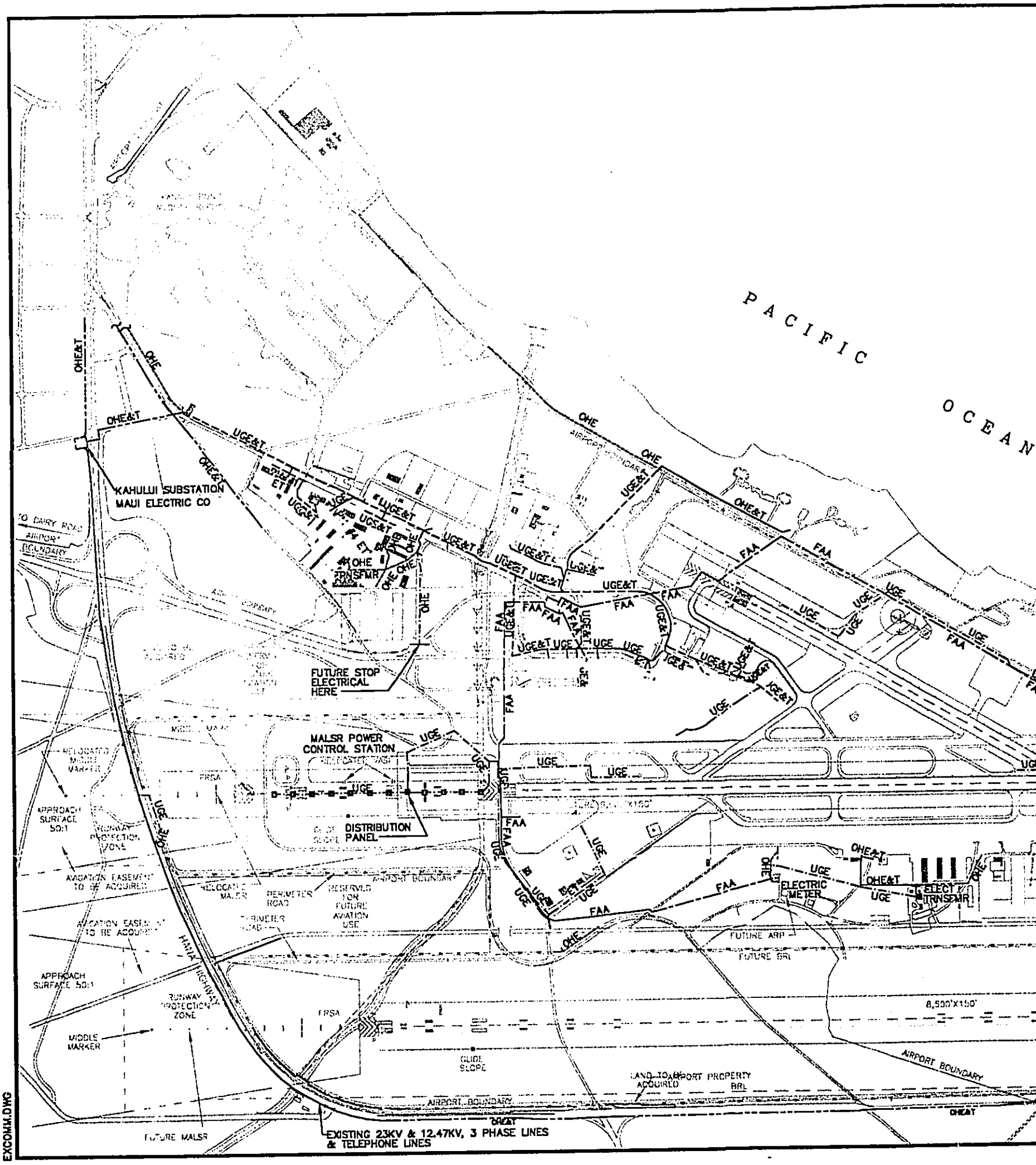
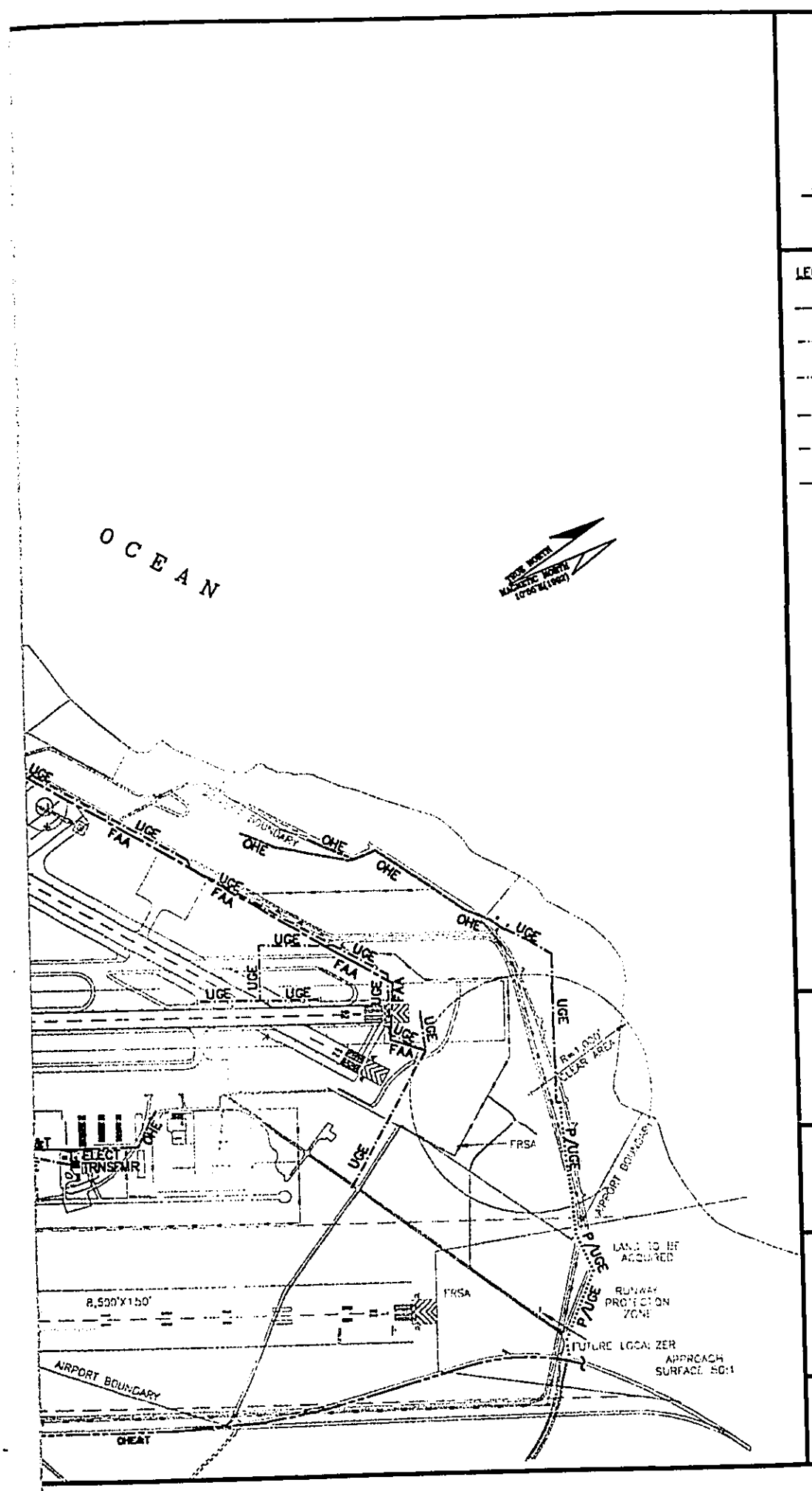

PACIFIC
OCEAN
KAHULUI SUBSTATION
MAUI ELECTRIC CO
TO DAIRY ROAD
AIRPORT BOUNDARY
OHE&T
OHE
UGE&T
FUTURE STOP ELECTRICAL HERE
MALSR POWER CONTROL STATION
RELOCATED MIDDLE MARKER
FRSA
DISTRIBUTION PANEL
APPROACH SURFACE 50:1
RUNWAY PROTECTION ZONE
AVIGATION EASEMENT TO BE ACQUIRED
RELOCATED MALSR
PERIMETER ROAD
RESERVED FOR FUTURE AVIATION USE
HANA HIGHWAY
MIDDLE MARKER
GLIDE SLOPE
FUTURE MALSR
FAA
ELECTRIC METER
FUTURE ARP
FUTURE BRL
8,500'X150'
LAND TO AIRPORT PROPERTY ACQUIRED
EXISTING 23KV & 12.47KV, 3 PHASE LINES & TELEPHONE LINES

EXCOMM.DWG



DEPARTMENT OF TRANSPORTATION • STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

- OHE — EXISTING OVERHEAD POWER LINE
- UGE — EXISTING UNDERGROUND POWER LINE
- UGT — EXISTING UNDERGROUND TELEPHONE LINE
- OHEAT — EXISTING OVERHEAD POWER/TELEPHONE LINE
- UGEAT — EXISTING UNDERGROUND POWER/TELEPHONE LINE
- FAA — EXISTING FEDERAL AVIATION & ADMINISTRATION LINES
- ◻ EXISTING APPROACH LIGHTS
- ET ELECTRICAL TRANSFORMER

0 500 1000 1500
GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING ELECTRIC POWER & COMMUNICATION SYSTEM

DATE	FIGURE
JANUARY, 1997	2-21

Another overhead 12.47kV circuit runs eastward from the MECO's Dairy Road substation to Haleakala Highway along Hana Highway; at that point it turns westward and follows Haleakala Highway to the helicopter facilities. This feeder serves the helicopter facilities, general aviation facility, cargo facility, air taxi facility, FAA Airport Traffic Control Tower, Airport surveillance radar, and the radio transmitter/receiver building.

Communication System. Figure 2-21 illustrates the communication distribution system for the Airport. Kahului Airport receives telephone service from the Hawaiian Telephone Company's switching station located in Kahului. The main telephone system consists of overhead lines (which total approximately 1,000 pairs) running along Keolani Place. These lines serve the facilities in the main passenger terminal area.

The facilities east of Runway 2-20 are fed by a line which taps the main telephone line at Keolani Place. These lines, which amount to approximately 400 pairs, run overhead along Aalele Street, then overhead along Haleakala Highway until reaching the threshold of Runway 2, where the cables are routed underground. These lines run underground to the intersection of Kala Road and Haleakala Highway. The telephone lines then run overhead to serve the facilities east of Runway 2-20. Underground telephone lines tap the overhead lines along Keolani Place to serve the new passenger terminal.

Tsunami Evacuation Route. The low-lying land between the west side of Runway 5-23 and the ocean lies within the tsunami hazard area. Residences in West Spreckelsville to the north of the Airport boundary are also located in this area. The current emergency evacuation route for this community is via Old Stable Road to Hana Highway.

2.6 PROJECT APPROVALS AND PERMITS

This EIS will be used in connection with various Federal, State and Maui County permit applications. Table 2-6 lists the *major* approvals and permits required for the proposed Kahului Airport improvements, while Table 2-7 lists those *major* approvals and permits for the Airport Access Roadway Project. Other approvals and permits which may be required for the proposed improvements in addition to those permits and approvals are listed. Upon analysis of the Proposed Project, a Section 404[12] permit is not required at this time.

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[12] The Section 404 permit is issued under Section 404(b) of the Clean Water Act of 1977, and is applicable to discharges of dredged or fill material into waters of the United States.

Table 2-6
MAJOR PERMITS AND APPROVALS REQUIRED FOR PROPOSED PROJECT

APPROVAL	APPROVING AGENCY OR BODY	STATUS
MAUI COUNTY		
Special Management Area Permit	Planning Commission and Planning Department	Application will be submitted prior to construction.
Airport Zone Designation	Planning Commission and Planning Department	Application will be submitted prior to construction.
Wailuku-Kahului Community Plan Amendment	Planning Commission, Planning Department and County Council	Application will be submitted prior to construction.
Solid Waste Management Plan	County of Maui	Applications will be submitted prior to construction by the contractor, as applicable.
STATE OF HAWAII		
Land Use Boundary Amendment	Land Use Commission	Final decision on the HDOT-AIR application will be rendered upon completion of the EIS.
Historic Sites Review	Department of Land and Natural Resources, Historic Preservation Program	Federal/State coordination completed.
Coastal Zone Management Consistency Determination	Office of State Planning	Federal Coordination completed.
Water Quality Certification (Section 401, Federal Clean Water Act)	Department of Health	Will be completed as necessary prior to construction on a project-by-project basis.
National Pollutant Elimination Discharge System (NPDES)[1]	Department of Health	In process of being completed. See note below.
FEDERAL GOVERNMENT		
Farmland Conversion Impact Rating [2]	U.S. Department of Agriculture, Soil Conservation Service	Phase 1 conversion completed. See note 2.
Biological Assessment	U.S. Fish and Wildlife Service	Completed for EIS. No jeopardy biological opinion rendered..
Airport Layout Plan Approval	Federal Aviation Administration	Conditional approval granted.

Notes for Table 2-6

[1] The general stormwater permit has been obtained. HDOT-AIR is in the process of completing a stormwater pollution control plan for the Airport. The DOT will need to obtain the applicable NPDES permits for the construction activities, prior to the start of construction.

[2] For Phase 2 and 3 improvements. The farmland conversion impact form was completed for the Phase 1 projects as part of this EIS.

Table 2-7
MAJOR PERMITS AND APPROVALS REQUIRED FOR AIRPORT ACCESS ROADWAY

APPROVAL	APPROVING AGENCY OR BODY	STATUS
MAUI COUNTY		
Special Management Area Permit	Planning Commission and Planning Department	Application will be submitted prior to construction.
STATE OF HAWAII		
Historic Sites Review	Department of Land and Natural Resources, Historic Preservation Program	Federal/State coordination completed.
Coastal Zone Management Consistency Determination	Office of State Planning	Federal coordination completed.
Water Quality Certification (Section 401, Federal Clean Water Act)	Department of Health	Will be completed as necessary on a project by project basis.
National Pollutant Elimination Discharge System (NPDES)[1]	Department of Health	In progress. See notes below
FEDERAL GOVERNMENT		
Airport Layout Plan Approval	Federal Aviation Administration	Conditional approval granted.

[1] The stormwater permit has been obtained. HDOT-AIR is in the process of completing a stormwater pollution control plan for the Airport.

2.7 USES OF THE EIS

This EIS has been prepared in compliance with the procedural and substantive requirements of the National Environmental Policy Act of 1969, as amended (NEPA); FAA Orders 5050.4A and 1050.1D; Chapter 343, Hawaii Revised Statutes, as amended; the Stipulated Court-order of March 12, 1991 and the Court-order of June 2, 1993. The purpose of this EIS is to identify and assess environmental impacts that could result from the implementation of the proposed Kahului Airport improvements. The EIS will be used as an informational document in the decision making process by the approving agencies. Through the review of this EIS, as well as the technical studies performed in support of the analyses contained herein, HDOT-

AIR and the FAA will: (i) identify intermediate and cumulative environmental impacts in the Proposed Project; (ii) propose appropriate mitigation measures for potential negative impacts; and (iii) ultimately create a well-planned, environmentally sound project. To the extent possible, the information contained in this EIS covers both the on- and off-site impacts of the project, as well as the infrastructure improvements and amenities that are necessary to serve the project.

This EIS will be used as one of the primary informational documents to support the requisite permits and approvals, as listed in Table 2-6. The EIS is also intended to support HDOT's request for ISTEA funds from the FHWA for the Airport Access Road. The ISTEA requirement mandated the use of the 2020 traffic forecasts for the automobile traffic analysis in this EIS.

In addition to previously prepared Airport Master/Development Plans and Environmental Impact Statements, the following studies and surveys were prepared specifically for or used in the analyses and assessment process described in this EIS and are included as Appendices to this EIS.

- *Air Quality Study for the Proposed Kahului Airport Improvements*, B.D. Neal & Associates, December 1995

- *Alien Species Action Plan, A Multi-agency Commitment*, October 19, 1994

- *The Archaeology of Kahului Airport*, International Archaeological Research Institute, Inc., May 1995

- *Preservation Plan: Site 1798, Kahului Airport, Island of Maui*, International Archaeological Research Institute, Inc., July 1997.

- *Architecture and Archaeology at Naval Air Station Kahului, Kahului Airport, Island of Maui*, International Archaeological Research Institute, Inc., July 1997.

- *Aviation Studies Related to the Proposed Kahului Airport Master Plan Alternatives*, P&D Aviation, May 1995

- *Alien Species Biological Assessment for Kahului Airport Improvements, Kahului, Maui, Hawaii*, Edward K. Noda and Associates, Inc., March 1997

- *Biological Opinion of the U.S. Fish and Wildlife Service for the Kahului Airport Improvements, Phases 1 and 2*, July 23, 1997

- *Botanical Survey Report for the Kahului Airport, Wailuku District, Maui, Hawaii*, Botanical Consultants, 1994

- Faunal (Bird and Mammal) Reports for the Environmental Impact Statement Kahului Airport, Kahului, Maui, Philip Bruner

- *Infrastructure Analysis*, R.T. Tanaka Engineers, Inc., December 1994

- *Kahului Airport - FAR Part 150, Noise Compatibility Program, Volume II, Noise Compatibility Program Report*, Belt Collins Hawaii, September 1995

- *Kahului Airport Improvements, Traffic Impact Study*, Wilbur Smith Associates, June 1995

- *Land Use: Impact Assessment*, Eugene P. Dashiell, AICP, Planning Services, May 1995

- *Limited Survey Hazardous Material, Kahului Airport*, Edward K. Noda & Associates, Inc., December 1994

- *Maui General Aviation Study, Volume 1, Airport Site Selection Report*, Edward K. Noda & Associates, Inc., P&D Aviation, & R.T. Tanaka Engineers, Inc., December 1995

- *Kahului EIS Noise Analysis*, Mestre Greve Associates, February 1996

- *Programmatic Agreement, Regarding the Development of Kahului Airport, Kahului, Hawaii*, Federal Aviation Administration

- *Socio-Economic Impact Assessment of Proposed Kahului Airport Master Plan Improvements*, Community Resources, Inc., May 1995

- 2020 Traffic Analysis and Related Studies

    - *Year 2020 Traffic Assessment of Kahului Airport Access Road*, Wilbur Smith Associates, December 1995

    - *Noise Assessment for Kahului Airport Expansion, Year 2020 Highway Noise Standards Analysis*, Mestre Greve Associates, February 1996

    - *Air Quality Study for the Year 2020 Traffic in the Vicinity of Kahului Airport*, B.D. Neal & Associates, November 1995

    - *Drainage System Requirements for Different Intersection Improvements at Hana Highway and Airport Access Road*, R.T. Tanaka Engineers, Inc., February 1996

- Water Quality Analysis, Oceanic Institute and Anacon, Inc.

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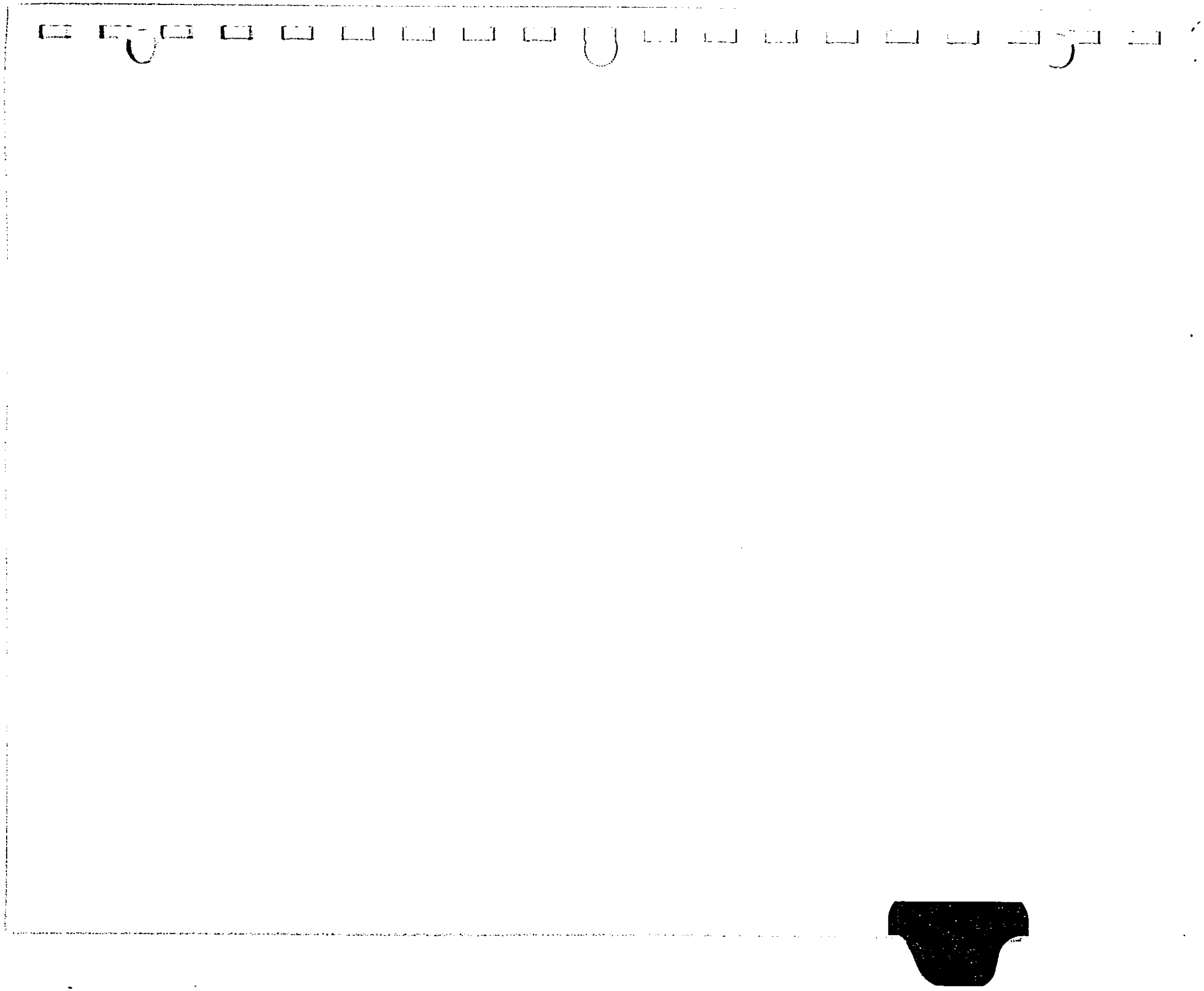


SECTION 3.0
AFFECTED ENVIRONMENT, PROBABLE CONSEQUENCES AND MITIGATION MEASURES

3.1 INTRODUCTION

The general and specific physical, natural and social environmental characteristics, archaeological and cultural resources that potentially will be affected by the Proposed Project (preferred alternative) are described below. Additionally, the public utility components and public facilities serving the Kahului Airport that may be affected by the proposed improvements are also described. The criteria against which potential effects have been measured, the significance of those effects, measures to minimize or mitigate potential adverse effects, and the significance of those effects following the implementation of mitigation measures are also described.

To the extent practical and applicable, well-established and accepted analytic and scientific techniques have been used to evaluate the potential effects of the proposed airport improvements. Where possible, numerical modeling and computer simulation has been applied to analyze the potential for future environmental impacts. As much as possible, conclusions or estimates of likely effects were made using the appropriate Federal or State standards, or applicable objective criteria.

The criteria used to evaluate potential effects were developed to measure objectively the potential short-term and long-term environmental effects of the proposed improvements to Kahului Airport. In the evaluation, it was necessary to determine the potential effects of individual development components and the potential aggregate effect of the overall development concept. Also, the criteria are applied to the cumulative effects of the proposed improvements over the multi-phased development period. The results of the application of these criteria are used to develop measures to mitigate and minimize potential adverse effects, minimize environmental harm, and to enhance beneficial effects.

The analysis of the long-range projects (Phase 3 of the Master Plan) will be performed to the extent practical and feasible. Because these projects are beyond the year 2009 time frame, the full impacts of the larger projects in Phase 3, namely the parallel runway, relocation of helicopters off-airport, the fuel supply pipeline from Kahului Harbor to the bulk fuel tanks, and transient apron, may not be known and cannot be properly assessed at this time. These larger projects will probably, if at all, be implemented closer to the year 2016 or beyond. The EIS has noted where an impact analysis for the long-range projects are unknown or cannot be properly assessed at this time. However, prior to the construction of these long-range projects additional environmental analysis will be completed in order to determine what, if any, further environmental documentation is required.

3.2 NOISE

This EIS addresses the noise impacts, if any, attributed to the Proposed Project. The noise analysis contained in the EIS is separated into several sections to help distinguish the different noise analyses and evaluation criteria (*e.g.*, those for aircraft noise versus those for roadway noise), and the different impact locations of the various noise sources. The FAA and FHWA utilize different noise metrics for land use/noise compatibility assessment. The FAA uses the 24 hour weighted energy average metric, (Yearly Averaged Day-Night Average Sound Level (DNL)) as recommended by the EPA. This descriptor is an averaged yearly 24-hour average and is based on A-weighted sound level, and increases the nighttime sound levels (10:00 pm to 7:00 am) by 10 decibels (dBA). The FHWA uses the peak one hour energy average noise level Leq, which has units of dBA. In this EIS, the FAA metric will be used for assessing aircraft noise and the FHWA metric will be used to assess roadway (ground traffic) noise. Airport/aircraft, ground traffic and construction noise will be treated in separate sections.

3.2.1 AIRPORT AND AIRCRAFT NOISE

As a means of implementing the Federal Aviation Safety and Noise Abatement Act of 1979, the FAA adopted Regulations on Airport Noise Compatibility Planning Programs. These regulations are spelled out in FAR Part 150. As part of the FAR Part 150 Noise Compatibility Program, the FAA published noise and land use compatibility charts to be used for land use planning with respect to aircraft noise. An expanded version of this chart appears in Advisory Circular 150/5020-1 (dated August 5, 1983). These guidelines represent recommendations to local authorities for determining acceptability and permissibility of land uses. The guidelines specify a maximum amount of noise exposure that will be considered acceptable or compatible to people in living and working areas.

These noise levels are derived from case histories involving aircraft noise problems at civilian and military airports and the resultant community response. Residential land use is deemed acceptable for noise exposures up to 65 DNL. Recreational areas are also considered acceptable for noise levels up to 65 DNL (with certain exceptions for sport activity areas that are allowed higher noise levels). Note that these recreational noise level guidelines are intended for application to zoning of land use around an existing airport as opposed to assessing impacts in a wilderness setting. Several important notes appear for the FAA guidelines including one which indicates that ultimately *"the responsibility for determining the acceptability and permissible land uses remains with the local authorities."* Therefore, the State revised the noise guidelines by lowering the acceptable noise level to 60 DNL for residential land use. In addition, for those residential land uses that are exposed to aircraft generated noise greater than 55 DNL, Section 31, Chapter 467, HRS, requires property owners to disclose aircraft noise levels to potential buyers prior to any real property transactions.

The noise descriptor used for the Part 150 Noise Compatibility Program is the Yearly Averaged Day-Night Average Sound Level (DNL). The actual DNL (Ldn) noise contours used in the Part 150 Noise Compatibility Program (NCP) and this EIS were generated by FAA's Integrated Noise Model

version 4.11. Noise sampling for the FAR Part 150 Noise Compatibility Program was used to verify the generated base year noise contours.

3.2.1.1 Existing Conditions

A FAR Part 150 NCP for Kahului Airport was voluntarily initiated by HDOT-AIR in late 1987, with the Noise Exposure Maps completed in 1989. However, the completion of the actual NCP was delayed. Due to this delay, the time interval between the 1989 Noise Exposure Maps and the present required that a new set of Noise Exposure Maps be completed and used as a basis for the Kahului Airport Part 150 NCP (Section 11.0, Reference 16). Thus, the base year Noise Exposure Map was 1993 and the 5-year forecast Noise Exposure Map is for the year 1998 (See Figures 3-1A and 3-1B). The NCP and the Noise Exposure Maps are designed to address existing incompatible uses within the Airport's environs and to help prevent new incompatible uses within the Airport's environs from developing. The Noise Exposure Maps indicate that there are incompatible land uses within the Airport environs in both the base year (1993) and in the 5-year forecast year (1998). The 1998 Noise Exposure Maps presents the noise contours with the runway extension, whereas the 1993 Noise Exposure Map presents the noise contours with the existing 7,000 foot runway length. The NCP is included in Appendix O and was approved by the Federal Aviation Administration, letter dated September 18, 1996. The amount of incompatible land use within the Airport environs is shown in the Table 3-1a[1] and Table 3-1b.[1]

The NCP concluded that the majority of incompatible land uses would be in the residential communities of East and West Spreckelsville and Puunene. There are 89 dwelling units which are currently impacted by aircraft noise levels greater than 60 DNL.[2] (Note, however, that the single family dwellings in the Puunene Mill area are slated to be demolished in the short-term time period.) In addition, there are three schools and one church located within the 60 DNL aircraft noise contours. The existing noise contours for Kahului Airport (1994) are shown in Figure 3-1. These contours essentially confirm the NCP finding of incompatible land uses in the Spreckelsville and Puunene communities. The FAR Part 150 NCP recommended that the following noise abatement measures be implemented to reduce the incompatible Land Uses within the Kahului Airport environs.

Recommended Noise Abatement Measures:

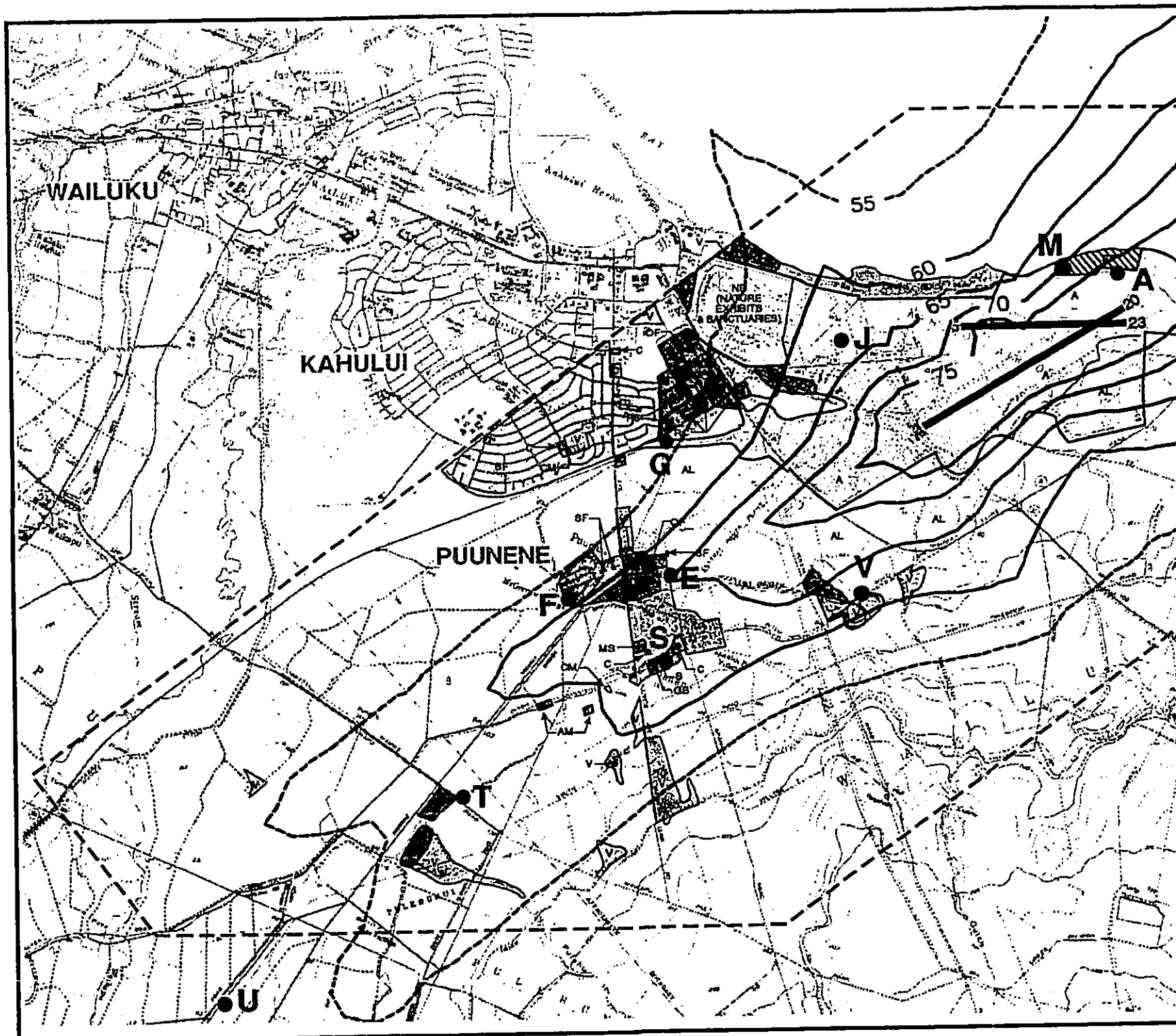
- Nighttime Prohibition on Stage 2 Aircraft[3]
  HDOT-AIR is presently pursuing an amendment to the Hawaii Administrative Rules Chapter 19-28, which would add a new section, § 19-28-3.1, which states:

---

[1] In addition to the analysis prepared in connection with the Part 150 program, a separate aircraft noise analysis was prepared for this EIS and is presented in Appendix C.

[2] The existing background ambient noise without aircraft or vehicular traffic is in the range of 45 to 50 dBA. During calm wind periods this ambient level may drop below 45 dBA.

[3] HDOT-AIR has recently suspended amending Hawaii Administrative Rules Chapter 19-28.



LAND USE CLASSIFICATION

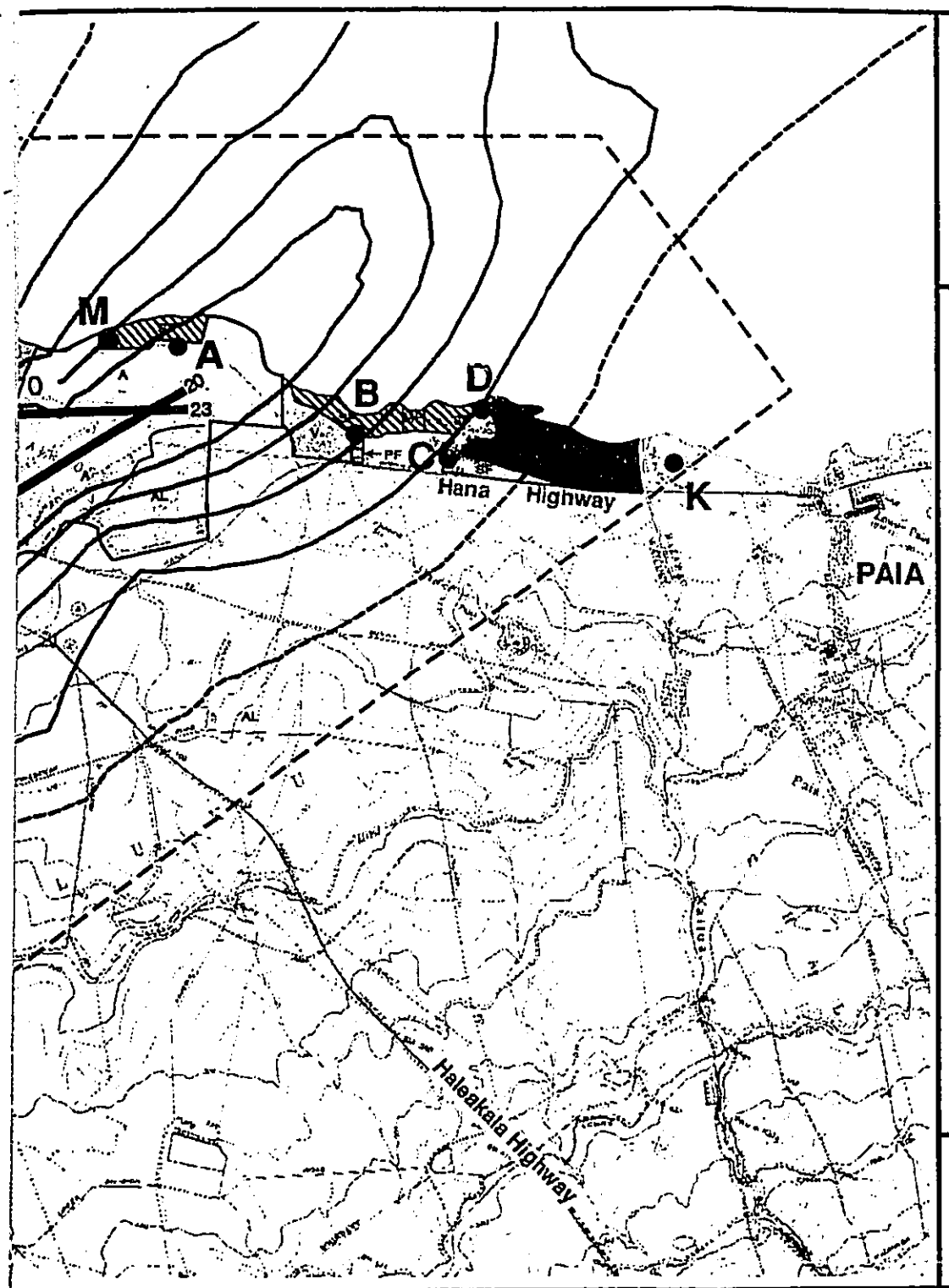
COMMERCIAL AND GOVERNMENT USE
- RC RETAIL COMMERCIAL
- OF BUSINESS/PROFESSIONAL OFFICES
- AC AIRPORT BUSINESSES (car rental agencies, tours, lei stands)
- RS RETAIL STORAGE (warehouses)
- CS COMMERCIAL SERVICES
- GB GOVERNMENT BUILDING

RESIDENTIAL
- SF SINGLE FAMILY
- MF MULTIPLE FAMILY

PUBLIC USE
- S SCHOOL
- H HOSPITALS (clinics, health care facilities, nursing homes)
- PF PUBLIC FACILITIES (day care, libraries, community centers)
- C CHURCH

MANUFACTURING, PRODUCTION & STORAGE
- M LIGHT/HEAVY MANUFACTURING
- AM AGRICULTURAL MANUFACTURING
- MS MANUFACTURING WAREHOUSES

AL AGRICULTURAL LAND



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

1993 Ldn Contours

Noise Monitoring Station

Note: Land use authority rests with the County of Maui and the State of Hawaii.

0 2,000 4,000 6,000
GRAPHIC SCALE IN FEET

SOURCE:
BELT COLLINS HAWAII
Y. EBISU & ASSOCIATES
1995

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

1993 NOISE EXPOSURE MAP

DATE	FIGURE
JANUARY, 1997	3-1A

facilities,

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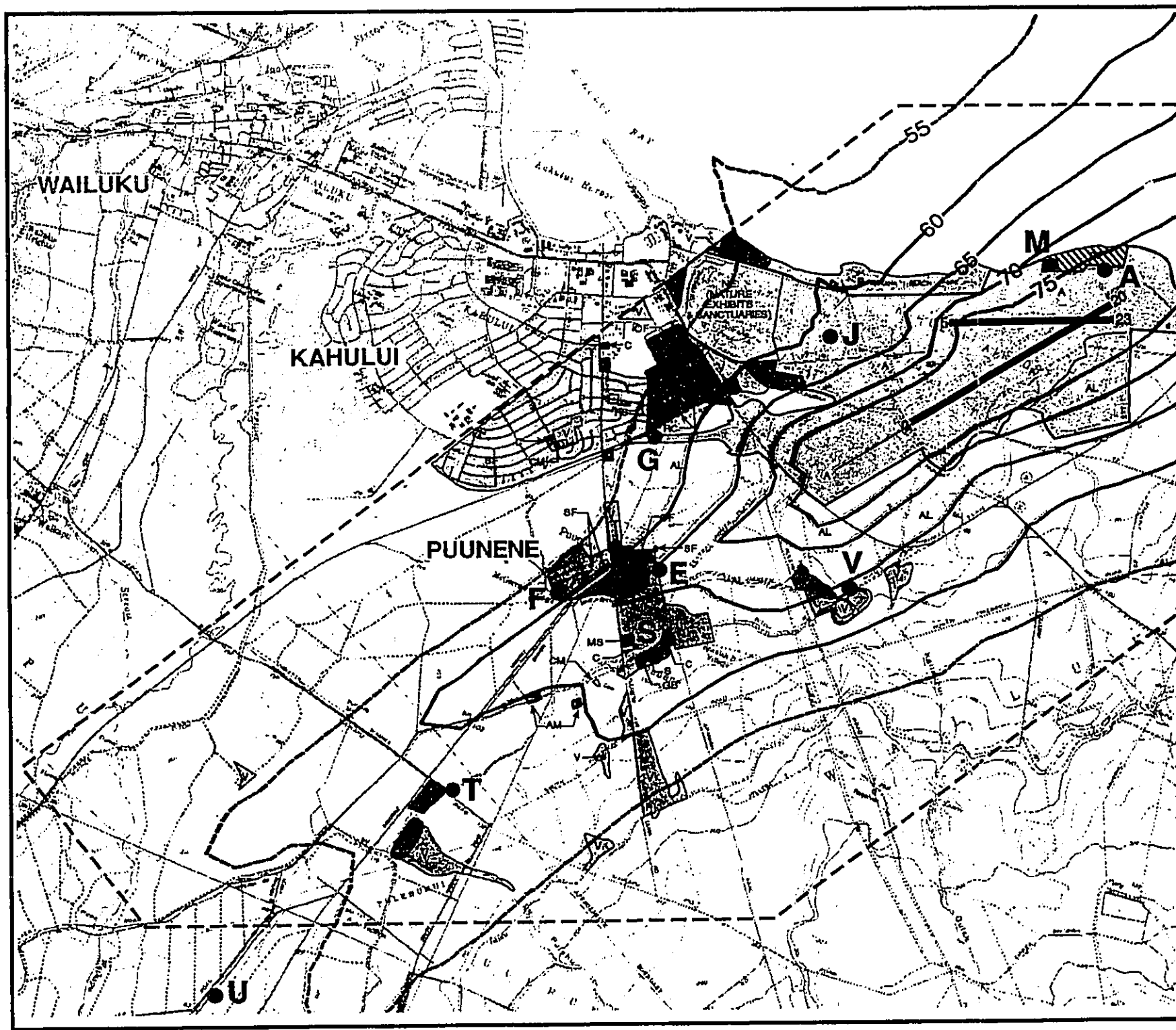
SES
ND

RECREATIONAL
OR OUTDOOR RECREATION
NE NATURE EXHIBITS & SANCTUARIES
G&W GOLF COURSES, GARDENS, WATER RECREATION
OPEN SPACE
CM CEMETERY
P PARK
V VACANT OR UNDEVELOPED LAND
STUDY AREA BOUNDARY
AIRPORT PROPERTY
AREA OF INCOMPATIBLE LAND USE

DOCUMENT CAPTURED AS RECEIVED



LAND USE CLASSIFICATION

COMMERCIAL AND GOVERNMENT USE
- RC RETAIL COMMERCIAL
- OF BUSINESS/PROFESSIONAL OFFICES
- AC AIRPORT BUSINESSES (car rental agencies, tours, lei stands)
- RS RETAIL STORAGE (warehouses)
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RESIDENTIAL
- SF SINGLE FAMILY
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PUBLIC USE
- S SCHOOL
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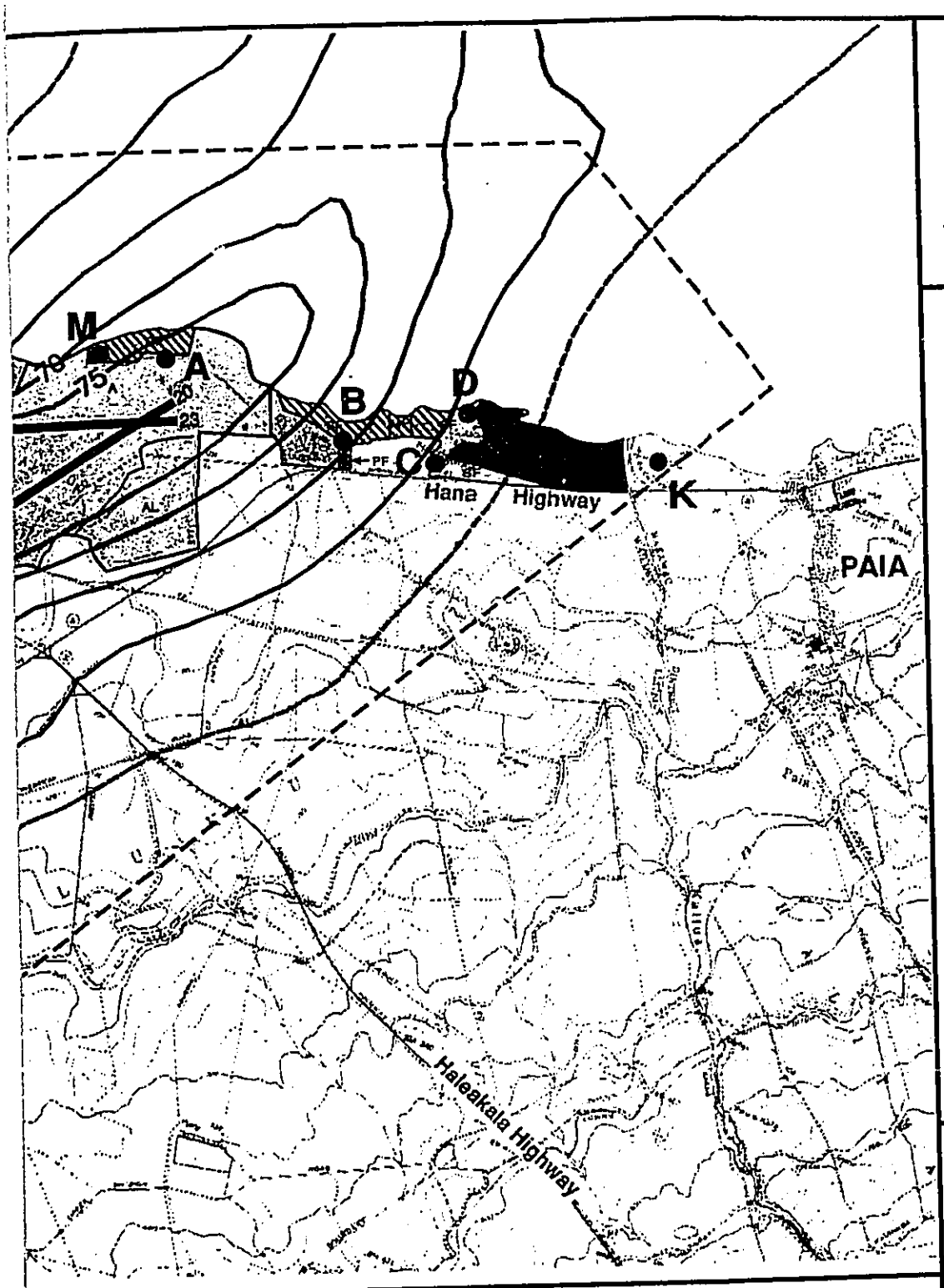
MANUFACTURING, PRODUCTION & STORAGE
- M LIGHT/HEAVY MANUFACTURING
- AM AGRICULTURAL MANUFACTURING
- MS MANUFACTURING WAREHOUSES

AL AGRICULTURAL LAND

DOCUMENT CAPTURED AS RECEIVED



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

1998 Ldn Contours

Noise Monitoring Station

Note: Land use authority rests with the County of Maui and the State of Hawaii.

0 2,000 4,000 6,000
GRAPHIC SCALE IN FEET

SOURCE:
BELT COLLINS HAWAII
Y. EBISU & ASSOCIATES
1995

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

1998 NOISE EXPOSURE MAP (NO MITIGATION)

DATE	FIGURE
JANUARY, 1997	3-1B

re facilities,

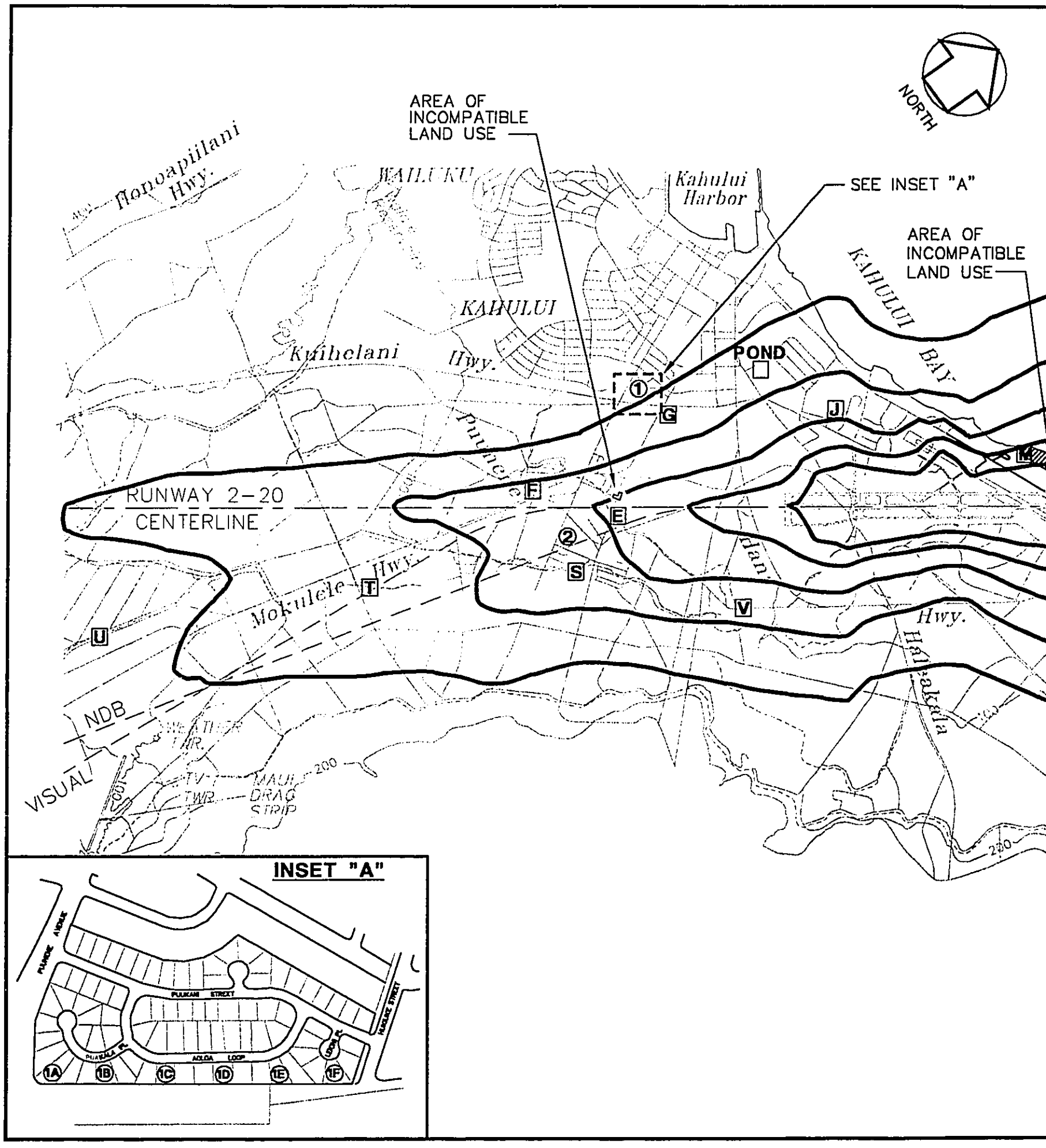
, libraries,

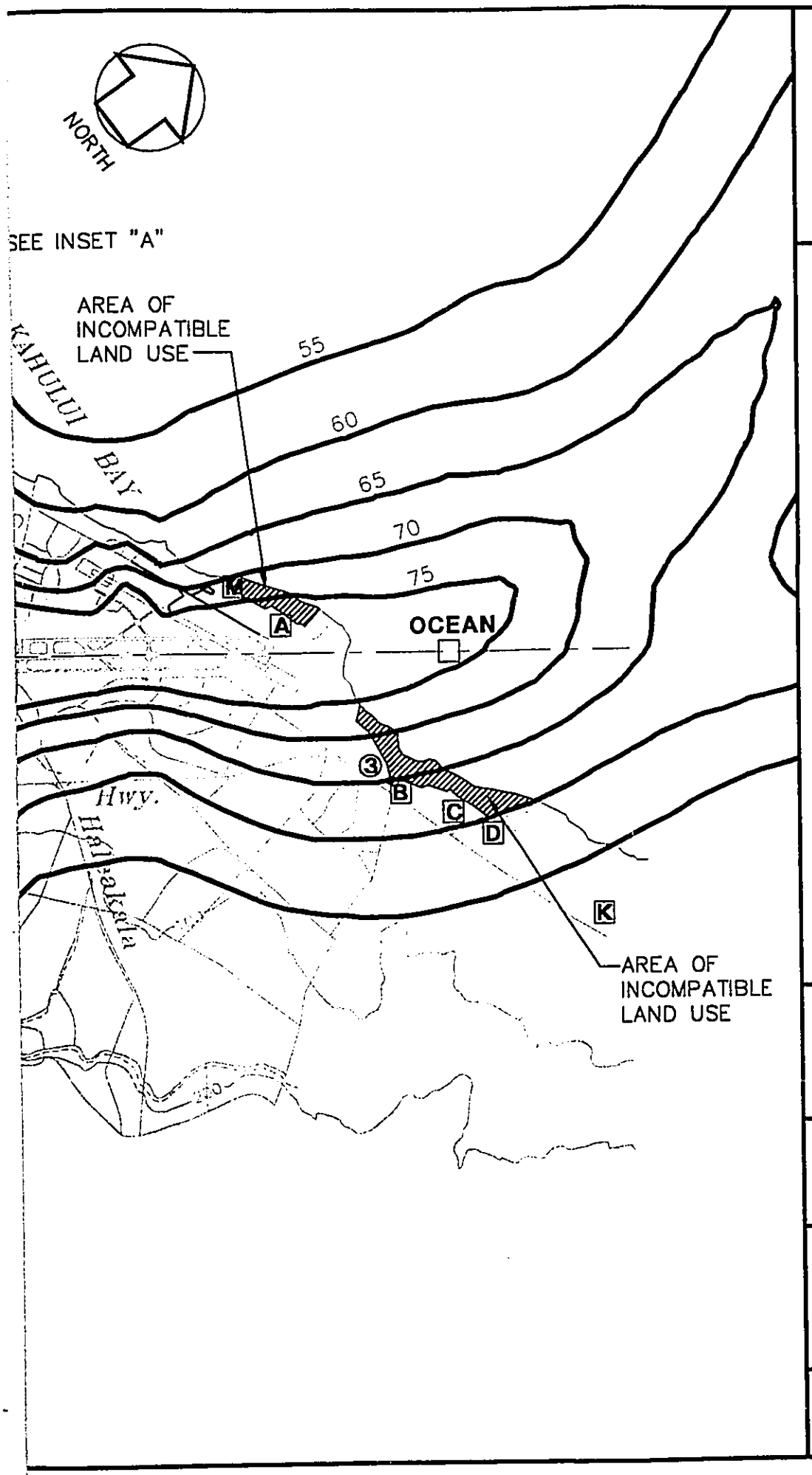
)DUCTION & STORAGE
ING
URING
USES
ND

RECREATIONAL
OR OUTDOOR RECREATION
NE NATURE EXHIBITS & SANCTUARIES
G&W GOLF COURSES, GARDENS, WATER RECREATION

OPEN SPACE
CM CEMETERY
P PARK
V VACANT OR UNDEVELOPED LAND

STUDY AREA BOUNDARY
AIRPORT PROPERTY
AREA OF INCOMPATIBLE LAND USE


NORTH
AREA OF INCOMPATIBLE LAND USE
SEE INSET "A"
AREA OF INCOMPATIBLE LAND USE
Honoapiilani Hwy.
WAILUKU
Kahului Harbor
KAHULUI
Kuihelani Hwy.
POND
KAHULUI BAY
Puunene Ave.
RUNWAY 2-20
CENTERLINE
Mokulele Hwy.
Hwy.
Hāli'akalā
NDB
VISUAL
WEATHER TWR.
TV TWR
MAUI DRAG STRIP
200
INSET "A"
PUUNENE AVENUE
PUUKANI STREET
HUGHES STREET
PUUKALA ST.
AOLOA LOOP
LOOP ST.
1A
1B
1C
1D
1E
1F



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

① NOISE SENSITIVE RECEPTORS

A NOISE MEASUREMENT SITES

0 2,000 4,000 6,000
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

1994 AIRCRAFT NOISE DNL CONTOUR MAP

DATE	FIGURE
MARCH, 1996	3-1

Table 3-1a

1993 INCOMPATIBLE LAND USES[a]

DETERMINED USING RECOMMENDED STATE STANDARDS

(Section 11.0, Reference 16)

LAND USE	INCOMPATIBLE LAND USES IN ACRES BY AVERAGE DAY-NIGHT SOUND LEVEL			
	60-65	65-70	70-75	>75
Single-Family Residential	18.48[b]	9.01	7.82	12.15
Multi-Family Residential	4.04	0	0	0
Public Facilities (a)	3.0	0	0	0
Commercial (a)	N.A.	N.A.	0	0
Industrial	N.A.	N.A.	0	0

Table 3-1b

1993 INCOMPATIBLE LAND USES[a]

DETERMINED USING RECOMMENDED STATE STANDARDS

(Section 11.0, Reference 16)

LAND USE	No. of Incompatible Dwelling Units by DNL Band				No. of Persons Residing in Incompatible Areas[c] by DNL Band			
	60-65	65-70	70-75	>70	60-65	65-70	70-75	>75
Single-Family Residential (b)	36	11	5	19	126	39	18	67
Multi-Family Residential	18	0	0	0	50	0	0	0
Public Facilities	3	0	0	0	N.A.	N.A.	N.A.	N.A.
Churches	1	0	0	0	N.A.	N.A.	N.A.	N.A.

Note: a. Compatibility determination is from the Department of Transportation, State of Hawaii, recommendations for local land use compatibility.

b. Unsubdivided land in Puunene subdivision assumed to be ¼ acre per residence.

c. Population estimates based on 3.5 persons per single-family residential unit and 2.75 persons per multi-family unit.

Source: Kahului Airport - FAR Part 150, Volume II, Noise Compatibility Program Report, September 1995.

§ 19-28-3.1 Additional restrictions at Kahului. No aircraft shall take off or land at Kahului Airport between the hours of 10:00 p.m. and 6:00 a.m. as of December 31, 1995 unless it is a stage 3 airplane.

The NCP recommends that HDOT-AIR continue to evaluate the impact of imposing a "nighttime prohibition on Stage 2 aircraft" as part of the continuing effort to amend Chapter 19-28, Hawaii Revised Statutes.

- Clarification of Informal Runway Use Program. The intent of this measure is to reduce the incidence of light aircraft overflights of homes in Spreckelsville. This measure would reword the existing Informal Runway Use Program to clarify the departure routes from Runways 5-23 and 2. According to the NCP, the estimated cost for implementation is $10,000.

- Negotiate with private landowners in West Spreckelsville enclosed by the 75 DNL Contour to purchase the private properties or avigation easements (currently underway). According to the NCP, these properties have an estimated property value of $13 million.

- Initiate a Sound Attenuation Program for remaining residences in East and West Spreckelsville. According to the NCP, the estimated cost could range from $1.8 million to $4 million, depending on the number of home owners which chose to participate.

- Offer to purchase private properties that are between the 60 and 75 DNL contours whose owners do not wish to participate in the Sound Attenuation Program.

- Continue monitoring of development proposals in the Kahului Airport environs, disclosing airport noise exposure maps to the community.

- Design, install, and operate a noise monitoring system at Kahului Airport. According to the NCP, the estimated cost is $300,000.

- Annually monitor aircraft noise levels and operations at Kahului Airport, and conduct public informational meetings on the progress of the Part 150 Noise Compatibility Program. According to the NCP, the estimated annual cost would be $10,000.

3.2.1.2 Impact Analysis

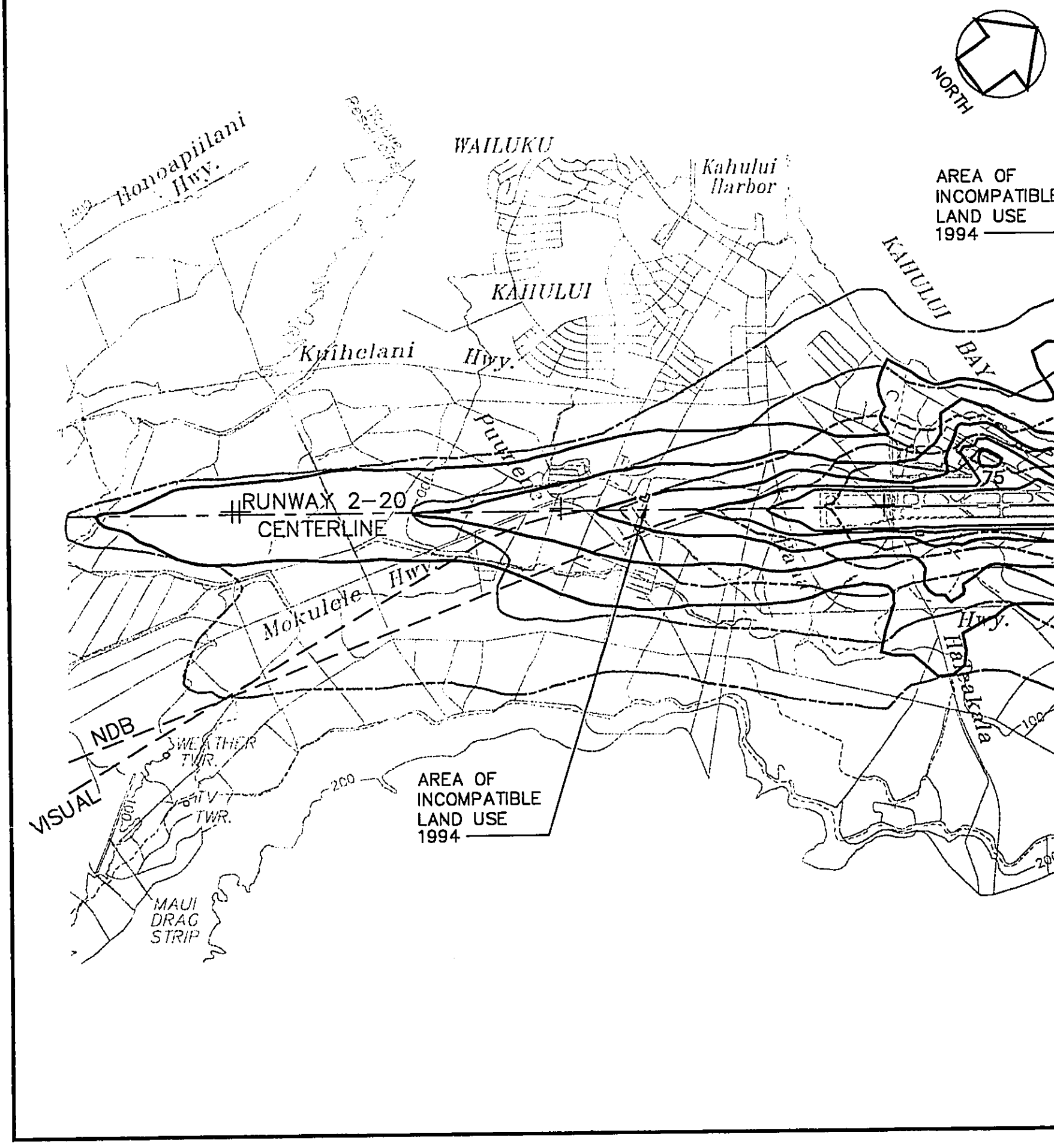
Land use compatibility guidelines for various levels of aircraft generated noise, as measured by the DNL (Ldn) descriptor method, are shown in Table 3-2. For Kahului Airport, the County Planning Department has imposed a Special Overlay District which follows the 60 DNL noise level contour surrounding the Airport. Within this Special Overlay District, County Community Plan land uses are limited to airport, light or heavy industrial, commercial, and agriculture. It also allows residential uses in part of Spreckelsville. HDOT-AIR has recommended the 60 DNL noise level as the common level for determining land use compatibility with respect to noise sensitive uses near airports. In addition, for those noise sensitive land uses that are exposed to aircraft generated noise greater than 55 DNL, Section 31, Chapter 467, HRS, requires property owners to disclose aircraft noise levels to potential buyers prior to any real property transactions.

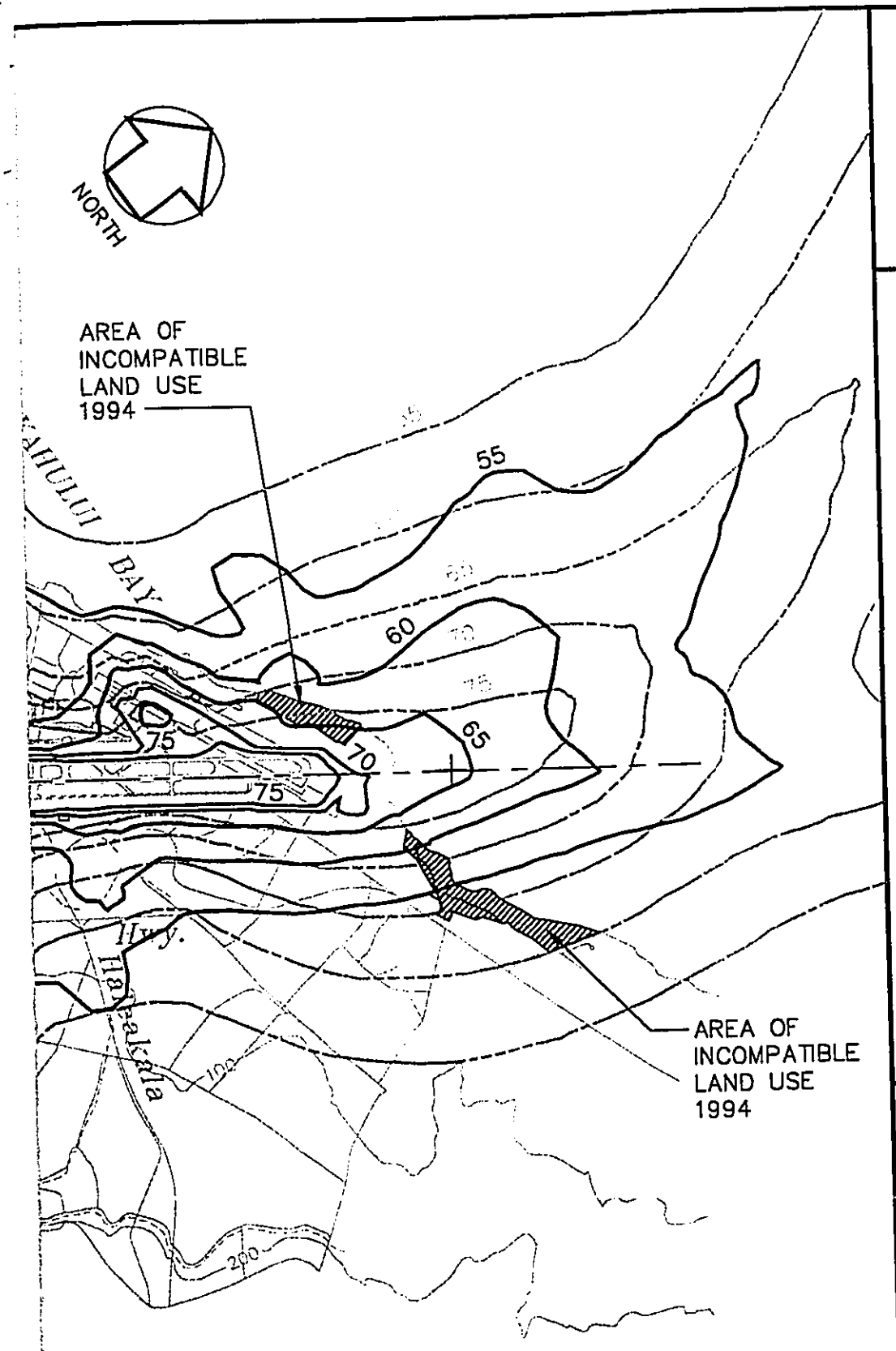
Aircraft noise contours for Kahului Airport were developed using the FAA Integrated Noise Model (INM) Version 4.11. The contours were developed for years 1994 and 2010. The contours generated for the 2010 forecast year are derived from an aircraft mix based on the information contained in Appendix N. The analysis used an average day of 699 aircraft operations, of which 221 were air carrier operations, 311 were air taxi/commuter operations, 135 were general aviation operations, and 32 were military operations. It is assumed that all aircraft are Stage 3, with the B737-200 aircraft replaced by B737-300 aircraft and the DC-9 aircraft replaced with MD-80 aircraft.

The assumption that the airlines will have a Stage 3 fleet by the year 2010 is based on industry projections of the life of Stage 2 aircraft, the higher fuel cost for older aircraft, and the higher maintenance cost for aging aircraft. This latter factor is particularly significant for high-use, short haul aircraft such as the Boeing 737 and DC-9 aircraft used by the interisland air carriers. The interisland commercial jet carriers have a much higher number of landing-and-takeoff cycles per day than is typical in the US fleet.

The two improvement projects which will impact the aircraft noise contours are the proposed Runway 2-20 extension and the proposed parallel runway. Figure 3-2 compares the 2010 aircraft noise contours for the proposed Runway extension against the 1994 noise contours with the existing conditions. Figure 3-3 compares the 2010 noise contours for the parallel runway against the 1994 contours with the existing conditions. Note that for the parallel runway, the analysis assumed that Runways 2L and 20R as the primary runways for departure by the larger propeller and jet aircraft, and Runways 2R and 20L as the primary runways for landings of these aircraft. Both of the forecast 2010 contours (Figures 3-2 and 3-3) show a substantial decrease in the noise impacts from aircraft using Kahului Airport. This significant reduction in the noise contours is partially due to the assumption that by 2010 all aircraft are of the quieter Stage 3 variety.

To assess the impact due to the Proposed Project only, the impact analysis was performed by comparing the differences of the "No-Action" alternative and the Proposed Project for the year


NORTH
AREA OF
INCOMPATIBLE
LAND USE
1994
Honoapiilani
Hwy.
WAILUKU
Kahului
Harbor
KAHULUI
KAHULUI
BAY
Kuihelani
Hwy.
Puunene
RUNWAY 2-20
CENTERLINE
Mokulele Hwy
Hana Hwy.
NDB
VISUAL
WEATHER
TWR.
TV
TWR.
AREA OF
INCOMPATIBLE
LAND USE
1994
MAUI
DRAG
STRIP
100
200
75



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

60 — 1994

60 — 2010

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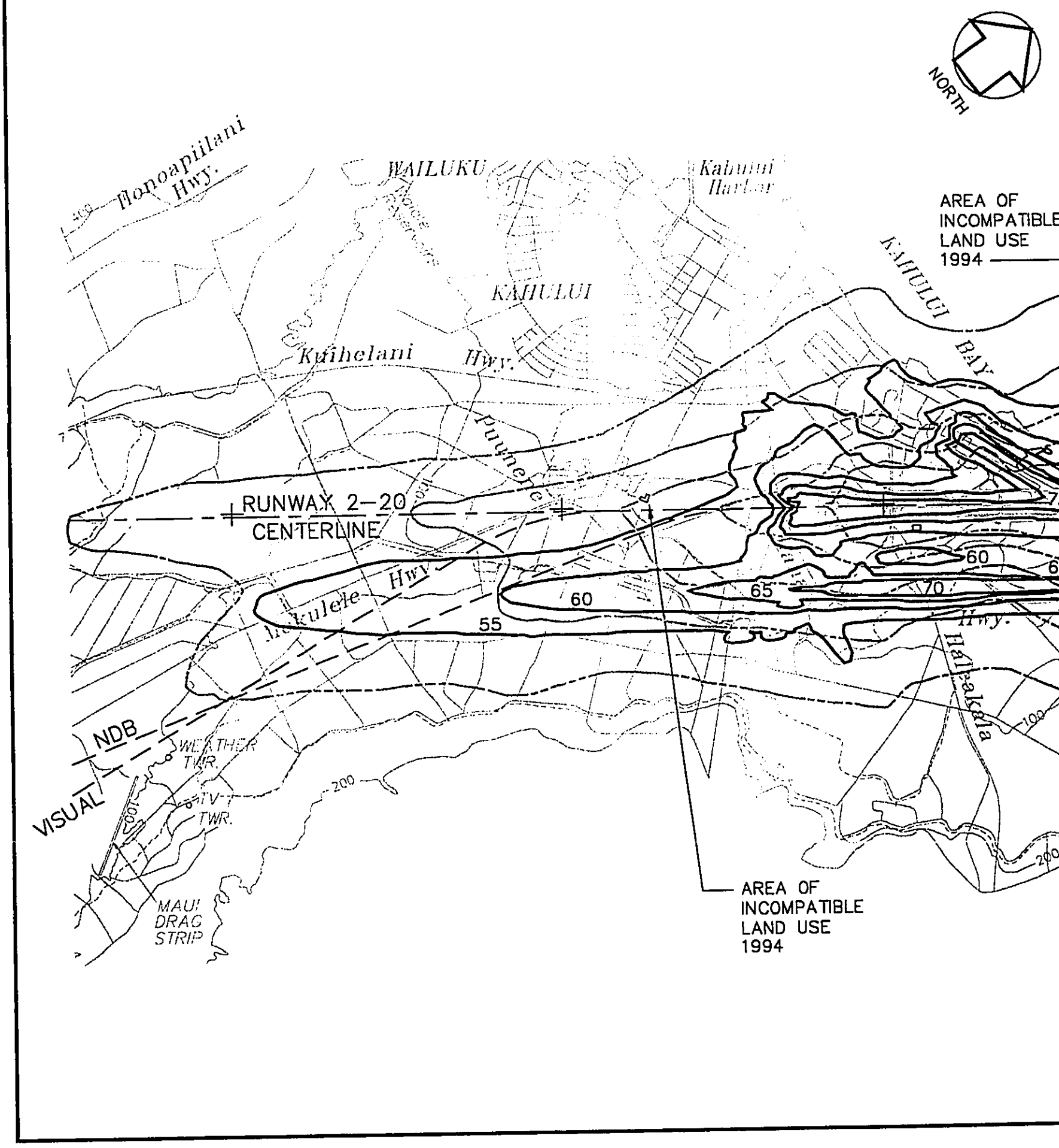
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

2010 AIRCRAFT NOISE DNL CONTOUR MAP WITH RUNWAY 2-20 EXTENDED TO 9,600 FEET

DATE	FIGURE
MARCH, 1998	3-2


NORTH
Honoapiilani Hwy.
WAILUKU
Kahului Harbor
AREA OF INCOMPATIBLE LAND USE 1994
KAHULUI
KAHULUI BAY
Kuihelani Hwy.
Puuhele
RUNWAY 2–20
CENTERLINE
Hana Hwy
60
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70
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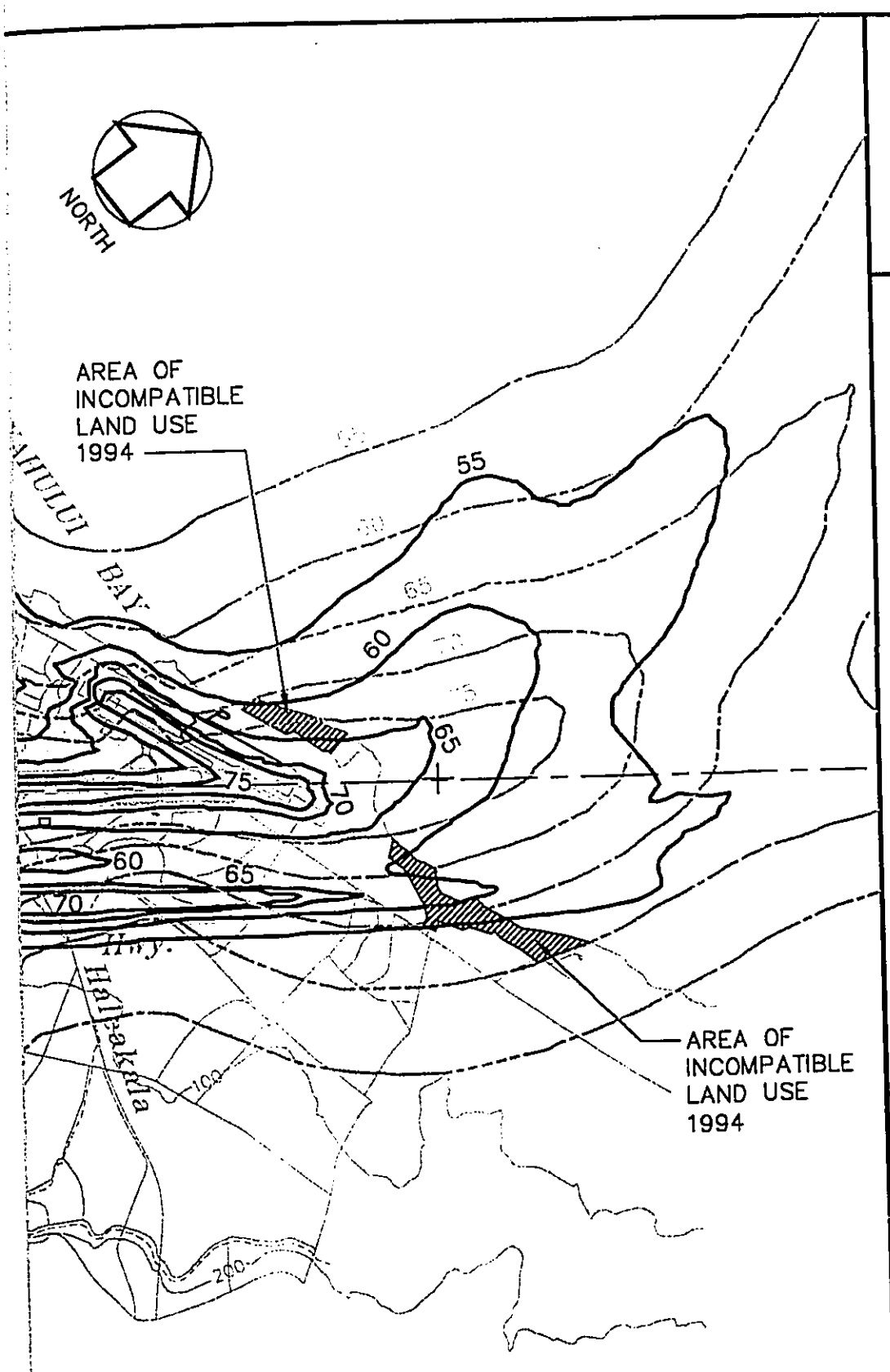
NDB
VISUAL
WEATHER TWR.
TV TWR.
100
200
MAUI DRAG STRIP
AREA OF INCOMPATIBLE LAND USE 1994



DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

60 — 1994

60 — 2010

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GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT

STATEMENT

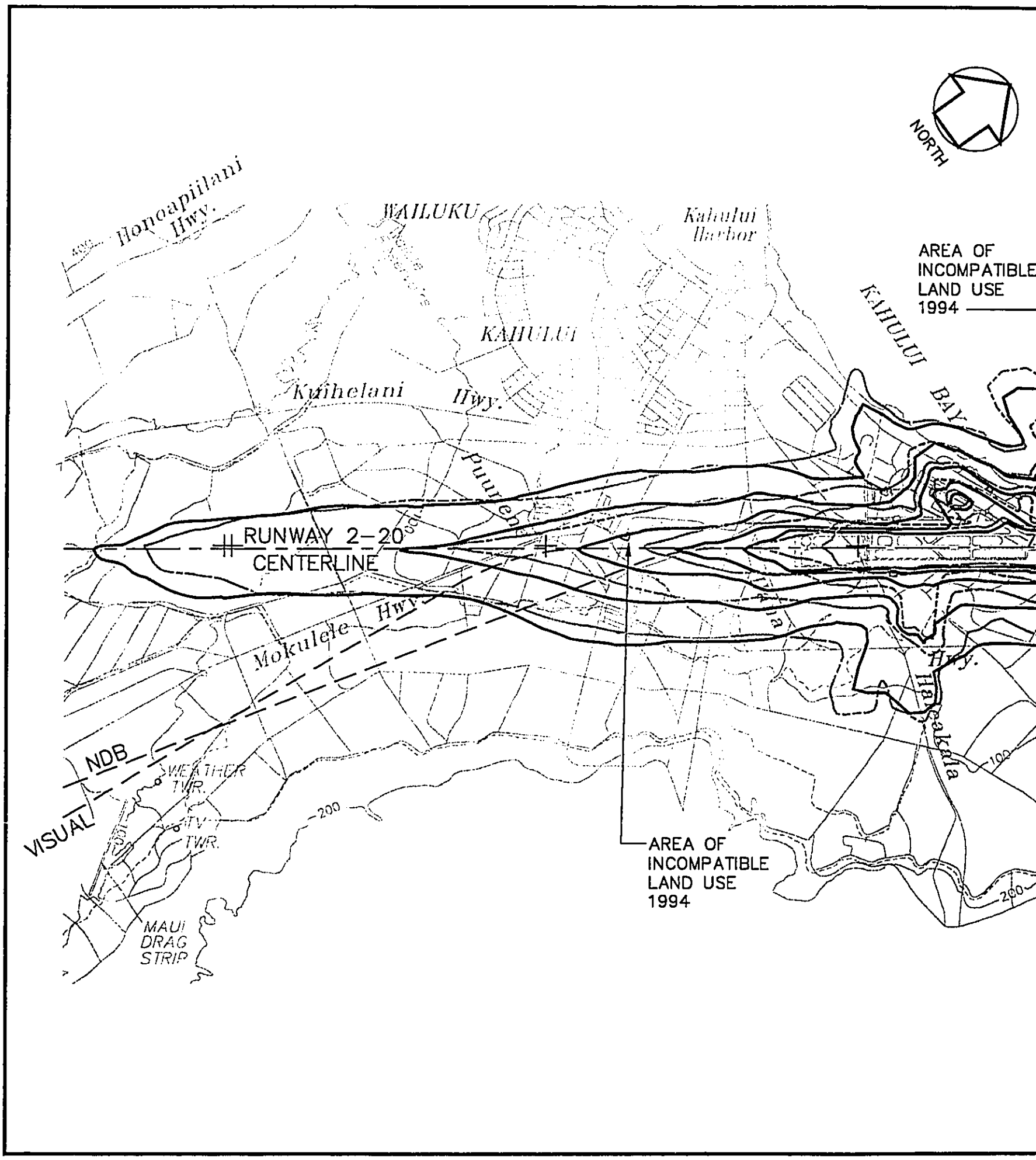
2010 AIRCRAFT NOISE DNL CONTOUR MAP WITH PARALLEL RUNWAY

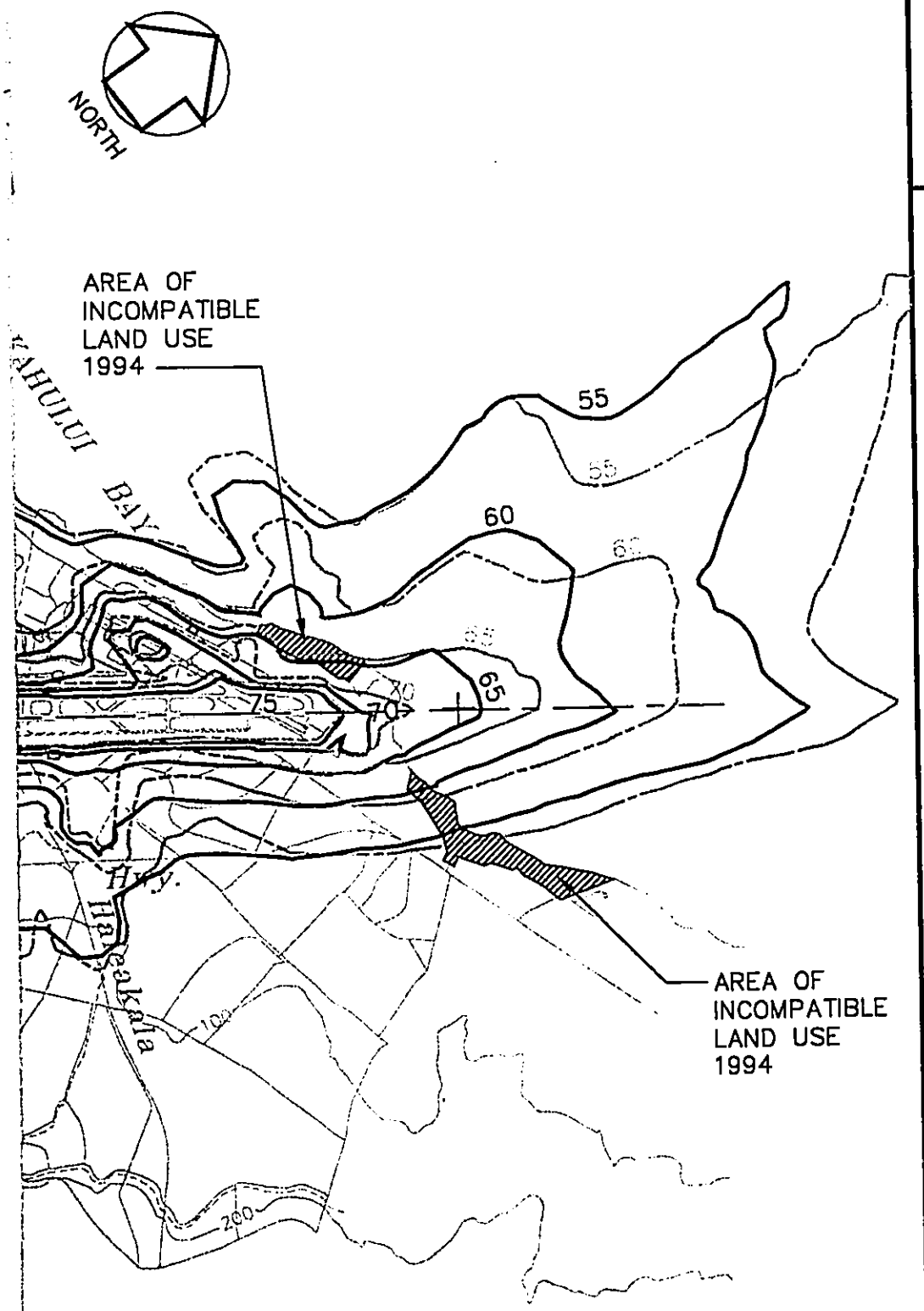
DATE	FIGURE
MARCH, 1996	3-3

2010. Figure 3-4 compares the DNL noise contours for the proposed Runway 2-20 extension to 9,600 feet against the 2010 "No-Action" alternative DNL noise contours. Likewise, Figure 3-5 compares the 2010 DNL noise contours *with the parallel runway* against the 2010 "No-Action" DNL noise contours. The detailed aircraft noise analysis is contained in Appendix C.

Table 3-2
STATE OF HAWAII LAND USE COMPATIBILITY
WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS

LAND USE	YEARLY DAY-NIGHT AVERAGE SOUND LEVEL					
	<60	60-65	65-70	70-75	75-80	80-85
Residential						
Low density residential, resorts, and hotels with extensive outdoor use	Y(a)	N(b)	N	N	N	N
Low density apartment with moderate outdoor use	Y	N(b)	N	N	N	N
High density apartment with limited outdoor use	Y	N(b)	N(b)	N	N	N
Transient lodgings with limited outdoor use	Y	N(b)	N(b)	N	N	N
Public Use						
Schools, day-care centers, libraries, and churches	Y	N(c)	N(c)	N(c)	N	N
Hospitals, nursing homes, clinics, and health facilities	Y	Y(d)	Y(d)	Y(d)	N	N
Indoor auditoriums and concert halls	Y(c)	Y(c)	N	N	N	N
Government service and office buildings serving the general public	Y	Y	Y(d)	Y(d)	N	N
Transportation and parking	Y	Y	Y(d)	Y(d)	Y(d)	Y(d)
Commercial and Government Use						
Offices - government, business, and professional	Y	Y	Y(d)	Y(d)	N	N
Wholesale and retail - building materials, hardware and heavy equip.	Y	Y	Y(d)	Y(d)	Y(d)	Y(d)
Airport businesses - car rental, tours, lei stands, ticket offices, etc.	Y	Y	Y(d)	Y(d)	N	N
Retail trade, restaurants, shopping centers, financial institutions, etc.	Y	Y	Y(d)	Y(d)	N	N
Power plants, sewage treatment plants, and base yards	Y	Y	Y(d)	Y(d)	Y(d)	N
Studios without outdoor sets, broadcasting, production facilities, etc.	Y(c)	Y(c)	N	N	N	N
Manufacturing, Production and Storage						
Manufacturing, general	Y	Y	Y(d)	Y(d)	Y(d)	N
Photographic and optical	Y	Y	Y(d)	Y(d)	N	N
Agriculture (except livestock) and forestry	Y	Y(e)	Y(e)	Y(e)	Y(e)	Y(e)
Livestock farming and breeding	Y	Y(e)	Y(e)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(f)	Y(f)	N	N	N
Outdoor music shells, amphitheaters	Y(f)	N	N	N	N	N
Nature exhibits and zoos, neighborhood parks	Y	Y	Y	N	N	N
Amusements, beach parks, active playground, etc.	Y	Y	Y	Y	N	N
Public golf courses, riding stables, cemeteries, gardens, etc.	Y	Y	N	N	N	N
Professional/resort sport facilities, locations of media events, etc.	Y(f)	N	N	N	N	N
Extensive natural wildlife and recreation areas	Y(f)	N	N	N	N	N


NORTH
Honoapiilani Hwy.
WAILUKU
Kahului Harbor
KAHULUI
KAHULUI BAY
Kuihelani Hwy.
Puunene
RUNWAY 2–20
CENTERLINE
Mokulele Hwy
Hana Hwy.
NDB
VISUAL
WEATHER TWR.
TV TWR.
MAUI DRAG STRIP
100
200
AREA OF INCOMPATIBLE LAND USE 1994
AREA OF INCOMPATIBLE LAND USE 1994



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

NO ACTION

60 2010

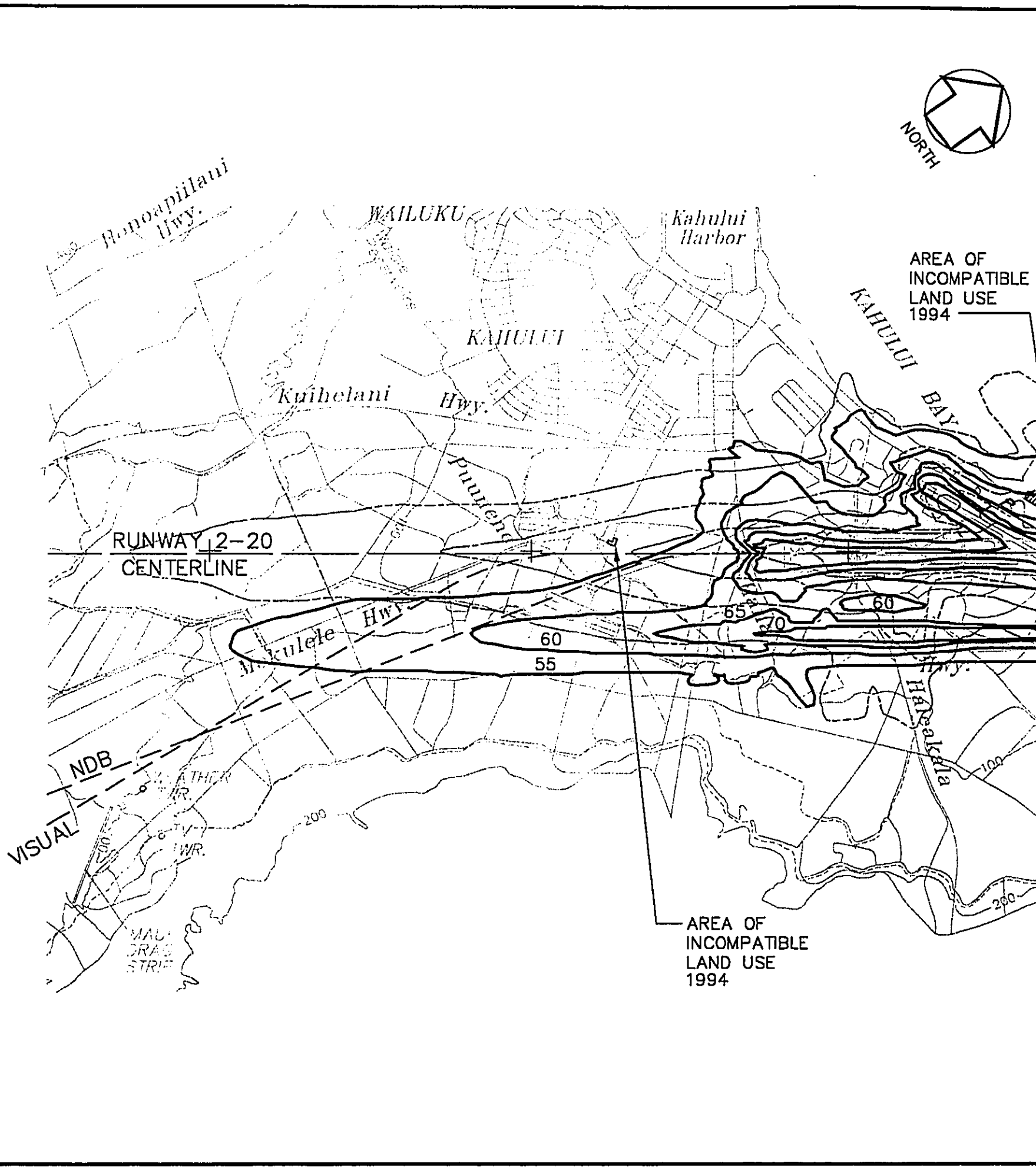
0 2,000 4,000 6,000
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

2010 AIRCRAFT NOISE DNL CONTOUR MAP WITH RUNWAY 2-20 EXTENSION VERSUS NO ACTION

DATE	FIGURE
MARCH, 1996	3-4


NORTH
Hanoapiilani Hwy.
WAILUKU
Kahului Harbor
AREA OF INCOMPATIBLE LAND USE 1994
KAHULUI
KAHULUI BAY
Kuihelani Hwy.
Puunene
RUNWAY 2-20
CENTERLINE
Mokulele Hwy.
65
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Hana Hwy.
NDB
VISUAL
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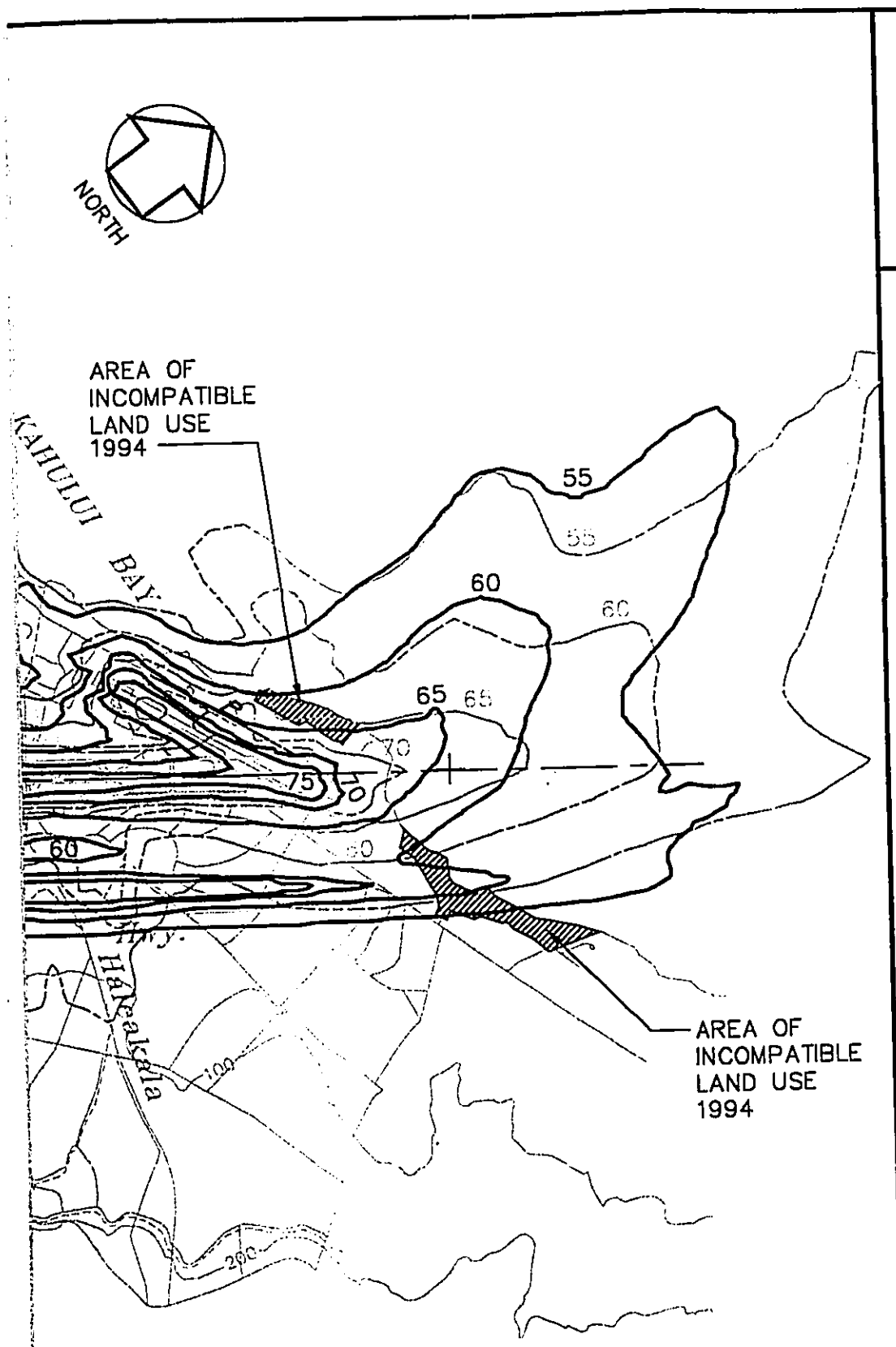
AREA OF INCOMPATIBLE LAND USE 1994



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DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

NO ACTION

60 2010

0 2,000 4,000 6,000
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

2010 AIRCRAFT NOISE DNL CONTOUR MAP WITH PARALLEL RUNWAY VERSUS NO ACTION

DATE	FIGURE
MARCH, 1996	3-5

Key to Table 3-2

Y (Yes) Land Use and related structures compatible without restrictions.
N (No) Land Use and related structures are not compatible and should be prohibited.

(a) A noise level of 60 Ldn does not eliminate all risks of adverse noise impacts from aircraft noise. However, the 60 Ldn planning level has been selected by the State Airports Division as an appropriate compromise between the minimal risk level of 55 Ldn and the significant risk level of 65 Ldn.

(b) Where the community determines that these uses must be allowed, Noise Level Reduction (NLR) measures to achieve interior levels of 45 Ldn or less should be incorporated into building codes and be considered in individual approvals. Normal local construction employing natural ventilation can be expected to provide an average NLR of approximately 9 dB. Total closure plus air conditioning may be required to provide additional outdoor to indoor NLR, and will not eliminate outdoor noise problems.

(c) Because the Ldn noise descriptor system represents a 24-hour average of individual aircraft noise events, each of which can be unique in respect to amplitude, duration, and tonal content, the NLR requirements should be evaluated for the specific land use, interior acoustical requirements, and properties of the aircraft noise events. NLR requirements should not be based solely upon the exterior Ldn exposure level.

(d) Measures to achieve required NLR must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

(e) Residential buildings require NLR. Residential buildings should not be located where noise is greater than 65 Ldn.

(f) Impact of amplitude, duration, frequency, and tonal content of aircraft noise events should be evaluated.

IMPACTS OF RUNWAY EXTENSION. The best way to assess the noise impacts of the runway extension project is to compare the Proposed Project without the parallel runway against the "No-Action" 2010 alternative. To perform this comparative analysis, the DNL for specific sites within the Airport's environs were measured for: (i) existing conditions (1994); (ii) Proposed Project without the parallel runway (2010); and (iii) the "No-Action" alternative (2010). These sites are shown on Figure 3-1, and the DNL readings are presented in Table 3-3. The differences in DNL between the existing noise contours and the 2010 noise contours are primarily due to the change of fleet mix to Stage 3 aircraft and the lengthening of the runway.

The Runway 2-20 extension causes the noise produced by aircraft takeoffs from Runway 2-20 to shift slightly to the southwest and, therefore, reduces incompatible land uses in the East Spreckelsville area when compared to the "No-Action" alternative. This shift to the southwest is due to the takeoff procedure used by aircraft departing Runway 2-20 during tradewind conditions. The typical departure initiates from the extreme southwest end of Runway 2-20. As the runway extension relocates this runway end further to the southwest, the initial takeoff point moves further to the southwest when compared to the existing runway. The Proposed Project removes most of East Spreckelsville from the 60 DNL contour and reduces the area of incompatibility from approximately three (3) acres with the "No-Action" alternative

to less than 0.5 acres with the Runway 2-20 extension. The "No-Action" scenario includes less overseas and more interisland aircraft than the Proposed Project, because of the shorter runway length. The incompatible land use in the West Spreckelsville area remains approximately the same with and without the Proposed Project.

Table 3-3
EXISTING AND FUTURE NOISE LEVELS (DNL) AT SPECIFIC SITES FOR THE PROPOSED PROJECT WITHOUT THE PARALLEL RUNWAY

NOISE MONITORING SITES LOCATION (See note)	1994 EXISTING (DNL)	2010 NO-ACTION (DNL)	2010 PROPOSED PROJECT (DNL)	DIFFERENCE BETWEEN PROPOSED PROJECT VERSUS NO-ACTION
Ocean	76.2	69.0	65.0	-4.0
Kanaha Pond	56.3	52.8	52.8	0.0
A	78.1	70.1	69.5	-0.6
B	65.9	58.1	56.0	-2.1
C	59.3	51.7	49.8	-1.9
D	59.6	52.6	50.8	-1.8
E	65.3	64.3	66.1	1.8
F	58.8	58.2	58.0	-0.2
G	54.4	49.2	50.3	1.1
J	62.4	57.2	56.0	-1.2
K	50.2	47.0	46.3	-0.7
M	70.6	63.0	64.1	1.1
S	62.0	57.1	56.7	-0.4
T	56.4	54.1	53.0	-1.1
U	51.8	47.9	47.8	-0.1
V	61.8	55.0	55.8	0.8

Note: Noise Monitoring Sites are shown on Figure 3-1, located after page 3-3.

Although there is an increase of more than 1.5 DNL in the Puunene area, the Proposed Project's impacts on single family dwellings in this area, will be insignificant because these structures are scheduled for demolition in the short-term. The structures are in dilapidated condition and will be demolished by the property owners. The area is currently planned for Heavy Industrial Use which is compatible with the aircraft noise levels. Other areas show small increases or decreases in the aircraft noise environment due to the Proposed Project.

In addition, a comparison of Single Event Noise Level[4] (SEL) contours was performed for the existing and lengthened Runway 2-20. Two sets of 85 SEL contours[5] were developed, one for arrivals and one for departures. The "arrival" set compares the reverse thrust contours for the existing runway and the extended runway lengths for the DC-9-50, B737-300 and DC-10-10, and are shown on Figures 3-6 to 3-8. The analysis shows that the runway extension will relocate the reverse thrust portion of the contours but not affect the length of the 85 SEL contour. In short, the SEL noise levels with or without the runway extension are not significantly changed. The 85 SEL contours, shown on Figures 3-9 to 3-13, compares departure contours for the existing runway and extended runway lengths. The aircraft used in this analysis are the B737-200, B737-300, DC-9-50, DC-10-10 and the L-1011. These are representative aircraft for the jet aircraft that will be affected by the runway extension and are being or have been used at Kahului Airport. The INM version 4.11 noise model was used to generate the single event noise contours. The figures illustrate the 85 SEL noise contour which would correspond to a maximum noise level of about 75 dBA. There are no single event noise standards or criteria. But this noise level, 75 dBA maximum during noise event, can be thought of as about the loudness of the typical television sound in the home and is about 10 dBA louder (twice as loud) as normal face to face conversation.

The results show that older Stage II aircraft generate significantly higher noise levels than the newer generation jet aircraft. This difference is quite profound. However, in terms of the difference between with and without the runway extension, the single event noise levels with and without the project are not significantly changed.

There are no standards in terms of single event criteria. An SEL level of 85 represents the level at which sleep disturbance starts to occur in the general population. It is also the level at which speech interference takes place. Given the quiet ambient noise environment, outdoor speech interference may occur at SEL noise levels below 80 dBA.

Note that there are many different variations of flight tracks. Different flight tracks will result in a different single event contours over different areas. These contours are intended to reflect the single event noise levels from one typical departure track.

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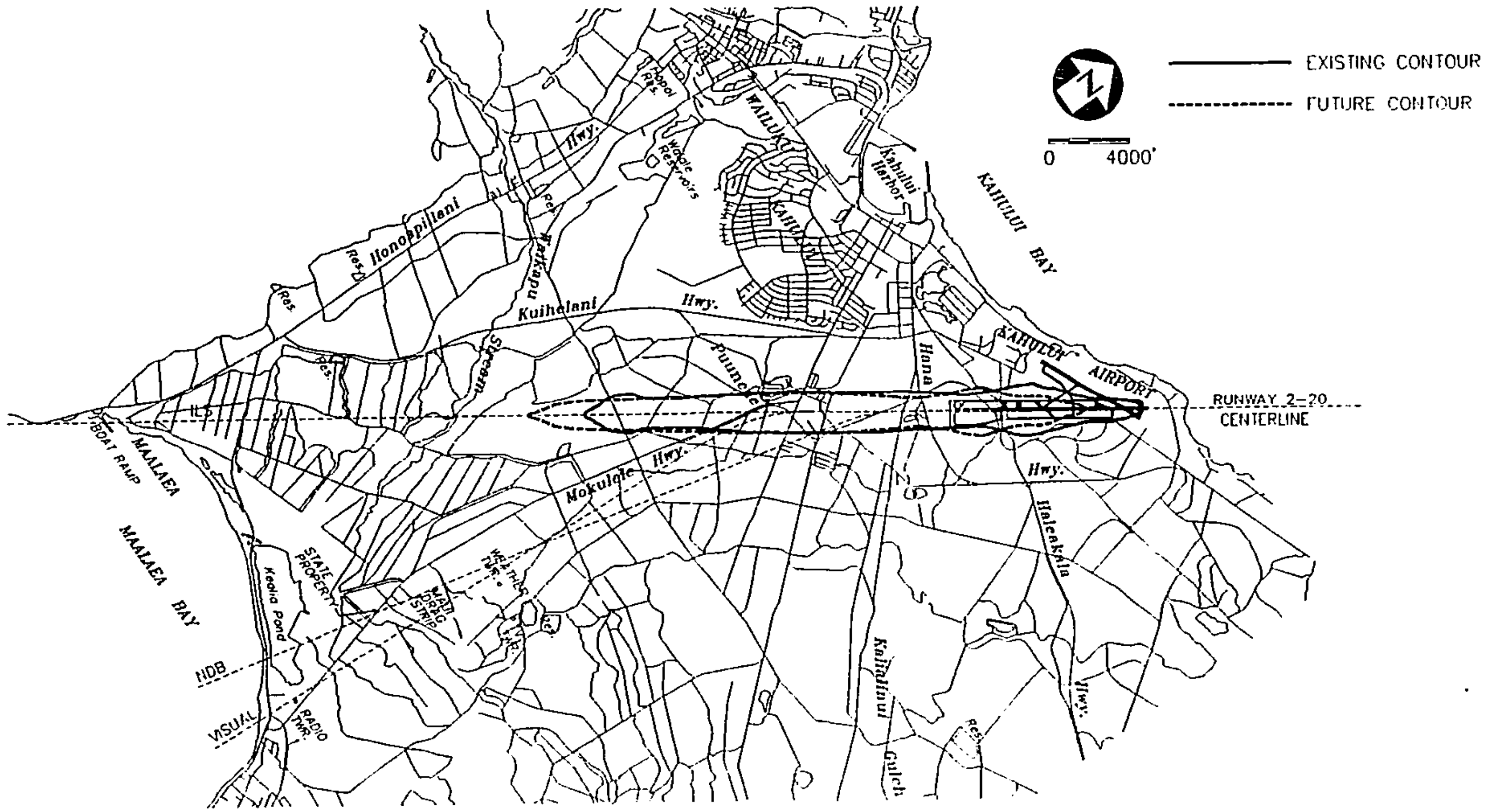
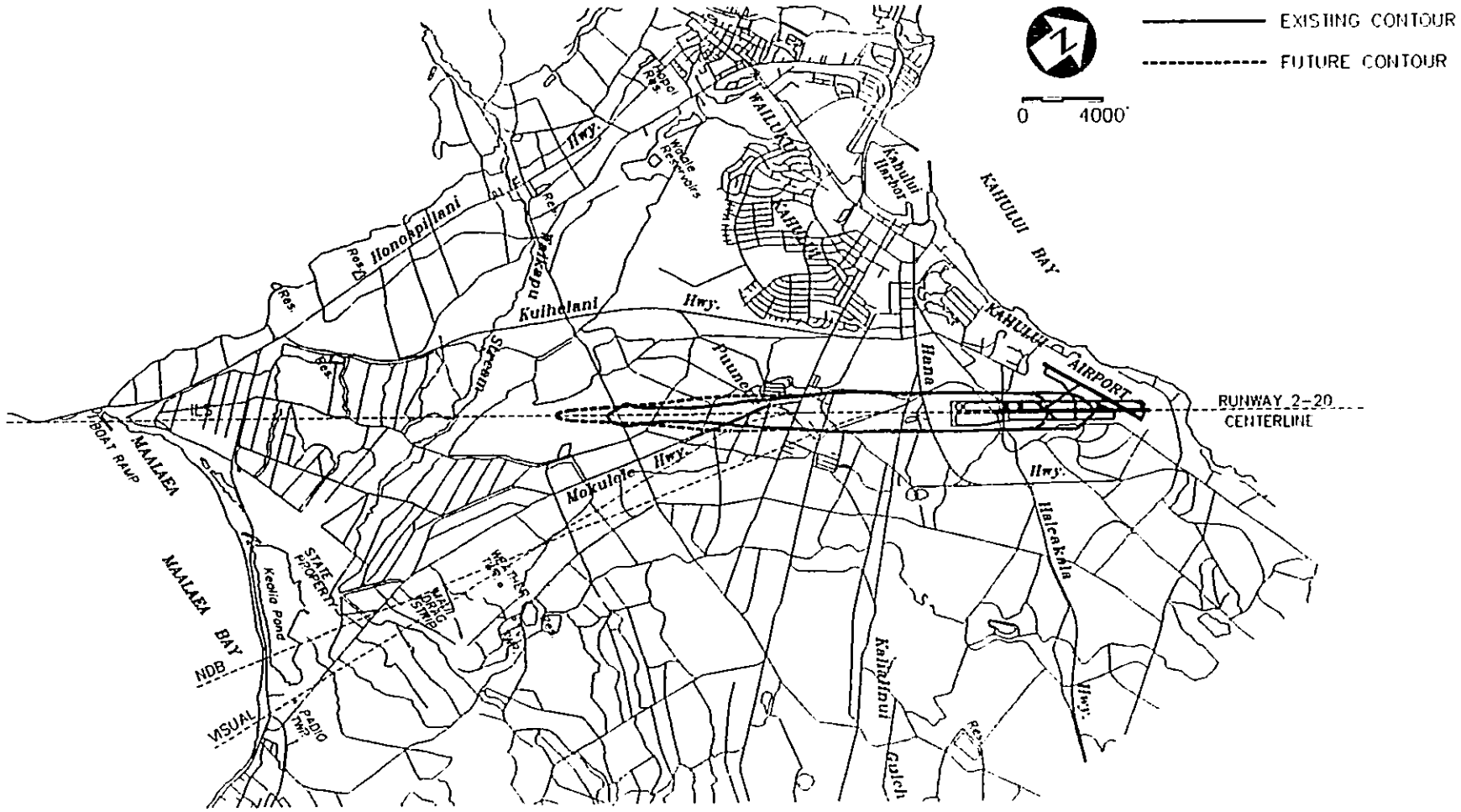
[4] Sound Exposure Level (SEL) is a metric that is used to report aircraft flyovers and is an integration of all the acoustic energy contained within an event. This metric takes into account the maximum noise level of the event and the duration of the event.

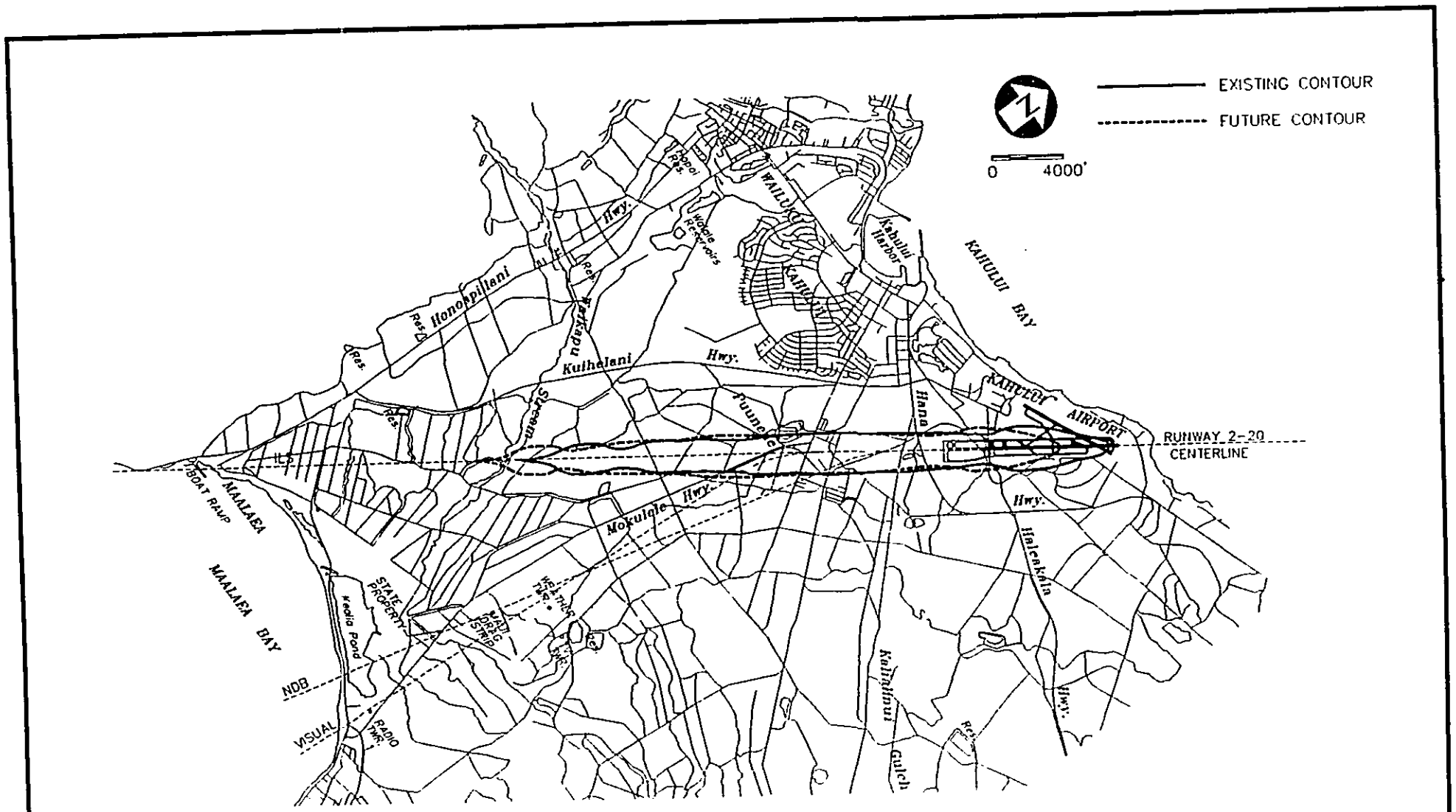
[5] The 85 SEL contour corresponds to the a maximum noise level of about 75 dBA.



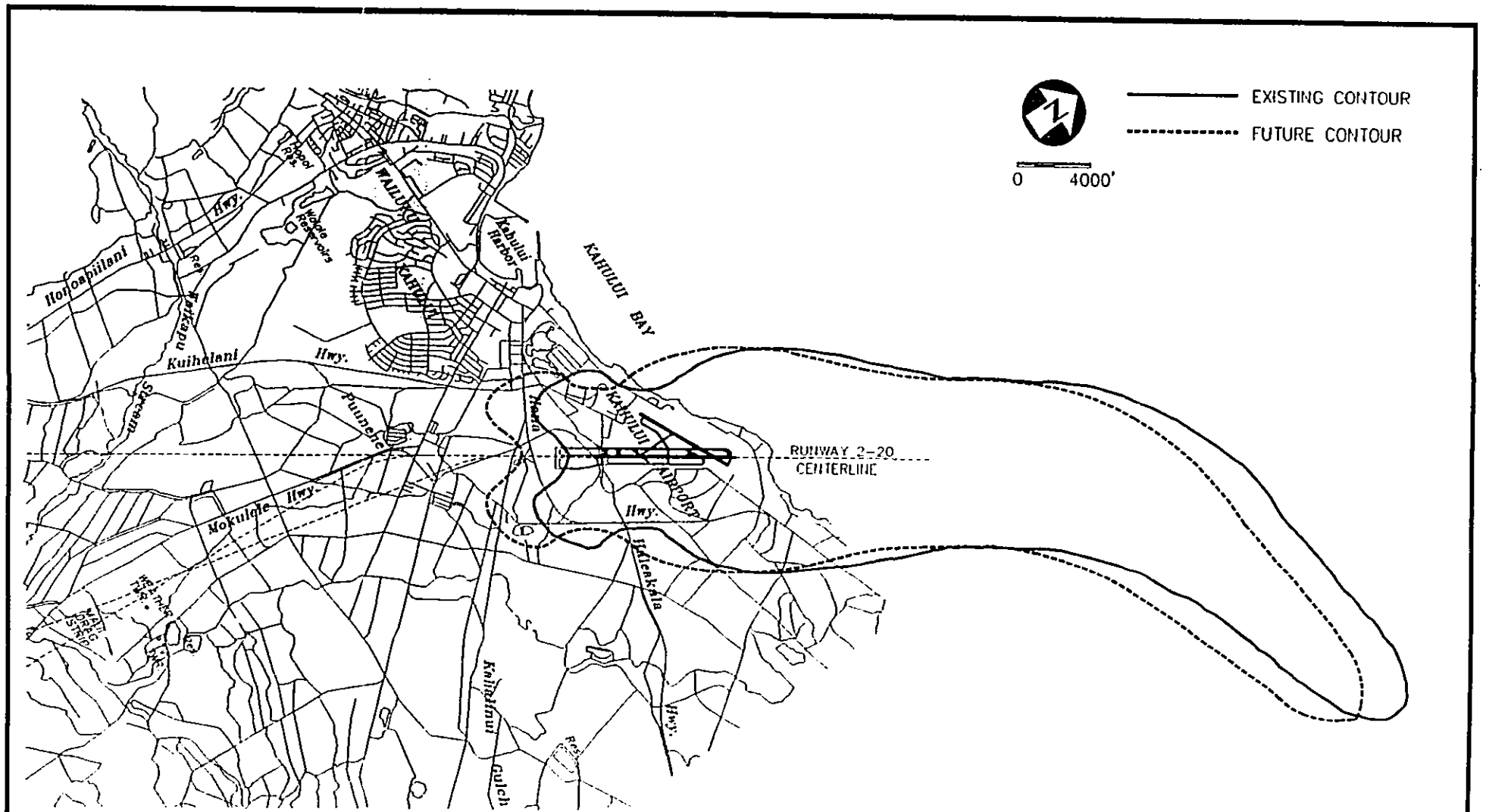
Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT	85 SEL Reverse Thrust Contours for DC9-50	FIGURE 3-6



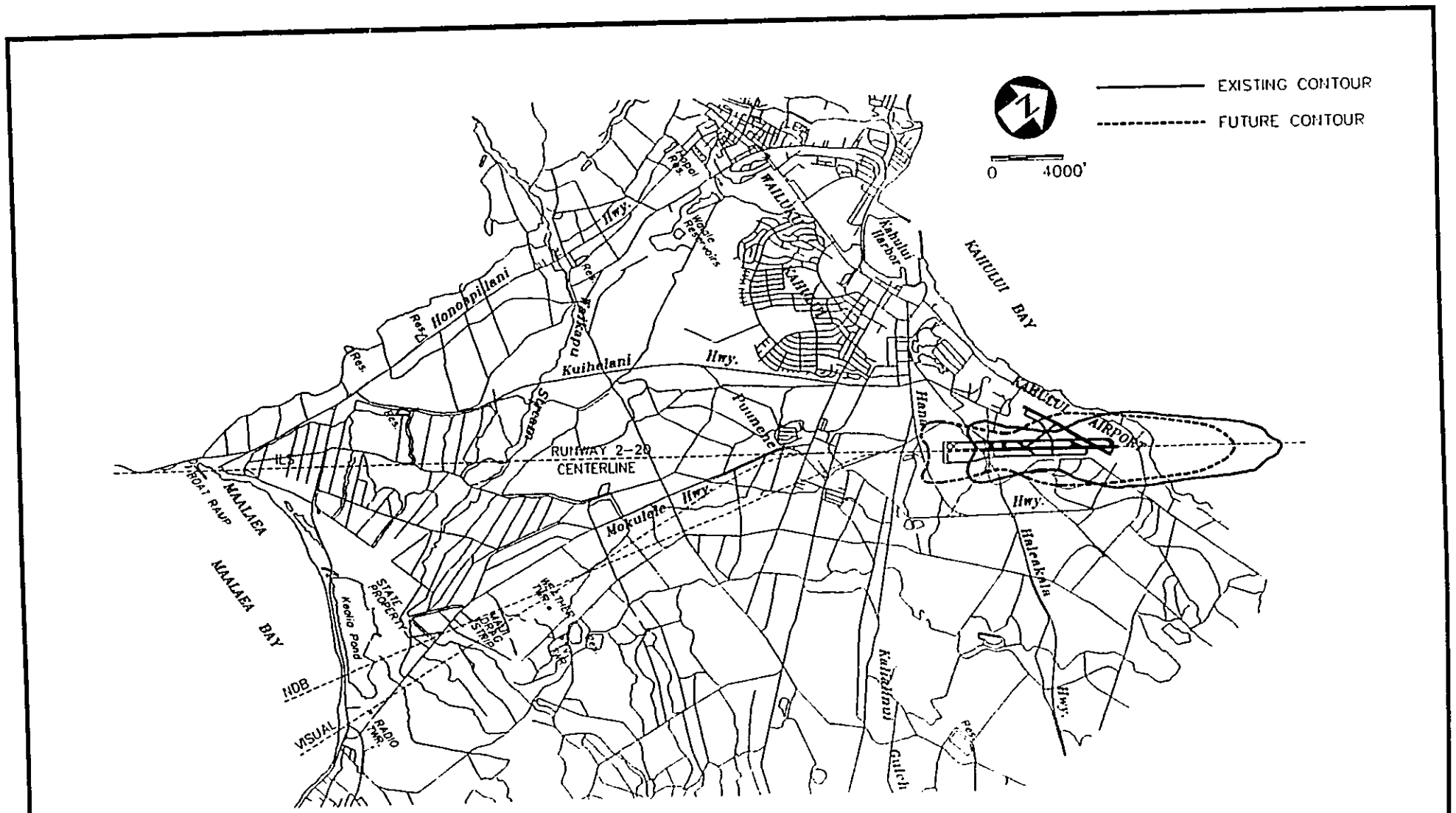
Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT	85 SEL Reverse Thrust Contours for B737-300	FIGURE 3-7



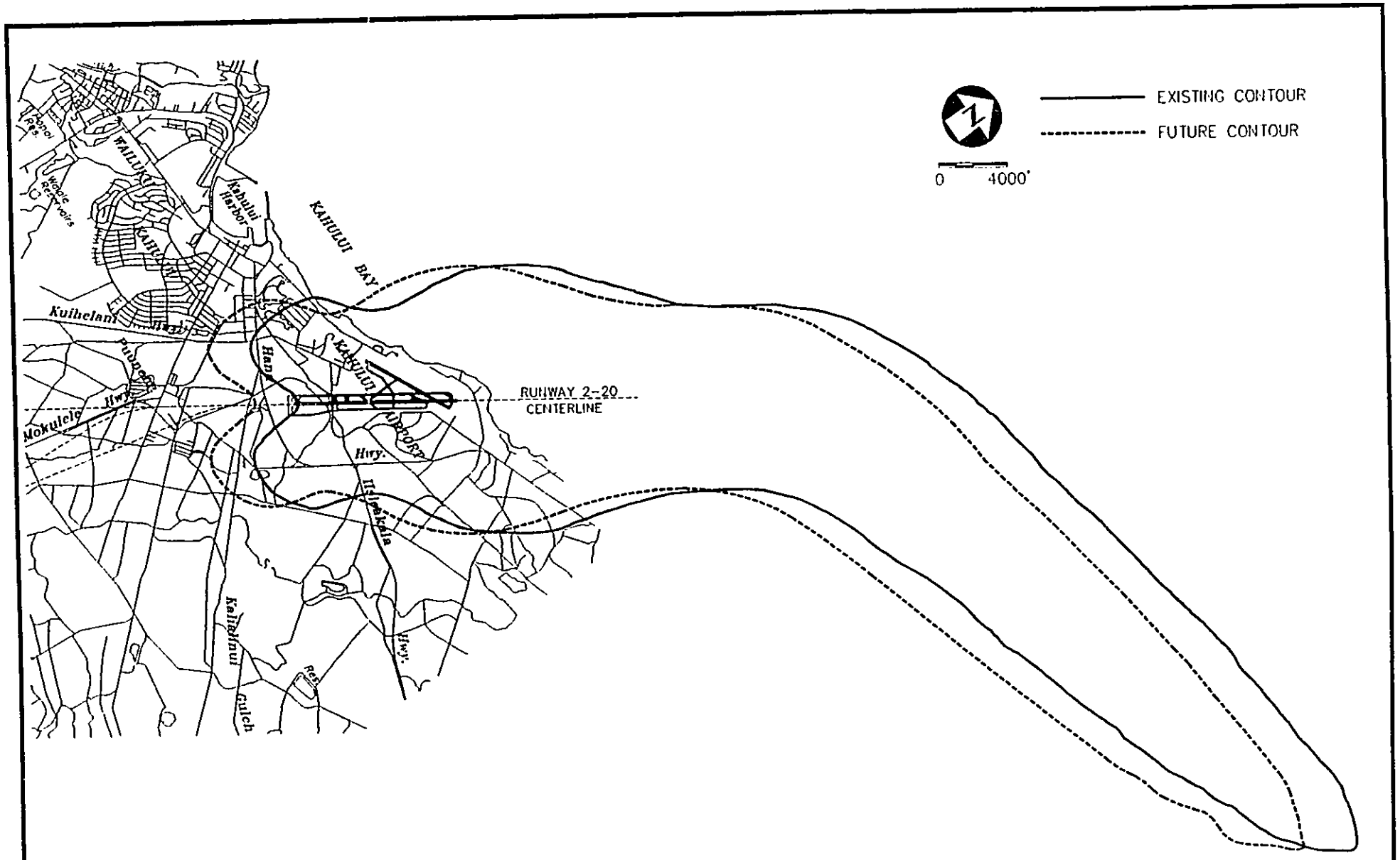
Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT	85 SEL Reverse Thrust Contours for DC10-10	FIGURE 3-8



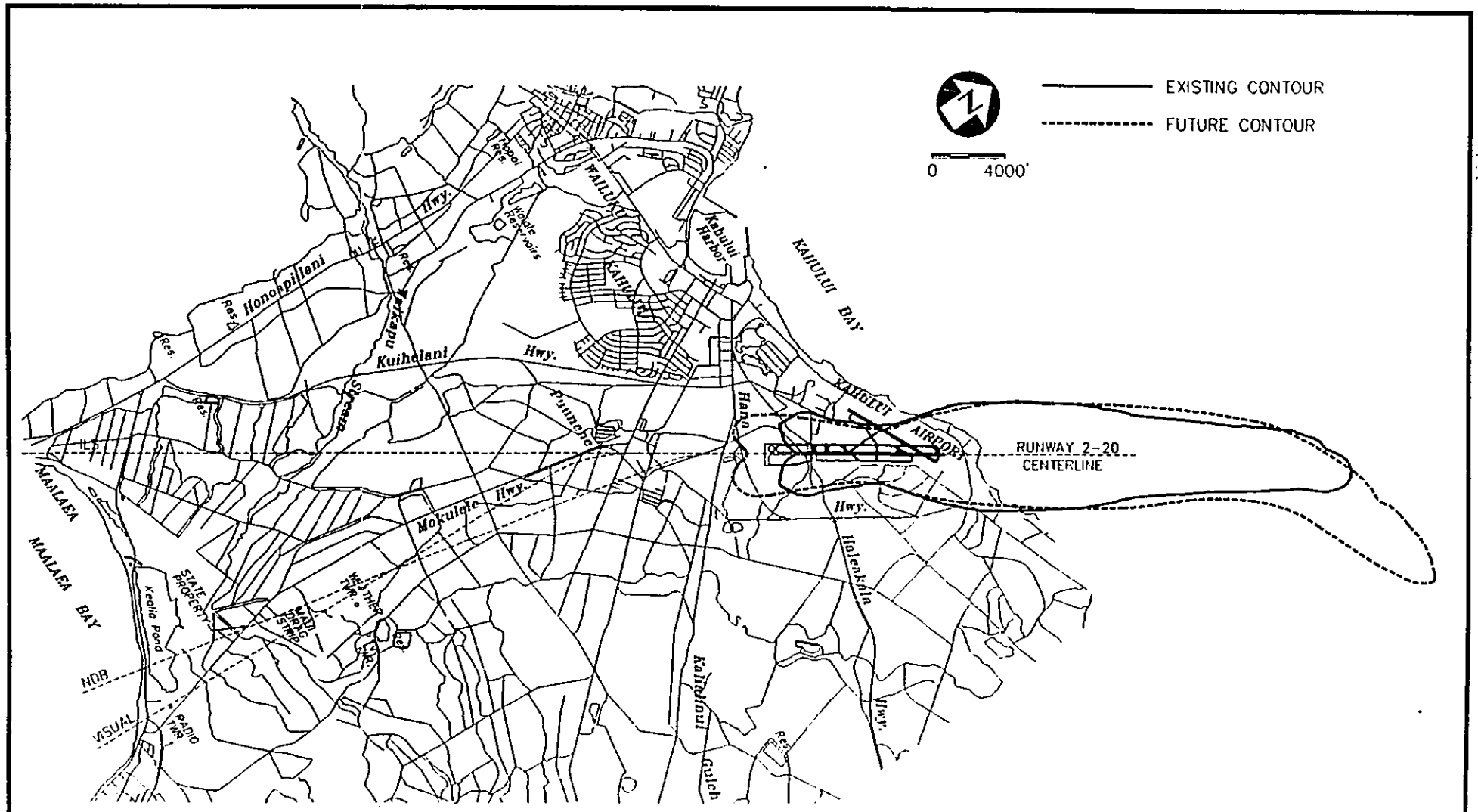
Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT	85 SEL Comparison for B737-200	FIGURE 3-9



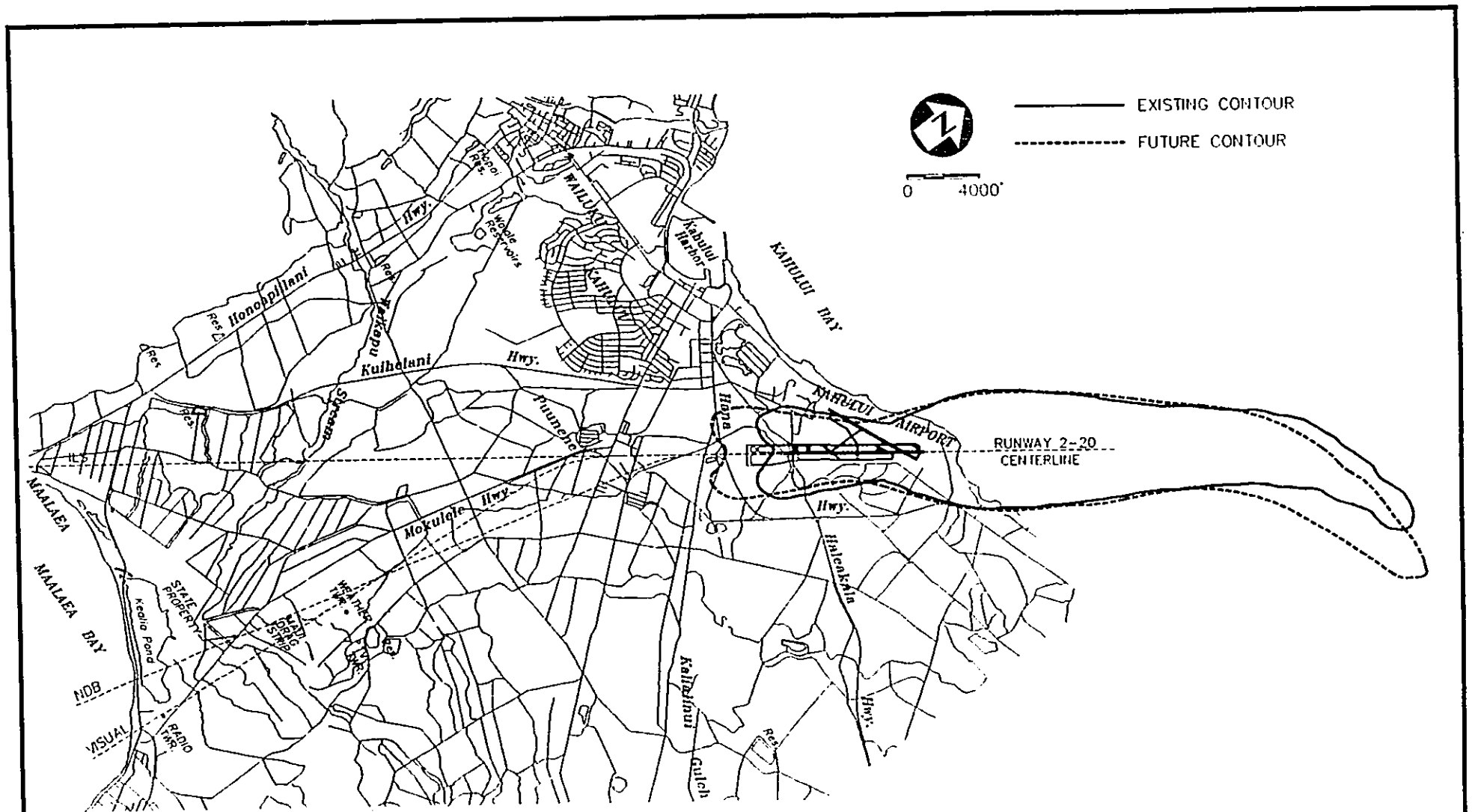
Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT	85 SEL Comparison for B737-300	FIGURE 3-10



Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT	85 SEL Comparison for DC9-50	FIGURE 3-11



Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT	85 SEL Comparison for DC10-10	FIGURE 3-12



Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT	85 SEL Comparison for L-1011	FIGURE 3-13

IMPACTS OF PARALLEL RUNWAY. If or when built, the parallel runway will have a major effect on the flight patterns of aircraft using Kahului Airport and would alter the noise distribution within the Airport environs. To assess the potential noise impacts of the parallel runway, the following assumptions were incorporated into the noise analysis performed for this EIS[6]:

- During trade wind and Kona traffic patterns, the 9,600 foot runway would be the primary departure runway, and therefore, the 8,500 foot parallel would be the primary arrival runway;
- Touch-n-Go activities would be relocated to the 8,500 foot parallel; and
- The aircraft mix would be all Stage 3.

Because runway operations dictate the location of the noise contours, the parallel runway (Runway 2R-20L) shows a different set of noise contours and impact area than the "No-Action" Alternative. The amount of incompatible land use with the parallel runway in West Spreckelsville remains approximately the same. In East Spreckelsville, the amount of incompatible land increases from approximately three (3) acres to thirteen (13) acres when compared to the "No-Action" alternative. Also, a different area of East Spreckelsville is impacted by the operations on the parallel runway. The new Kaunoa II Agricultural Lots near East Spreckelsville are also impacted and are being sold with aircraft noise easements in favor of the State of Hawaii. This noise impact was computed for the assumed runway use pattern; other runway use patterns will create different noise exposure contours. However, prior to the construction of these long-range projects additional environmental analysis will be completed in order to determine what, if any, further environmental documentation is required.

NOISE IMPACTS ON MARINE LIFE. During the scoping process for this EIS some commentators requested that the Proposed Project's noise impacts on the offshore marine life be considered and assessed. As shown in Figure 3-2 and 3-3, the impact of the Proposed Project decreases the noise impact on the ocean areas offshore Kahului Airport. The impact on the underwater marine life would be insignificant as most sound waves are reflected at the air/water interface. In addition, studies on the hearing threshold on a number of marine animal species indicate that the aircraft sound would be barely audible. A detail explanation is presented in Appendix C.

3.2.1.3 Significance Criteria And Analysis

The following criteria have been used to measure the Proposed Project's potential impacts on aircraft noise: (i) Significant negative noise effects occur when the action increases noise levels by 1.5 DNL (Ldn) or greater in incompatible land uses; (ii) Insignificant effects would occur when the action

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[6] As stated earlier, a full analysis of the parallel runway would be performed at a later date, with more definitive information on aircraft mix and runway operational use. If any of the assumptions are changed, the noise contours would change accordingly.

results in continued exposure of people to existing aircraft generated noise levels, or an increase of noise levels of less than 1.5 DNL in areas of incompatible land use; (iii) Positive noise effects would occur when actions result in aircraft generated noise levels less than those presently experienced. Federal requirements consider a significant impact as a 1.5 DNL increase within the 65 DNL contour (Section 11.0, Reference 17). Because the State of Hawaii has changed the guideline for incompatible uses to the 60 DNL contour, a significant impact would be a 1.5 DNL increase within the 60 DNL contour.

The proposed extension of Runway 2-20 will not significantly affect incompatible land uses in the Airport's environs. In fact, it may reduce some noise impacts in the East Spreckelsville community. The parallel runway will have a significant impact due to its redistribution of noise in the Airport environs. However, it will not generate new incompatible land uses other than those which presently exist and are shown in the Kahului Airport NCP. Because the parallel runway and the runway use plan, will not be constructed or established, if at all, until or beyond the year 2016, and because the parallel runway may have a major impact on the noise contours, it will be subjected to additional environmental analysis prior to construction. In addition, as the sound attenuation and avigation easement measures recommended by the NCP are implemented, the amount of incompatible land use in the Airport's environs will be reduced. The relocation of the "reverse thrust" contours will have an insignificant impact on adjacent noise sensitive land uses, nor will there be significant changes in the "departure" contours. Therefore, the aircraft noise impacts of the Project will be insignificant.

Other airport area sources of potential noise impacts include mechanical equipment, emergency generator equipment and ground transportation vehicles. Existing and future airport equipment and facilities will be located more than 500 feet from noise sensitive areas. As a result, adverse noise impacts from these sources are not anticipated. Table 3-4 summarizes the significance of the potential effects of the proposed improvements on airport/aircraft noise in the project area and island of Maui.

Table 3-4
SIGNIFICANCE OF EFFECTS ON AIRPORT/AIRCRAFT NOISE

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Airport Area Noise Levels	1.5 DNL (Ldn) increase w/in 60* DNL contour	Insignificant**
Wailuku-Kahului Area Aircraft Generated Noise Levels	1.5 DNL (Ldn) increase w/in 60* DNL contour	Insignificant
Flight Path (outside airport area) Aircraft Generated Noise Levels	1.5 DNL (Ldn) increase w/in 60* DNL contour	Insignificant

* As explained above, the Federal requirements are based on the 65 DNL contour.
** Potentially Significant with Parallel Runway

3.2.1.4 Mitigation Measures

There are no significant impacts due to the proposed project and no mitigation measures are required. The State should pursue the abatement and mitigation measures set forth in the Kahului Airport Noise Compatibility Program to reduce the existing incompatible land uses within the Airport's environs. The impacts may be potentially significant with the Parallel Runway. However, prior to the construction of these long-range projects additional environmental analysis will be completed in order to determine what, if any, further environmental documents or mitigation measures are required.

3.2.2 GROUND VEHICLE NOISE

The noise attributable to ground vehicles using the roadway network in the Airport's environs is analyzed based on the FHWA methodology, which uses a peak one-hour Equivalent Noise Level (Leq) unit of measurement. The analysis presents the Leq during the peak hour traffic volumes in the morning (a.m.) and afternoon (p.m.) which correspond to the highest noise levels along the roadways. In the analysis for the Proposed Project, which referenced a 2010 (revised to 2016) planning horizon, the Leq presented in this EIS will correspond to the peak traffic hours for the "design" day, which is the average day of the busiest month. In the analysis for ISTEA funding, which uses the 2020 planning horizon, the Leq peak hour noise levels represent the noise levels corresponding to the traffic for the "average" day of the year. In the analysis, the ground traffic volumes for the design day will be approximately 5 percent higher than volumes for the average day.

3.2.2.1 Existing Conditions

Existing and future vehicular noise levels were developed by computer models based on the Highway Noise Model published by the Federal Highway Administration (FHWA) (Section 11, Reference 18). The FHWA model uses traffic volume, vehicular mix, vehicle speed, and roadway geometry to compute the noise levels. A detailed analysis of ground traffic noise is contained in Appendix C for the Master Plan Alternatives and Appendix P for the 2020 ISTEA analysis. The Leq (1-hour) noise metric is used in both analyses. A 67 Leq noise level is the exterior noise goal for residential land uses under the FHWA noise abatement criteria. The interior noise goal is 52 Leq and assumes a 10 dB noise reduction (outdoor to indoor) for wood homes with the windows open. The distance from the roadway centerline to the 67 Leq level along the major roadway segments, for morning and afternoon peak hours, is shown on Table 3-5 and Table 3-6, respectively.

Noise sensitive land uses along the roadways include the Spreckelsville residential area, the Puunene Sugar Mill Museum, and the Kahului residential area along Dairy Road. Noise receptor sites were located in these areas as shown on Figure 3-1. Table 3-7 presents the Leq values for these noise receptor sites under existing and 2010 conditions, while Table 3-8 presents the information for the existing and 2020 conditions.

Table 3-5
DISTANCE TO THE 67 LEQ FOR THE MORNING PEAK HOUR FOR EXISTING, 2010 AND 2020 TRAFFIC LEVELS ALONG KEY HIGHWAY LINKS[1]

HIGHWAY LINK	EXISTING[2] DISTANCE (FEET)	2010 WITH PROPOSED PROJECT DISTANCE (FEET)	EXISTING[3] DISTANCE (FEET)	2020 WITH PROPOSED PROJECT DISTANCE (FEET)
Aalele Street				
Keoloni Place to Haleakala Hwy.	NA	NA	8	0
Hana Highway				
Harbor Ave. to Haleakala Hwy.	57	63	55	62
Haleakala Hwy. to Hanakai St.	52	56	48	68
Hanakai St. to Dairy Road	51	56	49	67
Dairy Road to Pulehu Road	164	NA	155	178
Dairy Road to Airport Access Rd.	NA	157	NA	178
Airport Access Rd to Hansen Road	NA	180	NA	215
Pulehu Road to Hansen Road	155	NA	151	NA
Hansen Road to Haleakala Hwy.	167	180	162	225
Haleakala Hwy. to Kala Road	81	97	79	108
Kala Road to Old Stable Road	84	97	NA	NA
East of Old Stable Road	84	97	NA	NA
Puunene Avenue				
E. Kamehameha Ave. to Dairy Road	42	38	41	53
South of Dairy Road	100	103	97	134
Kuihelani Hwy				
West of Puunene Ave.	61	160	59	34
Dairy Road				
Puunene Ave. to Hana Hwy.	36	29	34	28
Hana Hwy. to Haleakala Hwy.	17	19	18	16
Keolani Place				
Haleakala Hwy. to Aalele St.	26	27	27	22
Airport Access Road				
Puunene Ave. to Dairy Road	0	133	NA	152
Dairy Road to Hana Hwy.	0	122	NA	125
Keolani Place to Hana Hwy.	0	34	NA	152
Haleakala Highway				
Hana Hwy. to Hanakai St.	20	23	18	18
Hanakai St. to Keolani Place	20	23	19	19
Keolani Place to Aalele Street	7	NA	7	6
Kala Road to Hana Hwy.	12	NA	NA	NA
East of Keolani Place	NA	15	NA	NA
East of Hana Hwy.	135	132	131	176

NOTES: [1] The distance is measured from the roadway centerline in feet; [2] Based on the 2010 design day traffic volume; [3] Based on the 2020 average day traffic volume.

Table 3-6

DISTANCE TO THE 67 LEQ FOR THE AFTERNOON PEAK HOUR FOR EXISTING, 2010 AND 2020 TRAFFIC LEVELS ALONG KEY HIGHWAY LINKS[1]

HIGHWAY LINK	EXISTING[2] DISTANCE (FEET)	2010 WITH PROPOSED PROJECT DISTANCE (FEET)	EXISTING[3] DISTANCE (FEET)	2020 WITH PROPOSED PROJECT DISTANCE (FEET)
Aalele Street				
Keoloni Place to Halcakala Hwy.	NA	NA	8	0
Hana Highway				
Harbor Ave. to Halcakala Hwy.	60	51	59	75
Halcakala Hwy. to Hanakai St.	51	37	49	68
Hanakai St. to Dairy Road	52	56	50	68
Dairy Road to Pulchu Road	157	NA	152	177
Dairy Road to Airport Access Rd.	NA	158	NA	178
Airport Access Rd to Hansen Road	NA	189	NA	203
Pulchu Road to Hansen Road	154	NA	149	NA
Hansen Road to Halcakala Hwy.	164	184	159	186
Halcakala Hwy. to Kala Road	91	94	89	117
Kala Road to Old Stable Road	92	94	NA	NA
East of Old Stable Road	92	94	NA	NA
Puunene Avenue				
E. Kamehameha Ave. to Dairy Road	40	41	38	50
South of Dairy Road	111	121	107	150
Kuihelani Hwy				
West of Puunene Ave.	75	177	72	129
Dairy Road				
Puunene Ave. to Hana Hwy.	40	31	38	36
Hana Hwy. to Halcakala Hwy.	26	30	25	32
Keolani Place				
Halcakala Hwy. to Aalele St.	35	26	32	26
Airport Access Road				
Puunene Ave. to Dairy Road	0	156	NA	170
Dairy Road to Hana Hwy.	0	143	NA	121
Keolani Pl. to Hana Hwy.	0	41	NA	97
Halcakala Highway				
Hana Hwy. to Hanakai St.	25	25	23	20
Hanakai St. to Keolani Place	25	25	24	23
Keolani Place to Aalele Street	9	NA	9	18
Kala Road to Hana Hwy.	14	NA	NA	NA
East of Keolani Place	NA	22	NA	NA
East of Hana Hwy.	128	138	124	155

[1] The distance is measured from the roadway centerline in feet.
[2] Based on the 2010 design day traffic volume.
[3] Based on the 2020 average day traffic volume.

3.2.2.2 Impact Analysis

Vehicular noise calculations for existing conditions and for future conditions with and without the proposed airport improvements were performed using the Federal Highway Administration (FHWA) Noise Prediction Model. Hourly traffic volumes, average vehicle speed, estimates of traffic mix based on visual observations and a soft ground propagation factor were entered into the noise prediction model.

As seen in Table 3-7 and Table 3-8, the vehicular noise levels at the residential properties (sites 1A through 1F; see Figure 3-1 for site locations) along Dairy Road near the intersection of Puunene and Kuihelani Highways are forecast to exceed the FHWA criteria of 67 dBA Leq for exterior residential noise. The noise receptors for sites (2) and (3) are 400 feet or more from the roadway centerlines and therefore, are not subject to high noise levels.

Table 3-7
COMPARISON OF LEQ (dBA) FOR
NOISE RECEPTOR SITES FOR 2010 PEAK HOUR TRAFFIC

NOISE SENSITIVE AREA - LAND USE AND (SITE NO.)	1994 EXISTING DESIGN DAY		2010 NO-ACTION DESIGN DAY		2010 PROPOSED PROJECT DESIGN DAY		DIFFERENCE PROPOSED VERSUS NO-ACTION	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Spreckelsville - residential (3)	57.0	57.6	57.8	57.7	57.9	57.7	0.1	0.0
Sugar Cane Museum (2)	58.1	58.8	58.3	59.4	58.3	59.3	0.0	-0.1
Kahului - residential								
(1A)	65.8	66.4	70.1	71.2	70.1	71.1	0.0	-0.1
(1B)	65.8	66.4	70.1	71.2	70.1	71.1	0.0	-0.1
(1C)	66.1	66.7	70.4	71.5	69.8	70.9	-0.6	-0.6
(1D)	67.2	67.9	71.6	72.7	67.6	68.6	-4.0	-4.1
(1E)	69.6	70.3	74.0	75.1	67.5	68.4	-6.5	-6.7
(1F)	73.3	74.0	77.7	78.8	72.4	73.0	-5.3	-5.8

NOTE: (2) represents highway noise receptor site number, shown on Figure 3-1.

The 2010 analysis shows that the future traffic increase will increase the noise levels at noise sensitive receptors with or without the Proposed Project. When compared to the No-Action Alternative, the Proposed Project will decrease noise impacts in a range from 0.0 to 6.7 dBA for the noise sensitive receptors along Dairy Road/Kuihelani Highway. Similarly, the 2020 analysis shows that there will be some increase in the noise levels from 1994 due to increases in traffic volumes. The change in noise levels range from a decrease of 2.4 (site 1E, a.m.) to an increase of 3.4 dBA (site 1A, p.m.) with the Proposed

Project. However, when compared to the "No-action" alternative, the Leq levels along the roadways are 0.0 to 5.6 dBA less with the Proposed Project. Therefore, the Proposed Project will reduce the noise level along Dairy Road as the Airport Access Roadway will reduce the vehicular traffic from Dairy Road. There will be an increase in vehicular noise levels along the alignment of the new Airport Access Roadway, and on the portion of Hansen Road south of Hana Highway. However, there are no noise sensitive land uses planned for these areas.

Table 3-8
COMPARISON OF LEQ (dBA) FOR
NOISE RECEPTOR SITES FOR 2020 PEAK HOUR TRAFFIC

NOISE SENSITIVE AREA - LAND USE AND (SITE NO.)	1994 EXISTING AVERAGE WEEKDAY		2020 NO-ACTION AVERAGE WEEKDAY		2020 PROPOSED PROJECT AVERAGE WEEKDAY		DIFFERENCE BETWEEN 2020 AVERAGE WEEKDAY	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Spreckelsville - residential (3)	56.5	57.2	58.5	59.0	58.5	59.0	0.0	0.0
Sugar Cane Museum (2)	57.8	58.5	59.9	60.6	59.9	60.6	0.0	0.0
Kahului - residential								
(1A)	65.6	66.2	68.8	69.6	68.8	69.6	0.0	0.0
(1B)	65.6	66.2	68.8	69.6	68.8	69.6	0.0	0.0
(1C)	65.9	66.5	69.1	69.9	68.6	69.3	-0.5	-0.6
(1D)	67.0	67.7	70.3	71.1	66.3	67.0	-4.0	-4.1
(1E)	69.4	70.1	72.6	73.4	67.0	68.2	-5.6	-5.2
(1F)	73.1	73.8	76.4	77.2	72.5	74.0	-3.9	-3.2

NOTE: (2) represents highway noise receptor site number, shown on Figure 3-1.

3.2.2.3 Significance Criteria And Analysis

For the noise sensitive areas along Dairy Road, the noise abatement criteria specified by the FHWA and presented in Table 3-9 would be applicable. The FHWA noise abatement criteria basically establish an exterior noise goal for residential land uses of 67 Leq and an interior goal for residences of 52 Leq. The noise abatement criteria applies to private yard areas and assumes that typical wood frame homes with windows open provide 10 dB noise reduction (outdoor to indoor) and 20 dB noise reduction with windows closed. If the Leq noise levels would exceed the FHWA noise criteria, then the abatement measures which are reasonable and feasible must be considered. Also, the FHWA guidelines also consider a increase of greater than 15 dBA to be a substantial increase in noise. These impacts would also be considered significant adverse impacts. An insignificant adverse impact would occur when the increase in highway noise does not increase above the FHWA criteria or is less than a 10 decibels. Decreases in highway noise would

be considered a positive impact. Thus, the future ground vehicle noise levels in 2010 and 2020 will increase and result in noticeable increases in the noise environment.

The noise analysis shows that there will be a significant impact for the residences along Dairy Road, between Puunene Avenue and Hukilike Street (sites 1A through 1F). This impact is less than the impact forecast under the No-Action alternative, but the noise level remains above the FHWA criteria of 67 Leq. All other areas would have an insignificant impact as there are no existing or planned noise sensitive receptors impacted. A summary of the ground vehicle noise is presented in Table 3-10.

Table 3-9
FHWA NOISE ABATEMENT CRITERIA

ACTIVITY CATEGORY	NOISE ABATEMENT CRITERIA LEVEL -LEQ	DESCRIPTION OF ACTIVITY CATEGORY
A	57 (exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of open spaces, or historic districts which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas and parks which are not included in category A and residences, motels, hotels, public meeting rooms, schools, churches, libraries, and hospitals.
C	72 (exterior)	Developed lands, properties or activities not included in Category A or B above.
D	-	For requirements of undeveloped lands see FHWA PPM 7-7-3.
E	52 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Note: The activity category is an alphabetical designation for land use, as defined in the in Table 3-9.

Table 3-10
SIGNIFICANCE OF EFFECTS ON NOISE

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Vehicular Noise Levels Within the Airport	Increased noise levels For residences - exterior noise level above 67 Leq; interior noise level above 52 Leq.	Insignificant along the new Airport Access Road.
Increased Vehicular Noise Levels Outside the Airport	Increased noise levels For residences - exterior noise level above 67 Leq; interior noise level above 52 Leq.	Significant along Dairy Road from Hukilike Street to Puunene Ave. Insignificant at all other areas.

3.2.2.4 Mitigation Measures

The increase in traffic along Dairy Road will cause a significant increase in ground vehicle noise. Although this impact may be greater without the Proposed Project, by as much as 6.7 dBA Leq, the use of FHWA funding and the exceedance of the 67 dBA Leq criteria requires the consideration of reasonable and feasible mitigation measures. The construction of a noise barrier, a solid wall, was considered to be a reasonable and feasible measure (approximately $15,000 per lot). Based on the worst case location of 1F, a noise barrier of approximately 6.5 feet in height[7] would be sufficient to reduce the noise impact by 8 dBA at Site 1F and reduce the noise level to about 65.6 dBA Leq. The noise barrier is recommended to be located along the property lines, within the roadway Right-of-Way, of the homes along Dairy Road/Kuihelani Highway between Puunene Avenue and Hukilike Street (TMKs 3-8-70:2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, and 20). In addition, prior to the finalization of the roadway design, HDOT will discuss this mitigation measure with the affected homeowners and property owners. The barrier will be built only if there is a consensus among the homeowners and property owners, because the effectiveness of the noise barrier is reduced if it is not a continuous barrier.

3.2.2.5 Level Of Significance After Mitigation

If the noise barrier is constructed, the vehicular noise levels will not exceed the FHWA criteria. Therefore, with the proposed mitigation measures, the vehicular noise impacts will be reduced to a level of insignificance.

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[7] The 6.5 foot wall height is based on the assumption that the topography is flat. The barrier is only effective if it can break the "line-of-sight" between the source and the receiver. If the topography is not flat, the location of the wall or height of the wall may need to be adjusted to achieve an adequate reduction of noise.

3.2.3 SHORT TERM CONSTRUCTION NOISE

3.2.3.1 Impact Analysis

During construction on the airfield proper, existing residences in East and West Spreckelsville may experience increased noise levels due to construction equipment and aircraft overflights.

The strengthening and lengthening of Runway 2-20 will have the most impact on the neighboring communities, as construction will most likely be scheduled between the hours of 10:00 p.m. and 7:00 a.m. Under normal conditions, Runway 2-20 is utilized for both day and night operations, with most of the aircraft operations occurring between 7:00 a.m. and 10:00 p.m. In addition, the heavy aircraft, such as the DC-10 and L-1011, must use Runway 2-20 and usually operate during the daytime and evening hours. Thus, in order to minimize disruption to the airfield operations the construction activities are being scheduled from 10 p.m. to 7 a.m., and will require closure of the runway during this period. The length of the Runway 2-20 closure will be from zero days to two months, depending on construction technique and the project design. The nighttime closure of the runway would impact approximately 20 aircraft operations (10 takeoffs and 10 landings each night), using Kahului Airport. These aircraft operations would arrive and depart on Runway 5-23 instead of Runway 2-20. During this time period, residents of Kahului, Wailuku and Spreckelsville will incur increased aircraft overflights and noise impacts. Also, this will cause the overflight of Kanaha Pond Wildlife Sanctuary. The short term noise impacts to Kanaha Pond are discussed in Section 3.11. An overflight study on the impacts to Kanaha Pond was performed and the results are presented in Appendix J. The construction of the Airport Access Road may cause short-term noise impacts to the residences along Dairy Road between Hukilike Street and Puunene Avenue.

3.2.3.2 Significance Criteria and Analysis

Adverse impacts from the short-term construction noise impacts are not expected to be in the "public health and welfare" category due to the temporary nature of the work and due to the administrative controls available for its regulation. Due to the short-term impact of the construction work, the impact would be insignificant. At a distance of about 50 feet, typical construction equipment noise levels range from 70 to 100 dBA. Most residences will be more than 50 feet from the construction area.

The significance criteria for aircraft noise is discussed in Section 3.1.2.3, above. Based on this criteria, the change in flight paths will be insignificant due to the short-time period of the construction and the small number of flights which will be rerouted. Depending on the construction technique used on the runway strengthening project, the runway may be closed from zero (0) days to approximately two months. The work will be done at night between the hours of 10:00 p.m. to 7:00 a.m. with an average of about 20 aircraft operations being rerouted per night. Table 3-11 summarizes the potential impacts and significance of the impacts due to the Proposed Project.

Table 3-11
SIGNIFICANCE OF EFFECTS ON CONSTRUCTION NOISE

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Airport Area Noise Levels	1.5 DNL (Ldn) increase w/in 60 DNL contour	Insignificant
Airport vicinity Noise Levels	1.5 DNL (Ldn) increase w/in 60 DNL contour	Insignificant

3.2.3.3 Mitigation Measures

The noise impacts related to construction will be short-term and are insignificant, therefore no mitigation is required. However, to minimize environmental harm, voluntary mitigation of construction noise will include the use of properly muffled equipment. Noisy construction activities are not permitted on holidays under Department of Health permit procedures.

3.3 LAND USE

3.3.1 EXISTING CONDITIONS

To determine land use factors associated with the proposed Kahului Airport improvements and the potential effects of those improvements on land uses in and around the Airport, a Land Use Impact Assessment (LUIA) was prepared specifically for this EIS and is included as Appendix D. The following briefly summarizes that report.

The Airport boundary presently encompasses approximately 1,447 acres, including approximately 235 acres for the Kanaha Pond Wildlife Sanctuary. The Airport is bordered to the north by the Pacific Ocean, to the west by the light industrial areas of Kahului, and to the south and east by sugar cane fields. Kanaha Beach Park and the Spreckelsville Beach Lot Properties occupy frontage along the Airport's northern boundary. In 1968, the Department of Transportation (HDOT) transferred, with FAA approval, approximately 66 acres to the County of Maui for purposes of establishing Kanaha Beach Park. In 1969, the HDOT transferred, with FAA approval, approximately 24 acres to the County of Maui for the Kahului-Wailuku Wastewater Treatment Plant. Recently, an additional 43 acres of Airport property adjacent to the Kahului-Wailuku Wastewater Treatment Plant was turned over to the DLNR. In addition, in 1994 HDOT reached an agreement with DLNR which delineates the boundary of the Kanaha Pond Wildlife Sanctuary (KPWS). The sanctuary now encompasses approximately 235 acres. The boundary of KPWS is shown on Figure 3-14.

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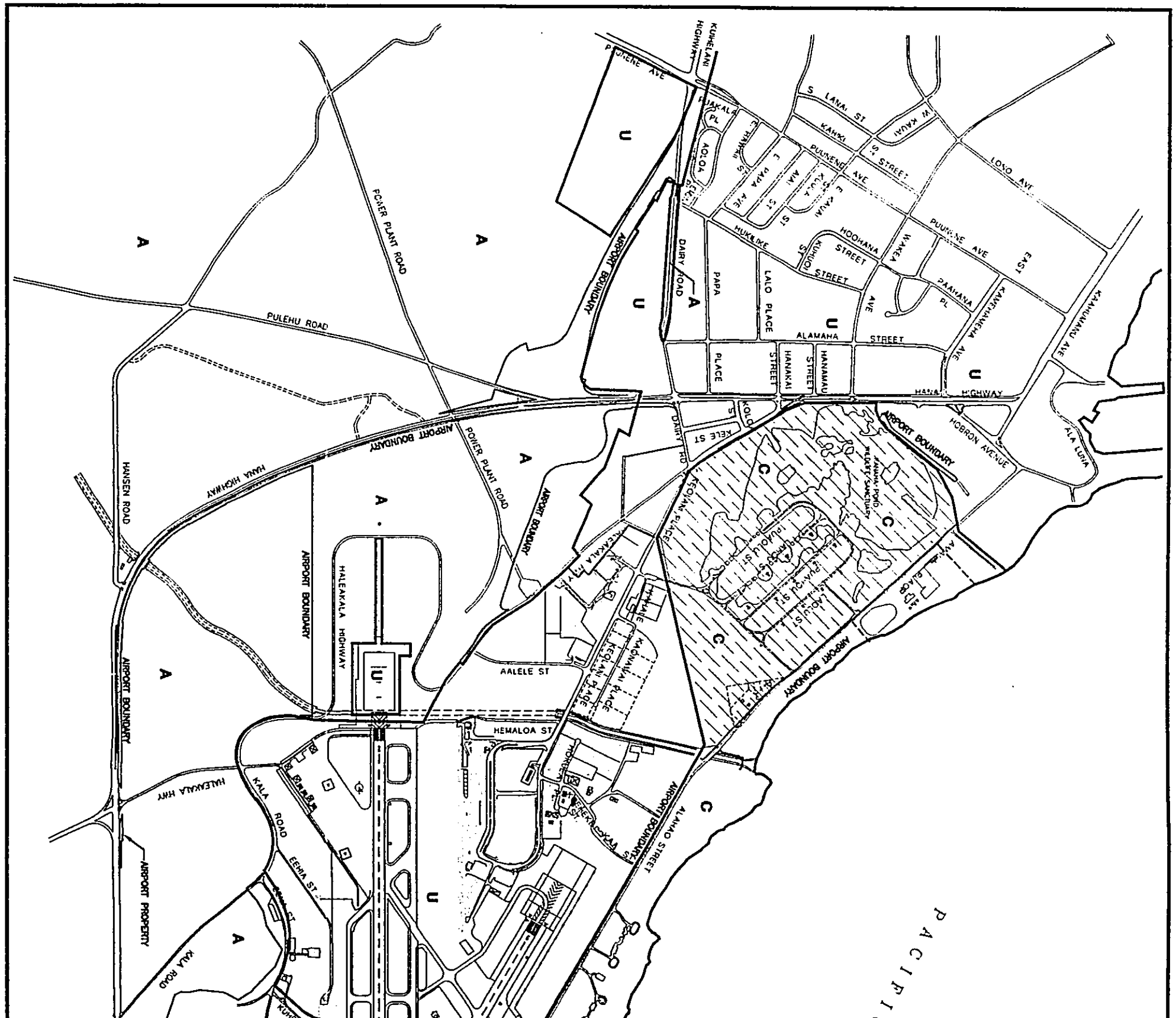
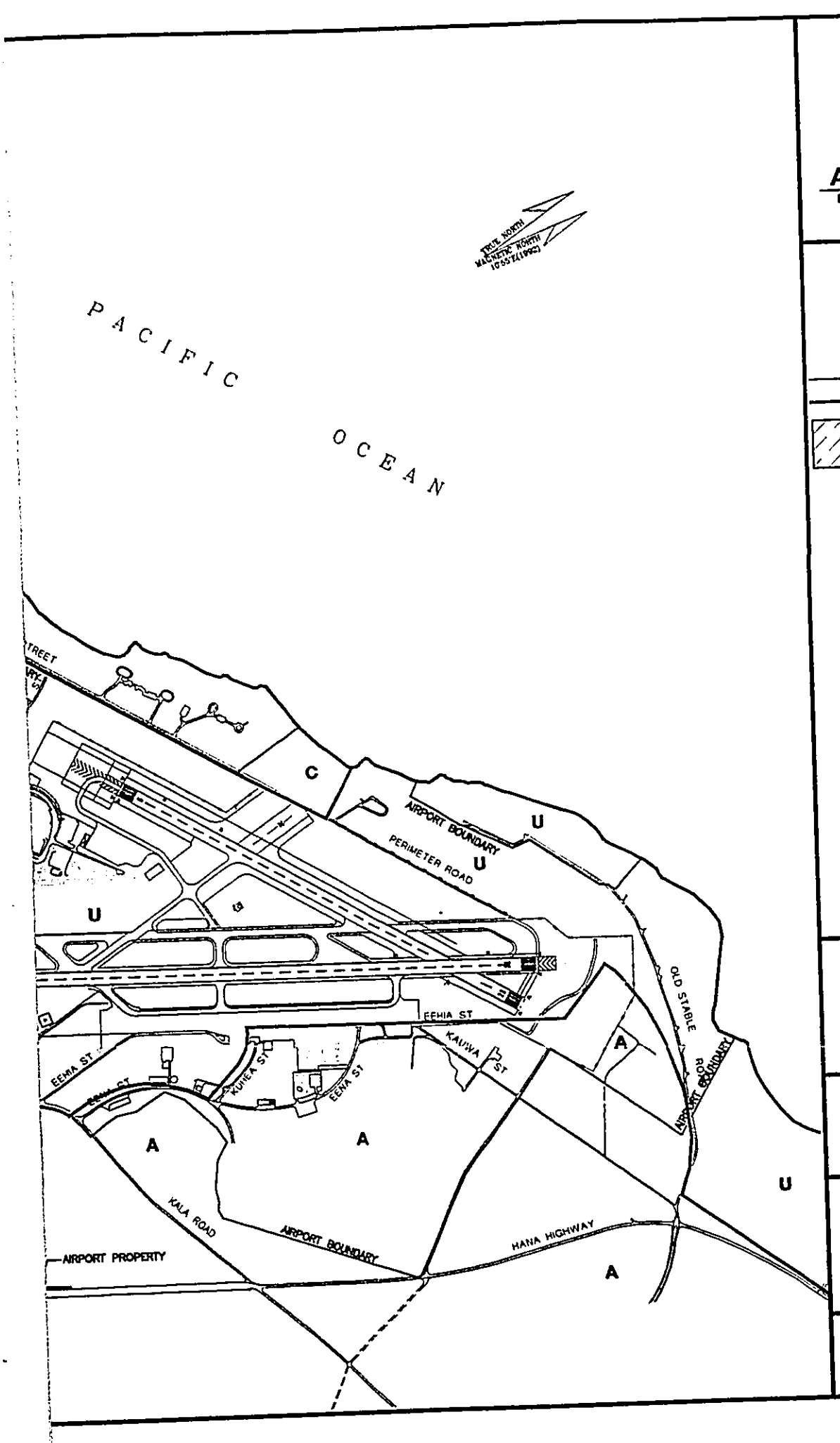




DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

- A Agriculture
- U Urban
- R Rural
- C Conservation
- Airport Boundary
- Land Use Boundary
- Kanaha Pond Wildlife Sanctuary

0 500 1000 1500 2000
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING STATE LAND USE DISTRICTS

DATE	FIGURE
JANUARY, 1997	3-14

Significant changes in land use patterns have occurred since the Airport was established. These changes reflect population growth, a decrease in agricultural activity and increased demand for Airport and community-related services. The recent shift from agricultural to urban land uses is due largely to the confluence of roads in the Airport area and the presence of businesses and government near the Airport. On the other hand, however, tsunami and flood hazards have served to constrain some types of land uses in and around the Airport.

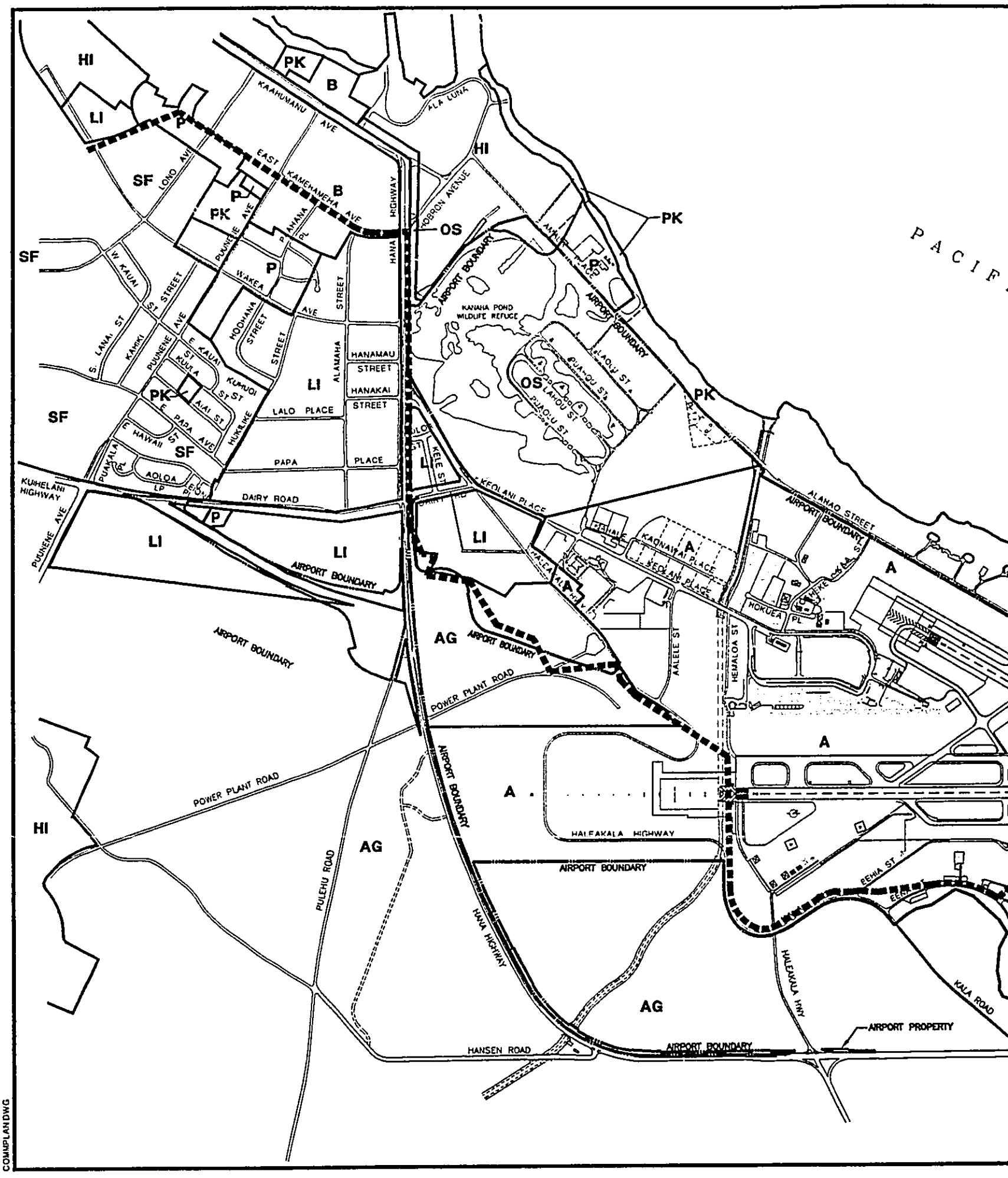
Land within the present Airport boundary is designated into three different land use districts by the State Land Use Commission (LUC): (i) Conservation - which includes Kanaha Pond and a small area along the coast planned for expansion of Kanaha Beach park; (ii) Urban - which includes the active Airport areas and the Spreckelsville area; and (iii) Agriculture - which includes lands already acquired for Airport purposes or lands to be acquired for Airport purposes. A fourth land use classification, Rural, is not found within the Airport vicinity. The proposed Airport improvements will not require a change in the Conservation district lands because the proposed project will not result in an impact to these areas. However, a change of the Agriculture lands to Urban will require LUC action. This change is needed because the current agricultural designation does not allow for airport-related uses. Figure 3-14 shows the State of Hawaii land use classifications within the vicinity of the Airport.

The Airport is designated in the Wailuku-Kahului Community Plan and Zoning (WKCP) for airport use, and is presented in Figure 3-15. The majority of the existing Airport is within the County's Special Management Area (SMA) pursuant to the State's Coastal Zone Management Program (See Figure 3-15). The County Planning Department has introduced a policy represented by a Special (Airport) Overlay District which follows the 60 DNL (Ldn) noise level contour surrounding the Airport. This policy limits County Community Plan land uses within the Special Overlay District to airport-related, light or heavy industrial, commercial and agricultural uses. In addition, the policy permits residential uses only in part of Spreckelsville.

The residential areas near the Airport include East and West Spreckelsville, adjacent to the northwest and northeast corners of the Airport. The Kahului residential areas are outside the DNL (Ldn) 60 area, but are subject to overflights by interisland jet aircraft seeking to avoid the turbulent air conditions over the Maalaea and Kihei areas during strong trade wind periods. These turbulent trade winds occur infrequently and are estimated to be three to five hours for five to six days a year on the average.

Industrial and commercial areas have developed as Kahului has grown, and reflect the business needs of the community. Many of the businesses target residents and visitors and rely to some extent on traffic to and from the Airport.

The parks, open space and conservation uses are all located within the coastal zone along the shoreline. The major park in the area is Kanaha Beach Park, a significant picnicking and meeting place that serves as a base for people using the public shoreline and nearshore waters. Kanaha Pond Wildlife Sanctuary is a predominant Conservation land use in the vicinity of the Airport.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HUKILIKE
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AOLOA LP
PAPA PLACE
KELE ST
KUHELANI HIGHWAY
DAIRY ROAD
PUUNENE AVE
AIRPORT BOUNDARY
KEOLANI PLACE
KAONAKAI PLACE
HOKUEA PL
AALELE ST
HEMALOA ST
ALANAO STREET
AG
POWER PLANT ROAD
PULEHU ROAD
HANA HIGHWAY
HALEAKALA HIGHWAY
HALEAKALA HWY
KULA ROAD
AIRPORT PROPERTY
HANSEN ROAD
KANAHA POND WILDLIFE REFUGE
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LAHOU ST
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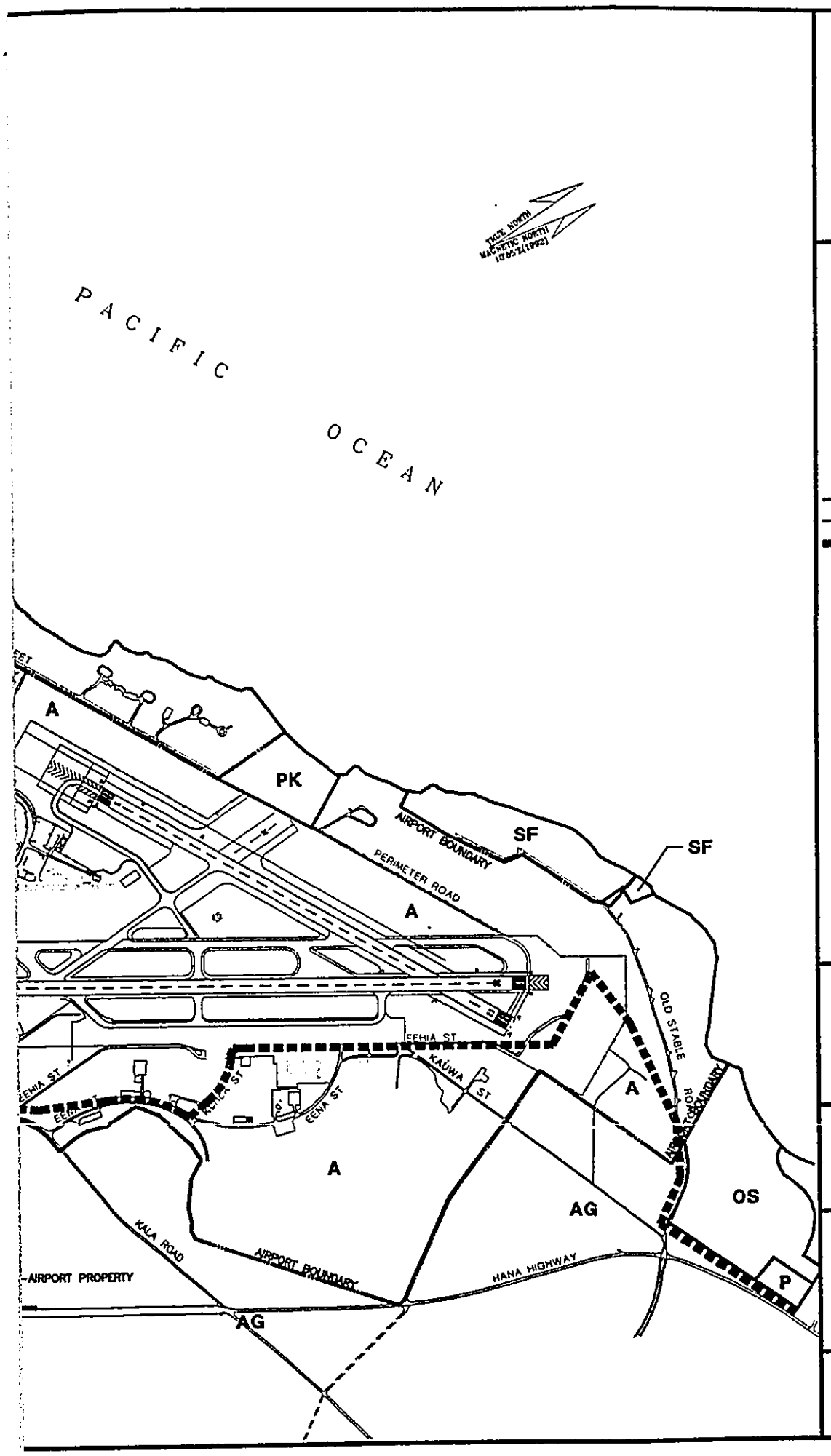

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LEGEND

- AG Agriculture
- SF Single-Family Residential
- LI Light Industrial
- P Public/Quasi-Public
- PK Park
- OS Open Space
- HI Heavy Industrial
- A Airport
- B Business/Commercial
- ——— Land Use Boundary
- ——— Airport Boundary
- ▬▬▬ Special Management Area Boundary (1979)

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GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING WAILUKU - KAHULUI COMMUNITY PLAN

DATE	FIGURE
JANUARY, 1997	3-15

The State of Hawaii owns Kahului Airport, including Kanaha Pond Wildlife Sanctuary and the shoreline. The County of Maui owns the Kahului Wastewater Treatment Plant, located west of Kanaha Beach Park and makai (north) of the Airport, and Kanaha Beach Park. The residential areas of East and West Spreckelsville and Kahului are a mix of small parcels in private ownership. The commercial, light industrial and agricultural lands (including the land to be acquired) are owned by A&B Hawaii, Inc.

3.3.2 IMPACT ANALYSIS

The potential impacts on land uses were evaluated where: (i) aircraft generated noise levels may reach or exceed 60 DNL (Ldn) levels; (ii) where the proposed Airport improvements may affect existing or planned nearby land use patterns; and (iii) where the proposed Airport improvements may disrupt businesses or require the relocation of residents or businesses. It should be noted, that the Federal (FAA) requirements for assessing the potential aircraft generated noise impacts on land uses begin at the 65 DNL contour (Section 11.0, Reference 17). However, the FAA allows the local authorities to establish "local" guidelines, and therefore, the State of Hawaii has changed the guidelines for incompatible land uses to begin at the 60 DNL contour.

Aircraft generated noise will continue to impact the Kanaha Pond and Beach Park areas. Both of these areas are currently within the 60 DNL (Ldn) noise contour. Similarly, the East and West Spreckelsville areas will continue to experience aircraft generated noise. The proposed new parallel runway will change the noise contours, but will probably impact areas currently impacted by the existing aircraft operations. Aircraft overflights, especially those at night, are expected to continue and will potentially generate the most single event noise complaints. These potential noise impacts are addressed in Section 3.2.

The proposed airport improvements, especially those related to roadway realignments, may affect existing businesses along Keolani Place that rely on the present airport traffic for customers. These businesses are on short-term, inexpensive leases from A&B Hawaii, which could be phased out or made subject to increased rents if these operations compete with the Triangle Square businesses. Hence, it is not certain that these businesses would be in operation when the Airport Access Road is built. In addition, there are two businesses on Kahului Airport, off of Keolani Place, which may be affected by the relocation of surface traffic to the new Airport Access Roadway. The Kahului Light Industrial Area is expected to be positively affected by the airport improvements by increasing the volume of business in the vicinity of the area.

In general, the proposed roadway improvements are planned to ease present congestion and facilitate traffic flow in and out of the airport area. The proposed Airport Access Road and interchange are expected to reduce present traffic congestion, which could facilitate customer traffic to businesses located along the present airport access routes. A detailed traffic analysis is presented in Appendix M for the year 2010 and Appendix P for the year 2020. A summary of ground traffic impacts is presented in Section 3.22.8.

Construction of the Alahao Street extension (emergency access) and the County's Bikeway will create the opportunity for increased pedestrian and bicycle traffic to travel along the shoreline between Kanaha Beach Park and Spreckelsville. Note that during emergency situations, there will be an increase in vehicular traffic along this road. This increase in vehicular traffic during emergency situations would lead to corresponding, event-specific increases in traffic noise.

The proposed airport improvements will require the acquisition of approximately 430 acres of sugar cane cropland. This land will be used for the Airport Access Roadway Project (4 acres for Hansen Road realignment), navigational aids and lighting aids (9 acres), the new parallel runway (415 acres), runway protection zones and expansion of the air cargo area (2 acres). Acquisition of these lands will result in their gradual shift from agricultural to airport-related uses. A change in State Land Use designation will be required from Agriculture to Urban at the time the land use changes to airport use. Presently, the Office of State Planning has proposed reclassification of 210 acres of State of Hawaii lands from Agriculture to Urban in support of the airport expansion, specifically for the lengthening of Runway 2-20[8]. In addition, the County will need to change the zoning of the acquired land from Agriculture and Single Family to Airport as the need for airport facilities become apparent. The HDOT-AIR has filed a petition for district boundary amendment with the Land Use Commission for the reclassification of approximately 210 acres as recommended by the Office of State Planning (currently known as DBEDT, Office of Planning) in the five (5)-year Boundary Review Report.

The agricultural area is being acquired for primarily to land bank and secondarily for the parallel runway would remain in agricultural production until such time as it is needed for aviation use. In addition, another 85 acres of sugar cane cropland will be required for avigation easements. This land, under the avigation easement, will remain in private ownership but will be subject to height restrictions and impacts related to aircraft overflights. The height restrictions or aircraft overflights will not affect present agricultural activities and could benefit agricultural uses by discouraging non-agriculture uses. Continued use of these agricultural lands for agricultural purposes is expected to act as a benefit due to a buffering effect and maintenance of existing vistas toward the West Maui Mountains. The primary landowner of the agricultural lands, A&B Hawaii, Inc., does not oppose the Phase 1 acquisition of land for airport expansion. In fact, A&B Hawaii has plans to convert approximately 340 acres of its land near the Airport from agriculture (sugar) to industrial and other urban uses. A&B Hawaii's current plan shows a long-term urbanization of 240 acres of Agricultural land instead of 340 acres. The State Land Use Commission has approved part of their request and amended the land use district boundaries so as to reclassify approximately 76 acres from Agriculture to Urban District. The Commission also approved the incremental redistricting of a second phase of approximately 53 acres. As part of their rezoning request, A&B Hawaii, Inc. clearly indicated the 340 acres were not needed for the long-term well-being of its sugar operations. The industrial and urban uses as planned by A&B Hawaii are compatible with airport use.

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[8] This land use reclassification was part of the 1992 State Land Use District five (5) year Boundary Review for the Island of Maui.

There are several parcels of land along the coast, that are held by private land owners, which may be acquired for the parallel runway. These parcels are zoned by the County of Maui as "Open Space." Because the construction of the parallel runway is scheduled for the year 2016 or beyond, the extent of the necessary land acquisition toward the coast is not fully known at this time, therefore, the full impacts are not known and cannot be properly assessed at this time. Therefore, prior to the construction of the parallel runway, a supplemental or new EIS will be completed in order to determine the full impacts of the parallel runway and what, if any, mitigation measures are needed.

Although the land for the Airport Access Roadway has been acquired, the change in land utilization from agriculture to a roadway was not covered in the previous Environmental Assessment. Therefore, this EIS will address the change in land use for this land parcel and the land needed for the relocation of Hansen Road. The existing use of sugar cane crop land will be changed to a highway use; however, no formal Land Use change is required as roads are permitted uses in "Agriculture" districts. The ownership of a portion of the Airport Access Roadway will be transferred to HDOT-Highways Division (HDOT-HIGH) for operational and maintenance responsibilities.

3.3.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Allowable land uses within the State are designated by the State Land Use Commission. The land uses within the County of Maui control are designated by the Maui County Council via the Maui County General Plan and Wailuku-Kahului Community Plan. Maui County zoning ordinances and project district designations also control land use development.

The following criteria have been used to measure potential land use effects of the proposed improvements: (i) **Significant** adverse land use effects are defined as those actions which (a) result in a change in the State Land Use designation of Conservation lands; (b) result in land uses outside existing County land use designations and Community Plans; (c) cause a hardship to present land uses; (d) require relocation of present residents, tenants or existing land uses; or (e) change aircraft noise compatible land uses to incompatible land uses; (ii) **Insignificant** adverse effects are defined as: (a) those actions which permit continuation of existing land uses; or (b) land use changes not considered significant or considered positive; and (iii) **Positive** (beneficial) land use impacts are defined as those actions which (a) result in long-term land uses which are consistent with existing and planned State and County land use plans; (b) result in efficient and economical use of land; or (c) result in reduced or better uses of land.

Based on the Land Use Assessment (Appendix D) conducted for this EIS, in conjunction with the recently completed FAR Part 150 Noise Compatibility Program study and evaluation criteria listed above, there will be no significant noise impacts on land use due to the Proposed Project, except when the parallel runway is constructed (Refer to Section 3.1). The Noise Compatibility Program for Kahului Airport has been approved by the FAA in September 1996.

The land use impacts due to aircraft generated noise with the runway extension will be an insignificant adverse impact. The proposed roadway improvements, will have an insignificant adverse impact on businesses in the airport areas. The roadway improvements may affect businesses along Keolani Place that rely on the present airport traffic, but it is not certain that these businesses will be in operation when the Airport Access Road is built, as they are on month to month leases. The Kahului Light Industrial Area is expected to be positively affected by the airport improvements because the proposed roadway improvements will decrease roadway congestion. The decrease in congestion would facilitate traffic flow in and out of the airport area, and could facilitate customer traffic to businesses located along the present airport access routes.

The proposed airport improvements for Phase 1 will require change in the land use from agricultural to urban uses. A change in State Land Use designation will be required from Agriculture to Urban prior to the land use changing to airport use. The Phase 1 land use change will be an insignificant land use impact. The land acquisition slated for Phase 2 will not require land use changes as the uses will remain unchanged until future aviation demand dictate a need for airport expansion. The Phase 3 projects, especially the parallel runway, is scheduled to be constructed beyond the year 2009 time frame, and the full impacts may not be known and therefore cannot be properly assessed at this time. Prior to the construction of these long-range projects, additional environmental analysis will be completed in order to determine what, if any, further environmental documentation is required. Table 3-12 summarizes the significance of the potential effects of the proposed improvements on present and future land uses within the project area.

Table 3-12
SIGNIFICANCE OF EFFECTS ON LAND USES

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Land Uses Compatible With State and County Plans	Land uses not in conformance with existing or future plans, policies and controls	Potentially Significant with parallel runway, only
Aircraft Noise	Changes compatible land use to incompatible land use	Insignificant
Businesses and Residential Areas	Relocation or disruption to existing business levels or character	Potentially Significant with parallel runway, only

3.3.4 MITIGATION MEASURES

The proposed Airport improvements are generally expected to result in positive or insignificant impacts to existing or planned land uses within the Airport and surrounding areas. The parallel

runway may have an impact on land use. Possible mitigation measures for implementation of the parallel runway project will be discussed in future environmental documents, as necessary.

3.4 GEOLOGY, PHYSIOGRAPHY, SOILS, AGRICULTURAL POTENTIAL AND EARTHQUAKES

3.4.1 EXISTING CONDITIONS

Geologically, the Island of Maui is characterized as East and West Maui, with East Maui dominated by Haleakala Volcano. West Maui, which includes the saddle isthmus between Haleakala and the West Maui Mountain and the Kahului/Wailuku areas (the Airport location), is distinguished by Iao Needle in Iao Valley. There are five major geologic units on West Maui: (i) Pliocene and Pleistocene volcanic rocks, including the Wailuku and Honolua volcanic series; (ii) Pleistocene and recent volcanic rocks, including the Lahaina volcanic series; (iii) Pleistocene sediments which include calcareous dunes and consolidated earthy deposits; (iv) recent sediments which include unconsolidated deposits; and (v) historic volcanic rocks.

Typically, the West Maui basalt is thin-bedded a'a and pahoehoe created by quiescent flank eruptions along rift zones. A'a is characterized by a spiny, clinkery surface underlain by a dense core of rock. Pahoehoe has a smooth to billowy surface with a ropy or folded texture. The soils of West Maui, which reach depths of about 20 feet, indicate that the volcanic activity probably stopped in the Pliocene or earliest Pleistocene era.

The Airport is situated at the northeastern corner of a broad isthmus that joins the two mountains. The underlying geology of the Airport area is a sequence of intercalated volcanics, marine sediments and terrestrial sediments laid on the northeastern flank of Haleakala. The shallow subsurface conditions along the seaward part of the Airport consists of exposed Pleistocene age sand dune deposits formed during a lower stand of the sea. Under the sand dunes and in the eastern portion of the Airport property lie lava flows and related deposits of the Kula Volcanic Series. This volcanic series is characterized as late stage volcanics of andesitic composition that formed thick flows of dense massive basaltic lava. The Kula lava flows are generally mantled by a thin cover of volcanic ash.

The physiography of the Kahului Airport area is characterized as being relatively flat with an average slope of 0.5 percent from south to north. The current ground surface elevations range from sealevel at the coast to about 80 feet mean sea level (msl) along Hana Highway in the northeastern portion of the project area. The Airport Reference Point (ARP) is located near the intersection of Taxiways "A" and "F", and has an elevation of 54 feet mean sea level (msl). There are no major land forms within the Airport boundaries, nor is it likely that major land forms existed in the vicinity of the Airport in the past.

The soils of Central Maui, including Wailuku, Kahului, Puunene, Waikapu, Paia and Kihei, are generally deep, well drained, nonstony and well adapted for the cultivation of agricultural crops (sugar

and pineapple). The dominant Great Soil Groups are: (i) Low Humic Latosol; (ii) Alluvial; (iii) Reddish Brown; and (iv) Regosol. The Airport area consists of seven soil types as classified by the U.S. Department of Agriculture, Soil Conservation Service (August, 1972). The seven soil types are shown on Figure 3-16 and as follows:

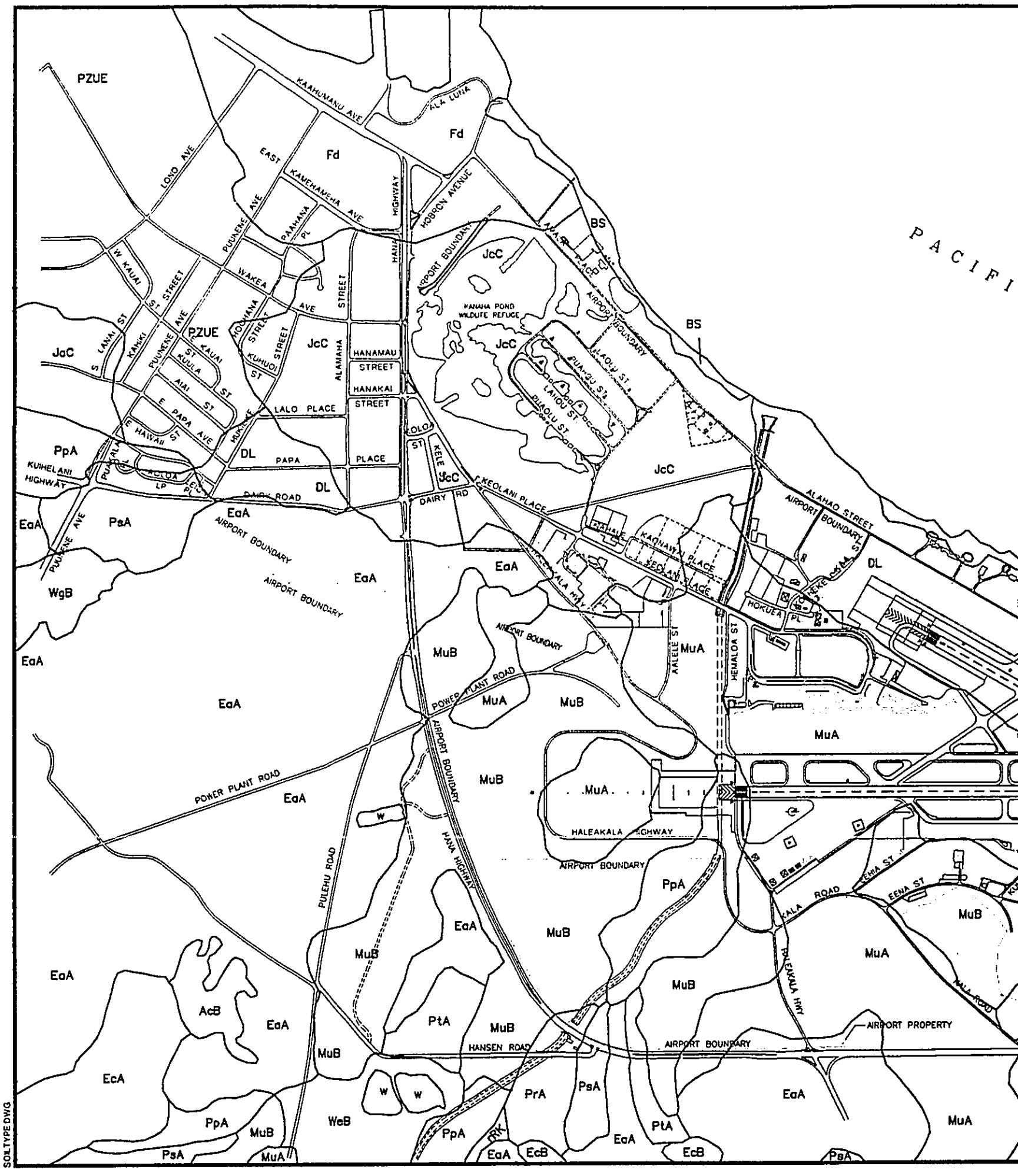
- Dune Land (DL): Dune land consists of hills and ridges of sand-size particles drifted and piled by wind. The hills and ridges are actively shifting or are so recently stabilized that no soil horizons have developed. The sand is dominantly from coral and seashells. Elevations range from nearly sea level to 150 feet. Annual rainfall is 15 to 90 inches. This land type is suitable for wildlife habitat, recreational areas and as a source of liming material.

- Ewa Silty Clay Loam, 0 to 3 percent slopes (EaA): This soil series consists of well-drained soils in basins and on alluvial fans on the island of Maui. Elevations range from near sea level to 150 feet. Annual rainfall is 10 to 30 inches. Runoff is very slow and the erosion hazard slight. This soil type is suitable for sugarcane and homesites.

- Jaucas Sand, Saline, 0 to 12 percent (JcC): This soil series consists of excessively drained, calcareous soils that occur as narrow strips on coastal plains. They are nearly level to strongly sloping with elevations from sea level to 100 feet. Annual rainfall is 10 to 40 inches. This soil type occurs near the ocean in areas where the water table is near the surface, and salts have accumulated. The water table is normally within a depth of 30 inches. This soil type is suitable for pasture, wildlife habitat and urban development.

- Molokai Silty Clay Loam, 0 to 3 percent slopes (MuA): This soil series consists of well-drained soils ranging from nearly sea level to 1,000 feet. Annual rainfall is 20 to 25 inches. This soil is on smooth slopes and used entirely for sugarcane cultivation on Maui. In a representative soil profile, the surface layer is dark reddish-brown silty clay loam about 15 inches thick. The soil is slightly acid to neutral, except in areas used for pineapple cultivation where acidity is strong. Permeability is moderate, runoff slow and erosion hazard slight.

- Molokai Silty Clay Loam, 3 to 7 percent slopes (MuB): This soil series consists of well-drained soils ranging from nearly sea level to 1,000 feet. Annual rainfall is 20 to 25 inches; runoff is slow to medium and erosion hazard is slight to moderate. This soil type is suitable for sugarcane and pineapple cultivation, wildlife habitat and homesites.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HOBRON AVENUE
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ALAMAHA STREET
HANAMAU STREET
HANAKAI STREET
LALO PLACE
PAPA PLACE
KOLO ST
KELE ST
DAIRY RD
KEOLANI PLACE
KUIHELANI HIGHWAY
PUUKALA ST
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EcB
AcB
PtA
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WeB
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POWER PLANT ROAD
PULEHU ROAD
HANA HIGHWAY
HALEAKALA HIGHWAY
AIRPORT BOUNDARY
HANSEN ROAD
KALA ROAD
PUKALANI HWY
AIRPORT PROPERTY
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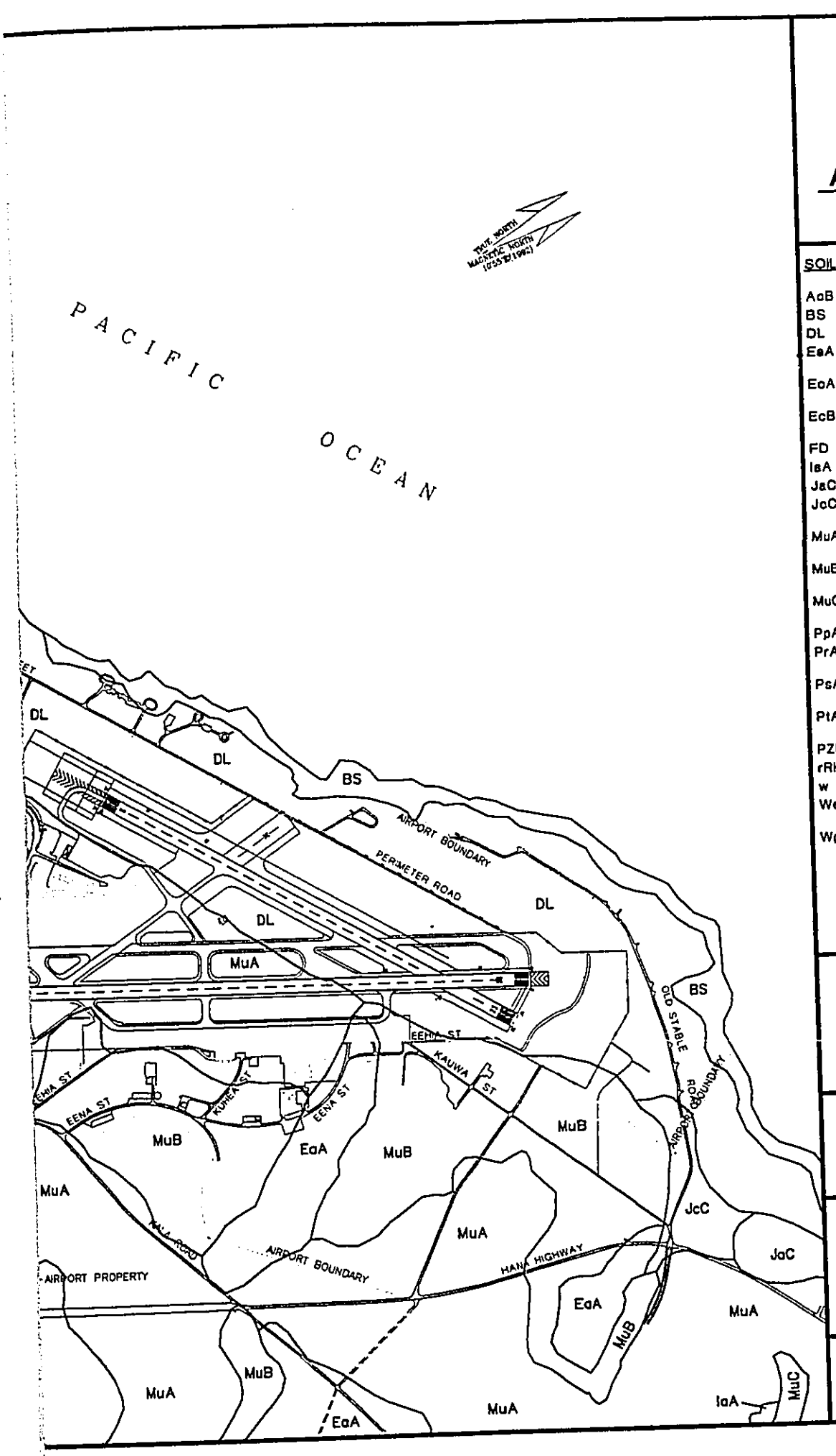

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

SOIL TYPE LEGEND

AaB	ALAE SANDY LOAM, 3-7% SLOPES
BS	BEACHES
DL	DUNE LAND
EaA	EWA SILTY CLAY LOAM, 3-7% SLOPES
EoA	EWA COBBLY SILTY CLAY LOAM 0-3% SLOPES
EcB	EWA COBBLY SILTY CLAY LOAM 3-7% SLOPES
FD	FILL LAND
IaA	IAO SILTY CLAY, 0-3% SLOPES
JaC	JAUCAS SAND, 0-15% SLOPES
JcC	JAUCAS SAND SALINE, 0-12% SLOPES
MuA	MOLOKAI SILTY CLAY LOAM, 0-3% SLOPES
MuB	MOLOKAI SILTY CLAY LOAM, 3-7% SLOPES
MuC	MOLOKAI SILTY CLAY LOAM, 7-15% SLOPES
PpA	PULEHU SILT LOAM, 0-3% SLOPES
PrA	PULEHU COBBLY SILT LOAM, 3-7% SLOPES
PsA	PULEHU CLAY LOAM, 0-3% SLOPES
PtA	PULEHU COBBLY CLAY LOAM, 0-3% SLOPES
PZUE	PUUONE SAND, 7-30% SLOPES
rRK	ROCK LAND
w	WATER
WeB	WAIAKOA SILTY CLAY LOAM, 3-7% SLOPES
WgB	WAIAKOA VERY STONY SILTY CLAY LOAM, 3-7% SLOPES

0 500 1000 1500 2000
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

SOIL TYPES

DATE	FIGURE
JANUARY, 1997	3-16

- Pulehu Silt Loam, 0 to 3 percent slopes (PpA): This soil series consists of well-drained soils on alluvial fans and stream terraces and in basins. This soil is nearly level to moderately sloping with elevations ranging from nearly sea level to 300 feet. Annual rainfall is 10 to 35 inches. This soil is similar to Pulehu clay loam, 0 to 3 percent slopes (PsA), except that the texture is silt loam. This soil type is suitable for sugarcane cultivation.

- Pulehu Clay Loam, 0 to 3 percent slopes (PsA): This soil series consists of well-drained soils on alluvial fans and stream terraces and in basins. The soils are nearly level to moderately sloping with elevations ranging from nearly sea level to 300 feet. Annual rainfall is 10 to 35 inches. In a representative soil profile, the surface layer is dark-brown clay loam about 21 inches thick. The soil is neutral in the surface layer and neutral to mildly alkaline below the surface layer. Permeability is moderate, runoff is slow, and the erosion hazard is no more than slight. Low areas are subject to flooding. This soil is suitable for sugar cane and truck crops cultivation and pasture.

The Land Study Bureau of the University of Hawaii, *Detailed Land Classification - Island of Maui*, May 1967, classified the overall productivity ratings of lands within the project area. The land types, productivity ratings and descriptions of the land types within the project area are summarized in Table 3-13 and shown on Figure 3-16.

The agricultural potential of the Airport area is well documented. According to the Land Study Bureau, the overall productivity rating for this land is the highest possible if irrigated and the lowest possible if not irrigated. Alexander and Baldwin Hawaii, Inc. (A&B) owns all of the agricultural lands immediately surrounding Kahului Airport. Hawaiian Commercial & Sugar Company (HC&S), a division of A&B, is a 36,000 acre sugar plantation that has cultivated sugar cane on Maui for over 100 years. As explained in Section 3.3, A&B has plans to convert approximately 340 acres of its land near the Airport from agriculture (sugar) to industrial and other urban uses. The State Land Use Commission has approved part of A&B's request and amended the land use district boundaries and reclassified approximately 76 acres from Agriculture to Urban. The Commission also approved the incremental redistricting of a second phase of approximately 53 acres. A&B has stated that the 340 acres are not necessary for the long-term well-being of its sugar operations. The industrial and urban uses as planned by A&B are compatible with airport use.

Earthquakes with epicenters on or near the Island of Hawaii originate from both volcanic and tectonic activity. Most of the volcanically related earthquakes are associated within the underground movement of magma and are relatively small. These earthquakes originate from the Molokai Seismic Zone, which includes the islands of Maui and Hawaii. The Molokai Fracture Zone is a series of fractures in the sea floor that stretch from the Hawaiian islands to Baja California. Most of the fracture zone is seismically inactive, but significant earthquakes are associated with the portion near Hawaii.

Table 3-13

KAHULUI AIRPORT LAND TYPES; PRODUCTIVITY RATINGS AND DESCRIPTIONS

Rating/ Type	Class of Sugar Cane[1]	Soil Series	Stoniness	Drainage	Machine Tillability
A51i	a	Molokai	Nonstony	Well-drained	Well-suited
A71i	a	Pulehu	Nonstony	Well-drained	Well-suited
E3	e	Catano	Nonstony	Excessively-drained	Well-suited
E51	e	Molokai	Nonstony	Well-drained	Well-suited
E71	e	Pulehu	Nonstony	Well-drained	Well-suited
E74	e	Kealia	Nonstony	Poorly-drained	Poorly-suited

Source: Land Study Bureau, University of Hawaii, May 1967.

Rating/Type - Capitol letters indicate the *Overall Productivity Rating*, as "A" represents the highest productivity and "E" represents the lowest productivity.
- Numbers indicate the *Land Type number.*
- i indicates that the rating is based on irrigated lands.

[1] Selected Crop productivity ratings for sugar cane were: Class a: 0.53 tons or more of sugar per acre per month; Class e: less than 0.22 tons of sugar per acre per month.

Data on earthquakes recorded on Maui during historical times indicate that two large quakes in the Molokai Fracture Zone and the Ka'u earthquake of 1871 probably produced earthquakes in East Maui. Haleakala Crater is considered to be a dormant volcano. The potential earthquake damage to existing and proposed structures would be minimized by following the Uniform Building Code and other applicable rules and regulations. Presently, Kahului Airport is in seismic Zone 2B as established by the Uniform Building Code (UBC).[9]

3.4.2 IMPACT ANALYSIS

The proposed Airport improvements which have the potential to affect the geology, physiography and soils of the Airport area are: (i) the Airport Access Road; (ii) the Runway 2-20 extension; (iii) construction of a parallel runway (2L-20R), and associated taxiways; (iv) improvements to the area

[9] The Uniform Building Code categorizes the United States in to various zones from 1 to 4. These zones are assigned a "seismic zone factor" which is used to compute the seismic design loads on structures. The "seismic zone factor" is related to the intensity of seismic activity in the region.

adjacent to the East Ramp and the construction of the expanded ground transportation facilities; (v) the new air cargo facilities; (vi) the transient aircraft parking apron; and (vii) the new fueling facilities.

These projects will primarily affect the physiography of the area by altering the present grades and elevations. The soils of the project area are expected to be minimally affected by the proposed improvements and the geology of the area is expected to remain unchanged.

During construction, the proposed improvements also have the potential to affect the marine environment via erosion and increased sediment loading in the nearshore areas. Following construction, increased surface water flows into nearshore areas could affect nearshore water quality and marine life. The estimated runoff entering Kalialinui Gulch from the Phase 1 improvements, mainly from the Runway 2-20 and Taxiway "A" extension, will be 69 cubic feet per second (cfs) during a 100 year recurrence interval event. This amount is less than 1 percent of the flow expected in Kalialinui Gulch during a 100 year recurrence interval rainfall event. The Phase 2 proposed improvements would add an additional 59 cfs during the 100 year recurrence interval event. The compute flow during 100 year recurrence interval event for Kalialinui Gulch is 7,500 cfs.

The agricultural potential of the area will be reduced by the removal of 700 acres from active sugar cane production. As noted previously, A&B Hawaii, Inc. has clearly indicated this acreage is not needed for the long-term well-being of its sugar operations.

Earthquakes are likely to occur at some time in the Kahului area. However, it is not possible to predict the exact time or magnitude of these quakes and/or their effect on airport facilities.

3.4.3 SIGNIFICANCE CRITERIA AND ANALYSIS

3.4.3.1 Terrestrial Environment

Significant adverse effects on the terrestrial environment are defined as those that would severely modify the geology, physiography, soils or agricultural potential of the project area. Significant effects would occur if the proposed facilities could not withstand an earthquake within the Zone 2B classification. Insignificant or negligible effects are those that would occur from relatively minor grading operations and/or the loss of some agricultural lands.

The identification of geotechnical hazards is used to determine the existence and extent of constraints to the proposed improvements. No potential concerns have been identified related to topography, seismicity, volcanic activity, or the stability of surficial deposits on the project site. Exposure of people or structures to major geologic hazards is defined as a significant effect. In addition, significant adverse effects would occur if the proposed action exposes people or structures to ground rupture or earthquake effects. Insignificant but noticeable effects would occur if the project exposes people and structures to minor earthquakes. The significance of the potential effects of the proposed improvements on

the terrestrial geology, physiography, soils and agricultural lands within the project area, and the potential effects of earthquakes on the proposed improvements are summarized below and in Table 3-14.

- The construction and operation of the proposed improvements at the Airport are not expected to alter significantly the geologic features which currently exist at the project area. The same conclusion can be drawn with regard to physiographic impacts. As stated above, the Kahului Airport area is relatively flat with an average slope of 0.5 percent from south to north, and no major land forms exist within the Airport boundary. Thus, the grading operations associated with the construction of the Proposed Project including the Airport Access Roadway Project will have only a negligible effect on the topography of the site.

Table 3-14
SIGNIFICANCE OF EFFECTS ON TERRESTRIAL GEOLOGY, PHYSIOGRAPHY AND SOILS

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Geology	Alterations to geologic features	Insignificant
Physiography	Alterations to major land forms	Insignificant
Soils	Erosion, sedimentation of offshore areas	Insignificant
Agricultural Potential	Loss of extensive areas of prime agricultural lands	Insignificant
Earthquakes	Large-scale earthquakes, extensive ground movement	Insignificant
	Increased damage to facilities due to earthquakes	Insignificant

- The Project's impacts on soils will also be insignificant, as the expected total run-off from the Project's individual features -- and the erosive effect of that run-off – is approximately 1 percent of the estimated 100 year flood flow of the nearest water-course, Kalialinui Gulch.

- Construction and operation of the Proposed Project, including the Airport Access Roadway Project and Navigational Aids in Phase 1, will require that

certain agricultural lands be surrendered and made compatible with airport-related uses. However, because the owner of most of these agricultural lands, A&B Hawaii, Inc., has itself requested that some 240 agricultural acres be redesignated to allow Urban uses, and has indicated that its sugar cane operations will not be adversely affected by the Proposed Project, the loss of these agricultural lands is not considered significant from an *agricultural* point of view.

The earthquake impacts related to the Proposed Project are also insignificant. Although Maui does experience occasional earthquakes, these are relatively minor and, historically, have caused little damage on the island. The UBC places Maui, within seismic zone 2B, which corresponds to light-to-moderate seismic strength/risk. By way of comparison, California is within seismic zone 4, which corresponds to heavy seismic strength/risk. It is expected that all facilities of the Proposed Project will be constructed in compliance with the UBC design standards established for seismic zone 2B. It is therefore unlikely that the new Airport facilities will sustain significant damage as a result of a "design level" earthquake.

3.4.3.2 Marine Environment

The primary effect the proposed improvements could have on marine geology, physiography and soils is the transport of sediment into the marine environment due to surface water runoff. This potential effect is closely related to the hydrology, floodplain management and drainage evaluation criteria discussed in Section 3.13

The significance criteria for project impacts on marine geology, physiography and soils are as follows. Significant adverse effects would result from increased sediment loading. Insignificant, but noticeable effects, would result from increased sediment loading from Airport surface water runoff caused by severe storms or flooding conditions. These effects are considered insignificant because they would occur intermittently and not on a sustained basis. Beneficial effects of the proposed improvements on the marine environment would result from reduced sediment loading caused by Airport surface water runoff.

Based on the preceding evaluation criteria, the Proposed Project's impacts on the marine geology, physiography and soils of the project area are not expected to be significant. As explained above, the Proposed Project's run-off contribution to the total flood flow of Kalialinui Gulch is quite small (less than 1 percent); and the Project will not require that any marine land forms or the sea floor be disturbed. Table 3-15 summarizes the significance of the potential effects of the proposed improvements.

Table 3-15
SIGNIFICANCE OF EFFECTS ON MARINE GEOLOGY,
PHYSIOGRAPHY AND SOILS

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Geology	Alterations to geologic features	Insignificant
Physiography	Alterations to major seafloor forms	Insignificant
Soils	Erosion, sedimentation of offshore areas	Insignificant
Earthquakes	Large-scale earthquakes, extensive ground movement	Insignificant

3.4.4 MITIGATION MEASURES

As there are no identifiable significant adverse impacts associated with the Proposed Project, no mitigation measures are required. However, to further minimize the effects and minimize environmental harm resulting from grading and construction activities, HDOT will implement applicable Federal, State and County rules and regulations. The following is a brief discussion of these measures:

- State and County erosion and sediment control measures, including the use of sediment retention basins, will be employed during construction to minimize storm water runoff. Following construction, berms and landscaping will assist in reducing runoff flows and direct flows to drainage channels. As applicable, the appropriate State and County permits will be obtained and best management practices will be developed prior to construction activities. The applicable Section 401 permits and NPDES-Notice of Intent will be completed and obtained.

- The loss of existing agricultural activities (sugar cane production) in the project area will be minimized by on-going state and county diversified agricultural activities in other areas of the island.

- To minimize potential earthquake damage, facilities will be designed and constructed to meet applicable Federal, State and County building codes and regulations, including those applicable to seismic activity.

The design of the new on-airport Fuel Storage Facilities and the associated piping to the aircraft apron shall be designed in compliance with all applicable Federal and State codes, rules and regulations to prevent the contamination of soil, runoff and groundwater applicable at the time of design/construction. These regulations include the State's Waste Water Management Regulations, Uniform Building Code, and National Fire Protection Association, 40 CFR 112, and US DOT Regulations, Title 49, Part 195 - *Transportation of Hazardous Liquids by Pipeline*. The mitigation measures which will be designed for the new Fuel Storage facility and piping will include: (i) containment berms or walls; (ii) oil/water separation systems; (iii) corrosion resistant coatings; (iv) filters; (v) applicable Spill Protection Containment and Countermeasures; and (vi) leak detection and monitoring. These facilities will be designed, constructed and operated by HFFC. Likewise, the future supply pipeline from the Harbor to the Airport's Fuel Storage Facility will be designed, installed and operated by HFFC. Due to the long-range nature of this facility, the potential impacts or proposed mitigation measures will be addressed in a future environmental analysis and required documentation.

3.5 SOCIO-ECONOMIC IMPACTS

3.5.1 EXISTING CONDITIONS

The socio-economic factors associated with the proposed Kahului Airport improvements are detailed in the *Socio-Economic Impact Assessment Report* (SIAR) included as Appendix E. The following briefly summarizes the existing conditions section of the SIAR.

3.5.1.1 Demography

From 1930 to 1960, Maui's population declined over each decade. Maui's population growth rate between 1960 and 1970 was modest and less than the overall growth rate for the state. From 1970, a booming visitor industry caused Maui's population to grow at a rate more than twice that of the rest of the state. By 1990, Maui's Island resident population was 91,361, making Maui the third most populous island after Oahu and the Big Island.

Maui Island residents share most of the demographic characteristics that typify residents statewide. One noticeable difference, however, is that Maui Island has proportionately more Caucasians at 41 percent versus 33 percent statewide. In addition to Caucasians, the other major ethnic groups on Maui are Filipino (19 percent), Japanese (18 percent) and Hawaiian (14 percent). Other ethnic groups account for approximately 8 percent of Maui's population.

3.5.1.2 Housing

As of 1990, Maui had approximately 38,420 housing units, most of which were newer than units statewide. Maui also has more single family units than the state average. Many of the residential units on Maui are vacant, especially those used for seasonal and recreational purposes. This

results from a high number of Maui condominiums used for visitor accommodations or second homes in the resort areas of West and South Maui.

The 1990 mean value of a Maui home was roughly 90 percent of the state mean. Because homes are less expensive, there is a greater degree of home-ownership on Maui than statewide. Generally, there are fewer persons per Maui household, but on average the homes are small, resulting in as many crowded households as elsewhere in the state (about 8 percent of households).

3.5.1.3 Income And Poverty

Maui's Island 1990 mean household income of $48,365 is slightly higher than the state mean. Also, Maui household incomes were more egalitarian than incomes on the other islands; that is, there was less discrepancy between the richest and the poorest households. Other indications of Maui's comparatively high 1990 standard of living include: (i) fewer households on public assistance income; (ii) lower incidence of people living below the poverty level; (iii) lower rate of food stamp reliance; and (iv) lower overall home prices. However, Maui rents tend to be higher than state averages.

3.5.1.4 Labor Force And Industry

Maui's 1990 labor force was almost entirely civilian. The military presence on the island is negligible. Maui's 1990 labor force participation rate was higher than the state's. Compared to the state, Maui workers were more likely to be employed in the entertainment and recreation services, construction and agriculture industries. They were also less likely to hold managerial and professional positions. Table 3-16 presents a comparison of the Maui County, Maui Island and State labor and unemployment rates.

Table 3-16
MAUI CIVILIAN LABOR FORCE AND UNEMPLOYMENT - JUNE 1994

	STATE	MAUI COUNTY	MAUI ISLAND
CIVILIAN LABOR FORCE	597,049	67,268	62,441
Employed	561,748	62,693	58,471
Unemployed	35,301	4,575	3,970
Unemployment Rate	5.9%	6.8%	6.4%

Source: SIAR, Appendix E

In 1988, when Maui was close to full employment, a statewide survey revealed that nearly 25 percent of Maui County residents worked more than 48 hours per week, and up to half of all workers worked weekends or evenings. The survey also indicated some 53 percent of Maui County workers held jobs in the visitor industry. State Department of Labor and Industrial Relations (DLIR) estimates indicate that the job situation on Maui is growing tighter, with unemployment above the statewide average.

3.5.1.5 Major Industries

Maui's most important non-government industries, in order of importance, are: Hotels and Tourism; Finance, Insurance and Real Estate; Construction; and Agriculture. The Finance industry is primarily an outgrowth of the other three industries. Table 3-17 indicates the relative importance of Maui County industries.

Table 3-17
MAUI COUNTY GROSS COUNTY PRODUCT BY INDUSTRY, 1989

INDUSTRY	PERCENT OF TOTAL
Government	9
Manufacturing	5
Agriculture	8
Construction	9
Finance	15
Hotels and Tourism Related	54

Source: SIAR, Appendix E

3.5.1.6 Tourism

Tourism is the primary industry on Maui. In 1992, 2,285,410 visitors came to Maui and spent more than $2.2 billion (Table 3-18). These expenditures are estimated to generate and support tourism jobs for approximately 45 percent of Maui's residents.

In 1992, most westbound visitors to Maui (*e.g.*, Continental Americans) remained on the island about a week, with Eastbound tourists (*e.g.*, Japanese) staying about one-half a week. Approximately one-half of all visitors stayed in hotels and nearly two-thirds visited other islands in addition to Maui. Visitor arrivals tend to peak between June and August and between October and December.

Table 3-18
VISITOR ARRIVALS AND EXPENDITURES, 1989-1993

YEAR	STATE		MAUI COUNTY		MAUI ISLAND	
	Visitors	Expenditures ($Billions)	Visitors	Expenditures ($Billions)	Visitors	Expenditures ($Billions)
1989	6,641,820	10.91	2,513,960	2.31	2,468,870	N/A
1990	6,971,180	9.41	2,389,970	2.10	2,345,060	2.02
1991	6,873,890	9.92	2,322,060	2.37	2,272,240	2.23
1992	6,513,880	9.56	2,342,340	2.36	2,285,410	2.22
1993	6,124,230	8.68	2,260,940	2.25	2,209,980	2.13
1994	6,430,300	10.6	2,354,580	2.67	2,302,690	2.53
1995**	6,589,230	N/A	2,306,780	N/A	2,248,080	N/A

Source: 1) SIAR, Appendix E
2) 1994, 1995 statistics, Hawaii Visitors Bureau, ** 1995 data are preliminary and subject to change.

The following recent trends reflect the present tourism situation on Maui:

- In the first quarter of 1994 strong visitor arrivals were experienced by the state, with March 1994 arrivals 10 percent greater than those of March 1993;
- Airlines increased the number of summer flights between Hawaii and the mainland U.S.;
- Maui's hotel occupancy levels and room rates are returning to pre-recession levels, with the Maui room rate $20 higher than the statewide rate;
- The Japanese economy is showing signs of a mild rebound, including an increase in the number of international travelers;
- The U.S. Dollar to Japanese Yen ratio has devalued, making overseas destinations like Hawaii more attractive to Japanese travelers;

- The ratio of visitors to residents on Maui has been greater than the State ratio over the last two decades, and has generally been on the increase; and

- On any given day in 1992, Maui County had about four tourists for every ten residents.

Expenditures per visitor on Maui are lower than the state average, partly because the average Maui visitor is: (i) American; (ii) a repeat visitor; and (iii) likely to stay in a condominium as opposed to a hotel. Japanese visitors generally stay in hotels and spend more on lodging and gifts. Compared to the rest of the state, Maui has more non-hotel units than hotel units. Generally speaking, the state as a whole has more than twice as many hotel units as non-hotel units.

3.5.1.7 Construction

A continuing construction slump has resulted in almost one-third of Maui's 1,200 construction-related union members being out of work. The value of construction permits directly attributable to hotel construction and maintenance has ranged from a peak in 1988 to zero in 1992 and 1993. New residential units comprise the major share of Maui construction. Permits for approximately 600 single family and 200 multifamily units were obtained in 1993. This reflects a substantial decrease in the number of single family homes being built, but a slight increase in multifamily units.

3.5.1.8 Agriculture

Sugar and pineapple cultivation are the primary agricultural activities on Maui (Table 3-19). The 1992 crop value grown on a total of 350,000 acres was over $140 million with diversified agriculture, mainly vegetables and flowers, slowly gaining in market share against both sugar and pineapple. Livestock products accounted for $11.7 million in 1992, bringing Maui County's total value of agricultural products to $152 million or about one-third of the entire state total.

Table 3-19
PERCENTAGE VALUE OF MAJOR MAUI COUNTY CROPS, 1992

CROP TYPE	PERCENTAGE OF TOTAL
Sugar	42
Pineapple	42
Vegetables	10
Flowers	6

Source: SIAR, Appendix E

3.5.1.9 Aviation On Maui

Maui has three State-operated airports: Kahului, Hana and Kapalua (Kapalua-West Maui). Aviation is critical to Maui's visitor industry as well as for the export of many perishable Maui products. The airports also provide important entrepreneurial and employment opportunities for Maui residents. Kahului Airport is estimated to have generated almost $325 million worth of economic benefits in 1991.

3.5.1.10 Community Issues

In the last decade, Maui residents have debated at length over the future of the Island and County. Discussions regarding Kahului Airport have been part of these debates. Much of the discussion has centered on the impacts of anticipated growth on Maui's economy, population, infrastructure and natural environment. The socio-economic impacts of specific airport projects have been debated less frequently. Participants in these debates have been characterized as pro- or anti-development, although most residents' views are more complex. Various surveys have recorded swings in opinion, which may signify changes in priorities rather than overall expectations and concerns about the future. The most recent themes in draft revisions to the Wailuku-Kahului Community Plan include:

- Develop the region as the island's urban center while retaining agriculture and ties to the past;
- Address regional infrastructure, transportation and housing needs to handle both current needs and anticipated growth; and
- Improve the appearance of the region so it can better serve as the gateway to the entire island.

Maui residents' ideas and questions regarding the Airport Master Plan include two major themes:

- Most residents expect that airport improvements will facilitate or create growth in visitor arrivals and hence increase the island's visitor population, resident population and hotel stock; and
- Maui's infrastructure is not adequate to meet current and anticipated needs. Some view this as necessitating new limits on visitor industry growth, others do not.

During the public scoping process for this EIS, nearly all participants agreed that airport improvements will bring economic and population growth. However, perspectives on growth differ.

Some view constraints on airport development as a means to limit visitor industry growth. Others want current infrastructure inadequacies rectified but are concerned that too much infrastructure may provide the basis for additional visitor industry growth. Some emphasize the need for a growth management plan. Other residents support the airport improvements, believing that an enlarged airport will help Maui's visitor industry, will boost the construction industry, and will allow Maui to remain competitive with other destinations in Hawaii and elsewhere.

3.5.2 IMPACT ANALYSIS

The potential gross revenue for the construction projects associated with the Proposed Project (preferred alternative) would be approximately $145 million for Phases 1 and 2 of the Master Plan, and $149 million for Phase 3 (1993 dollars). The SIAR performed for this EIS defined "impact" as the likely change in social or economic conditions caused by the Proposed Project (preferred alternative). The "impacts" assessment includes the potential for the Proposed Project to: (i) relocate existing uses; (ii) change planned developments; and (iii) relocate or disrupt the social and economic characteristics. However, impacts on certain issues, such as increases in employment and demands on public facilities, are compared to a "baseline" growth scenario, namely No-Action. In this case, certain impacts are assessed as the relative change between two different futures:

- The "No-Action Future" is an estimate of what the affected community will be like at some point in time if the proposed improvements *do not* occur. For this EIS, 2010 is the future reference point; and

- The "With-Action Future" is an estimate of what the affected community will be like at the same point in time (2010) if the proposed actions *do* occur.

The following improvements are considered to be the actions which have the most potential of causing significant social and economic impacts for the immediate area.

- The Airport Access Road;

- Extension of Runway 2-20;

- The Parallel Runway;

- The Location of General Aviation Facilities and/or Helicopter Facilities; and

- Kanaha Beach Park Improvements.

The basic question when evaluating the proposed airport improvements is this: "Will the proposed improvements cause an increase in the number of visitors coming to Maui and, by extension,

increase the population, number of jobs, economic activity, etc. beyond that which would occur if the proposed improvements were not implemented?" Based on the SIAR, the basic answer to this question is no. Airport improvements do not, in and of themselves, cause more visitors to come to any destination. Such improvements may facilitate the travel of those who would come anyway and should allow the airport to operate more efficiently, but the conclusion reached in this study, which interviewed "experts" in the travel industry, and reviewed and analyzed previously prepared reports specific to Hawaii as well as other areas, is that the proposed improvements will have little or no impact on long-term growth levels. However, some "experts" believe that the option of direct flights from Kahului to the Midwest would permit occasional short-term target marketing campaigns to make up for weak economic conditions on the West Coast.[10]

The SIAR (Appendix E), compared the passenger forecasts included in the *Update of Hawaii Aviation Demand Forecasts*, 1994, for reasonableness. The SIAR concluded that the forecasts were somewhat aggressive, but were not "out of the realm of possibility when compared to historical performance," and do provide a reasonable vision of year 2010 visitor activity. The study stated that although the Pacific Rim has enjoyed large growth, Hawaii has not shared in the air route expansion, and in fact has found itself being overflown between vital city pairs.

Another evaluation performed in the SIAR was the comparison of the 1994 passenger forecasts with the recent Maui County Planning Department study and the Land *Use Constrained Maui County Forecasts*. The aviation forecasts for 2010 were similar if not lower than those presented in the two Maui County reports.

In addition, the Proposed Project may generate short-term employment growth of more than five percent (5%) related to the construction of the improvements listed above. Smaller but more long-term employment growth will result from the need to provide efficient operation of the expanded Airport. Project-related land acquisition and construction will have effects on Maui and the immediate airport area. For example, the runway extension could lead to a decrease in the growth rate of interisland flights to and from Kahului, since the extended runway will allow for non-stop fully-loaded takeoffs to overseas destinations, thereby, reducing the number of overseas passengers transiting through Honolulu International Airport to board overseas flights. Additionally, a significant number of construction jobs would be created and impacts on some airport area businesses could occur. It is estimated that a total of 1,882 person-years of full-time direct employment, about 125 jobs per year on average, over a 15 year period will be created by the proposed airport improvements. Also, on Maui, a total of direct, indirect and induced jobs amounting to about 4,000

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[10] Although the above insignificant or no-growth conclusion was reached, the second phase of the SIAR analysis looked at hypothetical questions for determining a "maximal growth impact." The analysis first assumed that people who wanted to come to Maui would in no way be discouraged (or "constrained") by the need to stopover or switch planes, and was called the "Unconstrained No-Action Future." The conclusion of the analysis is that a potential "maximal" overall increase in visitor arrivals in the year 2010 was three percent for the given hypothesis. ***Consequently, it was estimated that there would be about a three to four percent increase in jobs and population for the proposed project over "No-Action" alternative.*** The potential maximal effect would be an increase of about 4,000 people. A summary of the growth impacts are discussed in Section 6.0 and in detail in Appendix E.

person-years, or nearly 270 jobs per year over the development period, will be created. About three-fourths of the total income associated with construction would go to workers on Maui. In relation to future estimated construction job counts, airport construction will be significant, but the total Maui annual employment impact associated with the Kahului Airport construction would be a small (0.5 percent) part of island jobs.

Growth in airport operations jobs will occur in the future as air passenger traffic at the Airport increases, regardless of the proposed improvements. At present there are about 1,360 direct jobs located at the Airport. By 2010, there could be well over 2,000 jobs associated with aviation activities on Maui, whether these activities occur at Kahului Airport or at other locations. That is, the total jobs -- direct, indirect and induced -- associated with aviation on Maui will remain relatively constant regardless of whether the proposed improvements proceed or another alternative is selected, including the No-Action alternative. This is because the projected rate of growth in air carrier service at the airport will increase with or without the Proposed Project.

Population and housing effects associated with the proposed airport improvements have been estimated as a consequence of employment. It is estimated that approximately 20 potential households will be affected by the proposed improvements (the parallel runway). Because the proposed actions do not have significant impacts on island wide jobs, they will not have significant effects on population and housing.

Major changes in the character of the makeup of the airport area business community are occurring independently of the proposed airport improvements. These include A&B Hawaii, Inc.'s Triangle Square and Kahului Industrial Park, a new Costco and the existing Kmart. Several factory outlets will be occupying Triangle Square. These new projects will create a major discount retail center and industrial hub centered at Triangle Square. The developers of the above projects will be making many of the roadway improvements necessary to serve the businesses that will be established in the airport area. For example, Dairy Road will be widened, in two stages, and the Dairy Road-Haleakala Highway intersection will be signalized. The rapid changes occurring in the area will benefit many surrounding businesses by expanding their customer base. The synergistic effects of having a variety of bargain choices at one location could attract shoppers from all over the island and, possibly, from other islands such as Molokai and Lanai. It is expected that many of the small nearby businesses will benefit from spin-off effects of their new neighbors.

The new Airport Access Road will alleviate much of the existing and forecast traffic congestion. However, the traffic relief will not benefit all area business interests. Those stores and shops that rely on incoming and outgoing visitors would be adversely affected if the access road directs traffic away from Dairy Road and Triangle Square. Similarly, relocation of the helicopter facilities could adversely affect area businesses by diverting present customers away from the Kahului Airport area. However, these small retail operations occupy land owned by A&B Hawaii, often on inexpensive, short-term leases. Hence it is not certain that these businesses would still be near the Airport by the time the Airport Access Roadway is operational.

The parallel runway would displace some residents in East Spreckelsville and possibly disrupt the East Spreckelsville neighborhood. The new Runway 20L Runway Protection Zone would require the relocation and removal of certain structures in this area. In addition, the parallel runway would cause the relocation of the current helicopter facilities to an off-airport site. This would have an impact on the helicopter operators who are established at Kahului Airport in both capital improvements and market share. In addition, the parallel runway has been opposed by the community and the County of Maui, and is not part of Maui County's long-range plan. The effect of the proposed airport improvements on nearby residential areas would also change the Maui County Airport Overlay District, as the runway extension would tend to shift the noise contours to the southwest. The Maui County Airport Overlay District is based on the 60 DNL contour.

The potential effects of the proposed airport improvements on interisland air travel are related to costs that may be borne by interisland passengers. The analyses performed indicate that 68 percent of the capital cost is the maximum possible cost which might be passed on to air travelers. These per passenger per trip costs have been estimated to be between $0.15 and $0.20 for interisland travelers and $0.45 to $0.50 per overseas passenger. Perhaps of more concern to interisland air carriers are the Project's potential effects on their forecast passenger levels. The runway extension and parallel runway could result in more travelers flying directly to Maui rather than through Honolulu.

The proposed airport improvements may also affect other public facilities and services. The potential effects on police, fire, educational and recreational facilities are discussed below in their respective subsections of this section of this EIS.

3.5.3 SIGNIFICANCE CRITERIA AND ANALYSIS

The principal social effects considered have been those associated with employment, economic activity, population and housing, community cohesion and neighborhood character, and public facilities. Measuring the "significance" of social impacts is particularly difficult when so many different public interest groups are involved, many with contrasting values and concerns. An impact might be very significant to one group and inconsequential to others. The following list of significance criteria is largely derived from the SIAR and includes some criteria related to other environmental resources. Significant social and other secondary impacts are defined as follows:

- A change in the number of direct jobs at the Airport during the planning period of 5 percent or more, compared to the "No-Action" alternative;
- A change in State, County or Island estimated total employment of 5 percent or more, compared to the "No-Action" alternative;
- A change in location of customers for retail businesses leading to the loss of at least 5 percent of income, compared to the "No-Action" alternative;

- A change in the location of jobs for the State, County and Island of 5 percent or more, compared to the "No-Action" alternative;
- Residences or businesses outside the Airport require relocation to accommodate the proposed improvements;
- A change in State, County or island population and housing demand of 5 percent or more, compared to the "No-Action" alternative;
- Division or disruption of established communities;
- Disruption of orderly, planned development;
- A change in demand for public facilities that makes it impossible to deliver services at accepted standard levels; and
- A change in visitor arrivals of at least 5 percent, as compared to the "No-Action" alternative.

If any of the above are unaffected by the proposed improvements, or are positively affected by the proposed improvements, there would be insignificant, or beneficial effects. Based on the SIAR and the evaluation criteria listed above, the Proposed Project is expected to have insignificant impacts, except for the parallel runway. There will be a short-term impact as construction employment will probably increase above 5 percent. However, it will be project specific and would not have any long-term impacts on employment. The major potential significant adverse impacts are due to the parallel runway as it will cause relocation of Spreckelsville residents and it is inconsistent with the County of Maui's plans. A determination as to the effect on Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, will also be completed at that time. However, as the ultimate construction of the parallel runway would occur, if at all, in the later portion of Phase 3 of the Proposed Project, or beyond, this EIS will discuss the potential significant impacts of the parallel to the extent feasible. Prior to the construction of the parallel runway an independent or supplemental EIS will be completed. The Proposed Project, *without the parallel runway*, is not expected to have a significant adverse impact on any communities, therefore, it will not have a disproportionately high and adverse impacts on minority populations and low-income population (per Executive Order 12898).

Table 3-20 summarizes the significance of the potential impacts of the Proposed Project on socio-economic characteristics.

3.5.4 MITIGATION MEASURES

There are no significant adverse impacts, *without the parallel runway*. Therefore, measures to minimize or mitigate potential adverse impacts are not required. However, it is assumed that private and public employers will institute employment training programs as they are required for new employees of

airport-related activities. Similarly, it is recognized that additional housing units, in all economic categories will be required in the future. However, these units will be required regardless of the airport improvements and are not directly related to the proposed airport improvements.

Table 3-20
SIGNIFICANCE OF EFFECTS ON SOCIO-ECONOMIC CHARACTERISTICS

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Maui Direct Employment	Airport improvements create more than 5% increase in direct jobs, requiring importation of workers	Insignificant*
State Direct Employment	Airport improvements create more than 5% increase in direct jobs, requiring importation of workers	Insignificant*
Direct Effect on Local Businesses	Airport improvements create a 5% or more loss of income	Insignificant*
Employment and Housing	Airport improvements cause more than a 5% change location of jobs in State, County or Island	Insignificant
Relocation of Businesses or Residences	Airport improvements will require the relocation of businesses or residences	Insignificant; potentially significant if parallel runway is constructed.
Disruption or Division of Established Communities	Airport improvements will disrupt or divide established communities	Potentially Significant If Parallel Runway Constructed
Effects on Planned Development	Airport improvements will disrupt orderly and planned development	Positive
Public Facilities and Services	Demands greater than capabilities created by airport improvements	Insignificant

* The sensitivity analysis conducted to estimate *maximal impacts* yielded quantified potentially significant findings. However, these impacts assumed conditions - some quite improbable - that were designed to produce *maximal* impact conclusions. These are discussed in Section 6.0 and in Appendix E of this EIS.

There is a potential significant impact in Spreckelsville, when the parallel runway is constructed. Applicable mitigation measures, if necessary for the impacts of the parallel runway will be discussed in a future environmental document for the parallel runway.

3.6 SECONDARY (INDUCED) SOCIO-ECONOMIC AND ECONOMIC IMPACTS

3.6.1 EXISTING CONDITIONS

The existing socio-economic conditions associated with secondary or induced impacts are the same as those associated with direct impacts as described in the preceding section and are not repeated here.

3.6.2 IMPACT ANALYSIS

The following improvements listed below are considered to have the most potential for inducing secondary social and economic impacts.

- The Airport Access Road;
- Extension of Runway 2-20;
- The Parallel Runway
- The Location of General Aviation Facilities and/or Helicopter Facilities; and
- Kanaha Beach Park Improvements.

Other components of the proposed improvements involve construction employment over a limited time and are needed, either in support of the actions listed above or separately, to provide for efficient operation of the airport.

Because the parallel runway would not be constructed until the year 2016 or later and the social and economic climates may differ in the long-term future, it was not considered in this analysis of growth inducing impacts for this time frame. However, it is possible that the parallel runway may have some impacts on growth and therefore, it will be addressed as appropriate at a later date. Similarly, internationalization of Kahului Airport was not considered as part of the Proposed Project, however the potential impact of internationalization is discussed below and in Section 8.0 in more detail.

The basic question when evaluating the proposed airport improvements is this: "Will the proposed improvements cause an increase in the number of visitors coming to Maui and, by extension, increase the population, number of jobs, economic activity, etc. beyond that which would occur if the proposed improvements were not implemented?" Based on the SIAR, the **basic answer to this question is no.** Airport improvements do not, in and of themselves, cause more visitors to come to any destination. Such improvements may facilitate travel of those who would come anyway and should allow the airport to operate more efficiently, but the conclusion reached in this study, which interviewed "experts" in the travel industry,

and reviewed and analyzed previously prepared reports specific to Hawaii as well as other areas, is that the proposed improvements will have little or no impact on long-term growth levels. However, some "experts" believe that the option of direct flights from Kahului to the Midwest would permit occasional short-term targeted marketing campaigns to make up for weak economic conditions on the West Coast.[11] Therefore, as the proposed improvements will not cause growth, the impact on cultural resources would be the same as the No-Action Alternative.

Internationalization, that is, allowing unlimited international flights to be processed at Kahului Airport, would require the staffing of customs and immigration and naturalization services by the Federal government. The likelihood of this occurring by the year 2010 is reflected in the updated forecasts for Kahului Airport. It was not expected during the SASP forecasts which were the basis for the 1993 Kahului Airport Master Plan. Likewise, the socio-economic analysis addressed the issue of internationalization, and the analysis is summarized in Section 8.0 and present in detail in Appendix E. The conclusion for the growth inducing impacts of internationalization, was that there was a potential "maximal" impact of 11 to 21 percent depending on the initial hypothesis used.

Given that the Proposed Project does not induce growth, (not including the parallel runway) the induced secondary impacts due to growth are insignificant. However, there are some impacts due to the Proposed Project and are as follows:

- There will be short-term increases in construction employment, depending on the size of the construction project. This is especially true for the lengthening and strengthening of Runway 2-20, construction of the Airport Access Roadway, and the construction of the parallel runway. This increase in construction employment would increase expenditures in the County and may have short-term housing impacts.

- It is estimated that extension of the runway to 9,600 feet would result in slower growth in the interisland aircraft operations, due to direct overseas flights. This slower growth rate in interisland flights results in a 15 percent decrease in the number of interisland flights when compared to the No-action scenario. In addition, the slower interisland growth rate would reduce the demand on the overall Statewide airport system. This is especially a concern for Honolulu International Airport

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[11] Although the above no-growth conclusion was reached, the second phase of the SIAR analysis looked at hypothetical questions for determining a "maximal growth impact." The analysis first assumed that people who wanted to come to Maui would in no way be discouraged (or "constrained") by the need to stopover or switch planes, and was called the "Unconstrained No-Action Future." The conclusion of the analysis is that a potential "maximal" overall increase in visitor arrivals in the year 2010 was three percent for the given hypothesis. ***Consequently, it was estimated that there would be about a three to four percent increase in jobs and population for the proposed project over "No-Action" alternative.*** The potential maximal effect would be an increase of about 4,000 people. A summary of the growth impacts are discussed in Section 6.0 and in detail in Appendix E.

(HIA) which is forecast to have significant delays in the future. Any reduction in demand at HIA would reduce the need for future capacity improvements at HIA.

- Agricultural exports from Maui -- above all, fresh pineapples -- have been constrained by limited space on flights to the U.S. mainland. The market for Maui products is expected to grow. Without the project, cargo handling facilities at Kahului (as well as flights) would limit potential cargo. With the runway extension and improved cargo handling facilities, outbound flights could carry much more cargo (See Appendices E and N). However, even if outbound shipments of fresh pineapple doubled or tripled, the result would be only a small increase in Maui's total pineapple output.

3.6.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Significant induced social factors include the following:

- Major shifts in patterns of population movement other than forecast;
- Increased population growth beyond that forecast; and
- Increased public services demands beyond that forecast (see Section 3.21).

Significant induced economic factors include the following:

- Major changes in business and economic activity beyond that forecast; and
- Major changes in employment, income and tax revenues result from the proposed improvements.

If any of the above are unaffected by the proposed improvements, or are positively affected by the proposed improvements, there would be insignificant or beneficial effects, respectively.

Based on the Social Impact Analysis study (Appendix E) and evaluation criteria listed above, the Proposed Projects would have an insignificant impact for this category of induced (secondary) socio-economic impacts. As stated in Section 3.5 above, the Proposed Project does not have significant impacts on island wide jobs, and therefore will not have significant effects on population and housing. The public service demands are addressed in detail in Section 3.21. The conclusion is that the Proposed Project will have insignificant impacts on public services. In addition, major changes in the character of the makeup of the airport area business community are occurring independently of the proposed airport improvements. These include A&B Hawaii, Inc.'s Triangle Square and Kahului Industrial Park, a new Costco and the existing Kmart. Several factory outlets will be occupying Triangle Square. These new projects will create

a major discount retail center and industrial hub centered at Triangle Square. There is a potential for an increase in the volume of outbound cargo, namely agricultural products and this is considered a positive impact. As the growth analysis concluded that the Proposed Project will have insignificant or no growth impacts, the impacts to these categories for secondary socio-economic will be insignificant. In regards to internationalization, the SIAR concluded that the secondary socio-economic impact of international visitors would be insignificant.

However, the parallel runway impacts were not addressed in this EIS and prior to the construction of these long-range projects additional environmental analysis will be completed in order to determine what, if any, further environmental documentation is required. Table 3-21 summarizes the significance of the potential effects of the proposed improvements on induced secondary socio-economic characteristics of the project area and island of Maui.

Table 3-21
SIGNIFICANCE OF EFFECTS ON INDUCED SOCIO-ECONOMIC CHARACTERISTICS

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Population Movement	Airport improvements will cause major shifts in the level and makeup of the State, County or Island's population	Insignificant
Public Services and Facilities	Airport improvements will cause demands greater than existing or planned capabilities	Insignificant
Economic and Business Activity	Airport improvements will cause major changes in business and economic activity beyond that forecast	Insignificant
Employment and Tax Revenues	Airport improvements will cause decreases in employment and State and County tax revenues	Insignificant
Internationalization	Internationalization will cause adverse socio-economic and socio-cultural effects on State, County and Island	Insignificant

3.6.4 MITIGATION MEASURES

Given the lack of significant adverse impacts, measures to minimize or mitigate potential adverse impacts are not warranted. In addition, the State Department of Agriculture, is planning to establish a working committee that will address in a comprehensive and systematic manner the overall transportation issue faced by the State's agricultural producers. HDOT-AIR will work with this committee and/or the State Department of Agriculture to plan, design and implement cargo facility improvements that would benefit the shipment of agricultural products, such as covered storage of agricultural produce awaiting shipment, as well as improvements to facilitate the State Department of Agriculture's alien species interception/inspection program.

3.7 AIR QUALITY, CLIMATE AND METEOROLOGY IMPACTS

The Proposed Project involves both State and Federal actions and funds. Thus, the project must comply with pertinent State and Federal environmental laws and regulations, including Chapter 343 of the Hawaii Revised Statutes and the National Environmental Policy Act, as well as specific Court-orders pertaining to the project.

Both Federal and State regulations have been promulgated that are applicable to airport-related sources of air pollution. Applicable Federal emission standards have been established for aircraft, motor vehicles and petroleum storage facilities, while applicable State standards are limited to petroleum storage tanks and to motor vehicles.

Both Federal and State standards have also been established to maintain ambient air quality. At the present time, six pollutants are regulated: (i) particulate matter, (ii) sulfur dioxide, (iii) nitrogen dioxide, (iv) carbon monoxide, (v) ozone, and (vi) lead. Hawaii's air quality standards for nitrogen dioxide, carbon monoxide and ozone are more stringent than the comparable national limits. However, Hawaii's standards for sulfur dioxide, particulate matter and lead are the same as the national standards.

In areas that do not meet national ambient air quality standards, Federal Conformity Rules apply. Conformity Rules (40 CFR Part 93) were issued by the U.S. Environmental Protection Agency in response to Section 176 of the Clean Air Act. Conformity Rules prohibit any federal agency from engaging in any actions that do not conform to any state's plan to correct non-attainment situations. However, because the entire State of Hawaii is considered to be an attainment area for all national ambient air quality standards, the Conformity Rules do not apply. Therefore, the FAA is not required to make a conformity determination.

3.7.1 EXISTING CONDITIONS

To assess the air quality, climate and meteorological impacts associated with the proposed Kahului Airport improvements, the State of Hawaii commissioned an Air Quality Study specifically for this EIS. This study, included as Appendix F, examined the potential short-term and long-term air quality

impacts of the construction and use of the proposed facilities. The study also examined numerous mitigation measures designed to minimize the Proposed Project's effects on air quality. What follows is a brief summary of that report.

3.7.1.1. Climate and Meteorology

The Kahului area's climate is characterized by an equable temperature regime, marked seasonal variation in rainfall, persistent surface winds from the northeast quadrant and the rarity of severe storms. The range of temperature between August, the warmest month, and January, the coldest month, is 79.2 °F to 71.5 °F.

Rainfall is normally relatively light and occurs mostly during the wet season from November through April. Annual rainfall is about 20 inches. Humidity at Kahului Airport is usually moderate to high throughout the year.

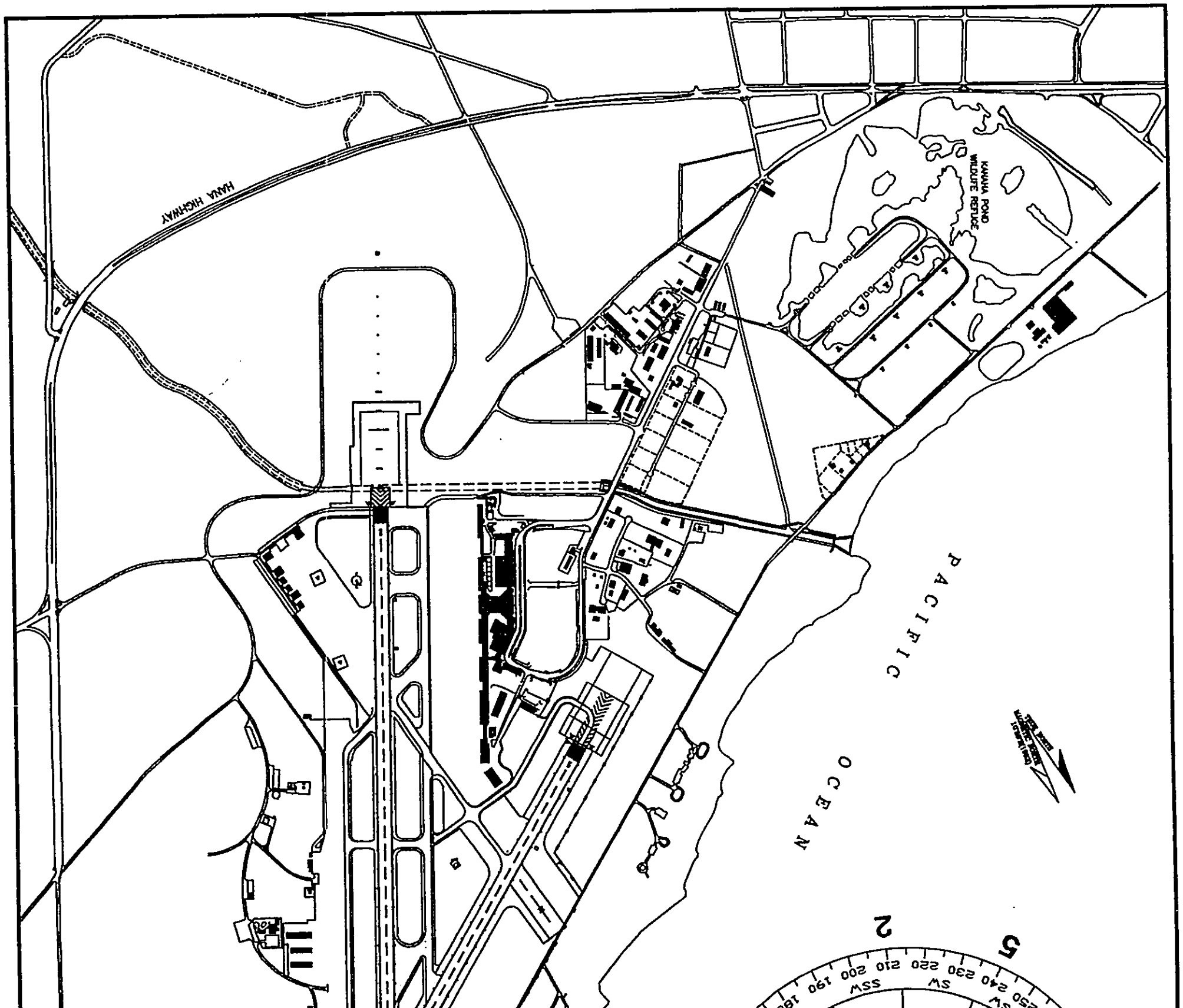
Northeasterly trade winds dominate the wind pattern at Kahului Airport and provide excellent ventilation for the area. The trade wind flow is most prevalent during the dry season, while variable winds occur primarily during the wet season. However, trade winds occur more than 50 percent of the time during the wet season.

The normal trade winds, accentuated by the funneling effect of Haleakala and the West Maui Mountains, may attain speeds of up to 40 to 45 miles per hour (mph) at the airport. Occasional strong southerly (Kona) winds occur with the passage of storms during the winter months. Figure 3-17 shows the wind rose for Kahului Airport and depicts the annual frequency of wind speeds and directions based on hourly data collected in 1983.

3.7.1.2 Existing Air Quality

The air quality of a given location is a function of both local meteorology and the amounts of air pollutants emitted from sources in the area. Present air quality in the airport area is affected by aircraft and vehicular emissions, industrial and agricultural activities, and natural processes. The latest emissions inventory for the island of Maui was conducted in 1980 by the State of Hawaii, Department of Health. For this EIS, an estimated 1992 air pollutant emission inventory by source category for Maui County was compiled and is presented in Table 3-22. This table is based on data on file at the State Department of Health, U.S. Environmental Protection Agency and from statistics in the State of Hawaii Data Book, 1992.

As indicated in Table 3-22, agriculture continues to be the major source of particulate matter emissions on the island and the level has increased by about 25 percent since 1980. Sulfur oxides emissions are primarily generated by electric power plants, and have increased almost 50 percent since 1980. Electric power plants are also the primary source of nitrogen oxides. Motor vehicles and the agriculture industry are the major sources of carbon monoxide and hydrocarbons. Since 1980, aircraft


HANA HIGHWAY
KANAHA POND
WILDLIFE REFUGE
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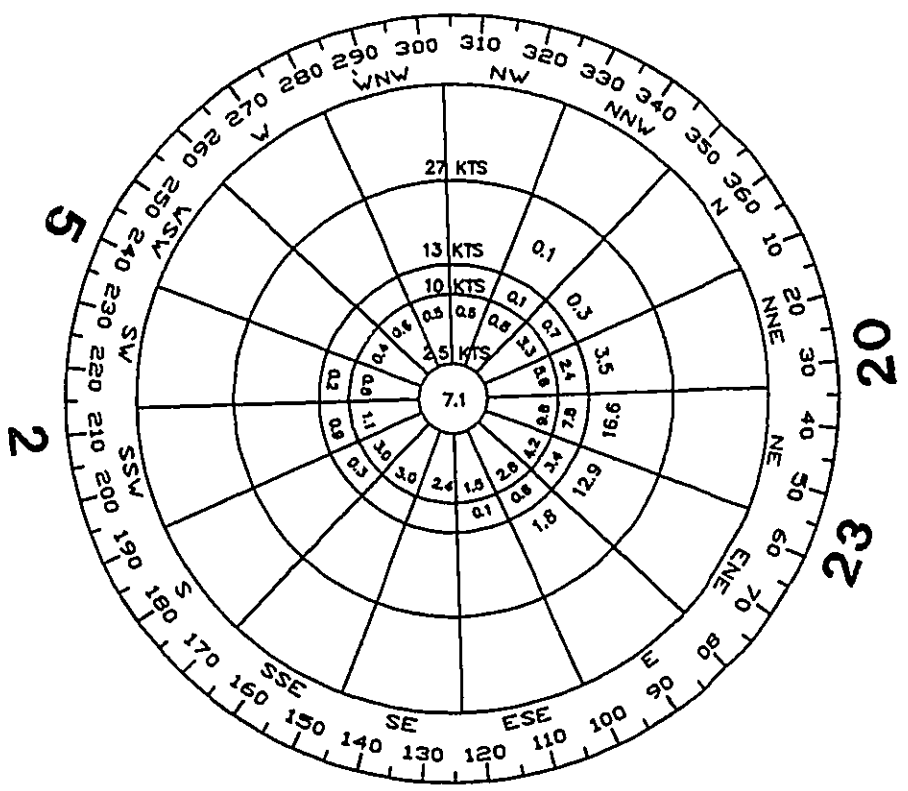

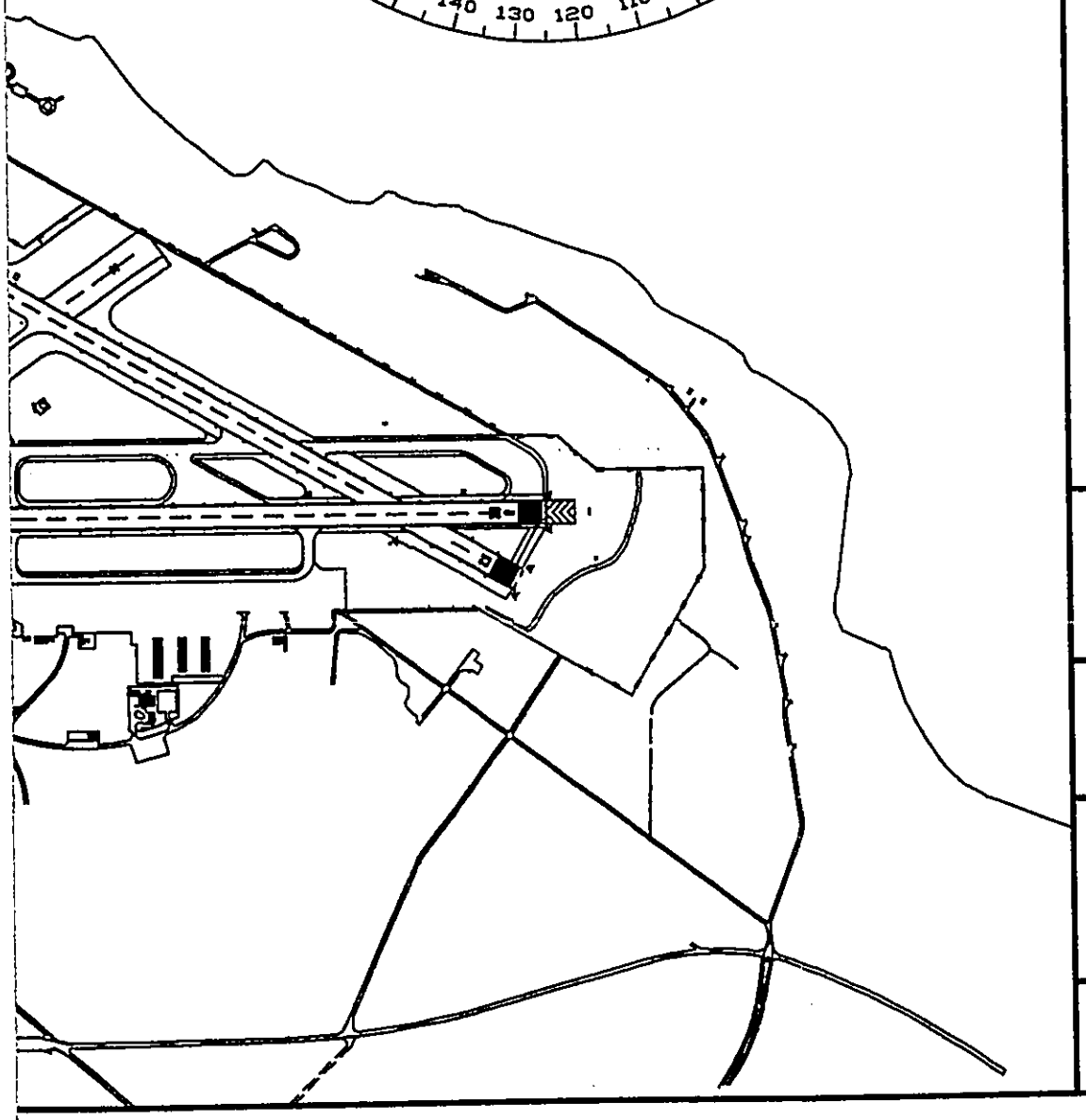

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

ALL-WEATHER WIND ROSE
SOURCE:
U.S. WEATHER BUREAU,
KAHULUI AIRPORT
PERIOD:
JANUARY 1, 1970 TO
DECEMBER 31,1979

0 500 1000 1500
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

WIND ROSE

DATE	FIGURE
MARCH, 1995	3-17

emissions of nitrogen oxides and hydrocarbons have increased by a factor of about two to three. Nevertheless, aircraft emissions for all air pollutant categories are low compared to other source categories.

Table 3-22
AIR POLLUTANT EMISSION INVENTORY FOR ISLAND OF MAUI, 1992

SOURCE CATEGORY	EMISSIONS (TONS/YEAR) PARTICULATE	SULFUR OXIDES	NITROGEN OXIDES	CARBON MONOXIDE	HYDRO-CARBONS
Electric Power Plants	480	4,525	5,039	1,160	271
Gas Utilities	NA	NA	NA	NA	NA
Fuel Combustion in Agricultural Industry	2,925	1,837	1,877	1,005	32
Mineral Products Industry	600	NA	NA	NA	NA
Petroleum Storage	0	0	0	0	388
Municipal Incineration	0	0	0	0	0
Motor Vehicles	NA	NA	1,971	29,397	3,629
Construction, Farm and Industrial Vehicles	NA	NA	NA	NA	NA
Aircraft	3	18	359	1,090	200
Vessels	NA	2	18	835	213
Agricultural Field Burning (sugar cane burning)	2,628	0	0	30,570	3,886
TOTALS	6,636	6,382	9,264	64,057	8,619

Source: Air Quality Analysis, Appendix F. The sources of this emissions inventory is presented in Appendix F.

Significant industrial sources located within a few miles of Kahului Airport include: (i) Puunene Sugar Mill, located about 2 miles to the southwest; (ii) Paia Sugar Mill, located about 4 miles to the east; and (iii) Kahului Power Plant, located about 2 miles to the west. Annual emission estimates for

these three sources are given in Table 3-23. As indicated in the table, Puunene Mill is a relatively large source of sulfur oxides and emits smaller amounts of the other pollutants. Carbon monoxide is emitted at about 1/3 of the rate of the existing emissions from Kahului Airport. Paia Mill has a smaller capacity than Puunene Mili, and emissions are correspondingly lower. Carbon monoxide emissions from Paia Mill are about 15 percent of the existing airport emissions. Kahului Power Plant emits mostly sulfur oxides and smaller amounts of nitrogen oxides and particulate. Sensitive receptors within close proximity of the Airport are the residential areas of East and West Spreckelsville.

Table 3-23
AIR POLLUTION EMISSIONS RATES (TONS/YEAR) FROM INDUSTRIAL SOURCES LOCATED NEAR KAHULUI AIRPORT

POLLUTANTS	Puunene Mill	Paia Mill	Kahului Power Plant
Sulfur Oxides	2,164	192	3,872
Nitrogen Oxides	500	115	758
Carbon Monoxide	386	153	60
Hydrocarbons	355	150	13
Particulate	324	213	259

Source: Hawaii Department of Health, 1992 Annual Emission Reports

STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS. The State and National Ambient Air Quality Standards for the six criteria pollutants -- PM10, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead -- are listed in Table 3-24 and more fully described below.

PM10: PM10, also known as Fine Particulate Matter, consists of extremely small suspended particles or droplets 10 microns or less in diameter that can cause respiratory problems. PM10 arises from such sources as road dust, diesel soot, combustion productions, abrasion of tires and brakes, construction operations, and wind storms. The Federal government has established both annual and 24-hour PM10 emissions standards. Under these standards, a given location may not emit an *average* of more than 50 micrograms per cubic meter per day for the year, or more than 150 micrograms per cubic meter on any given day. PM10 concentrations which exceed these levels would be considered a violation of the Federal standards and would mean that the location in question is "out of attainment." The State of Hawaii's 24-hour PM10 emissions standard is the same as the Federal government's: 150 micrograms per cubic meter on any given day. However, the State of Hawaii has not promulgated an annual PM10 standard.

Table 3-24
SUMMARY OF STATE OF HAWAII AND FEDERAL
AMBIENT AIR QUALITY STANDARDS (AAQS)

POLLUTANT	AVERAGING TIME	MAXIMUM ALLOWABLE CONCENTRATION (micrograms/cubic meter) MAUI AMBIENT LEVELS[c]	NATIONAL	STATE OF HAWAII
PM-10[a]	Annual	14	50	50
	24 Hour	56	150[b]	150[b]
Sulfur Dioxide	Annual	3	80	80
	24 Hour	13	365[b]	365[b]
	3 Hour	34	1,300[b]	1,300[b]
Nitrogen Dioxide	Annual	6	100	70
Carbon Monoxide	8 Hour	6	10,000[b]	5,000[b]
	1 Hour	14	40,000[b]	10,000[b]
Ozone	1 Hour	86	235[b]	100[b]
Lead	3 Months	N.D.	1.5	1.5

Sources: State Department of Health and U.S. EPA

a Particulate matter which is 10 microns or less in diameter.

b Not to be exceeded more than once per year.

c The data given in the table were obtained by Maui Electric Company at Site No. 233 located approximately 1 mile north of Maalaea Power Plant. Concentrations shown in the table for averaging times shorter than annual are the highest concentrations recorded during the period June 10, 1989 through December 31, 1989. Annual average concentrations for all pollutants are based on the 7-month period.

Concentrations shown in the table for averaging times shorter than annual do not include periods when the on-shore flow (southerly flow between 130 and 230 degrees) persists, as this would include the Maalaea Generating Station emissions.

Source: Prevention of Significant Deterioration Permit Application for Maalaea Combined Cycle Project, Maui Electric Co., Revised, August 1990.

Sulfur Dioxide: Sulfur dioxide is emitted primarily from electric power plants, and is regulated at both the national and state levels. In the case of Hawaii, the national and state standards for sulfur dioxide emissions are essentially the same. The standard for annual daily average emissions is 80 micrograms per cubic meter; the standard for daily peak emissions is 365

micrograms per cubic meter; and the standard for 3-hour peak emissions is 1,300 micrograms per cubic meter.

Nitrogen Dioxide: Nitrogen dioxide is a by-product of fuel combustion and a precursor of ozone. It is also created by electric power generation. It absorbs blue light and causes the atmosphere to take on a brownish-red cast. Nitrogen dioxide also contributes to the formation of PM10. There are no 24-hour standards for nitrogen dioxide; only annual daily average standards. The Federal standard is 100 micrograms per cubic meter. However, the State of Hawaii imposes a more stringent standard of 70 micrograms per cubic meter.

Carbon Monoxide: Automobiles, aircraft and other types of motor vehicles are the primary sources of carbon monoxide ("CO") emissions. CO is a highly localized pollutant and is easily dispersed by wind into the general atmosphere. Neither the Federal government nor the State of Hawaii have established annual daily average standards for this pollutant. Instead, CO is regulated at 8-hour and 1-hour measurement intervals which are meant to correspond, respectively, to work-day and rush hour commute situations. Under the Federal regime, CO emission should average less than 10,000 micrograms per cubic meter over an 8-hour period, and should not exceed 40,000 micrograms per cubic meter during any 1-hour period. Under the more rigid standards established by the State of Hawaii, CO emissions are limited to an 8-hour maximum of 5,000 micrograms per cubic meter, and a 1-hour maximum of 10,000 micrograms per cubic meter.

Ozone: Ozone is a photochemical oxidant that is formed when reactive organic compounds (ROC) and nitrogen oxides, both of which are by-products of the internal combustion engine, react in the presence of ultraviolet sunlight. Ozone is the primary ingredient in what is commonly referred to as "smog." Ozone is regulated on a 1-hour basis only. The Federal 1-hour standard for ozone is 235 micrograms per cubic meter. The State of Hawaii's 1-hour standard is 100 micrograms per cubic meter.

Lead: Lead occurs in the atmosphere in the form of particulate matter. The combustion of leaded gasoline, the manufacture of batteries, paint, ink, ceramics and ammunition, and the operation of secondary lead smelters are the primary sources of airborne lead. Lead is regulated on a quarterly or 3-month basis. The Federal and State standards are the same for lead emissions. The standard is an average of less than 1.5 micrograms per cubic meter per day over the three month period.

Based on data collected by the State Department of Health, Maui Electric Company and others at various locations on the island, State of Hawaii and National Ambient Air Quality Standards for all pollutants are currently being met. With regards to the Clean Air Act, the entire State of Hawaii is considered to be an attainment area for all air quality standards.

As shown on Table 3-24, background carbon monoxide levels on Maui are almost nil, except for areas near traffic-congested locations and close to agricultural operations. Background levels of particulate concentrations are moderate, except near sugar cane operations in the project vicinity where localized levels of particulate are occasionally elevated. Ambient levels for sulfur dioxide and nitrogen dioxide are well below both the national and State standards. Background ozone, however, is nearly 86% of the State standard. No data is available for ambient lead concentrations, but this pollutant in not considered to be a problem in the State.

In addition to its *ambient* air quality standards, the State of Hawaii has also established *project-related* emissions standards for major stationary sources[12]. These standards relate to the following five pollutants: (i) carbon monoxide, (ii) nitrogen oxide, (iii) volatile organic compounds, (iv) sulfur dioxide, and (v) particulate matter. These emission standards do not apply to the Airport because the Airport is not defined as a major stationary source. However, they have been used as a guide to estimate the potential significance of the air quality impacts of the Proposed Project and alternatives. The pollutants which exceed these emission standards were further analyzed to assess their potential impacts.

3.7.2 IMPACT ANALYSIS

3.7.2.1 Short Term Construction Impacts

There will be short-term air quality impacts due to construction activities at the airport. Such impacts would be direct and indirect and emanate from two potential sources: (i) fugitive dust from vehicle movement or soil excavation; and (ii) exhaust emissions from on-site construction equipment.

Fugitive dust emission may arise from grading and dirt-moving activities within the project sites. The emission rate for fugitive dust is nearly impossible to estimate accurately because of its elusive nature and because the potential for its generation varies greatly depending upon: (i) the type of soil at the construction site; (ii) the amount and type of dirt-disturbing activity taking place; (iii) the moisture content of exposed soil in work areas; and (iv) the wind speed. The EPA estimates that under "medium" construction activity conditions, 1.2 tons per acre per month of uncontrolled fugitive dust will be generated. Uncontrolled fugitive dust emissions in the project area would probably be somewhere near this level. The State of Hawaii's Air Pollution Control Regulations require that visible emissions of fugitive dust from construction activity be essentially nil. Adherence to those regulations as recommended will serve to mitigate any potentially significant short-term fugitive dust air quality impacts to a level below the level of significance.

On-site construction equipment (both mobile and stationary) will also emit some air pollutants in the form of engine exhaust. The larger equipment are usually diesel-powered. Nitrogen dioxide

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[12] "Major Stationary Source" as defined in the Hawaii Administrative Rules, Title 11, Department of Health, Chapter 60, Air Pollution Control.

emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from diesel-powered equipment, on the other hand, are very low.

Slow-moving construction vehicles traveling on roadways leading to and from the project site could obstruct the normal flow of traffic to such an extent that overall vehicular emissions are increased, but this impact can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, the schedules of commuting construction workers can be adjusted to avoid peak hours in the project vicinity. Thus, the potential short-term air quality impacts from project construction can be mitigated to a level below the level of significance.

3.7.2.2 Operational Impacts

The Proposed Project's long-term operational impacts on air quality were analyzed for this EIS and are discussed in detail in the Air Quality Study (Appendix F). The study employed the Emissions and Dispersion Modeling System (EDMS) developed jointly by the Federal Aviation Administration and the United States Air Force. U.S. EPA recommends EDMS for assessing air quality impacts from airport emissions. The analysis was performed using 1994 as the base year and 2010 as the forecast year for airport operations. In addition, a separate analysis was performed to assess the Proposed Project's 2020 roadway traffic impacts. A description of this 2020 air quality analysis and its results are presented in Appendix P. The roadway traffic analysis was performed using CALINE4 with queuing estimates based on the CAL3QHC model. This approach accounts for both queuing and modal emissions.

To assess the Proposed Project's air quality impacts, three scenarios were analyzed: (i) Scenario 1, the No-Action Alternative; (ii) Scenario 2, the Proposed Project *with the parallel runway and relocated helicopter operations*; and (iii) Scenario 3, the Proposed Project *without the parallel runway and with helicopter operations*. For each scenario, emissions were calculated at three general areas believed to be indicators of project-related air quality impacts: (i) On-Airport; (ii) the Airport boundary; and (iii) Off-site roadway intersections.

ON-AIRPORT ANALYSIS. Air pollution emissions from airports occur primarily from aircraft operations, ground support equipment, motor vehicles, fuel storage and handling, and aircraft maintenance operations. At Kahului Airport, aircraft refueling and maintenance operations have been relatively minor activities, although it is expected that more refueling and maintenance operations may occur in the future. Estimated Airport emissions for each of the six criteria pollutants are provided in Table 3-25. Table 3-25 provides a summary of the air pollution emission estimates for Kahului Airport for the existing conditions (1994) and the year 2010 for each of the three scenarios described above.

The primary purpose of the Air Quality Study (Appendix F) was to determine if the proposed project alternatives, *i.e.*, Scenarios 2 or 3 for 2010, would have a significant impact on air quality.

The most appropriate way to address this question is to compare emissions of 2010/Scenario 1 (No-Action Alternative) with the emissions of 2010/Scenarios 2 and 3 (the Project scenarios). When compared against the State's maximum allowable emission rates for major stationary sources, the 1994 airport emissions of carbon monoxide, nitrogen oxides and hydrocarbons were above the State's allowable rates, while emissions of sulfur oxides and particulate matter were below. This situation would continue up to and through the year 2010 with any of the three scenarios studied. Again, however, it must be emphasized that the airport is not a "major stationary source." This comparison is provided as a guideline only.

Between 1994 and 2010, under the No-Action Alternative (Scenario 1), annual emissions of carbon monoxide are projected to increase by about 780 tons per year, while nitrogen oxides emissions would increase by about 284 tons per year and hydrocarbons would increase by about 127 tons per year. Thus, the *changes* in carbon monoxide, nitrogen oxides and hydrocarbon emissions would all exceed the current (1994) emission rates for this scenario. Under both of the Project scenarios (Scenarios 2 and 3), emission increases are generally projected to be smaller but, with respect to 1994 emission levels, would still exceed the maximum allowable emission rates for major stationary sources for carbon monoxide, nitrogen oxides and hydrocarbons.

As shown in the table, 2010/Scenario 2 emissions of nitrogen oxides and hydrocarbons were estimated to be somewhat less than their 2010/Scenario 1 counterparts; carbon monoxide emissions were estimated to be *significantly* less under 2010/Scenario 2 than under 2010/Scenario 1. Thus, compared to the No-Action Alternative (2010/Scenario 1), 2010/Scenario 2 would likely not have a significant adverse impact on air quality, but could instead provide a significant *positive* impact on air quality.

Emissions of carbon monoxide for 2010/Scenario 3 would be significantly less than those for 2010/Scenario 1, while nitrogen oxides emissions would be slightly higher and hydrocarbon emissions would be nearly the same. Again, 2010/Scenario 3 would likely not have a significant adverse impact on air quality and could potentially provide a significant positive effect.

Table 3-25 summarizes the results of the emissions analyses by indicating which pollutants were projected to increase for each scenario. Compared to 1994 emissions, any of the three 2010 scenarios would result in increases in carbon monoxide, nitrogen oxides, hydrocarbons, sulfur dioxide and particulate matter. However, compared to 2010/Scenario 1, 2010/Scenarios 2 and 3 would result either in insignificant increases or in decreases in emission rates for all pollutants.

The emission estimates and discussion presented above indicate that if the Proposed Project is measured against the No-Project (No-Action) scenario it would likely have small positive impacts on air quality except for the larger positive effect with respect to carbon monoxide emissions. If the project is instead measured in terms of 1994 emission levels, then substantial increases may result for the emissions of carbon monoxide, nitrogen oxides and hydrocarbons emission, based upon the major stationary source standards.

Table 3-25

AIR POLLUTION EMISSION ESTIMATES FOR
KAHULUI AIRPORT, 1994 AND 2010 (TONS/YR)

POLLUTANT	YEAR / SCENARIO 1994	2010 SCENARIO 1	2010 SCENARIO 2	2010 SCENARIO 3
Carbon Monoxide				
Aircraft	1,013.4	1,773.8	1,547.1	1,658.4
Motor Vehicles	118.7	138.0	143.2	143.2
Total	1,132.1	1,911.8	1,690.3	1,801.6
Nitrogen Oxides				
Aircraft	354.5	635.9	610.0	650.4
Motor Vehicles	13.5	15.9	16.5	16.5
Total	368.0	651.8	626.5	666.9
Hydrocarbons				
Aircraft	170.7	294.3	270.2	292.5
Motor Vehicles	9.7	12.0	12.5	12.5
Fuel Storage/Refueling	2.2	3.2	3.1	3.1
Total	182.6	309.5	285.8	308.1
Sulfur Oxides				
Aircraft	17.5	30.2	24.6	28.0
Motor Vehicles	nil	nil	nil	nil
Total	17.5	30.2	24.6	28.0
Total Suspended Particulate				
Aircraft	2.8	6.2	5.6	5.8
Motor Vehicles	0.1	0.1	0.1	0.1
Total	2.9	6.3	5.7	5.9
Particulate Matter (<10 um)				
Aircraft	2.8	6.2	5.6	5.8
Motor Vehicles	0.1	0.1	0.1	0.1
Total	2.9	6.3	5.7	5.9

Notes: (1) Total suspended particulate and particulate matter (<10 um) include combustion emissions only, i.e., fugitive dust not included.

(2) Scenario 1: the No-Action Alternative; Scenario 2: the Proposed Project *with the parallel runway and relocated helicopter operations;* Scenario 3: the Proposed Project *without the parallel runway and with helicopter operations.*

AIRPORT BOUNDARY ANALYSIS. Potential air quality impacts along the airport boundary were assessed using EDMS. As discussed previously, EDMS was developed jointly by the FAA and the USAF, and the U.S. EPA recommends it for assessing air quality impacts from airport emissions. EDMS operates in both a "screening" mode and a "refined" mode. The screening mode is designed to provide a more simplified analysis that yields conservatively high estimates of maximum air quality impacts. The refined mode, on the other hand, is meant to provide more realistic estimates of maximum impacts, although it requires more extensive input data and analysis. Typically, the refined mode is used only after the screening mode has failed to show compliance. For the Kahului Airport analysis described below, EDMS was used in the screening mode.

In conducting the screening analysis for Kahului Airport, the overriding objective was to predict worst-case concentrations at the airport boundary. Typically, it is assumed that the highest concentrations will occur when worst-case dispersion conditions coincide with maximum airport activity. This assumption may not be categorically accurate, but in most cases it provides a reasonable worst-case assessment. At Kahului Airport, peak-hour activity generally occurs between about 10 and 11 a.m., although other hours between 8 a.m. and 4 p.m. may approach the peak-hour level.

To fully evaluate air quality conditions in the vicinity of an airport, emissions from both aircraft and other nearby pollution sources must be considered. As indicated in the airport emission estimates given in Table 3-25, airport-related motor vehicle traffic also emits carbon monoxide, but the emission quantities are relatively small in comparison to the emissions from aircraft. Nevertheless, emissions from motor vehicles using the airport access road and the airport parking facilities were included in the EDMS assessment of maximum boundary line concentrations. The inputs to EDMS for the dispersion assessment of motor vehicle related emissions were the same as those described in Section 3.7.2.2.3. The results of the Airport-Boundary emissions analysis are as follows:

Carbon Monoxide (1-Hour). Table 3-26 summarizes the final results of the EDMS screening analysis in the form of the estimated worst-case 1-hour ambient carbon monoxide concentrations for each of the four scenarios studied. In addition to indicating the highest concentration found along the airport boundary, the receptor number with the highest concentration is also shown for each case.

The predicted highest worst-case 1-hour carbon monoxide concentration for 1994 was 5.8 mg/m^3 and occurred at receptor no. 126, located along the south boundary of the airport near the queuing area for Runway 2. The second maximum occurred near receptor nos. 10 and 29, which are located near the queuing areas for Runways 20 and 23, and near receptor no. 90, which is located along the airport access road. All predicted concentrations for this scenario were below the allowable levels defined by State and national AAQS.

In the 2010/Scenario 1 (No-Action), the predicted highest worst-case 1-hour concentration was 25.4 mg/m^3; this occurred at receptor no. 10 which is located along the north

boundary near the runway safety area for Runway 23. The substantial increase compared to the 1994 scenario was primarily due to the forecast increase in aircraft operations which would equal or slightly exceed airport capacity, and thus result in long queues and long queue delay times. Areas of secondary maximum concentrations occurred near receptor nos. 19 through 33 (the north side of the airport near the queuing areas for Runways 2 and 23), receptor nos. 45 and 46 (the north boundary near the queuing area for Runway 5), and receptor nos. 101 through 103 and 122 through 129 (the south boundary near the queuing area for Runway 2). All predicted concentrations for this scenario were below the national AAQS of 40 mg/m^3, but approximately 30 of the 145 studied locations exceeded the more stringent State standard of 10 mg/m^3.

In the 2010/Scenario 2 (Project with Parallel Runway), the maximum predicted worst-case 1-hour concentration was 6.5 mg/m^3 and occurred at receptor no 23. Receptor no. 23 represents a location along the north boundary of the airport near the queuing areas for Runways 20R and 23. This scenario would provide for only a slight increase in the worst-case concentration compared to 1994 and a substantial improvement compared to 2010/Scenario 1. The substantial reduction in the maximum worst-case concentration compared to the 2010/Scenario 1 case reflects both the added capacity and the change in aircraft mix that 2010/Scenario 2 would provide. Areas of secondary maximum concentrations were predicted to occur near receptor nos. 95 through 100 and 122 through 125. These areas near the airport access road and the south boundary of the airport near Runway 2L. All predicted concentrations for this scenario were below the allowable levels defined by State and national AAQS.

Table 3-26

ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATION ALONG KAHULUI AIRPORT BOUNDARY

Year / Scenario	Concentration (mg/m^3)	Receptor Number
1994 - Present Condition	5.8	126
2010 - No-action	25.4	10
2010 - with Parallel Runway	6.5	23
2010 - without Parallel Runway	12.9	24
Ambient Air Quality Standard		
State	10	
National	40	

Note: To convert table values to parts per million, multiply by 0.87.

In 2010/Scenario 3 scenario (Project without Parallel Runway), the maximum predicted worst-case 1-hour concentration was 12.9 mg/m^3 and occurred along the south boundary at receptor no. 24. This scenario was predicted to result in a maximum worst-case concentration approximately double that of 1994 and about half that of 2010/Scenario 1. The reduction in the maximum worst-case concentration compared to the 2010/Scenario 1 case reflects the change in aircraft mix and the enlarged airport boundary that 2010/Scenario 3 would provide. Elevated concentrations are predicted to occur at other locations along the airport boundary, including the area near receptor no. 96 (near the airport access road) and the area near receptor no. 122 (the south boundary near the queuing area for Runway 2). All predicted concentrations for this scenario were below the allowable levels defined by the national AAQS, but approximately 12 of the 165 locations studied exceeded the more stringent State standard.

Carbon Monoxide (8-Hour). Table 3-27 summarizes the worst case 8-hour ambient carbon monoxide concentrations for each of the four scenarios examined. For the 1994 scenario, the estimated worst-case 8-hour carbon monoxide concentration at the airport boundary was 1.9 mg/m^3. The maximum value for 2010/Scenario 1 was predicted to increase to 8.4 mg/m^3. In the 2010/Scenario 2 scenario, a worst-case 8-hour concentration of 2.2 mg/m^3 was predicted, only slightly above the 1994 level. In the 2010/Scenario 3 case, the worst-case 8-hour value was 4.3 mg/m^3, more than double the 1994 case but only about one-half of the 2010/Scenario 1 scenario. Comparing the predicted worst-case 8-hour concentrations to the State and the national AAQS, it appears likely that both standards would be met in all scenarios except for the 2010/Scenario 1 case. In this case, the more stringent State standard of 5 mg/m^3 is predicted to be exceeded.

Table 3-27

ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATION ALONG KAHULUI AIRPORT BOUNDARY

Year / Scenario	Concentration (mg/m^3)
1994 - Present Condition	1.9
2010 - No-action	8.4
2010 - with Parallel Runway	2.2
2010 - without Parallel Runway	4.3
Ambient Air Quality Standard	
State	5
National	10

Note: To convert table values to parts per million, multiply by 0.87.

Nitrogen Oxides. The resulting estimated maximum annual nitrogen dioxide concentrations are indicated in Table 3-28. For the 1994 scenario, the estimated maximum annual nitrogen dioxide concentration at the airport boundary was 29.5 mg/m^3 and occurred at receptor no. 107. The maximum value for 2010/Scenario 1 was predicted to increase to 54.9 mg/m^3 and occur at receptor no. 106. In the 2010/Scenario 2 scenario, a maximum annual nitrogen dioxide concentration of 47.4 mg/m^3 was predicted to occur at receptor no. 117. This value is slightly below the 2010/Scenario 1 scenario and approximately 60 percent above the 1994 level. In the 2010/Scenario 3 case, the maximum annual value was 59.9 mg/m^3 and occurred at receptor no. 116. This value is approximately double the 1994 case and about 10 percent above the 2010/Scenario 1 scenario. Comparing the predicted maximum annual concentrations to the State and the national AAQS, it appears likely that both standards would be met in all scenarios.

Table 3-28
ESTIMATED MAXIMUM ANNUAL NITROGEN DIOXIDE CONCENTRATION ALONG KAHULUI AIRPORT BOUNDARY

Year / Scenario	Concentration (mg/m^3)	Receptor Number
1994 - Present Condition	29.3	107
2010 - No-action	54.9	106
2010 - with Parallel Runway	47.4	117
2010 - without Parallel Runway	59.9	116
Ambient Air Quality Standard		
State	70	
National	100	

Note: To convert table values to parts per billion, multiply by 0.53.

Hydrocarbons Although there are no State or national ambient air quality standards pertaining to hydrocarbons, hydrocarbon emissions may become involved in the complicated photochemical reactions that result in the formation of groundlevel ozone. Both State and national AAQS have been established for groundlevel ozone.

Background concentrations of ozone in the vicinity of Maalaea are currently at about 86 percent of the State standard and 37 percent of the national standard. Thus, current ozone levels appear to be well within the national AAQS and marginally within the more stringent State AAQS. It might also be noted that Maalaea is situated several miles in the prevailing downwind direction from Kahului Airport and from other air pollution sources located in the Kahului area.

As shown in Table 3-25, Kahului Airport was estimated to have emitted about 183 tons per year of hydrocarbons in 1994; this would increase to about 310 tons in 2010/Scenario 1, 286 tons in 2010/Scenario 2 and 308 tons in 2010/Scenario 3. These emission rates represent only about 3 to 4 percent of hydrocarbons that are currently emitted from motor vehicle and agricultural burning. Thus, it is unlikely that either existing or future emissions of hydrocarbons from Kahului Airport will have a significant effect on groundlevel ozone concentrations.

OFF-SITE ROADWAY INTERSECTION ANALYSIS. Similar to the on-airport and airport boundary assessments, three scenarios were selected for the assessment of carbon monoxide concentrations at roadway intersections: (i) year 1994 with present conditions; (ii) year 2010 without the project; and (iii) year 2010 with the Project. The 2010 with project scenario pertains to the preferred project alternative which includes extending the existing main runway to 9,600 feet and adding a parallel runway.

To begin the modeling study, critical intersections in the vicinity of the Airport were identified for analysis based on the project traffic report. Critical intersections were defined to include high-volume, signalized intersections located in the vicinity of the airport and identified in the traffic study as being potentially effected by airport traffic. These included the following existing intersections: Hana Highway at Dairy Road, Hana Highway at Haleakala Highway, and Puunene Avenue at Dairy Road / Kuihelani Highway. In the 2010 with Project case, assessments were also made at signalized intersections that would be created at Dairy Road and the new airport access road and at Hana Highway and Hansen-Spine Road. The traffic impact analysis for the Project describes the present and future traffic conditions and lane configurations of these intersections in detail. The Proposed Project includes the new Airport Access Road and a grade-separated, partial cloverleaf interchange at Hana Highway, thereby avoiding the need for an at-grade intersection at this location.

Table 3-29 summarizes the final results of the roadway intersection study in the form of estimated worst-case 1-hour morning and afternoon ambient carbon monoxide concentrations for each of the three scenarios considered at each of the five intersections studied. These results can be compared directly to the State and the national AAQS. The locations of these estimated worst-case 1-hour concentrations all occurred at or very near the indicated intersections.

Hana Highway/Dairy Road Intersection. As indicated in the table, the existing morning and afternoon worst-case concentrations at the Hana Highway/Dairy Road intersection were estimated to be 42.8 and 48.8 mg/m^3, respectively. With or without the Proposed Project, roadway improvements are planned for this intersection by 2010, and the analyses for 2010 assumed that the improvements would be implemented. Without the Proposed Project in 2010, the morning worst-case concentration was estimated to remain nearly unchanged at 42.7 mg/m^3, while the afternoon value increased to 56.1 mg/m^3. With the Proposed Project in 2010, worst-case concentrations were forecast to decrease to 31.5 mg/m^3 during the morning and 48.1 mg/m^3 during the afternoon. This is a result of the diversion of traffic from Dairy Road onto the new Airport Access Road. Worst-case concentrations at the Hana Highway/Dairy Road intersection were predicted to exceed both State and national standards in all three

scenarios; however, with Proposed Project these exceedences are less severe than the exceedences under either the existing conditions scenarios or the No-Action Alternative.

Table 3-29
ESTIMATED WORST-CASE CARBON MONOXIDE CONCENTRATIONS AT KEY ROADWAY INTERSECTIONS FOR THE PROPOSED PROJECT (DESIGN DAY)

ROADWAY INTERSECTION	1-HOUR (milligrams/cubic meter)				8-HOUR (milligrams/cubic meter)	
	1994		2010			
	AM	PM	AM	PM	1994	2010
Hana Highway and Dairy Road	42.8	48.8	31.5	48.1	17.1	16.8
Hana Highway and Haleakala Highway	51.6	32.5	42.0	27.9	18.1	14.7
Puunene Avenue and Kuihelani Highway	28.6	23.2	67.9	39.4	10.0	23.8
Airport Access Road and Dairy Road	--	--	14.7	14.7	--	5.2
Hana Highway and Hansen-Spine Road	--	--	30.6	24.4	--	10.7

Hana Highway/Haleakala Highway Intersection. Existing worst-case concentrations at the intersection of Hana Highway and Haleakala Highway were predicted to reach 51.6 mg/m^3 during the morning and 32.5 mg/m^3 during the afternoon. Without the Proposed Project in 2010, worst-case concentrations were estimated to decrease to 42.4 mg/m^3 during the morning and increase slightly to 34.6 mg/m^3 during the afternoon. The decrease in the morning concentration is related to the assumed new highway between Pukalani and Kihei. With the Proposed Project, the southbound approach to this intersection will be eliminated, creating a T-intersection. Compared to the without project case, the worst-case concentration during the morning for the 2010 with the Proposed Project was predicted to remain nearly unchanged at 42.0 mg/m^3, while the afternoon value was estimated to decrease to 27.9 mg/m^3. Worst-case concentrations at this location were predicted to potentially exceed both State and national standards in all three scenarios.

Puunene Avenue/Kuihelani Highway Intersection. Worst-case concentrations at the Puunene Avenue/Kuihelani Highway intersection for the existing case were predicated to reach 28.6 mg/m^3 during the morning and 23.2 mg/m^3 during the afternoon. Without the Proposed Project in 2010,

worst-case concentrations were forecast to increase substantially to 67.9 mg/m^3 during the morning and 44.3 mg/m^3 during the afternoon. Worst-case concentrations in 2010 with the Proposed Project compared to without it were estimated to remain unchanged during the morning and to decrease somewhat to 39.4 mg/m^3 during the afternoon. All scenarios were predicted to potentially exceed the State standard by a large margin, while only the future cases were forecast to potentially exceed the national standard.

Airport Access Road/Dairy Road Intersection. The new airport access road intersection with Dairy Road would only exist under the project scenarios. Worst-case concentrations at this intersection were predicted to be 14.7 mg/m^3 during both the morning and the afternoon commute hours, assuming added capacity is provided as suggested in the project traffic study. This is within the national standard but exceeds the more stringent State standard.

Hana Highway/Hansen-Spine Road Intersection. Hana Highway at Hansen-Spine Road would only become a signalized intersection in the with Proposed Project. Hence, only the 2010 with the Proposed Project was examined at this location. During the morning, a worst-case concentration of 30.6 mg/m^3 was forecast. During the afternoon, a worst-case value of 24.4 mg/m^3 was predicted. These concentrations are within the national standard but exceed the more stringent State standard.

Worst-case 8-hour carbon monoxide concentrations were estimated by multiplying the worst-case 1-hour values by a locally-derived 1-hour to 8-hour conversion factor of 0.35. This accounts for two factors: (i) traffic volumes averaged over eight hours are lower than peak 1-hour values; and (ii) wind speed averaged over eight hours is higher than for the worst-case hour. Lower 8-hour traffic volumes and higher 8-hour wind speeds both serve to reduce maximum 8-hour concentrations compared to the worst-case 1-hour value.

For the 1994 scenario, the highest estimated worst-case 8-hour carbon monoxide concentration within the project area was 18.1 mg/m^3. This was estimated to occur near the intersection of Hana Highway and Haleakala Highway. Estimated worst-case concentrations at other intersections studied were 17.1 mg/m^3 at Hana Highway and Dairy Road and 10.0 mg/m^3 at Puunene Avenue and Kuihelani Highway. Worst-case concentrations at all locations studied were forecast to equal or exceed both State and national standards, set at 5 mg/m^3 and 10 mg/m^3, respectively.

Without the Proposed Project in 2010, the predicted maximum values near the intersections studied were 23.8 mg/m^3 at Puunene Avenue and Kuihelani Highway, 19.6 mg/m^3 at Hana Highway and Dairy Road, and 14.8 mg/m^3 at Hana Highway and Haleakala Highway. Compared to the 1994 case, air quality in the vicinity of Puunene Highway and Kuihelani Highway would experience the most degradation. Air quality near Hana Highway and Dairy Road would decrease slightly, while the area near Hana Highway and Haleakala Highway would improve somewhat. Worst-case concentrations at all locations studied were forecast to exceed both State and national standards.

With the project in 2010, worst-case 8-hour concentrations were predicted to either remain unchanged or improve slightly compared to the No-Action Alternative. At the five intersections studied for this scenario, concentrations were predicted to range from 5.2 mg/m^3 near the airport access road at Dairy Road to 23.8 mg/m^3 near Puunene Avenue and Kuihelani Highway. Worst-case concentrations at all locations studied were forecast to equal or exceed both State and national standards.

In addition, as part of the FHWA requirement, an analysis for the 2020 planning horizon was performed for ground traffic emissions only. The 2020 study analyzed the intersections of Hana Highway/Dairy Road, Hana Highway/Haleakala Highway, Puunene Avenue/Kuihelani Highway, and the Proposed Airport Access Road/Hana Highway. The Proposed Project includes a partial cloverleaf interchange at the intersection of the Airport Access Road/Hana Highway. The resulting emissions are presented in Table 3-30.

Table 3-30
ESTIMATED WORST-CASE CARBON MONOXIDE CONCENTRATIONS AT KEY ROADWAY INTERSECTIONS FOR THE PROPOSED PROJECT (AVERAGE DAY)

ROADWAY INTERSECTION	1-HOUR (milligrams/cubic meter)				8-HOUR (milligrams/cubic meter)	
	1994		2020			
	AM	PM	AM	PM	1994	2020
Hana Highway and Dairy Road	42.8	48.8	33.1	34.3	17.1	12.0
Hana Highway and Haleakala Highway	51.6	32.5	63.1	25.5	18.1	22.1
Puunene Avenue and Kuihelani Highway	28.6	23.2	36.1	31.5	10.0	12.6
Airport Access Road and Dairy Road	--	--	17.6	19.6	--	6.9
Hana Highway and Hansen-Spine Road	--	--	31.2	27.7	--	10.9
Hana Highway at Airport Access Roadway - Eastbound Ramp	--	--	5.1	4.8	--	1.8
Hana Highway at Airport Access Roadway - Westbound Ramp	--	--	3.5	3.9	--	1.4

The analysis shows that with the Proposed Project, the projected concentration from the estimated carbon monoxide emissions would comply with State and national standards and are substantially less than the emissions from the diamond interchange and the at-grade intersections. The emission levels at the intersections of Airport Access Road/Dairy Road, and Hana Highway/Spine Road/Hansen Road were forecast to meet the national standards but exceed the more stringent State standards. In addition, the forecast increase in overall traffic results in increased emissions at the Hana Highway/Haleakala Highway intersection. Again, however, these emissions are much less under the Proposed Project than under the No-Action Alternative. While air quality problems are indicated at some locations in the airport vicinity, it may be concluded that project-related traffic would not be a significant contributor if the traffic mitigation measures proposed in the accompanying traffic study are implemented.

3.7.3 SIGNIFICANCE CRITERIA AND ANALYSIS

The fundamental test regarding the Proposed Project's potential air quality impacts is whether the present airport facility, together with the proposed project improvements, will meet national and state ambient air quality standards. Exceedences of these standards would constitute a significant environmental impact. Emissions which do not exceed the standards would be insignificant. The Proposed Project would have a positive air quality impact if, when compared against the No Project alternative, it reduces emissions from the airport and in the airport vicinity. The Governor has certified that the State of Hawaii, with respect to the Proposed Project, will locate, design, construct, and operate the airport in compliance with all applicable air and water quality standards (See Exhibit 10-1, Section 10.0).

The proposed airport improvements will not affect the general climate or meteorological characteristics of the project site or area. However, the significance of potential impacts have been evaluated based on the potential for the Proposed Project to affect either the localized climate and meteorology or the climate of the surrounding area. A significant impact would occur if the climate and meteorology were affected. Insignificant impacts would occur if there was a perceptible impact but which did not dramatically change the climate and meteorology, and no or negligible impacts would occur if the project had no effect on the climate and meteorology of the site or area.

If the construction adheres to established fugitive dust rules and regulations, the short-term emissions during construction should be insignificant. Emissions from construction vehicles are not expected to exceed the established air quality standards for nitrogen dioxide and carbon monoxide, and, therefore, their impact should be insignificant.

With regard to air quality impacts at the Airport boundary, the Project without the parallel runway would cause 12 exceedences of the State 1-hour standard for carbon monoxide, 23 fewer exceedences than under the No-Action Alternative. This is a positive impact. The Project without the parallel runway would not exceed the 8-hour State or national carbon monoxide standard. The Project *with* the parallel runway would not cause any exceedences of the 1-hour or 8-hour carbon monoxide standards. From the analysis, it is determined that the impact on the sensitive receptors would be insignificant. Because,

as emission concentrations decrease proportional to the distance from the airport boundary, the sensitive receptors at East and West Spreckelsville, which are farther from the emission source than Airport boundary, would be impacted by concentrations lower than those computed at the Airport Boundary. Such impacts are determined to be insignificant.

With regard to air quality impacts at off-site roadway intersections, the Proposed Project (with or without the parallel runway) would have *positive* impacts on roadway carbon monoxide emissions as it reduces the emissions at the intersections of Hana Highway/Dairy Road and Hana Highway/Haleakala Highway. However, although the Proposed Project's emissions are forecast to be *less* than those forecast for the No-Action Alternative, they will still exceed both national and State standards for carbon monoxide. The Proposed Project would have insignificant impacts for all other pollutants, including nitrogen oxides. Although there are no State and national standards for hydrocarbon emissions, the impact on hydrocarbon emissions would be insignificant as the airport emission rate is a small (3% to 4%) percentage of the overall island emission of hydrocarbons.

There would be insignificant impacts to the climate and meteorology.

Table 3-31 summarizes the significance of the potential effects of the proposed improvements on the air quality, climate and meteorological characteristics of the project area and island of Maui.

Table 3-31
SIGNIFICANCE OF EFFECTS ON AIR QUALITY, CLIMATE AND METEOROLOGY

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Air Quality	Exceedence of established standards	Significant (State carbon monoxide 1-hour only, without Parallel Runway) Insignificant (other pollutants) Positive at certain roadway intersections. Significant at others
Climate	Dramatically change local climate	Insignificant
Meteorology	Dramatically change local meteorology	Insignificant

3.7.4 MITIGATION MEASURES

Even though the Proposed Project, with or without the parallel runway, will improve air quality when compared to the No-Action Alternative, State and Federal air quality standards will still be exceeded at certain locations. The State of Hawaii, Department of Health works with the U.S. EPA to enforce and implement the air quality standards.

To mitigate these air quality impacts, the Airport should encourage the use of capacity enhancement techniques to lessen the aircraft delay on the airfield. These capacity enhancement techniques could include building of a parallel runway, or using hold-short operations on the 9,600 foot runway. As the emission levels of carbon monoxide, especially from turbojet engines, are higher during taxi and idle, reduction in queuing would significantly reduce carbon monoxide emissions. Other mitigation measures could include: (i) requiring pilots to increase engine speed and reduce the number of engines operating during idle and taxi; (ii) reducing idle operating times by controlling departure times from gates; (iii) reducing taxi operating time by partially towing aircraft between runway and gate, and (iv) reduce the operating time of aircraft auxiliary power supply by providing ground-based power supply.

The other mitigation measures are considered not reasonable or feasible and the discussion for each of these proposed mitigation measures and their feasibility is discussed below.

- Increase engine speed and reduce the number of engines operating during idle and taxi:

  Because of their weight and size, wide-body aircraft and heavy narrow-body aircraft need at least two engines operating to taxi safely. The thrust required to initiate movement of these aircraft is such that one engine brought to that power level would create a hazard to ground personnel and equipment. Certain aircraft could also experience directional control problems because of the adverse, unbalanced thrust that would be created by using only one engine. Such factors as weather, taxi surface, taxi slope, ramp congestion, taxiway condition/composition, directional control, the proximity of the terminal area and aircraft, and other similar conditions also affect safe single/reduced engine taxiing and require an on-the-spot situation specific judgment of a pilot in command who is responsible for the safety of the passengers, crew members, cargo and the aircraft regarding whether or not single engine taxiing can be safely used in a specific instance.

  To the extent that single/reduced engine taxiing would provide identifiable air quality benefits and if and to the extent that it is determined by the FAA and the airlines to be a safe and efficient operational procedure for air carrier aircraft at Kahului Airport, this mitigation measure may be used at the airport.

- Control departure time from gates:

The controlled departure from gates would only be applied as the level of congestion on the taxiways and runways were at a level at which the aircraft would spend more time on the taxiway, or for safety reasons. However, the ground operational situation must be determined to assess the efficiency of this mitigation measure. The use of a controlled gate departure, is a decision which needs to be coordinated with the ramp control, the airline and the FAA, and must take into account gate congestion, airfield congestion at that time. The measure will be dependent on the congestion situation at the Airport.

- Partially towing aircraft:

FAA considers towing aircraft to be unacceptable from both a safety and a efficient utilization of airspace standpoint. This is due to operational considerations of both the aircraft and towing vehicle as well as the requirements of air traffic control. Communication and control problems during the towing operation are potentially significant and have safety implications. At the present time, an air traffic controller communicates with the pilot in command and directs the aircraft to the runway or, after landing, directs the aircraft to the terminal. The use of a towing vehicle introduces the tow operator into the communications link. The tow operator is in control of the aircraft being towed, but is not responsible for the aircraft (pilot's role) or responsible for the aircraft movement (controller's role). The controller is typically about 100 feet off the ground, the pilot is 20 feet off the ground and the tow operator is only 5 feet or less off the ground. The ability to see and be seen is directly related to the height of the observer. The tow operator's limited visibility is a major safety concern. There is also considerable concern that the nose gear could collapse in an emergency stop from top towing speed, endangering the life of the tow vehicle driver.

In addition, pilots are extensively trained in all matters of safety, because they are accountable for the safety of passengers and equipment under their command. Such responsibility and accountability is not expected of tow vehicle operators. Therefore, according to FAA, the transference of passenger safety from the pilot to the tow vehicle operator, beyond the slow and deliberate pushback procedure, would be an unnecessary and unacceptable deterioration in aviation safety.

Because of FAA opposition, lack of aircraft manufacturer approval, and various operational limitations, the possible towing of the aircraft to the runway is not a viable option for emission reductions.

- Reduce operating time of aircraft auxiliary power supply:

  At present all jet aircraft parking at the Main Terminal gates use a ground based power unit and the aircraft's auxiliary power supply unit is not used.

Although the short-term construction impacts are insignificant, under the State of Hawaii, Air Pollution Control Regulations, visible emissions of fugitive dust from construction activities at the property line are prohibited. Thus an effective dust control plan for the project construction phase will be essential. Construction activities must comply with provisions of Chapter 11-60.1 of the State of Hawaii Administrative Rules, Section 11-60.1-33, on Fugitive Dust. Adequate fugitive dust control can be accomplished by the following measures, as necessary:

- focusing on minimizing the amount of dust generating materials and activities, centralizing material transfer points and onsite vehicular traffic routes, and locating potentially dusty equipment in areas of the least impact;
- providing an adequate water source at the site, prior to startup of construction activities;
- control of dust from shoulders, project entrances, and access roads;
- providing adequate dust control measures during weekends, after hours, and prior to daily startup of construction activities;
- Use of a frequent watering program to prevent bare-dirt surfaces from becoming significant dust generators;
- Limiting the area that can be disturbed at any given time;
- Application of chemical soil stabilizers or mulching;
- Construction of wind screens;
- Requirements that all open-bodied trucks be covered when transporting dirt or dust producing materials;
- Road cleaning or tire washing, as appropriate; and/or
- The paving of parking areas and the establishment of landscaping early in the construction process to limit areas of possible dust production.

To reduce ground vehicle emissions, the traffic mitigation measures recommended in the traffic study should be implemented. These mitigation measures are presented in Section 3.22.8.6, and include increasing the capacity of the intersection by: (i) installing traffic signals; (ii) additional turning lanes; (iii) improved ramp entry; or widening the roadway. In addition, other mitigation measures which are suggested include: (i) reduce roadway speed limits at those locations where the high speed limits, above 35 mph, cause excessive acceleration emissions; (ii) optimize and/or coordinate traffic signals to reduce traffic queuing; (iii) provide buffer zones between sidewalks and roadways; (iv) promote bus service for arriving and departing airport passengers; and (v) if feasible, coordinate air carrier schedules to minimize airport-related traffic during peak commute hours.

3.7.5 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The Proposed Project will result in significant air quality impacts as there is a predicted exceedance of the 1 hour State standard if the parallel runway is not constructed. As this EIS will discuss the potential significant impacts of the long-range (Phase 3) Proposed Project to the extent feasible, the mitigation measures and a more detailed analysis should be performed prior to the construction of the parallel runway. Upon this analysis, it would be determined what, if any, further environmental documentation is required.

The implementation of the mitigation measures set forth above will minimize these impacts but will not reduce these impacts to a level below the level of significance. However, the Proposed Project, with or without the parallel runway, will create fewer air quality exceedances than would the No-Action Alternative.

3.8 WATER QUALITY

3.8.1 EXISTING CONDITIONS

Water quality factors associated with Kahului Airport are primarily influenced by surface water drainage effects (non-point source pollution) on the nearshore marine environment (see Section 3.13 below). Previous water quality monitoring (Section 11.0, Reference 19) has indicated that airport operations have little effect on the nearshore marine environment. The ocean waters off-shore from the Airport are classified as Class A - Open Coastal Waters by the DOH. To determine present marine water quality conditions and to confirm previous studies conducted in 1980, 1990, and 1993, water quality samples were collected and analyzed specifically for this EIS. The results of that sampling were compared to both previous results and the Open Coastal Water Standards and are included as Appendix G. The following briefly summarizes the results of that report.

Water quality samples were collected at seven stations in the area offshore of the Airport: four nearshore stations; two Kalialinui Gulch stations; and one station in Kanaha Pond near Haleakala Highway. At each nearshore station, samples were taken at depths of approximately 5 and 9 feet (1.5 and

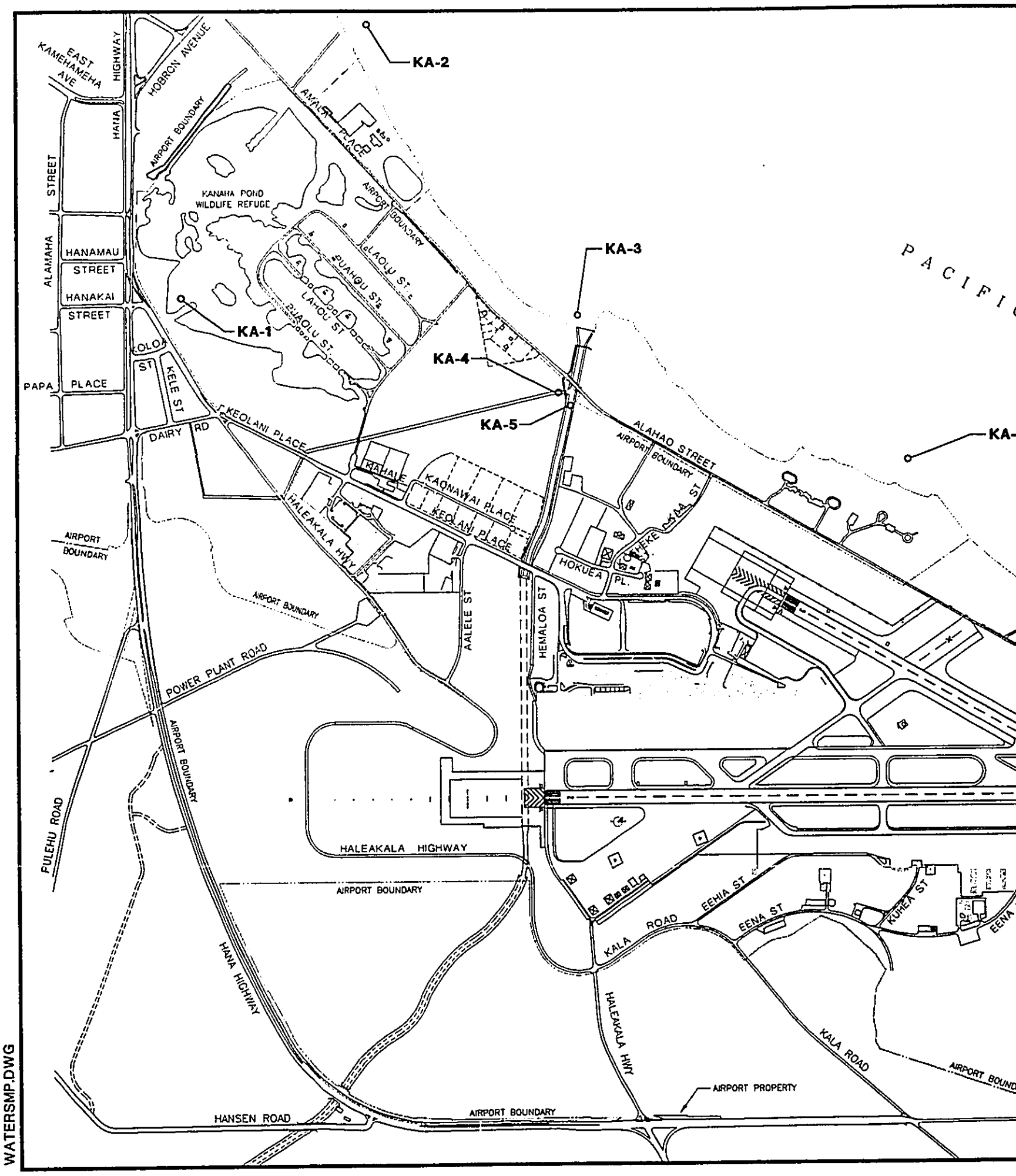
2.7 m, respectively). These sampling stations are shown on Figure 3-18. Two sets of samples were taken, one during the summer; and one during the winter. For the summer samples, the weather was characterized by light wind with some heavy showers, and the nearshore waters were calm with little surf or current action. For the winter samples, the weather was characterized by northeasterly trade winds with no rain, and the nearshore waters were calm with little surf or current action. Samples were analyzed for: (i) salinity; (ii) pH; (iii) turbidity; (iv) total suspended solids; (v) nitrate + nitrite; (vi) ammonium; (vii) total nitrogen; (viii) phosphate; (ix) total phosphorus; (x) silicate; (xi) chlorophyll; and (x) total petroleum hydrocarbons (TPH). The analyses were conducted in conformance with standard, commonly accepted methods.

In general, the data for the nearshore samples are typical of nearshore marine environments affected by groundwater and/or surface water runoff. Therefore, due to the affect of groundwater or runoff, near coastal waters are often subject to less rigid criteria than open marine waters. The nearshore surface samples show decreased salinity and elevated nutrient levels, with the greatest effect shown from the samples collected immediately offshore of Kalialinui Gulch. Chlorophyll levels were typical of nearshore waters with surface or groundwater nutrient input and low energy (weak currents and wave energy).

Table 3-32 indicates the geometric mean values for the nearshore stations collected specifically for this EIS as compared to the corresponding State Water Quality Standards (WQS) for open coastal waters and samples taken in 1981, 1990, 1993 and 1994. As indicated, the geometric means for the nearshore samples collected specifically for this EIS exceed, in some cases by as much as 20 times, the respective water quality criteria for turbidity, nitrate + nitrite, ammonium and total nitrogen. The mean level for total phosphorus is below the WQS criterion. These results are similar to the previous 1981, 1990 and 1993 data, and are fairly typical for nearshore waters around Hawaiian waters. In other words, most nearshore waters in the Hawaiian islands, including Maui, exhibit excessive levels of certain water quality parameters (*e.g.*, turbidity, ammonium). The high concentrations of these parameters are usually due to surface run-off. The analysis performed for this EIS confirms that the Airport's contribution to the surface run-off into Kalialinui Gulch and resultant water pollutant levels is, by itself, very small. However, the total run-off into Kalialinui Gulch, created by *all* activities in the study area including natural processes, would constitute a significant *cumulative* impact.

3.8.2 IMPACT ANALYSIS

Potential effects on water quality resulting from the proposed airport improvement projects are associated with increased non-point source pollution of nearshore waters. These heightened pollution levels would be due to: (i) increased contaminated surface water runoff and drainage from the Airport and surrounding roadways; (ii) increased sediment loading of nearshore waters due to larger area to be served by the airport drainage system; and (iii) increased opportunities for petroleum hydrocarbon contamination of runoff waters. The proposed improvements do not include any work in nearshore waters or along the shoreline except for the improvements at Kanaha Beach Park. These improvements are inland and will not impact water quality.



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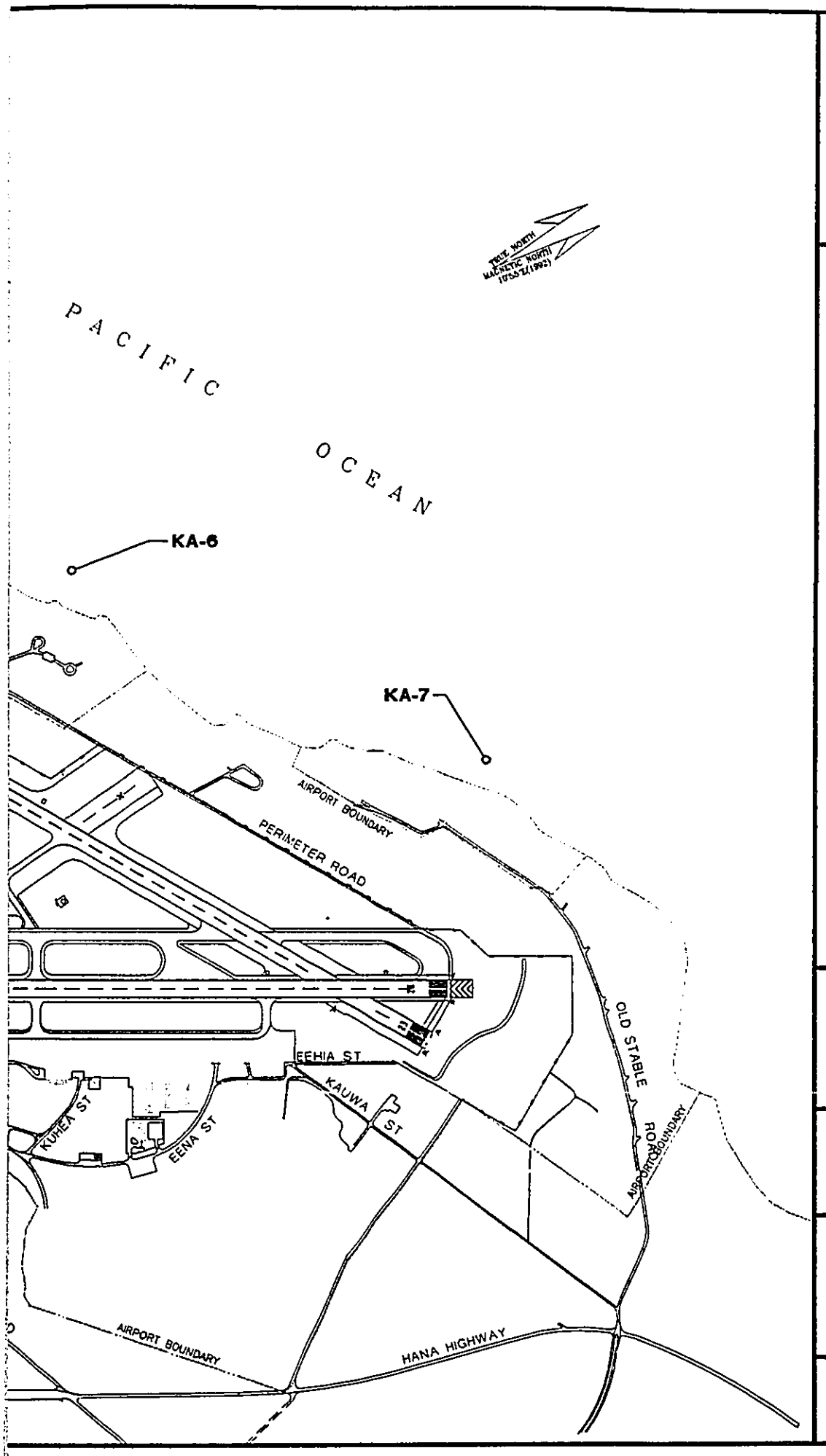


Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

o **WATER SAMPLING LOCATION**

0 500 1000 1500
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

WATER SAMPLING LOCATIONS

DATE	FIGURE
JANUARY, 1997	3-18

Table 3-32
RESULTS OF WATER QUALITY ANALYSES
IN THE VICINITY OF KAHULUI AIRPORT - SUMMARY OF GEOMETRIC MEAN
(WQS for open coastal waters)

SAMPLE DESCRIPTION	SALINITY (0/00)	pH	TURBID. (NTU)	TSS (mg/l)	NO_2+NO_3 (μM)	NH_4 (μM)	TN (μM)	PO_4 (μM)	TP (μM)	SI (μM)	CHL (μg/l)	TPH (mg/l)
OIC 11/94 Geo Mean	33.66	8.08	0.99	7.25	8.19	1.19	15.65	0.17	0.48	26.71	0.46	N.D.
OIC 7/94 Geo Mean	32.31	8.02	0.95	5.04	4.23	2.57	16.57	0.08	0.38	51.10	0.84	N.D.
OIC 1993 Geo Mean	33.56	NA	1.23	6.31	2.33	0.94	15.44	0.13	0.71	17.89	0.30	NA
AECOS 1981	33.75	7.72	2.78	NA	2.98	0.89	24.35	0.49	0.94	NA	NA	NA
AECOS 1990	NA	8.2	1.6	NA	7.21	0.79	24.29	0.32	NA	NA	1.10	NA
WQS	Not Applicable	Not Applicable	0.50	Not Applicable	0.36	0.25	10.71	Not Applicable	0.65	Not Applicable	0.30	Not Applicable

NS = no sample analyzed due to heavy particulate load. WQS = State Water Quality Standards for open coastal waters.
AECOS data from July 1992 Kahului Airport Final EIS are geometric means for all stations sampled. NA = Data Not Available or samples not collected.
N.D. = not detected.
TURBID = Turbidity, TSS = total suspended solids, NO_2+NO_3 = nitrate + nitrite, NH_4 = ammonium, TN =total nitrogen, PO_4 = phosphate, TP = total phosphorus, SI = silicate, CHL = chlorophyll and TPH = total petroleum hydrocarbon (Jet Fuel A).

It is expected that the larger paved surfaces at the Airport will cause slight increases in the quantity of rain water runoff into Kalialinui Gulch. Planned improvements to the East Ramp area will slightly increase runoff onto the lands east of Kanaha Beach Park. This water is expected to pond on these lands and percolate slowly into the ground. The proposed parallel runway will also increase surface water runoff onto the lands near Spreckelsville. Similarly, the new Airport Access Road may cause slight increases in rain water runoff onto adjacent lands and the new paved parking spaces at Kanaha Beach Park will slightly increase surface water runoff. The proposed airport improvements also have the potential to increase sediment loading into the nearshore waters fronting the airport area.

The proposed airport drainage system improvements have been planned and designed to alleviate potential adverse effects of increased surface water runoff. Equipment wash areas will be equipped with appropriate waste wash water collection and treatment facilities, and erosion control and sediment retention basins will be used to minimize sediment flow into Kalialinui Gulch. The proposed airport improvements are not expected to contribute significant amounts of nutrients to ground or surface waters because no new sources of these potential contaminants result from the proposed improvements. It is possible that displacement of some agricultural activities may lead to a decrease in the present level of agricultural-related nutrient subsidies to ground and surface water flows. In addition, HDOT-AIR has obtained a stormwater permit and is in the process of completing a stormwater pollution control plan.

The forecast of increased airport operations levels will result in increased quantities of petroleum products being handled on the Airport, thus increasing the potential for hydrocarbon contamination of surface or groundwater. Total petroleum hydrocarbon levels are presently below detectable levels in the nearshore waters, and it is expected that future levels will remain below detectable levels because of the present and future fuel-spill recovery system. This system consists of a two-level catchment mechanism that allows spilled fuel products to be directed toward storage tanks located under the ramp area. In the event of a fuel spill, the Aircraft Rescue and Fire Fighting (ARFF) team is called and appropriate measures are taken to assure the spill flows into the storage tanks. The fuel is then pumped out of the storage tanks and disposed of properly.

The design of the new on-airport Fuel Storage Facilities and the associated piping to the aircraft apron shall be designed in compliance with all applicable Federal and State codes, rules and regulations to prevent the contamination of soil, runoff and groundwater. These regulations include the State's Waste Water Management Regulations, Uniform Building Code, and National Fire Protection Association, 40 CFR 112, and US DOT Regulations, Title 49, Part 195 - *Transportation of Hazardous Liquids by Pipeline*. The mitigation measures which will be designed for the new Fuel Storage facility and piping will include: (i) a containment berms or walls; (ii) oil/water separation systems; (iii) corrosion resistant coatings; (iv) filters; (v) applicable Spill Protection Containment and Countermeasures; and (vi) leak detection and monitoring. These facilities will be designed, constructed and operated by HFFC. Likewise, the future supply pipeline from the Harbor to the Airport's Fuel Storage Facility will be designed, installed and operated by HFFC. The fuel pipeline from the Harbor to the Bulk Fuel Storage facility is planned for the long-term and is speculative at this time. The current location of this pipeline may have a potential

impact on Kanaha Pond and the coastal water quality if leak or breakage occurs. However, proper design of the pipeline, such as the use of a "quick flush" system and double walled pipes and adequate sensors would minimize the impact. Due to the long-term nature and uncertainty of this project, beyond the year 2016, this EIS discusses, to the extent possible and reasonable, the potential significant impacts of the fuel pipeline from Kahului Harbor to the Airport Storage Tanks. Prior to the construction of this project additional environmental analyses will be completed in order to determine what, if any, further environmental documentation is required. The environmental analysis will include assessing prudent and feasible alternatives to minimize the pipeline's effects on Kanaha Pond. One of those alternatives includes considering locations further from Kanaha Pond to avoid *constructive use* of Kanaha Pond that could result if the pipeline breaks, or leaks. If alternative locations are not prudent or feasible, mitigation measures, as discussed above, could be implemented to minimize impacts to Kanaha Pond that would result if the pipeline breaks, or leaks.

3.8.3 SIGNIFICANCE CRITERIA AND ANALYSIS

The potential effects of the proposed improvements on water quality have been evaluated utilizing the following significance criterion. Significant adverse effects would occur if the proposed improvements would: (i) measurably increase the concentrations of those pollutants for which the existing nearshore waters are already *out of compliance* with the State Water Quality Standards; or (ii) raise the concentrations of those pollutants for which the nearshore waters are currently *in compliance* to levels above the State Water Quality Standards (HAR 11-55-34 through 11-55-34.12). Insignificant effects would occur if the proposed improvements resulted in a continuation of existing water quality conditions, and beneficial effects would occur if water quality conditions improved as a result of the proposed improvements. Potential marine ecological effects of the proposed improvements are discussed below in Section 3.11.

Based on the water quality study performed for this EIS and evaluation criteria listed above, there will be no significant impacts to water quality by the Proposed Project. In addition, there will be no short-term construction impacts. Compared to the No-Action Alternative, the Proposed Project's increases to the storm run-off into Kalialinui Gulch are insignificant. However it should be noted that regardless of whether the Proposed Project is implemented, the nearshore marine environment near the Airport does (and will continue to) exhibit excessive levels of turbidity, nitrate + nitrite, total nitrogen, ammonium and chlorophyll.

The nearshore water quality impact is considered a cumulative impact in Section 5.0. Table 3-33 summarizes the significance of the potential effects of the proposed improvements on the water quality characteristics of the project area.

Table 3-33
SIGNIFICANCE OF EFFECTS ON WATER QUALITY

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Surface Water Runoff	Increased nutrient and sediment loading of nearshore waters	Insignificant
Groundwater Contamination	Increased nutrient input	Insignificant
Hydrocarbon Contamination	Increased surface and groundwater contamination	Insignificant

3.8.4 MITIGATION MEASURES

No significant water quality impacts have been identified; therefore, no mitigation measures are required. However, to minimize impacts and environmental harm during construction of the new runway, taxiway and other areas to be graded, best management practices will be utilized consistent with State Department of Health rules and regulations and the State's non-point source pollution management program, currently being prepared by the Office of State Planning. The State Department of Health enforces the water quality standards and NPDES regulations. The HDOT-AIR will file the applicable NPDES Notice of Intent and apply for the applicable Section 401 permits prior to construction. Following construction, new runways, taxiways and ramp areas will be provided with runoff water impoundment areas and new facilities will be connected to the drainage catchment system. As necessary, oil/water separators will be installed to minimize the runoff of petroleum products. Equipment wash areas will be equipped with waste wash water collection and appropriate facilities and the new fueling facilities will be bermed and underlain by impermeable membranes to prevent soil and groundwater contamination.

To further minimize the effects resulting from grading and construction activities, applicable Federal, State and County rules and regulations will be implemented. The following is brief discussion of these measures:

- State and County erosion and sediment control measures, including the use of sediment retention basins, will be employed during construction to minimize storm water runoff. Following construction, berms and landscaping will assist in reducing runoff flows and direct flows to drainage channels. As applicable, the appropriate State and County permits will be obtained and Best Management Practices will be developed prior to construction activities.

- New facilities will be designed and constructed to meet Federal and State flood zone and coastal high hazard rules and regulations to minimize potential damage from flooding or tsunamis.

- As further described in Section 3.12.4, HDOT-AIR has mitigated the impacts on the floodplain for the Airport Access Road by allowing runoff to pass beneath the road through a series of inlets and culverts. Based on the existing drainage scheme for the Airport Access Road, A&B Properties has developed a Drainage Master Plan for Phase I of their development. In addition, the State of Hawaii, Department of Land and Natural Resources (DLNR) is proposing a Kahului Flood Control Project for this area. In order to build Phase II of the Industrial Park, A&B Properties must develop a drainage plan for Phase II in accordance with the DLNR Flood Control Project. HDOT-AIR will be cooperating with DLNR during implementation of the Flood Control Project as it applies to the Airport Access Road. At this time, the drainage proposed for Phase Ia of the A&B development would have the runoff draining into the A&B concrete ditch. The drainage from Phase Ib would be handled by retention basins on A&B property. The Drainage Master Plan may provide some revisions to the Airport Access Road drainage system and will be coordinated, as necessary, with DLNR and A&B properties. A possible alternative relates to the use and widening of the confluence of the A & B Ditch and Kalialinui Drainage Channel.

3.9 DEPARTMENT OF TRANSPORTATION (DOT) ACT, SECTION 4(f)

3.9.1 EXISTING CONDITIONS

Section 4(f) of the Department of Transportation Act of 1966, as amended (49 USC, Subtitle I, Section 303), provides that no program or project that requires the *use* of any publicly owned land from a public park, recreation area, or wildlife refuge of national, state, or local significance or land of an historical site of national, state or local significance, shall be approved by the Secretary of the Department of Transportation unless there is no feasible and prudent alternative to the use of such land. *Use* within the meaning of Section 4(f) is generally considered to occur when the project requires a physical taking or other direct control of the land for the purpose of the project, and as a consequence the use is changed. *Use*, however, may include not only actual, physical takings of such lands but also adverse indirect impacts as well, *which may be characterized as constructive use* of such lands[13]. When there is no physical taking but

[13] 23 CFR Part 771.135 describes *constructive use* as a *use* which occurs when the transportation project does not incorporate land from a Section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the resources are substantially diminished.

there is the possibility of use of or adverse impacts to Section 4(f) land, a determination is made by the FAA as to whether the activity associated with the proposal conflicts with or is compatible with the normal activity associated with this land. The proposed action is compatible if it would not affect the normal activity or aesthetic value of a public park, recreation area, refuge, or historic site. When so construed, the action would not constitute use and would not, therefore, invoke Section 4(f) of the Department of Transportation Act. The Section 4(f) lands which exist in close proximity of the Airport include the Kanaha Pond Wildlife Sanctuary (KPWS) and Kanaha Beach Park. In addition, Haleakala National Park and International Biosphere Reserve is located approximately 20 miles from the Airport. The effects of the proposed airport improvements on the historical and archaeological features of the area are discussed in Section 3.10.

Kanaha Pond Wildlife Sanctuary: KPWS was designated a National Natural Landmark in 1973 and encompasses about 235 acres. KPWS is within the airport boundary and lies west of the airport facilities, and the land is owned by HDOT. However, a 1973 Memorandum of Agreement between the FAA, HDOT and Department of Land and Natural Resources (DLNR), transferred the management responsibilities of KPWS to DLNR. This Memorandum of Agreement was further refined by a 1996 Memorandum of Understanding between HDOT and DLNR, that defines the boundaries of KPWS and incorporates the 1973 Endangered Species Act into DLNR's management responsibilities. In addition, the Memorandum of Understanding (MOU) sets the boundary and acreage of the KPWS and provides habitat security as per the *Hawaiian Waterbirds Recovery Plan*, 1985. Three endangered bird species have been observed in KPWS. Additional information is included in Sections 3.11 and 3.12.

Kanaha Beach Park: Kanaha Beach Park lies to the north of the airfield, and is a popular beach park for both residents and tourists. The Park is publicly-owned and is a popular coastal recreational area. The beach park is described in more detail in Sections 3.3 and 3.22.7

Haleakala National Park: The Haleakala National Park, which is a part of the Hawaii National Park, is approximately 20 miles away from the Airport and encompasses an area of approximately 44 square miles of Haleakala Volcano on Maui. The Haleakala National Park includes the 10,023 foot summit and a portion of the east slope from the summit of Haleakala Volcano to the ocean. The Haleakala National Park has various habitats for native plants and ecosystems such as: the upper Haleakala Volcano at higher elevations; the subalpine shrubland at mid elevations; the rain forest and a small remnant of dryland forest at the mid-lower elevations; and the lowland zone at Kipahulu which is below the 2,000 foot elevation.

The Park contains some of the least disturbed ecosystems on Maui, which are dominated by native species. The native biota includes: (i) 240 species of flowering plants, with approximately 90 percent endemic to Hawaii, of which 20 percent are endemic to Maui; (ii) 100 species of ferns of which approximately 50 percent are endemic to Hawaii; (iii) 800 species of invertebrates of which 90 percent are endemic to Maui; (iv) one (1) endemic and endangered mammal, the hoary bat; and (v) eight (8) species of endemic forest birds. According to the U.S. Fish and Wildlife, there are approximately 37 plant species and numerous rare endemic invertebrate species that have a status on the endangered species list. Some of the invertebrate species are recognized by the U.S. Fish and Wildlife Service as "*species of special concern.*"

In connection with preparation of this EIS, a biological assessment has been prepared in compliance with 50 CFR 402.12. The biological assessment presents a detailed discussion of Haleakala National Park and states that there are approximately 50 Listed and Candidate Species of Plants, and approximately 20 Listed and Candidate Species of Animals. The following is a list of the Listed and Candidate species of Plants and Animals found in Haleakala National Park, as presented in the biological assessment in Appendix U:

> Plants: *Argyroxiphium sandwicense* ssp. *macrocephalum, Bidens micrantha* ssp. *kalealaha, Clermontia lindseyana, Clermontia oblongifolia* ssp. *mauiensis, Ctenitis squamigera, Geranium arboreum, Geranium multiflorum, Ischaemum byrone, Melicope balloui, Melicope ovalis, Phlegmariurus mannii, Plantago princeps* var. *laxiflora, Platanthera holchila, Schiedea haleakalensis, Solanum incompletum, Cyanea copelandii* ssp. *haleakalaensis, Cyanea glabra, Cyanea hamatiflora* ssp. *hamatiflora, Bidens campylotheca* ssp. *pentamera, Calamagrostis expansa, Clermontia samuellii* ssp. *samuelli, Cyanea kunthiana, Geranium hanaense, Joinvillea ascendens* ssp. *ascendens, Ranunculus hawaiensis, Ranunculus mauiensis, Argyroxiphium virescens, Asplenium schizophyllum, Clermontia tuberculata, Cyanea pohaku, Dubautia platyphylla, Embelia pacifica, Eragrostis mauiensis, Hillebrandia sandwicensis, Lagenifera maviensis, Lobellia hypoleuca, Melicope haleakalae, Melicope hawaiensis, Rubus macraei, Sanicula sandwicensis, Schiedea implexa, Sicyos cucumerinus, Silene cryptopetala, Silene degenri, Stenogyne haliakalae, Streblus pendulinus, Strongylodon ruber, Tetramolopium lepidotum* ssp. *arbusculum, Thelypteris boydiae, Cyanea grimesiana, Phyllostegia bracteata, and Tetraplasandra oahuensis; and*
>
> Animals: *Lasiurus cinereus semotus, Branta sandvicensis, Hemignathus lucidus affinus, Loxops coccineus ochraceus, Palmeria dolei, Pseudonestor xanthorphrys, Psittirostra psittacea, Pterodorma phaeopygia sandwichensis, Asio flammeus sandwichensis, Lentipes concolor, Partulina dolei, Partulina porcellana, Perdicella carinella, Megalagrion pacificum, Neseis haleakalae, Pseudobroscus lentus, Proterhinus 72 spp., Melamprosops phaeosoma and Thyrocopa apatela.*

3.9.2 IMPACT ANALYSIS

The proposed airport improvements will not require the physical taking or use of publicly owned park lands, recreation areas or wildlife refuges. The Airport Access Roadway Project does not impact any DOT 4(f) land.

Kanaha Pond Wildlife Sanctuary: The present airport boundaries does encompass KPWS. This area does not contain any airport buildings or facilities, but lies under the approach surface for Runway 5-23. No work is planned to occur within the KPWS. The analysis of the noise contours for the proposed action versus the No-action alternative indicates that they are similar in size and shape as described in Section

3.2. Therefore, the noise impacts will not increase with the implementation of the Proposed Project There may be a brief period of overflights (zero days to two months) of KPWS for the construction of the strengthening overlay of Runway 2-20.

Prior to constructing the pipeline from Kahului Harbor to the Airport Bulk Fuel Storage Facility, additional environmental analysis will be completed. The environmental analysis will include assessing prudent and feasible alternatives to minimize the pipeline's effects on Kanaha Pond. One of those alternatives includes considering locations further from Kanaha Pond to avoid *constructive use* of Kanaha Pond that could result if the pipeline breaks, or leaks. If alternative locations are not prudent or feasible, mitigation measures, as discussed in Section 3.8.2, could be implemented to minimize impacts to Kanaha Pond.

Kanaha Beach Park: The proposed airport improvements includes the extension of the existing Kanaha Beach Park into airport property. This extension will add vehicle parking spaces and improved access to Kanaha Beach Park. Other improvements include infrastructure improvements such as water, sewer and fencing. The Kanaha Beach Park is within the existing airport noise exposure contours and its impacts are discussed in Section 3.2. The noise impacts will not increase and may decrease slightly due to the Proposed Project.

Haleakala National Park: There will be no direct impacts to or *use* of Haleakala National Park, its endangered or threatened species, and its ecosystems by the Proposed Project. However, the National Park staff is concerned about the continued impact of alien species on Haleakala National Park, and its native species and ecosystems.

Alien Species: Haleakala National Park, the island of Maui, and the State has been impacted and will continue to be impacted by "alien" (non-native) species. The introduction of harmful alien species into the State has been a problem since the first migration of Polynesians to Hawaii, and has increased due to increased air and ship travel and urbanization of the world, State, and Maui. The introduction of alien species range from "purposeful introductions" to "accidental introductions." Therefore, this issue has been recognized in this EIS as a statewide cumulative impact, and that Haleakala National Park, as the rest of the State, will continue to be impacted by alien species with or without the Proposed Project. This problem has been recognized by Federal, State and private organizations and has recently led to the formation of the Alien Species Action Plan and the subsequent organization, the "*Coordinating Group of Alien Pest Species*" (CGAPS) of which HDOT-AIR is a participating member. The National Park Service views the proposed airport improvements (especially the runway extension) as a project which may induce visitor growth and thereby, increase the risk of alien species by increasing the "introduction rate" of alien species and thereby, may increase the risk to Listed and Candidate species and Species of Concern. The National Park Service also believes that this increased risk may potentially impact the native species and ecosystems which are not listed but form a integral part of Haleakala National Park, and other parks, sanctuaries and reserves on Maui. A biological assessment has been prepared for the project which specifically addresses the potential of the Proposed Project to increase the "introduction rate" of alien species

to Maui and potential mitigation. This biological assessment is presented in Appendix U of this EIS, and summarized in Sections 3.11.3, 5.1.6 and 8.2.5.23. The biological assessment concluded that alien species introductions resulting from existing air and ship transportation will continue to have an impact on Maui. The National Park Services has expressed their concerns on this issue throughout the EIS process and their comments are reprinted in the Appendices and in the biological assessment. A "no jeopardy" biological opinion was issued on July 23, 1997 by the USFWS on the Proposed Project and is presented in Appendix U.

3.9.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Section 4(f) (DOT) Act analyses are required when the proposed improvements involve the use or taking of lands currently being used for park, recreation, wildlife, waterfowl, or historic purposes. Significant adverse effects would occur if the proposed improvements would result in "use" or "constructive use" of Section 4(f) lands. In addition, significant impacts would result if conflicts or incompatible use occurs with the KPWS or its endangered inhabitants, due to the Proposed Project. Insignificant effects would occur if the proposed improvements result in a continuation of existing conditions; and if the proposed improvements do not affect normal activity or the aesthetic value of the Section 4(f) lands.

Based on this criteria, there will be no significant adverse impacts to DOT 4(f) lands due to the Proposed Project. Table 3-34 summarizes the significance of the potential effects of the proposed improvements on DOT Section 4(f) lands within the project area. The potential direct impacts of the Proposed Project on the archaeological, historical and cultural features of the area are discussed in Section 3.10.

Kanaha Pond Wildlife Sanctuary: According to the overflight study (Appendix J), the overflights of KPWS that may occur during the construction activities at Runway 2-20 will be short-term and these constitute an insignificant impact[14].

Kanaha Beach Park: The Kanaha Beach Park Expansion will increase the public beach in the airport vicinity and increase shoreline access, thus creating a beneficial impact. There will be insignificant impacts to Kanaha Beach Park. There will be no adverse noise impacts on the Park.

Haleakala National Park: Due to the distance of Haleakala National Park from Kahului Airport, there would be no impacts or insignificant impacts to the Park, its endangered or threatened species, and its ecosystems as a result of the project.

Alien Species: The incremental impact of the Proposed Project to the "introduction rate" of any alien species is insignificant, however, the alien species issue is considered a significant cumulative

[14] The USFWS has concurred with this finding of insignificant impact, in their letter of June 6, 1996 (Section 11, Reference 29).

impact, to Maui and the rest of the State. This issue is discussed in-detail in Sections 3.11.3, 5.1.6 and 8.2.5.23, Appendix Q and in the biological assessment in Appendix U.

Table 3-34
SIGNIFICANCE OF EFFECTS ON DOT SECTION 4(f) LANDS

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Publicly Owned Park Land (Haleakala National Park)	Taking of public park land	None
Recreation Areas (Kanaha Beach Park)	Taking of or altering recreation areas	Positive
Historic Sites	Taking of or altering historic areas	Insignificant
Wildlife Refuges (KPWS)	Alteration or incompatible uses	Insignificant

3.9.4 MITIGATION MEASURES

The Proposed Project will not result in any significant effects (*use*) on park lands, recreation areas and wildlife refuges; therefore, no mitigation measures are required. However, as the alien species issue is a significant cumulative impact, mitigation measures are proposed to reduce the "introduction rate" of any alien species, thereby reducing the risk of the establishment of a new alien species and minimizing harm. These mitigation measures are discussed in detail in the biological opinion (Appendix U) prepared for the Proposed Project and are discussed in Sections 3.11.3, 5.1.6 and 8.2.5.23 of the EIS. These mitigation measures were subject to detailed discussions and analysis by the Biological Assessment Technical Panel, which included the National Park Service, USFWS, DLNR, and other State and Federal agencies.

3.9.5 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The "introduction rate" of alien species is an existing statewide issue. It will continue to be an issue, as alien species have and will continue to impact the State's flora and fauna. This issue will continue to be a significant cumulative impact with or without the Proposed Project and is discussed in Section 5.0, Cumulative Impacts.

3.10 HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

3.10.1 EXISTING CONDITIONS

Kahului Airport and its surrounding environs have been the subjects of several archeological surveys. These surveys were reviewed as part of this EIS process. In addition, a new survey and cultural resources assessment were performed in late 1993 and early 1994. The results of this work are included as Appendix H to this EIS. Coordination with the State Historic Preservation Office has been performed in the 1992 State EIS (Section 11, Reference 9) and through the preparation period of the EIS. The following briefly summarizes the findings of the previous reports and the report prepared in connection with this EIS. The project area was divided into five subareas for the purposes of the archaeological and cultural resources investigations: (i) the airport proper; (ii) the coastal strip; (iii) the sugar fields inland and south of the airport; (iv) the developed area west of Kalialinui Gulch, excluding Kanaha Pond Wildlife Sanctuary; and (v) Kanaha Pond.

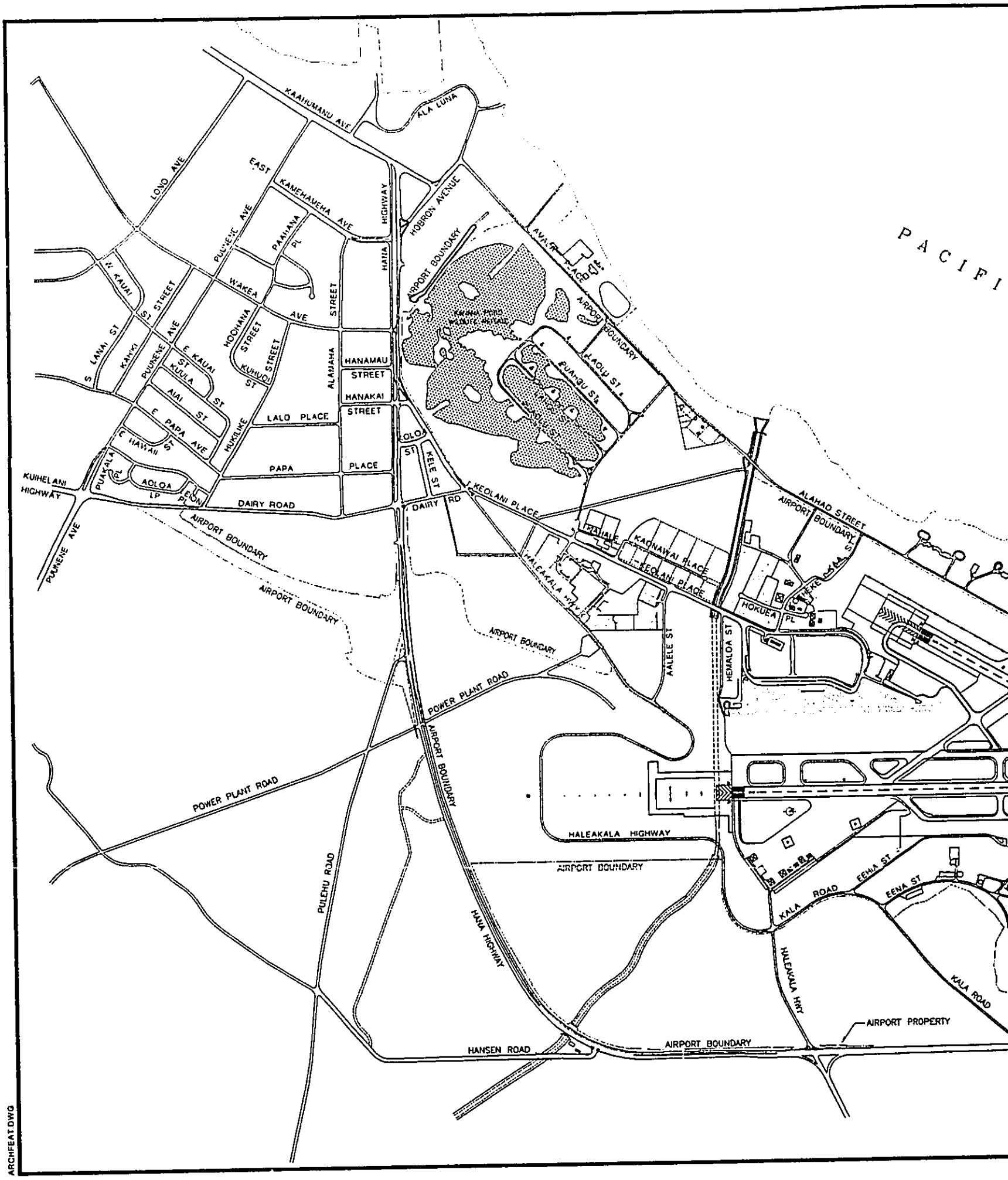
The entire project area has undergone extensive alteration during pre-contact and post-contact periods. There are five known archaeological sites within the entire study area: two buried cultural deposits; a burial/reburial area; a possible surface habitation site; and a fishpond with traditional origins. A summary of these sites is included on Figure 3-19 and Table 3-35.

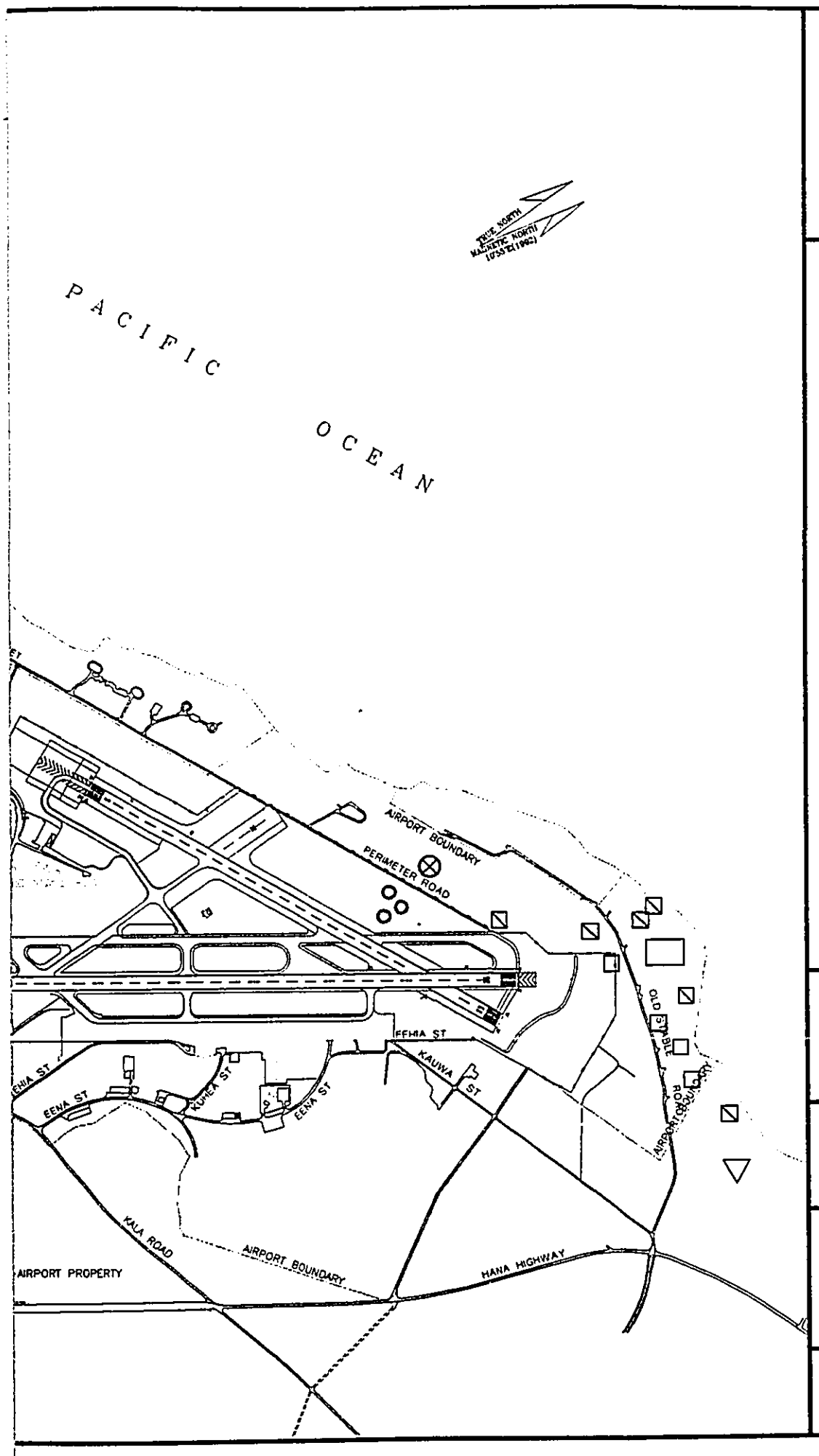
Table 3-35
ARCHAEOLOGICAL SITES AT KAHULUI AIRPORT

SITE No.	TYPE OF FEATURE
1777	Buried cultural deposit
1783	Kanaha and Mau'oni* fishponds
1798	Disturbed burial area Secondary reburial site Buried wall and marsh/pondfield deposits
1799	Scattered, unstacked small basalt boulders
2849	Buried horizon of traditional Hawaiian cultural material

* The exact boundaries of Mau'oni fishpond is unknown and presumed lost.

The field survey conducted for this archaeology study also identified the remains of World War II military activity related to Naval Air Station Kahului (NASKA). In 1996, a historical architectural survey was completed for NASKA for this EIS, to verify the earlier (1995) historical and archaeological


KAAHUMANU AVE
ALA LUNA
LONO AVE
EAST
KAMEHAMEHA AVE
HIGHWAY
HOBRON AVENUE
PUUNENE AVE
PAHANA PL
HAIIA
N KAUAI ST
WAKEA AVE
STREET
AIRPORT BOUNDARY
AIRPORT
S LANAI ST
KANOA
PUUNENE AVE
E KAUAI ST
KUULA ST
HOOHANA STREET
KUHIO STREET
ALAMAHA
HANAMAU STREET
HANAKAI STREET
AIAI ST
LALO PLACE
HUKILIKE
E PAPA AVE
HAWAII ST
OLOA ST
KELE ST
PUAKALA PL
AOLOA LP
PLUM PL
PAPA PLACE
KUIHELANI HIGHWAY
DAIRY ROAD
DAIRY RD
KEOLANI PLACE
ALAHAO STREET
PUUNENE AVE
AIRPORT BOUNDARY
KAONAWAI PLACE
HALEAKALA HWY
HOKUEA PL
AALELE ST
HEMALOA ST
POWER PLANT ROAD
PULEHU ROAD
HANA HIGHWAY
HALEAKALA HIGHWAY
EENA ST
KALA ROAD
HANSEN ROAD
AIRPORT PROPERTY
ARCHFEAT.DWG



DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

- 1777 SITE
- 1798 SITE
- 1799 SITE
- Kanaha Pond–1783 SITE
- 2849 SITE
- 2849 RADIOCARBON dates

0 500 1000 1500
GRAPHIC SCALE IN FEET

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

ARCHAEOLOGICAL FEATURES

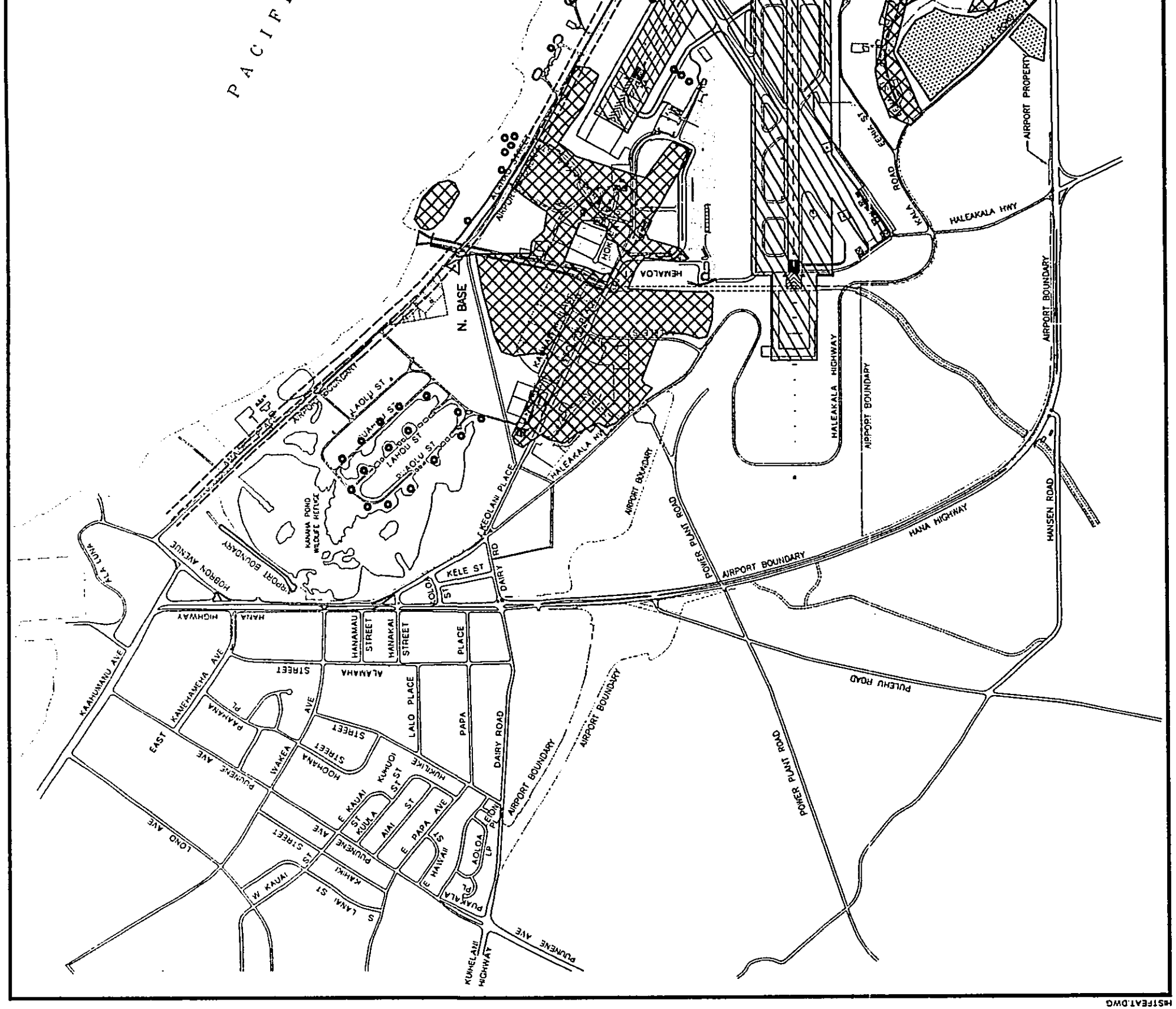
DATE	FIGURE
MARCH, 1996	3-19

survey included in Appendix H. The 1996 survey is presented in Appendix T. The survey concluded that NASKA played an important part in the World War II build-up of training facilities in Hawaii. However, the majority of the remains of this Naval Air Station are in such poor condition that the complex no longer meets the integrity criteria for National Register significance. The only features that retain sufficient architectural integrity and meet significance criteria A and C to warrant consideration of National Register eligibility as parts of a historic district are: (i) the ammunition magazines (buildings 103 to 117) in the Kanaha Pond Wildlife Refuge; (ii) the ammunition magazine (building 101) between the A&B Ditch and Keolani Place; and (iii) the enlisted men's beach pavilion (near building 244) that is no longer part of the Airport. Although only Building 411's (the Officer's Club) foundation remains, it is eligible to the National Register and may also meet the State of Hawaii criterion of significance based on cultural value to a particular ethnic group because of its use by Americans of Japanese Ancestry veterans after the war. The extent of the NASKA facilities are shown on Figure 3-20 and Figure 3-20A. Most of these facilities are now only concrete foundations, although several buildings remain intact. These structures contain no special architectural features and are not considered architecturally significant. Other possible historical sites are related to plantation activities and include at least four plantation villages and the remains of a railroad. Complete descriptions of these features are provided in Appendix H and T.

3.10.2 IMPACT ANALYSIS

Archaeological, cultural and historical sites that may be affected by the proposed Kahului Airport improvements are summarized in Table 3-36. The proposed Kahului Airport improvements will require some ground alteration that may affect subsurface archaeological sites and features. Given the ground alterations (including blasting), that have already taken place within the airport area proper, it is not likely that extensive archaeological deposits remain intact. The extension of Runway 2-20 or the Airport Access Roadway Project is not expected to have any significant impact on archaeological resources because most of this area was extensively altered decades ago by repeated plowing for sugarcane cultivation. Construction of a parallel runway (Runway 2R-20L) might have an impact on possible historical remains and buried cultural deposits. Near surface deposits have probably been disturbed by the existing agricultural use of this area. The construction of the transient apron may potentially impact a burial area. However, the transient apron has been relocated and reduced in size upon consultation with the State Historic Preservation Officer. A Preservation Plan for Site 1798 is presented in Appendix T.

Within the coastal strip, it is possible that subsurface burials or other cultural deposits will be found during construction of Phase 2 activities. Similarly, there are World War II remains of NASKA that will be affected by the proposed airport improvements. However, the emergency roadway has been relocated to the existing gravel roadway along the Airport's perimeter fence and will miss the former Officer's Club. Building 101 neighbors the proposed Phase III expansion of the ground transportation facility, and should be preserved and reused if possible. This building is situated near the gateway of the airport, and would make an excellent facility to interpret war-time activities at NASKA.


PACIFIC OCEAN
N. BASE
HENALOA
HALEAKALA HWY
KULA ROAD
GENIA ST
AIRPORT PROPERTY
AIRPORT BOUNDARY
HALEAKALA HIGHWAY
HANA HIGHWAY
HANSEN ROAD
PULEHU ROAD
POWER PLANT ROAD
DAIRY ROAD
KELE ST
KEOLANI PLACE
HOBRON AVENUE
KANAHA POND WILDLIFE REFUGE
KAAHUMANU AVE
KANEHAMEHA AVE
PUUNENE AVE
KUIHELANI HIGHWAY
LONO AVE
EAST
WAKEA
HOOHANA
STREET
ALAMAHA
PAPA
LALO PLACE
DAIRY ROAD
HUKILIKE
KUHUOI ST
E KAUAI ST
KUIKA ST
AMI ST
E PAPA AVE
E KAWAILI ST
AOLOA PL
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PLACE
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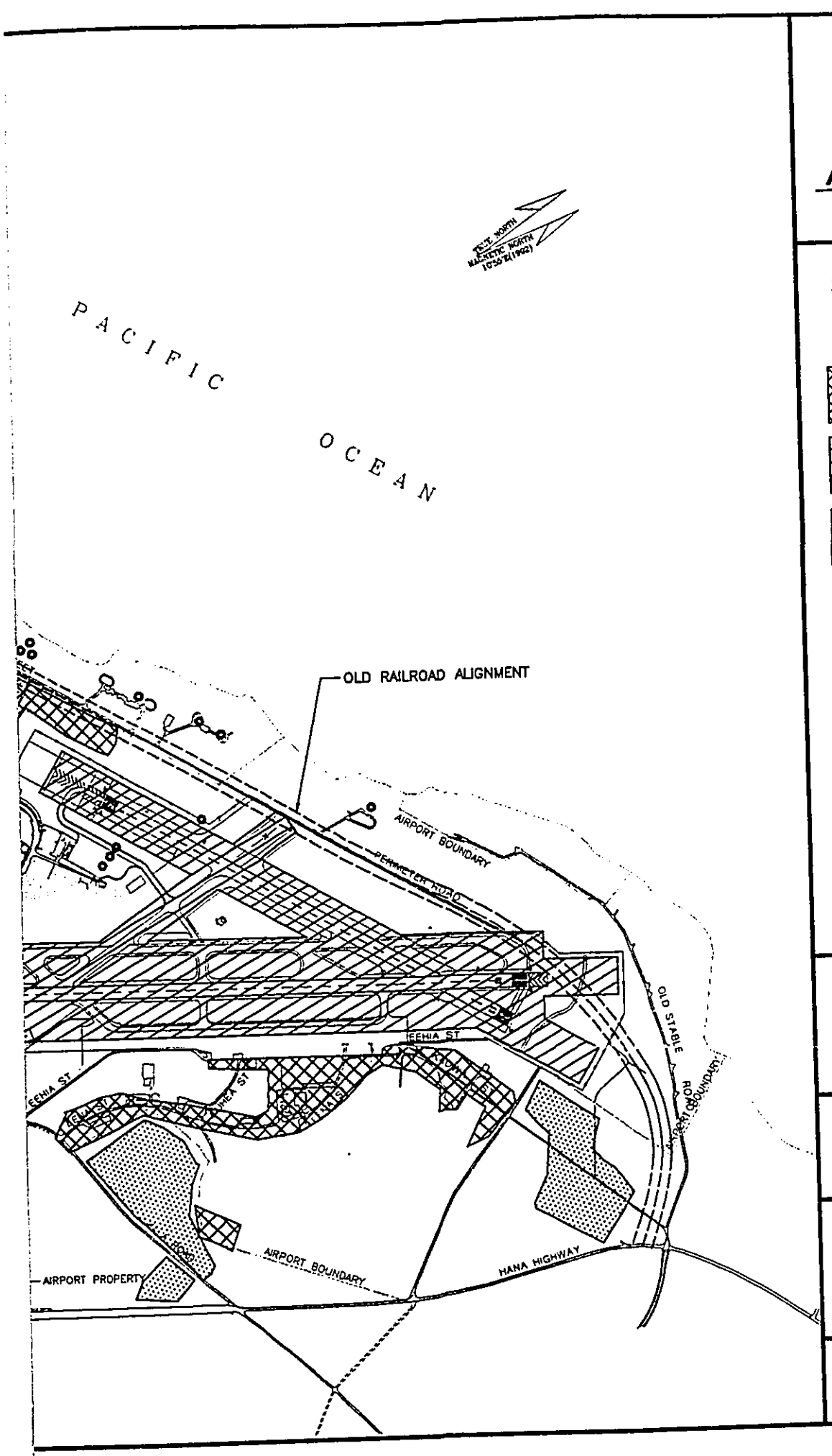

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LEGEND:

- NAVAL AIR STATION KAHULUI AIRPORT FACILITIES
- NAVAL AIR STATION KAHULUI AIRPORT FACILITIES
- NAVAL AIR STATION KAHULUI AIRPORT AIRFIELD
- PLANTATION CAMPS

0 500 1000 1500 2000
GRAPHIC SCALE IN FEET

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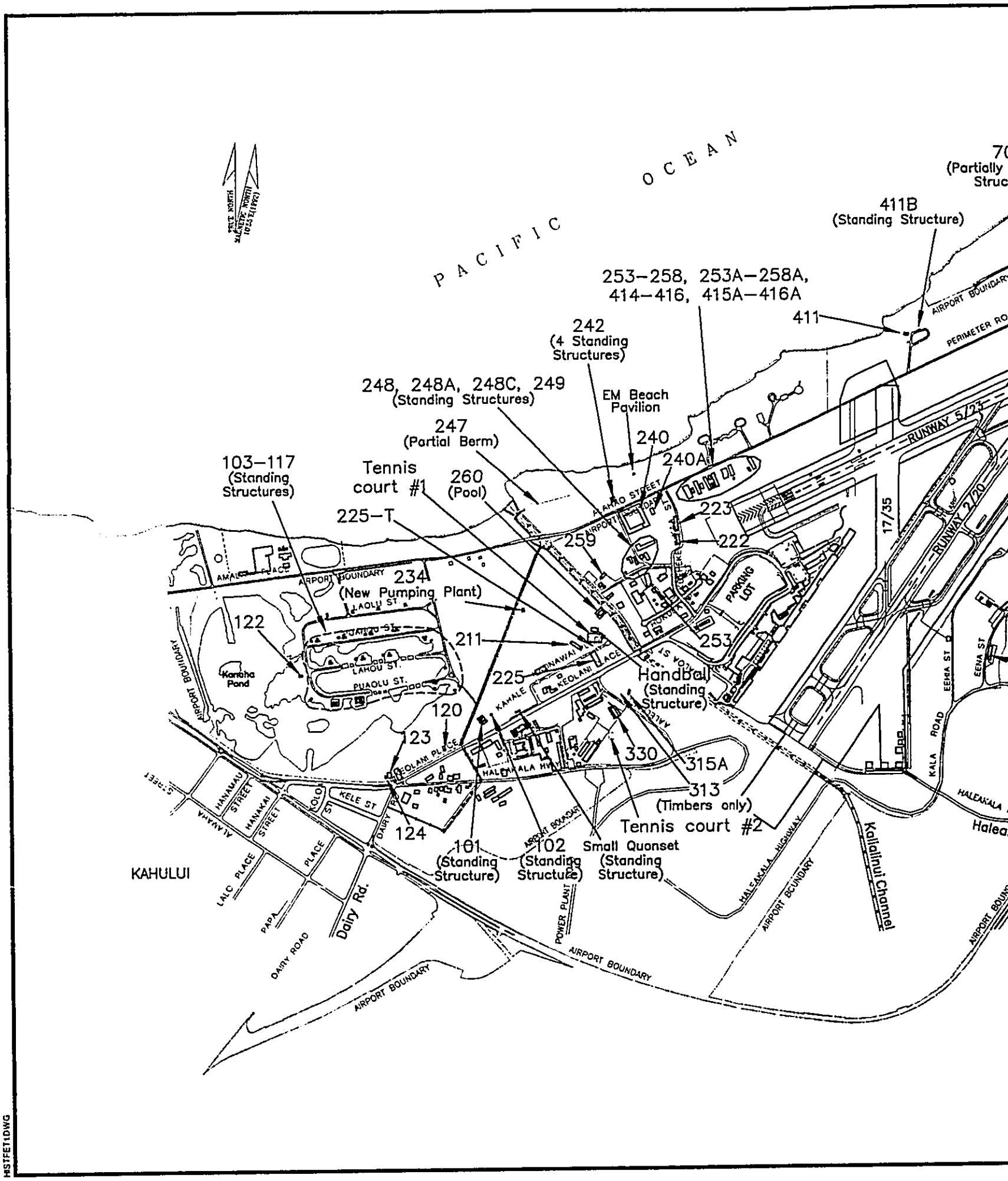
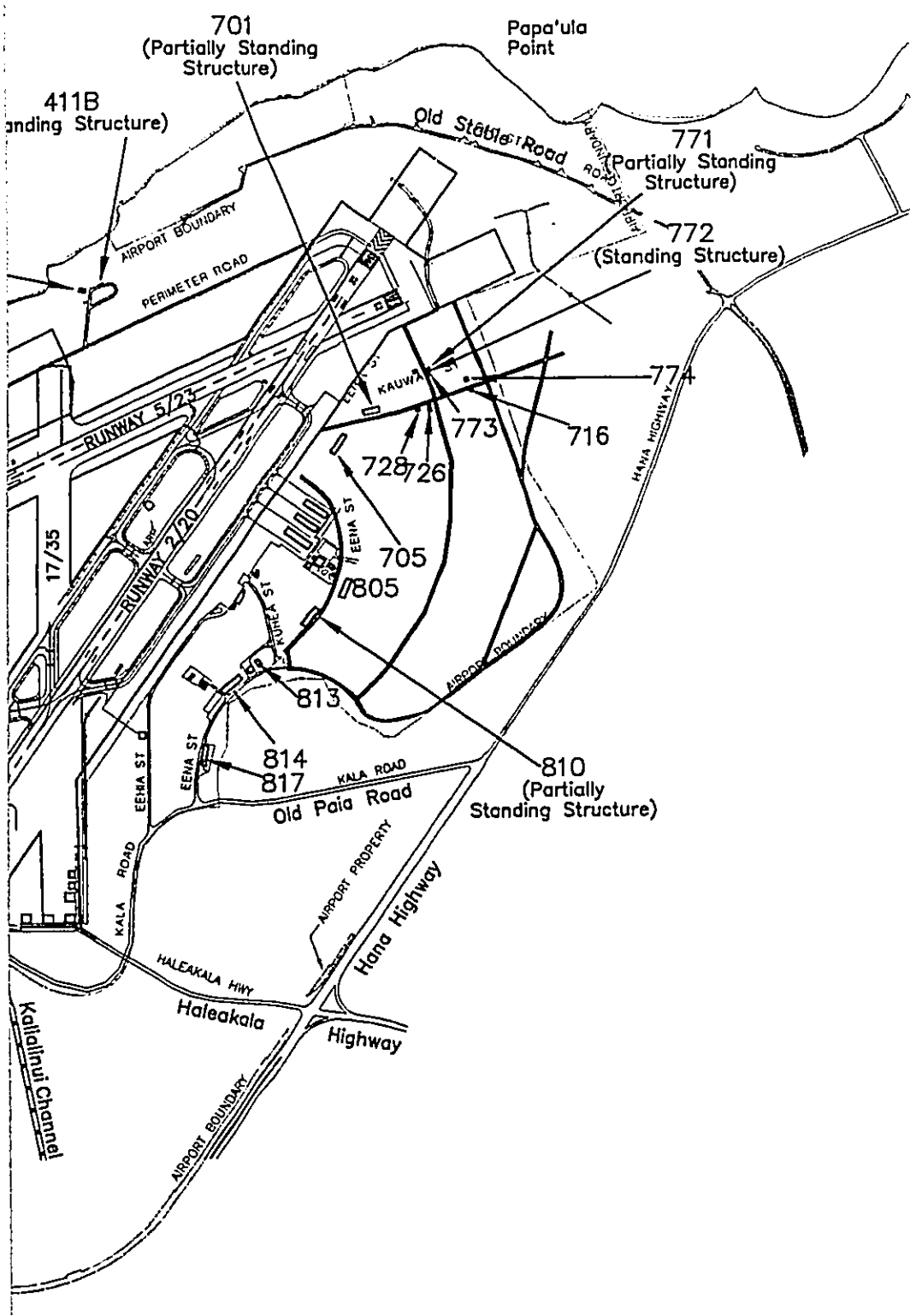
KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

HISTORICAL FEATURES

DATE	FIGURE
JANUARY, 1997	3-20


PACIFIC OCEAN
TRUE NORTH
MAGNETIC NORTH (2011)
411B
(Standing Structure)
253–258, 253A–258A,
414–416, 415A–416A
411
242
(4 Standing Structures)
248, 248A, 248C, 249
(Standing Structures)
EM Beach Pavilion
247
(Partial Berm)
240
240A
103–117
(Standing Structures)
Tennis court #1
260
(Pool)
225–T
259
223
222
234
(New Pumping Plant)
122
211
253
Handball
(Standing Structure)
Kanaha Pond
225
120
123
330
315A
313
(Timbers only)
Tennis court #2
124
101
(Standing Structure)
102
(Standing Structure)
Small Quonset
(Standing Structure)
KAHULUI
Dairy Rd.
Kalialinui Channel
AIRPORT BOUNDARY
RUNWAY 5/23
RUNWAY 2/20
17/35
PERIMETER ROAD
AMALA PLACE
LAHOU ST.
PUAOLU ST.
KEOLANI PLACE
KAHALE PLACE
HALEAKALA HWY
KOLOA ST
KELE ST
DAIRY RD
HANAMAU STREET
HANAKAI STREET
LALO PLACE
PAPA PLACE
DAIRY ROAD
POWER PLANT
HALEAKALA HIGHWAY
KALA ROAD
EEHA ST
PARKING LOT
HSTFE11DWG



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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

HISTORICAL FEATURES

DATE	FIGURE
JANUARY, 1997	3-20A

Table 3-36

POTENTIAL ARCHAEOLOGICAL SITES IMPACTED BY THE PROPOSED PROJECT

SITE No.	TYPE OF FEATURE	LEVEL OF SIGNIFICANCE*	PROPOSED TREATMENT
1777	Buried cultural deposit	Criterion D	Subsurface testing, data collection/recordation.
1798	Disturbed burial area	Criterion D & E	Avoid or data recovery and institute burial plan.
	Secondary reburial area	Criterion E	avoid or data recovery and institute burial plan
	Buried marsh deposits	Criterion D	additional testing and intensive data recovery
1799	Scattered, unstacked small basalt boulders	Criterion D	Data recovery.
2849	Buried horizon of traditional Hawaiian cultural material	Criterion D	Additional testing and intensive data recovery.
NASKA Sites (Approx. 30 sites)	Former NASKA Buildings and Facilities	Criterion A, C and D	Avoid if possible Bldg.101, 244 & 411; record architectural data, eligible for National Register listing for some sites.

Source : The Archaeology of Kahului Airport, Appendix H.

* Criterion per National Register of Historic Places (36 CFR 60) and Hawaii Register of Historic Places (Chapter 6E, HRS). Criteria definitions given below in Section 3.10.3.

Airport improvement activities within the sugar cane fields may also affect surface and subsurface cultural features and deposits, including former NASKA buildings and Plantation camps. Previous subsurface excavations have uncovered plantation era remains. However, the current agricultural cultivation of this area has probably extensively disturbed near surface remains and deposits. Within the developed area west of the airport, past alterations have been extensive. However, the remains of Naval Air Station buildings and possible subsurface Mau'oni Pond deposits may still exist.

The existing developments within the Airport's vicinity have probably impacted traditional Hawaiian subsistence lifestyle and shoreline access. The Proposed Project will not disturb any new areas which have not already been disturbed nor will it further limit shoreline access. The Kanaha Beach Park improvements will increase public access to the shoreline. Potential direct impacts on flora and fauna are discussed in other Sections of this EIS.

The proposed airport improvements do not include any actions within Kanaha Pond. Therefore, the proposed improvements will not affect possible surface or subsurface historical or cultural features in the pond area.

3.10.3 SIGNIFICANCE CRITERIA AND ANALYSIS

The National Environmental Policy Act of 1969 (NEPA), National Historic Preservation Act and other Federal and State statutes as applicable, require the consideration of the preservation of important historic, cultural, and natural aspects of our national heritage. Based on the National Historic Preservation Act, an action is considered to have a significant impact if it: (i) may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places; or (ii) may cause loss or destruction of significant scientific, cultural, or historical resources. There are four general significance criteria defined by the National Register of Historic Places (36 CFR 60):

"A" Be associated with events that have made an important contribution to the broad patterns of our history;

"B" Be associated with the lives of persons important in our past;

"C" Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value; and

"D" Have yielded or be likely to yield information important for research on prehistory or history.

The State of Hawaii [Chapter 6E, HRS and Section 13-146-5 (b) of Title 13, Subtitle b, Chapters 146-154 (draft May 1989)], adds one further significance criterion:

"E" Have traditional cultural value to an ethnic group of the State.

The impacts of the proposed Kahului Airport improvements have been evaluated based on the "significance" criteria listed above.

Based on the archaeological surveys and determination analyses performed for this EIS, and based the evaluation criteria listed above, the Runway 2-20 extension and the other Proposed Projects in

Phase 1 will not have significant impacts on the archaeological, cultural and historical features. Table 3-37 summarizes the significance of the potential effects of the proposed improvements on the archaeological, cultural and historical features of the project area.

There is a potential for significant impacts on archaeological features, especially buried cultural deposits, depending on the amount of subsurface excavation needed on the East Ramp improvements and the Kanaha Beach Park Improvements in Phase 2 of the Proposed Project. The Proposed Project may demolish certain NASKA facilities in the area, but will not impact those sites which are eligible for listing on the National Register. The new alignment of the Alahao Street/Old Stable Road connection will follow the existing gravel roadway and therefore will not impact the NASKA buildings 244 (Beach Club) and 411 (Officer's Club).

Table 3-37
SIGNIFICANCE OF EFFECTS ON ARCHAEOLOGICAL, CULTURAL AND HISTORICAL FEATURES

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
A. Important Historical/ Cultural Events	Removal or destruction of NASKA features	Insignificant (None)
B. Important Persons	Removal or destruction of features	Not Applicable
C. Distinctive Work	Removal or destruction of features	Not Applicable
D. Important Information	Removal or destruction of features	Potentially Significant
E. Cultural Value	Removal or destruction of features or burials	Potentially Significant

The Phase 3 improvements, such as the expanded runway safety areas for Runway 5-23[15], the extension of the Runway 5-23 parallel taxiway, construction of the perimeter road and fencing may disturb subsurface deposits.

[15] There is no work planned for the Runway Safety Area at the Runway 20 end, as it currently meets FAA requirements.

The transient apron, fuel pipeline from west of Kalialinui Gulch and the parallel runway and associated facilities which occur in Phase 3 of this project may impact significant archaeological features. These impacts will be assessed in future environmental documents for these projects.

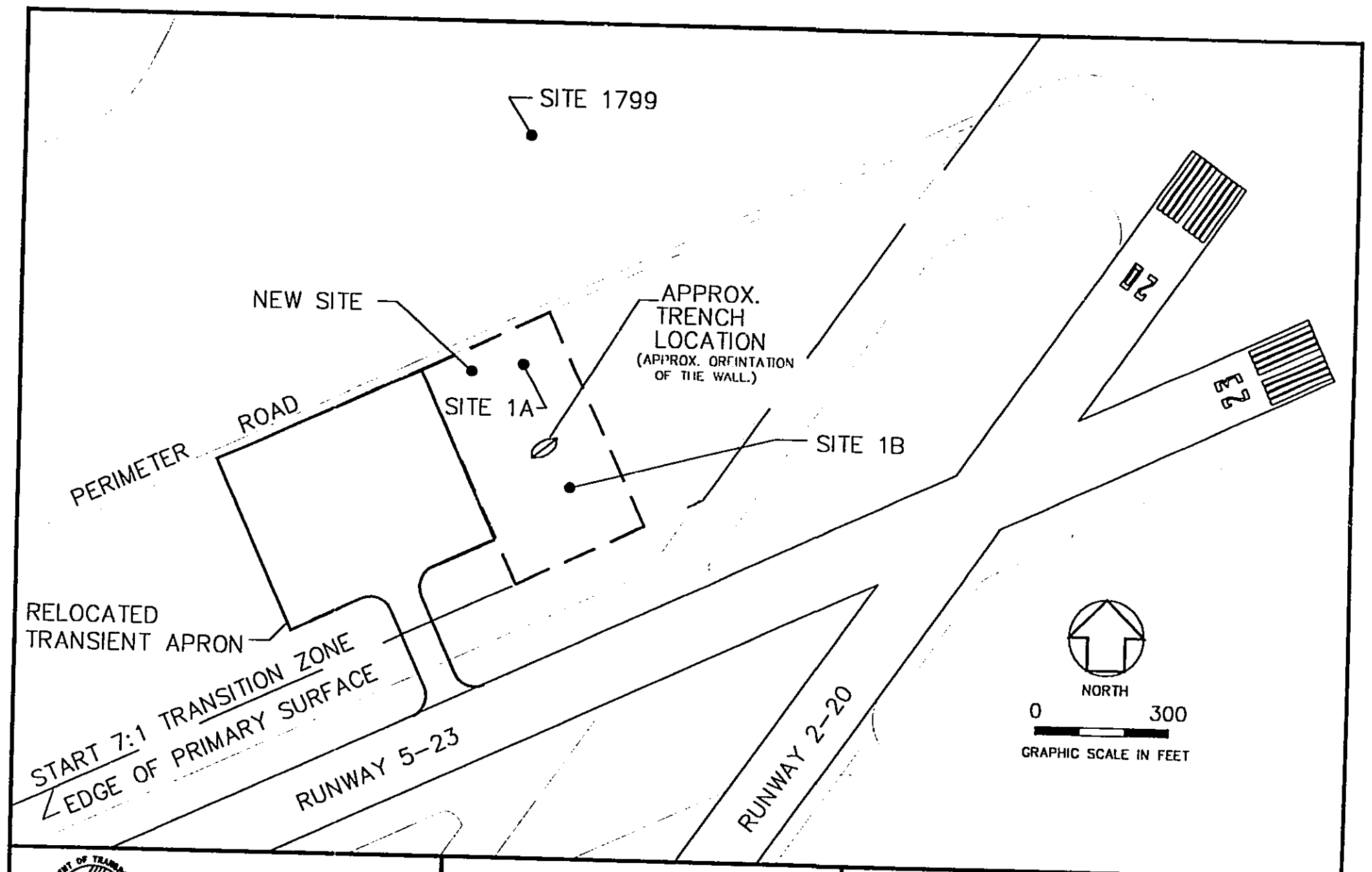
With regard to architectural impacts, none are anticipated. The buildings and structures to be affected by the proposed improvements are not architecturally significant. Building 101 neighbors the proposed Phase III expansion of the ground transportation facility and no impact from the Proposed Project is anticipated at this time. There would be an insignificant impact to cultural resources, such as subsistence lifestyles and shoreline access.

3.10.4 MITIGATION MEASURES

As shown in Table 3-36, additional data recovery and recordation will be performed for all sites and, if possible, burials will be avoided and/or a burial plan instituted. Former NASKA sites will be preserved if possible. The new alignment of the Alahao Street/Old Stable Road connection will follow the existing gravel roadway and thereby avoid the NASKA sites.

Monitoring by a professional archaeologist(s) will occur during construction activities to minimize and/or eliminate potential adverse impacts to the archaeological, cultural and historic sites and features within the proposed airport improvement areas. Should construction activities uncover or otherwise encounter any artifacts indicating an important historical, archaeological or cultural site, the project archaeologist will be called to investigate. If the archaeologist determines that the site in question is significant as defined by the criteria set forth in subsection 3.10.3, above, appropriate steps will be taken to minimize the disturbance of the site or loss of data. Also, as indicated in Appendices H and T, significant sites will undergo additional surface and subsurface testing and data recovery as appropriate prior to construction activities. If possible, burials will be avoided and/or, if necessary, a burial treatment plan, approved by the Maui County Burial Council, will be instituted. HDOT-AIR will investigate possible relocation of the transient aircraft apron to avoid impacting the burials sites, prior to construction. In addition, a Preservation Plan for Site 1798 has been submitted and approved by the State of Hawaii, Historic Preservation Division (SHPD) and the Maui/Lanai Burial Council. The Preservation Plan is presented in Appendix T. The Preservation Area is shown on Figure 3-21A and provides a 200 foot setback to the west boundary and a 100 foot setback to the east boundary. The preservation area is bounded by the Airport Boundary fence to the north and the Runway 5-23 primary surface to the south. A low berm will be constructed to the south (between Runway 5-23 and Site 1798 to divert surface runoff away from the Site. In addition, the Preservation Plan calls for a 400 foot transitional buffer zone around the preservation area. Within this transitional buffer zone, any ground-disturbing activities will require monitoring by a professional archaeologist.

A Programmatic Agreement was prepared by the FAA in coordination with the Hawaii State Historic Preservation Officer, and in consultation with the Advisory Council on Historic Preservation, Hawaii Department of Transportation, Maui/Lanai Islands Burial Council, Office of Hawaiian Affairs, and Hui



Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT	SITE 1798 PRESERVATION AREA	FIGURE 3-21A

Malama I Na Kupuna O Hawaii Nei. The Programmatic Agreement ensures that: (i) site 1798 be preserved; and (ii) future inventory surveys and testing, as appropriate, be conducted prior to implementing those projects in Phases 2 and 3. The Programmatic Agreement is presented in Appendix T.

No NASKA sites which have been considered for preservation will be impacted under the Proposed Project. At this time, Building 101 is not expected to be impacted, however, if the preservation of Building 101 is not possible, the building should be documented according to Historic American Building survey standards. There will be no impact on the NASKA sites due to the realignment of the emergency roadway (Alahao Street/Old Stable Road connection) and no impact to those sites situated in KPWS.

3.10.5 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Potential effects on the archaeological, cultural and historic sites after implementation of the above listed mitigation measures will be negligible or insignificant.

3.11 BIOTIC COMMUNITIES

3.11.1 TERRESTRIAL FLORA

3.11.1.1 Existing Conditions

Botanical surveys of the Kahului Airport area were conducted in 1981 and 1990. For this EIS, these previous surveys were reviewed and additional surveys were conducted in April and May 1994, and March 1995 (Appendix I). The findings of the recent surveys are summarized below. There are six vegetation zones within the proposed Kahului Airport improvements area: (i) wetlands; (ii) cane field/ruderal borders; (iii) koa haole scrub/mixed understory; (iv) open grassland; (v) kiawe/mixed understory; and (vi) wind-sheared dune vegetation (Figure 3-21).

WETLANDS. Existing conditions information relative to wetlands is provided below in Section 3.12. In general, the wetland vegetative zone within the airport boundaries is relatively small and ephemeral. The wetland areas meet U.S. Army Corps of Engineers definition criteria.

CANE FIELD/RUDERAL BORDERS. Approximately 540 acres of the Kahului Airport area are presently used for sugar cane (*Saccharum officinarum* L.) cultivation. The fields are monotypic; and the margins along the cane fields and haul roads support varied ruderal (weed) species. The yellow flowered Mexican poppy (*Argemone mexicana* L.), *Crassocephalum crepidioides* (Benth.) S. Moore, Natal redtop (*Rhynchelytrum repens* C.E. Hubb), *Chloris barbata* Swartz, and Guinea grass (*Panicum maximum* Jacq.) are found throughout the area or form fringing borders along the cane fields. Also, wild tobacco (*Nicotiana glauca* R.C. Graham), Chinese violets (*Asystasia gangetica* (L.) T. Anders.) and yellow golden crown beard (*Verbesina encelioides* Cav.) are common around the fields. Along Old Stable Road (Spreckelsville Beach Road) the ruderal border varies from one hundred to one hundred thirty feet (thirty to

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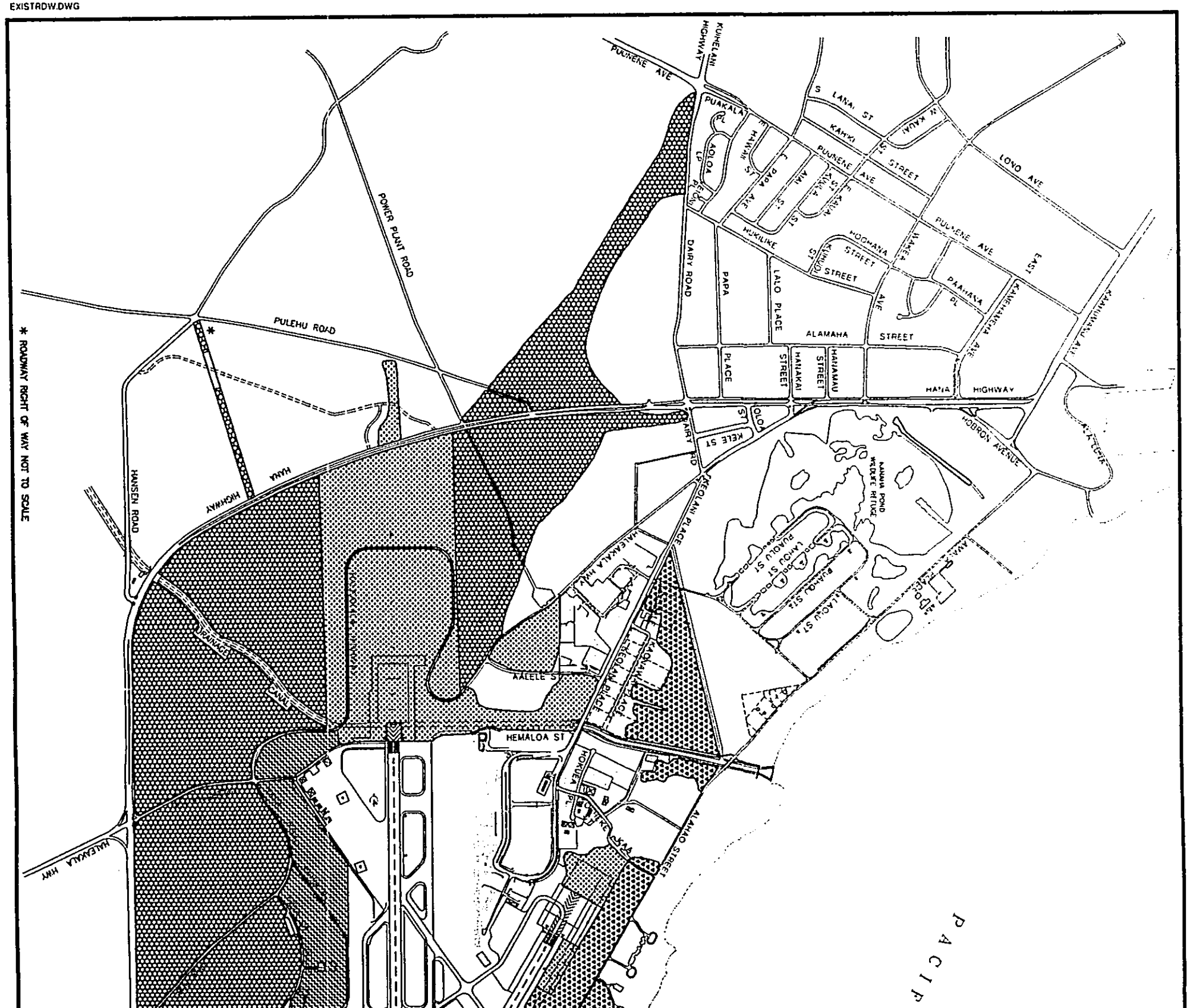

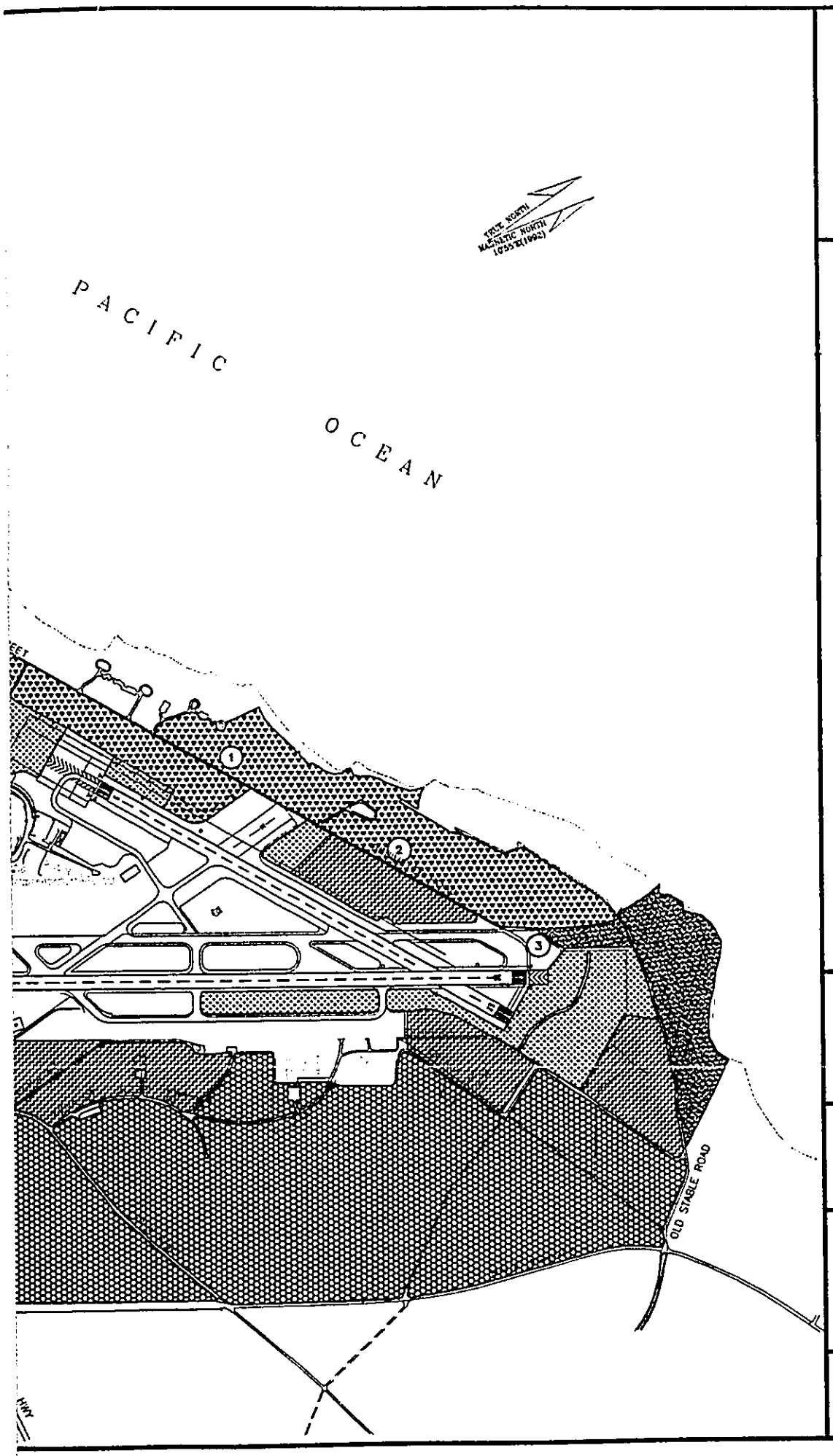

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND:

- WIND SHEARED DUNE VEGETATION
- KEAWE/MIXED UNDERSTORY
- OPEN GRASSLAND
- KOA HAOLE SCRUB/ MIXED UNDERSTORY
- CANE FIELDS/RUDERAL BORDERS
- ① ② ③ LOCATION OF WETLANDS (NOT ACTUAL SIZE)

0 1000 2000
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

VEGETATION MAP

DATE	FIGURE
JANUARY, 1997	3-21

forty meters) across. Here koa haole (*Leucaena leucococephala*) reaches thirty feet (ten meters) in height with a dense understory of elephant grass (*Pennisetum purpureum* Schumach.) and other weedy species.

Along Kala Road and Haleakala Highway, the two paved roads which traverse the cane fields/ruderal borders, trees have been planted for landscape purposes. Along Kala Road, the trees are badly wind sheared and include monkey pod (*Samanea saman* (Jacq.) Merr.), Kassod (*Cassia siamea* Lam.), earpod (*Enterolobium cyclocarpum* (Jacq.) Griseb.), and kiawe (*Prosopis pallida* (Humb. & Bonpl. ex Willd.) Kunth). These trees have reached heights of forty-five to fifty-five feet (fourteen to sixteen meters). An understory of purple bougainvillea vines were planted on the southeastern shoulder of Kala Road; the vines are now ten to sixteen feet (three to five meters) in height. Along Haleakala Highway, near Hana Highway, there are four or five monkeypod trees and one silk oak tree (*Grevillea robusta* A. Cunn), both of which are forty to sixty feet (twelve to eighteen meters) in height and badly wind sheared.

The irrigation ditches which traverse the cane field between Haleakala Highway and northwest of Hana Highway are filled with dense stands of barnyard grass (*Echinochloa crus-galli* (L.) Beauv.), and are fringed with a variety of other grasses and forbs. Along the large unlined drainage ditch within the cane field, it is common to find wild tobacco, neem trees (*Melia azedarach* L.), and koa haole shrubs.

KOA HAOLE SCRUB/MIXED UNDERSTORY. There are several places within the Kahului Airport area where the Koa Haole/Mixed Understory exists (Figure 3-21). Along the southern edge of the site, between Kala Road and the airport perimeter fence, the koa haole has been burned. Regeneration of the burned plants is occurring. The weed community is also thriving. Buffel grass (*Cenchrus ciliaris* L.), Guinea grass, Natal redtop, pitted beard grass (*Bothriochloa pertusa* (L.) A. Camus) and beach wiregrass (*Dactyloctenium Aegyptium*) are the most abundant grasses. Leguminous weeds within the burned area include wild bean (*Macroptilium* spp.), rattle box (*Crotalaria* spp.), begger weed (*Desmodium*), virgate mimosa (*Desmanthus virgatus* Willd.) and burr clover (*Medicago polymorpha* L.). The Hawaiian medicinal plant, 'uhaloa (*Waltheria indica* L.), and other native species including pa'u-o-Hi'iaka (*Jacquemontia ovalifolia*), pohuehue (*Ipomea pes-caprae* (L.) R. Br.) and 'akulikuli (*Portulaca pilosa* L.) also persist in the burned area.

The koa haole at the northeastern end of the airport area, between the Airport and cane fields, is one to two meters high and has an understory of almost solid buffel grass. Between the perimeter fence and Runway 5-23, there is a large undeveloped area consisting of koa haole, a few kiawe and Christmas berry (*Schinus terebinthifolius* Raddi), Indian fleabane (*Pluchea indica*) and the native 'aheahea (*Chenopodium oahuense* (Meyen) Aellen) shrub. The ground layer is mixed grasses and at least two species of alena (*Boerhavia* spp.) and pa'u-o-Hi'iaka.

OPEN GRASSLAND. Open Grassland is defined as an area where more than 40 percent of the vegetation consists of grass species. This condition prevails in several Kahului Airport areas (Figure 3-21). The largest grassland extends from the perimeter fence to Hana Highway. Buffel grass,

guinea grass, love grass (*Eragrostis* spp.) and various species of chloris are common. Other grassland areas also exist at the end of Runway 2-20, at the western end of Runway 5-23 and near the control tower. Most of these areas are mowed regularly.

KIAWE/MIXED UNDERSTORY. The Kiawe/Mixed Understory vegetative zone is characterized by kiawe canopy trees and an understory of buffel grass, Indian fleabane, 'aheahea and Chinese violet. Makai (toward the ocean) or north of Alahao Street, the substrate consists of rolling sand dunes and the vegetation cover is more complex. Kiawe remains the primary canopy tree, but others, including ironwoods (*Casuarina equisetifolia* L.), date palm (*Phoenix dactylifera*), hau (*Hibiscus tiliaceus* L.), milo (*Thespesia populnea*), and Chinese banyan (*Ficus microcarpa* L. f.), can also be found. The shrub layer consists of koa haole, Christmas berry, species of *Pluchea* and 'aheahea plants. The ground layer consists of buffel grass, Guinea grass, California grass, Chinese violet and 'akulikuli (*Sesuvium portulacastrum* L.).

The Kiawe/Mixed Understory makai of Aaele Road includes wili wili haole (*Erythrina variegata* (L.) Merr.), castor bean (*Ricinus communis* L.) and wild tobacco. The ground layer consists of several weedy species including wild tomato (*Lycopersicon pimpinellifolium* (Jusl.) Mill.), apple of Peru (*Nicandra physaloides* (L.) Gaertn.), 'aheahea, balsam apple (*Momordica charantia* L.) and alena species.

WIND-SHEARED DUNE VEGETATION. The low sand dunes makai (north) of the beach road, from the Papa'ula Point houses to the southeastern boundary of the Airport, are covered by a dense mantle of wind-sheared vegetation. There are broad patches of naupaka kahakai (*Scaevola serica* Vahl.), tree heliotrope (*Tournefortia argentea* L. fil), Christmas berry, Spanish reed (*Aruda donax*), sea grape (*Coccoloba uvifera*), koa haole, beach vitex (*Vitex* spp.), 'aheahea, hau, beach morning glory, seashore rush (*Sporobolus virginicus*), buffalo grass (*Stenotaphrum secundatum* (l) Kunth), yellow oleander (*Cascabela thevetia* (L.) Lippold) and remnant landscape plantings around former house sites.

The Kahului Airport area does not contain any Category 1, Threatened or Endangered species of plants. Nor does the airport area contain any plant species which have been *proposed* as candidates on the Threatened or Endangered species list. Previous botanical surveys also reported no protected plant species in the airport area.

3.11.1.2 Impact Analysis

The botanical survey for this EIS was conducted during the spring months, making it possible so as to observe those annuals which only appear during the early growing season. Consequently, many annual species were sighted and the extent of the ephemeral wetlands was determined. A total of 166 plant species in 47 families were inventoried during the survey, of which 89 percent are introduced species. The remaining 11 percent are native to the Hawaiian Islands.

The proposed Kahului Airport improvements, *without the parallel runway*, will result in the loss of approximately 139 acres of Cane Field/Ruderal Border for the Airport Access Roadway Project and the relocated Runway 2-20 navigational and light aids. In addition, 30 acres of Koa Haole/Mixed Understory and 170 acres of Open Grassland vegetative zones will be disturbed. These areas have been affected by previous man-induced disturbances and similar vegetative zones occur throughout the Hawaiian Islands. There are no protected plant species in these vegetative zones.

The parallel runway and associated facilities will result in a loss of approximately 550 acres of Cane Field/Ruderal Border, and 80 acres of Koa Haole/Mixed Understory. The impact of the parallel runway will be addressed in a future environmental document.

3.11.1.3 Significance Criteria And Analysis

To determine whether the Proposed Project will result in significant impacts to the terrestrial flora of the project site, the following factors are considered: (i) the extent of removal of existing vegetation and/or establishment of new vegetation; (ii) effects on Threatened or Endangered species; and (iii) the listing or candidate listing of any site flora on the National or State Endangered or Threatened species lists. Significant impacts would include: complete removal of vegetation, failure to improve the vegetation on the project site, and the listing of site flora as Threatened or Endangered or candidate species. Insignificant impacts would include relocation and reuse of vegetation.

The proposed airport improvements are expected to result in insignificant impacts to the vegetation of the airport area because: (i) no vegetation categories will be completely removed; (ii) the majority (89 percent) of the plant species within the airport area are introduced species; (iii) there are no protected species (Threatened, Endangered or proposed for listing) within the proposed airport improvement areas; (iv) the vegetative zones to be altered occur throughout the Hawaiian Islands; and (v) landscaping/replanting of new facilities is proposed as part of the airport improvements. Table 3-38 summarizes the significance of the potential effects of the proposed improvements on the flora of the project area.

3.11.1.4 Mitigation Measures

The proposed improvements will have insignificant effects on the vegetation of the airport area, therefore, no mitigation is required. Nevertheless, to minimize environmental harm and to mitigate the loss of vegetation due to grading and/or new construction activities, new buildings will be landscaped utilizing native[16] and introduced species as well as drought tolerant species to reduce irrigation demands. The new and replanting of landscape plants will result in positive effects to the airport area vegetation.

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[16] The Airport Building Design Standards (1993) specify *"when and where possible, incorporate land plants indigenous to the island on which the project is to be built."* In addition, appropriate signage to identify the indigenous plants for public education purposes will be placed in pedestrian leisure walkway areas and gardens.

Table 3-38
SIGNIFICANCE OF EFFECTS ON TERRESTRIAL FLORA

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Removal of Vegetation	Extensive removal without replacement	Insignificant
Threatened or Endangered Species	Removal or destruction	None
Candidate Listing Species	Removal or destruction	None

3.11.2 FAUNA

3.11.2.1 Existing Conditions

Several feral bird and mammal surveys of the Kahului Airport area have been conducted since the early 1970's (Berger, 1972; Bruner, 1981; and Bruner, 1990). Beginning in April 1994, a quarterly faunal (bird and mammal) survey of the area was conducted specifically for this EIS. This survey included night observations at Kanaha Pond Wildlife Sanctuary (KPWS), examinations of the wetland habitats makai (north) of the Airport, and a census of shorebirds and water birds at KPWS. The following summarizes the results of the quarterly surveys conducted for this EIS.

Resident endemic (native) birds recorded at KPWS include the Hawaiian Stilt (*Himantopus mexicanus knudseni*) and the Hawaiian Coot (*Fulica americana alai*). Both of these species are considered Endangered. The Endangered Hawaiian Duck or Koloa (*Anas wyvilliana*) also were observed at Kanaha Pond. The Hawaiian Owl (Puco) (*Asio flammeus sandwichensis*) may occur in and around the airport and KPWS, but none was sighted during the quarterly surveys. Other bird species observed in the KPWS included a winter plummaged Semipalmated Plover (*Charadrius semipalmatus*) and feral Mallards (*Anas platyrhynchos*). It is postulated by the wildlife biologists that the feral Mallards and Hawaiian Duck (Koloa) are hybridizing. Migratory indigenous birds sighted during the quarterly surveys include: (i) the Pacific Golden Plover (*Pluvialis fulva*); (ii) the Ruddy Turnstone (*Arenaria interpres*) (iii) the Wandering Tattler (*Heteroscelus incanus*); and (iv) the Sanderling (*Calidris alba*). Migratory waterfowl include the Northern Pintail (*Anas acuta*) and Northern Shoveler (*Anas clypeata*). The only *resident* indigenous species sighted during the quarterly surveys was the Black-crowned Night Heron (*Nycticorax nycticorax*). A total of 14 species of exotic (introduced) birds were recorded within the airport area during the 1990 bird surveys. These species and their relative abundance are listed in Table 3-39. Table 3-40 indicates the species and numbers of individuals sighted during summer semiannual waterbird surveys by DLNR-DOFAW, and the 1994 quarterly surveys of Kanaha Pond conducted specifically for this EIS.

The numbers of waterbirds and shorebirds recorded during the quarterly surveys indicate there has been a decline in abundance of most species. This trend is particularly noticeable in migratory ducks and has been noted by the State Department of Land and Natural Resources, Division of Forestry and Wildlife in annual census since 1988.

Table 3-39
EXOTIC SPECIES OF BIRDS RECORDED AT KAHULUI AIRPORT IN 1990

COMMON NAME	SCIENTIFIC NAME	RELATIVE ABUNDANCE*
Ring-necked Pheasant	*Phasianus colchicus*	R = 1
Black Francolin	*Francolinus francolinus*	R = 1
Gray Francolin	*Francolinus pondicerianus*	C = 5
Cattle Egret	*Bulbulcus ibis*	C = 7
Spotted Dove	*Steptopelia chinensis*	C = 8
Zebra Dove	*Geopelia striata*	A = 15
Rock Dove	*Columba livia*	R = 20
Common Myna	*Acridotheres tristis*	A =15
Northern Cardinal	*Cardinalis cardinalis*	C = 6
Red-crested Cardinal	*Cardinalis coronata*	U = 4
Japanese White-eye	*Zosterops japonica*	A = 11
Nutmeg Mannikin	*Lonchura punctulata*	A = 12
House Finch	*Carpodacus mexicanus*	A = 14
House Sparrow	*Passer domesticus*	A = 13

* Relative abundance = number of times observed during survey or frequency on eight minute counts in appropriate habitat.
Source: Feral Bird and Mammal Survey, Kahului Airport, Appendix J.
A = abundant (average 10+) number which follows is average of data from all surveys., C = common (average 5-10), U = uncommon (average less than 5), R = recorded (seen or heard at times other than on 8 minute counts. Number which follows is the total individuals seen or heard).

Birds such as the Black-crowned Night Heron, Mallards, Koloa, Hawaiian Stilt, Northern Shoveler and Pacific Golden-Plovers (*Pluvialis fulva*) have been recorded in the wetlands on airport property and on the airport proper. On the airport proper, records from the Department of Agriculture, Animal and Plant Health Service, Animal Damage Control Division (ADC), show that the Hawaiian Stilt and the Pacific Golden-Plovers are frequent visitors to the Airport. Since 1993, Airport staff and ADC personnel have found Hawaiian Stilts carcasses on the airfield. At present, the Hawaiian Stilts frequent the airfield area during the wet periods to feed in low areas which pond with rain runoff (Section 11, Reference 20).

Table 3-40
1994 KANAHA POND CENSUS DATA

CENSUS YEAR[1]	SPECIES/NUMBER OF INDIVIDUALS SIGHTED											
	BLACK-NECKED STILT	AMERICAN COOT	KOLOA (hybrid)	NIGHT HERON	PACIFIC GOLDEN PLOVER	RUDDY TURNSTONE	SANDERLING	WANDERING TATTLER	NORTHERN PINTAIL	NORTHERN SHOVELER	OTHER DUCKS	CATTLE EGRET
1978	180	48	-	89	148	52	24	4	136	237	-	-
1979	246	57	-	118	239	131	19	11	107	257	-	-
1985	240	47	-	106	26	29	8	2	7	55	-	424
1986	260	61	-	42	36	12	14	2	29	216	-	-
1989	75	8	-	29	13	-	-	-	-	-	8	-
1990	108	47	-	58	18	2	13	1	-	20	10	4
1991	168	33	-	17	59	8	4	3	-	-	31	2
1992	102	17	-	12	9	2	-	-	8	-	4	-
'993	80	13	-	11	33	6	4	2	-	-	10	1
1994[2]	60	13	14	17	20	6	6	2	-	36	2	7
1994[3]	69	8	10	22	-	-	-	3	1	-	5	4
1994[4]	41	5	11	8	21	13	9	1	2	52	-	2

Source: Feral Bird and Mammal Survey, Kahului Airport, Appendix J.

[1] 1978 to 1993 data are total numbers of individuals from DLNR-DOFAW semiannual waterbird surveys summer data.
[2] April 17, 1994 data by Bruner.
[3] July 13, 1994 data by Bruner.
[4] November 25-27, 1994 data by Bruner.

To reduce the number of Hawaiian Stilts on the airfield and minimize the interaction between the aircraft and Hawaiian Stilt, ADC has acquired a taking permit to haze the Stilts from the airport. In addition, HDOT-AIR is undertaking operational and maintenance measures to lessen the attraction of the airfield to the Hawaiian Stilt. These measures will deter and reduce the feeding attraction of the ponding areas on the airfield to the Stilt, and include, but are not limited to, drainage improvements and plantings. This effort is being coordinated with the USFWS (Section 11.0, Reference 29).

The ADC at the request of HDOT-AIR has assisted with the management of wildlife at Kahului Airport and implements the Kahului Airport Wildlife Management Plan. The current program objectives are to protect human safety and property by reducing bird strikes through an appropriate combination of management methods. The ADC operations provides technical assistance, along with lethal and nonlethal control methods through an Integrated Wildlife Hazard Management Plan. The Integrated Wildlife Hazard Management Plan primarily includes the daytime operational bird and occasional mammal control measures, occasional night operations, and technical assistance recommendations for habitat modifications in an integrated manner. Currently, an ADC biological technician is present at the airport each day to assist the Airport Manager in implementing the Wildlife Hazard Management Plan.

Egrets are monitored at Kanaha Pond Wildlife Sanctuary and any that are found to be roosting are chased out of the sanctuary. The plover flocks and Hawaiian Stilts are chased off the runways at the airport. Egrets are periodically shot along flight routes to reduce the population at Kealia Pond which is now the primary egret roost on the island of Maui. Feral cats and other mammals such as feral dogs and mongoose have been trapped infrequently and could potentially be removed from Airport property. All actions are conducted primarily during daylight hours with occasional night-time operations being performed as necessary to address nocturnal bird activities. In 1997, the ADC completed an Environmental Assessment (EA) for the "Integrated Wildlife Management Program at Kahului Airport" (Section 11.0, Reference 30), and a Finding of No Significant Impact (FONSI) was rendered on May 22, 1997. The FONSI states: *"ADC has determined that the need for action and those issues identified in the March 1997 environmental assessment are best addressed by continuing the existing program."* The issues in the EA were coordinated with the USFWS, HDOT-AIR, and the State of Hawaii, DLNR, Division of Forestry and Wildlife, and addresses the current "Integrated Wildlife Management Program."[17]

The Dark-rumped Petrel (*Pterodroma phaeopygia sandwichensis*) is a pelagic endangered seabird which nests at Haleakala National Park. It is possible that Dark-Rumped Petrels may overfly Kahului Airport while flying to and from their nests. It is also known that the Dark-rumped Petrels may be disturbed or disoriented by bright lights while flying at night. However, this is unlikely as their nest are usually above the 7,200 foot elevation. Within the past six years, the ADC has not found any indications

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[17] The 1992 Programmatic Biological Opinion on the ADC program by the USFWS, and the recent consultation with USFWS and DLNR (1996) on the Kahului Proposal have determined that program activities would not affect the Federally Listed Hawaiian Stilt (Section 11, Reference 30).

that the Dark-rumped Petrel has been found on the Airport or has been involved in a bird-strike incident at Kahului Airport.

The ADC found two Wedge-Tailed Shearwaters on Kahului Airport last year. One was found dead and the cause of death was not known, and the other was alive, turned over to DLNR, and later released.

The feral mammals inhabiting or frequenting the airport area include feral cats (*Felis domesticus*) and the Small Indian Mongoose (*Herpestes auropunctatus*). It is also likely that rats and mice inhabit the area. None of these feral mammals are protected species under the Endangered Species Act.

The Endangered Hawaiian Hoary Bat (*Lasiurus cinerus semotus*) has not been observed in the airport area. Recently, it has been proposed that the Blackburn's Sphinx Moth be listed on the Federal Endangered Species list. The moth is the largest native insect and inhabits the Airport environs. The USFWS does not believe that the Proposed Project will present the likelihood of jeopardizing the continued existence of the Blackburn's Sphinx Moth (Section 11.0, Reference 35).

3.11.2.2 Impact Analysis

As noted previously, the proposed Kahului Airport improvements will result in the loss of Cane Field/Ruderal Border, Koa Haole/Mixed Understory and some Open Grassland vegetative zones. These vegetative zones are primarily habitat for introduced bird species.

During the scoping process, some commentators expressed concern that the overflight of Kanaha Pond by the large interisland aircraft during the closure of Runway 2-20 for construction would disturb the Endangered species, namely the Hawaiian Stilt and Hawaiian Coot. At this time, the nighttime (10:00 to 7:00) closure of Runway 2-20 for the lengthening and strengthening project is expected to last from zero nights to two months, depending on the project's design and construction procedures. Therefore, the nighttime interisland cargo flights, and the early morning interisland arrivals, must use Runway 5-23 and overfly Kanaha Pond Wildlife Sanctuary.

Due to this potential short term impact, an observation study was performed with the assistance of Aloha and Hawaiian Airlines and their pilots to assess what, if any, effects on the Hawaiian Stilt and Coot these overflights may have. The methodology and conclusions of this study are presented in Appendix J. In summary, this study showed no correlation between the Hawaiian Stilt's responses and aircraft overflight. In addition, no shorebirds or water birds were startled by the aircraft activity. The study also looked at other relevant studies which showed that certain species will adapt to loud noises including aircraft overflights.

The Proposed Project will be installing additional airfield and street lighting as part of the Proposed Project. These lights will be similar to those which are currently in use. No new strobe, multi-directional or high intensity lights will be installed.

The proposed airport improvements will have an impact on the feral mammals inhabiting or frequenting the airport area, by disturbing their habitats and feeding areas. This is especially true of those mammals which inhabit the agricultural areas where the parallel runway will be built.

3.11.2.3 Significance Criteria And Analysis

The significance criteria used to define potential effects to the terrestrial bird and feral mammal populations inhabiting or frequenting Kahului Airport and environs include: (i) extent of loss or gain of habitat; and (ii) presence or absence of Threatened or Endangered species. Loss of habitat would indicate significant impacts while the relocation and/or modification of habitats would indicate insignificant impacts. Similarly, listing of a species as Threatened or Endangered and the alteration of that species habitat may indicate a significant impact. If project activities do not affect the fauna of the project site, there would be no impacts. Based on the feral bird and mammal surveys performed for this EIS and the evaluation criteria listed above, Table 3-41 summarizes the significance of the potential effects of the proposed improvements on the feral bird and mammal characteristics of the project area.

Table 3-41
SIGNIFICANCE OF EFFECTS ON TERRESTRIAL FAUNA

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Loss of Habitat	Removal of habitat	Insignificant
Gain of Habitat	Alteration of habitat	Insignificant
Endangered or Threatened Species	Modification of behavior	Insignificant
Disturbance Due To Nighttime Operations	Modification of behavior	Insignificant
Alien Species (pests)	Increase rate of introduction	Insignificant

The loss of Cane Field/Ruderal Border, Koa Haole/Mixed Understory and some Open Grassland vegetative zones will relocate or modify the habitats of introduced bird species and is an insignificant impact. In addition, landscaping within the airport improvements will potentially serve as substitute habitats.

Due to the short-term duration of the overflights of KPWS and from the results of the overflight study in Appendix J, there would be insignificant impacts on the KPWS inhabitants (the Hawaiian Stilt, Hawaiian Coot and Hawaiian Duck). These findings were concurred to by the USFWS in the US Department of Interior letter dated June 6, 1996 (Section 11, Reference 29).

The additional lighting is similar to existing lights in use at the Airport and vicinity, and no new strobe or high-intensity lights are planned in the Proposed Project, therefore, the impact on the Dark-rumped Petrel should be insignificant.

3.11.2.4 Mitigation Measures

There are no significant impacts, therefore, no mitigation is required. However, the following measures will minimize environmental harm. The proposed airport improvements will include the re-landscaping of new and relocated facilities. Landscaped areas are frequented by introduced bird species that are found throughout the Hawaiian Islands in a variety of habitats. These landscaped areas would provide new habitats to mitigate the loss of existing airport area vegetation. Consequently, the loss of existing, primarily introduced plant species will result in insignificant effects on the avifauna inhabiting or frequenting the airport area. The proposed runway extension will be graded to minimize the ponding potential in this area.

If ponding occurs due to the Proposed Project or the airfield becomes an attractor to the Hawaiian Stilt, HDOT-AIR will initiate programs similar to those used on the existing ponding areas to mitigate the attraction. In addition, HDOT-AIR has recently provided additional land area to KPWS. If these areas can be developed to enhance the feeding potential for the Hawaiian Stilt, the Airport would be a less attractive feeding area.

Although the new lights would have an insignificant impact on the Dark-rumped Petrel, the designers of the Proposed Project should follow the DLNR guidelines for the Newell's Shearwater, entitled *The Newell's Shearwater Light Attraction Problem, A Guide for Architects, Planners, and Resort Managers*. This publication is available from DLNR.

3.11.3 ALIEN SPECIES

3.11.3.1 Existing Conditions

The introduction of harmful alien pest species to the State of Hawaii has been a problem for over a century, and is a major issue throughout the state. Harmful alien species are those organisms, plants, predators and insects which thwart the shipment of local produce to other overseas markets; damage native forests, streams and watersheds; compete with and cause the extinctions of native flora and fauna; and carry diseases that affect native species, agricultural crops, livestock and humans (Section 11, Reference 21).

Currently, there are at least 20 State, Federal, and private organizations which are active in the prevention and control of alien pests and spend over $50 million each year to address this problem. Recently, over 80 State, Federal, businesses, private and non-profit groups have collaborated in the Alien Species Action Plan (ASAP) Working Group to produce a strategy to strengthen Hawaii's protection against this pest invasion. The Working Group has prepared recommendations which are presented below and in Appendix Q. Additional studies received or prepared in connection with the Draft EIS are incorporated into Appendix U, which include: (i) a report by Lipsey and Associates, Inc.; (ii) "The Alien Pest Species Invasion in Hawaii: Background Study and Recommendations for Interagency Planning;" (iii) an excerpt from "Harmful Non-Indigenous Species in the United States;" and (iv) the biological assessment by the FAA and HDOT-AIR on the introduction rate of alien species. These studies do not provide any new significant information from the information provided in the Draft EIS.

The existing first line of defense is the pre-entry prevention program. The second line of defense is the Federal and State agricultural inspection and quarantine programs, which intercept many animals and other organisms. The third line of defense is the prompt detection of pests, followed by eradication and control procedures. There are basically three means by which recently established pest plants and animals are currently detected (that are included in the third line of defense):

- In the course of routine surveys, the Hawaii Department of Agriculture (HDOA), Plant Pest Control (PPC) Branch staff members routinely conduct field work for their own individual Biocontrol or Chemical/Mechanical Section projects throughout the state.

- Referrals from other agencies such as the University of Hawaii (U.H.), Insect Diagnostic Clinic, U.H. Plant Disease Clinic, Cooperative Extension Service, USDA, DLNR, and Bishop Museum. The USDA light trap program currently monitors insect activity at high risk areas on Oahu, e.g. Honolulu International Airport, Hickam Air Force Base and Barbers Point Naval Air Station. Material picked up in these light traps are examined by a USDA Insect Identifier and the HDOA is notified of any unusual or foreign organism being intercepted.

- The general public also serves as eyes and ears and provides important information on possible new pests.

Currently, agricultural inspection at Hawaii's airports is conducted by the U.S. Department of Agriculture (USDA) and the State of Hawaii, Department of Agriculture (DOA). The USDA is responsible for the inspection of international flights, while the DOA is responsible for the agriculture inspection of domestic flights. The USDA has a working agreement with the DOA to detain any passenger/cargo carrying plants or animals which are not federally restricted, but restricted by the State of Hawaii. The Canadian flights are pre-cleared in Canada, by USDA, and are treated as domestic flights and

inspected by the DOA. Due to budget decreases at DOA, the HDOT-AIR supplements the DOA budget for inspection services at Honolulu International Airport, Keahole Airport and Kahului Airport.

The DOA-Plant Quarantine Branch currently has eight full-time positions for Maui County to carry out DOA's mandates at Kahului Airport, Kahului Harbor and the rest of Maui County. Of the eight personnel, one (1) is supervisory, five (5) are inspectors, one (1) is a dog handler and one (1) is currently vacant. The majority of the personnel are stationed or work at Kahului Airport. One of the inspector positions is funded by the HDOT-AIR. Other facilities include: (i) stations at the cargo area, passenger lobbies (jetways), and baggage claim area; (ii) a dog; (iii) golf carts; and (iv) radios. According to the DOA the existing Maui operation is substandard to meet the existing demand, therefore, as aviation demand increase, with or without the Proposed Project, additional facilities and inspectors will be needed for DOA to meet its mandates.

With the exception of pre-cleared Canadian flights, all international aircraft and passengers are inspected by the USDA. USDA-APHIS-Plant Protection and Quarantine Branch (PPQ) inspects the passengers, baggage and cargo going to the other 49 States and Puerto Rico. In addition, they protect Hawaii from alien species arriving on foreign (international) ships and aircraft. USDA-APHIS-PPQ works in conjunction with U.S. Customs for clearance of international surface and air freight. Currently, USDA-APHIS-PPQ inspects all check-in baggage on overseas flights departing Kahului Airport to the other 49 States. The USDA-APHIS-PPQ has nine (9) full-time inspectors, one (1) supervisor and 64 part-time/intermittent employees at Kahului Airport. At any one time at Kahului Airport, there will be four (4) part-time inspectors and one (1) full-time inspector on duty. The normal operating times are from 6:00 a.m. to 9:30 p.m., and any inspections outside of the normal operating hours are paid for by the airlines on a reimbursable overtime basis. International inspection by USDA is funded from an international arrivals inspection fee of $1.45 per passenger. This fee is paid by the passenger, collected by the airline as part of the ticket cost, and then paid by the airline to USDA. There is also an inspection fee of $53 per aircraft paid by the airline for USDA to inspect the plane and the cargo. Because it is separately funded, obtaining personnel for international USDA inspection is not difficult, in fact it is mandated by Federal law. This should not be confused with USDA pre-clearance inspection for domestic US flights which is paid out of the Federal government's general fund. In addition to USDA fees, the international arrivals fees for Customs is $5.00, and for Immigration and Naturalization Service (INS) is $5.00. These are collected the same way as USDA's fees by the airlines. All tolled international passengers each pay $11.45 in arrival inspection fees.

3.11.3.2 Impact Analysis

The forecast increase of air passengers and air cargo to Maui, as described in the State Airport System Plan (SASP) and recent updated forecasts, may result in an increase in the potential for the introduction or "introduction rate," of alien flora or fauna species into Maui. This forecast increase of passenger and cargo will occur with or without the Proposed Project. As stated above, there is an existing statewide, as well as worldwide, problem associated with the introduction of alien species into new areas.

According to the ASAP, the potential introduction of alien flora or fauna species through airports and other ports of entry is a major existing and future concern.

The alien species issue was studied on a statewide basis during the Alien Species Action Plan Project in 1994. The Project included an Advisory Task Force, which consisted of various representatives from Federal and State Governments, and community and business representatives. The adopted Alien Species Action Plan recommends the following actions:

- Form a Coordinating Group on Alien Pest Species.
- Improve effectiveness of inspections through coordination of U.S. Department of Agriculture, U.S. Fish and Wildlife Service, U.S. Postal Inspection Service, U.S. Customs Service, Hawaii Department of Agriculture, and Military Customs Inspection Program Inspectors.
- Make full use of the existing airline video on alien species.
- Resolve the use of prohibited/allowable lists as a principal regulatory strategy.
- Map priority pests.
- Assess the impact of Federal international trade "Pre-emption Provision" on Hawaii protection from alien pest species.
- Retain military customs inspection involvement in Guam Brown Tree Snake control.
- Ensure continued inspection of incoming foreign mail by the U.S. Customs Service.
- Establish the foundation of a central pest reporting system.
- Launch public awareness/targeted education campaign.

The ASAP also determined that the following topics need further attention.

- Inspection of First Class Mail
- Surveillance and monitoring systems

- Inspection and quarantine facilities
- Permanent staffing for agency coordination and public education
- Conflicting Federal-State regulations and policies

An outcome of the ASAP was the formation of the "Coordinating Group on Alien Pest Species" (CGAPS), which is a multi-agency partnership to coordinate more effective protection for Hawaii's economy, environment, health, and way of life from harmful alien pests. In 1996, CGAPS published a brochure called "the silent invasion." The brochure and members of the CGAPS, which includes the HDOT, is provided in Appendix U. Part of the CGAPS brochure included a ten point action plan of the following: (i) stop the brown tree snake; (ii) dramatically increase public awareness of alien pest problem; (iii) prevent pest introductions by the mail; (iv) prevent pest introductions via aircraft; (v) prevent pest introductions via shipped cargo; (vi) develop a more effective system to detect, contain and eradicate new pest infestations before they become widespread; (vii) stop the interisland spread of known pests; (viii) ensure stiff penalties for deliberate pest introductions; (ix) clarify which species are prohibited and simplify permit review systems; and (x) ensure federal support of Hawaii's pest prevention systems.

As part of "item (iv) - prevent pest introductions via aircraft," the CGAPS has stated:

> *The challenge is to inspect flights and passengers more thoroughly without ruining the Hawai'i visitor experience or clogging traffic at airports. Full participation by the airlines and travel industry is needed to inform visitors before they leave home and during their flight of the prohibitions against bringing plants, animals, or soil to the islands, and the stiff penalties for violations. State and federal agriculture inspectors need additional staff and equipment to efficiently inspect all arriving commercial, military, and private flights and baggage without inconveniencing travelers.*

In the brochure, CGAPS has also identified ten (10) actions, that the public could perform to help slow the invasion of alien pests. These include: (i) learn to identify the most threatening pests and report them; (ii) don't release your pets into the wild; (iii) fill out your Department of Agriculture declaration form completely and honestly; (iv) when coming to Hawaii, don't bring plants, fruits, vegetables, or illegal animals with you; (v) mail-order wisely and ask friends and relatives not to send you plants or animals through the mail; (vi) landscape with native plants or non-pest ornamentals; (vii) clean your hiking boots, running shoes, and other gear before you enter native forest areas or travel interisland; (viii) don't spread crop pests by sharing diseased plants; (ix) if you sail, or fly, keep a clean ship; and (x) spread the word, share this information with a friend.

As part of the impact analysis for this EIS and due to concerns by the National Park Service and USFWS, agencies of the U.S. Department of Interior, the FAA prepared a biological assessment

to address potential impacts of the airport improvements on the "introduction rate" of alien species through Kahului Airport, as it pertains to endangered and threatened species, and the flora and fauna of Maui. The biological assessment is presented in Appendix U, and was prepared in cooperation with the USFWS, with support from HDOT-AIR. The biological assessment is consistent with the requirements and procedures provided in 50 CFR Part 402 and has been prepared in connection with the procedures required by other relevant statutes including, but not limited to, the National Environmental Policy Act and the Hawaii Environmental Policy Act. To assist and to provide guidance in the preparation of this biological assessment, the FAA formed and convened a Biological Assessment Technical Panel of recognized alien species specialists, consisting of Federal and State agencies, and private organization representatives. The biological assessment concluded that the "introduction rate" of alien species resulting from existing air and ship travel, the shipment of cargo by air and sea, and the actual dispersion of species, will continue to have an impact on listed or candidate species, and other plant and animal species on Maui. The recommendations of the biological assessment refined the mitigation measures that were presented in the Draft EIS and the ASAP Plan for Kahului Airport. A biological opinion was issued with a no jeopardy finding on July 23, 1997 by the FWS on the Proposed Project and is presented in Appendix U.

The biological assessment and this EIS recognized that any alien species can impact, to a degree, any endangered species and that the impacts of alien species extends to all aspects of Maui, including native plants and animals, ecosystems, agricultural products and human diseases. Therefore, during the Section 7 consultation, the discussions focused on the potential impacts of various alien species (pests), and measures to control the "introduction rate" through Kahului Airport of all alien species to Maui. The discussion was not specifically oriented to a specific species, pathway or area of interest. One should note that the U.S. Fish and Wildlife Service's list of Listed, Threatened and Candidate species for Maui, is a very diverse list of plant and animal species and therefore, a wide range of potential alien species could pose a risk to these "listed" species if introduced through air and sea travel.

3.11.3.3 Significance Criteria And Analysis

A significant impact would occur if the proposed improvements would substantially increase the rate of introduction of alien pests. An insignificant impact would occur if the rate shows little or no increase. As the passenger levels and cargo/mail tonnage are similar in both the No-action and Proposed Project, the impact of the Proposed Project on alien species introduction rate is, in and by itself, insignificant. However, the introduction of alien species is an existing statewide problem and therefore, the potential impact of the Proposed Project on the introduction rate of alien species, would be considered a *significant cumulative* impact.

3.11.3.4 Mitigation Measures

There are no significant impacts, to endangered and threatened species or to native species, due to the Proposed Project and therefore, no mitigation is necessary. However, to minimize environmental harm, and as the alien species problem is a major concern and significant cumulative impact,

HDOT-AIR will continue to work with various Government agencies to deter the introduction of alien species (especially pests) through its airports, to the extent possible.

The "introduction rate" of alien species is a statewide problem and cannot be fully resolved in this EIS. The issue will continue to be a significant problem with or without the Proposed Project and is discussed in Section 5.0, Cumulative Impacts.

The mitigation measures proposed in the biological assessment and biological opinion were developed in connection with the Proposed Project and are intended to supplement mitigation measures set forth in the Draft EIS. It is recognized in the studies, that the FAA and HDOT-AIR have a limited role in the control or interdiction of alien species. Therefore, the proposed mitigation measures are in support of the Federal and State agencies that have the responsibility for the inspection for alien species at the Airport. The two primary agencies are the HDOA, which is responsible for inspection of alien species on domestic arrivals; and USDA which is responsible for inspection of alien species on international flights.

The conclusion of the "no jeopardy" biological opinion is that the following mitigation measures should be taken at Kahului Airport to reduce the "introduction rate" of any alien species due to the Proposed Project to the extent possible, and to also mitigate the present rate of alien species arriving on overseas flights. As recognized in the biological assessment, these mitigation measures have been developed to intercept the whole spectrum of potential alien pests, as specific alien species that may impact listed and candidate species were not identified. Therefore, these mitigation measures will apply equally toward alien species that may impact native species, native ecosystems, agriculture and humans and will be in effect by the completion of Phase 1 of the Proposed Project.

PRE-ENTRY

- *Pre-entry Traveler Education about Alien Species.* The HDOT-AIR will support the CGAPS in their educational role of informing the traveling public of the dangers of alien species, particularly in promoting an alien species video acceptable for in-flight viewing.

- *Notification of New Routes to Maui.* The HDOT-AIR, as a member of CGAPS, will keep CGAPS informed of any new proposed domestic or international routes to Maui. CGAPS members include the Hawaii Department of Agriculture, the U.S. Department of Agriculture, and the Fish and Wildlife Service.

- *Treatment of Cargo Holds.* The HDOT-AIR, will develop a voluntary program for all airlines serving Kahului Airport using a non-chemical best practical pesticide/pest prevention treatment program for aircraft cargo spaces.

PORT-OF-ENTRY

- *Traveler Education Regarding Alien Species Risks, Quarantine Restrictions, and Penalties.* The HDOT-AIR shall support efforts by CGAPS and others to adequately and effectively inform arriving passengers of the dangers posed by alien species, the nature of quarantine restrictions, and the penalties for violations. Current CGAPS plans are for this education program to be self-supporting, therefore, funding commitment is not required.

- *Training of Airline and Airport Personnel in Alien Species Recognition and Response.* A voluntary education program will be planned and implemented by HDOT-AIR that will train airport employees, baggage handlers, airline cabin personnel, and others. This program will educate these personnel to recognize and report smuggled animals and plants/fruit, stowaway snakes and insects, and new alien species on airport grounds. HDOT-AIR will coordinate the planning of this program with HDOA, USDA and CGAPS.

- *Arrival Inspection Facilities.* The HDOT-AIR will support HDOA domestic arrival inspection by installing a data link between arrival gates and baggage claim, installing one X-ray machine to test the feasibility of inspecting arriving baggage, installing a paging system at baggage claim, and supplying office space, kennels and inter-terminal golf carts as necessary. HDOT-AIR will furnish the infrastructure and support to adequately meet USDA inspection needs for international arrivals.

- *Additional Agriculture Arrival Inspectors.* The HDOT-AIR will fund one additional inspection dog and three additional agriculture inspector positions, one of which will act as a handler for the dog, bringing the total to eleven inspectors and two dogs. In light of the proposed measures in the project, and with these additional inspectors, HDOA has determined that it will be able to adequately inspect incoming domestic air traffic associated with the project.

- *New Air Cargo Building.* The HDOT-AIR will design and construct a new air cargo building to meet existing and forecast demands, to include an industrial air curtain barrier to prevent escape of any insects during inspection of air cargo containers; offices and facilities for U.S. Customs, USDA and HDOA; lab space, freezer and sterilization/incineration

facilities; space for X-ray equipment; and computer equipment and facilities for the HDOA alien species database system.

- *Quality Control Program.* The HDOT-AIR will design and fund, on an ongoing basis, a comprehensive program to monitor the efficacy of the alien species interdiction system at Kahului Airport. The program shall be designed in consultation with HDOA, USDA, and CGAPS, and shall be developed and operated by a consultant or agent under the control and management of HDOT-AIR. The program will provide yearly reports to all concerned agencies. These reports shall include summaries of all alien species interceptions from all airport-based operations, their origin and mode of arrival, to the extent possible, and estimates of the efficiency of the inspection system for various taxonomic groups of concern. HDOA will take the lead in developing these estimates which should be based in part on tests of the system (*e.g.*, attempted smuggling, random sampling of passenger effects and cargo, complete inspections of aircraft). The yearly reports shall also include recommendations to improve efficiency of the inspection system and the quality control program itself. The program will be integrated with the existing USDA Quality Control system for international arrivals.

EARLY DETECTION/RESPONSE AND OTHER MEASURES

- *Security Committee.* The HDOT-AIR will encourage the Kahului Airport Security Committee to include alien species control as an element under its purview

- Brown Tree Snake: The HDOT-AIR will review the Brown Tree Snake Control Plan (Aquatic Nuisance Species Task Force 1996) to determine its applicability to all airports within the State.

- *Alien Arthropod Detection and Response.* The HDOT-AIR will, on an ongoing basis, contract with a consultant in entomological pest identification to assist Animal Damage Control in conducting semi-annual monitoring of the airport environs to detect early establishment of new alien insects, particularly social hymenoptera (ants and wasps) and biting diptera (midges, flies and mosquitoes). Results will be communicated to the HDOA and the Quality Control Program. HDOT-AIR will assist HDOA and USDA with manpower, resources and funds in the eradication of any detected population within the Kahului Airport boundary.

3.10.3.5 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The "introduction rate" and the impact of alien species is an existing statewide problem. The introduction of alien species, will continue to impact the State's flora and fauna, and cannot be fully resolved in this EIS. The Proposed Project, however, will take significant steps toward minimizing any impacts caused by the Proposed Project and reducing existing impacts. This issue will continue to be a significant statewide problem with or without the Proposed Project (Also see Section 5.0, Cumulative Impacts).

3.11.4 MARINE ENVIRONMENT

3.11.4.1 Existing Conditions

The marine environment directly offshore Kahului Airport is a reef flat referred to as "Spartan Reef." The outer edge of this shallow reef is over one-half mile from shore; and at a distance of 1+ miles from shore, the reef is submerged approximately 30 feet below the water's surface. The shallow reef extends from Kahului Harbor eastward to Lower Paia, where the reef narrows and becomes indistinct.

At depths of 15 to 30 feet, coral cover approaches 85 percent and is dominated by *Porites lobata* and *Montipora flabella*. The distribution of algae (*limu*) on the reef is patchy and generally less than 5 percent cover. The primary species of algae include *Asparagopsis taxiformis*, *Turbanaria ornata*, *Galaxaura* sp. and *Amansia glomerata*. The sea urchin *Tripneustes gratilla* is abundant as is the soft coral *Palythoa tuberculosa*. The fish fauna is generally sparse with *Acanthurus nigrofuscus* and *Abudefduf abdominalis* being the most common species. The area offshore of Kahului Airport is a feeding area for the Green Sea Turtle which is an Endangered species. There are no other known candidate or listed Threatened or Endangered species of marine biota inhabiting the reef area off of Kahului Airport.

3.11.4.2 Impact Analysis

The proposed airport improvements have the potential to affect the marine environment through effects on water quality, as previously discussed in Section 3.9, and increasing sediment loading in the nearshore environment. Increased sediment loading could smother corals and create unstable conditions for the attachment of algal species and reduce algal availability on the reefs. As previously indicated, erosion control and sediment retention basins will prevent large influxes of sediment flowing into the airport area drainage system or Kalialinui Gulch. Consequently, the proposed airport improvements are not expected to affect the marine biota in the reef area off Kahului Airport.

3.11.4.3 Significance Criteria And Analysis

To evaluate the Project's potential effects on the marine environment the following significance criteria have been applied: (i) potential changes to biotic community; and (ii) potential effects

on Threatened or Endangered species. A significant impact on marine plants or animals would result from: (i) any harmful disturbance of species listed as Threatened or Endangered under the Federal Endangered Species Act or under state law; (ii) the destruction of any culturally or ecologically sensitive biological habitats; or (iii) the modification of reef habitat to the extent that a noticeable decline in catch per unit effort would occur. A disturbance of marine plants and animals, or their habitats, would be considered insignificant only if there was natural or human-induced recovery of similar or other living habitat. Minor impacts to the biotic community, to water quality characteristics or to Threatened or Endangered species would also be considered insignificant.

As the Proposed Project will not directly impact the marine environment and there will be insignificant or no effects on water quality or runoff, therefore, there will be insignificant impacts to the marine environment. Table 3-42 summarizes the significance of the potential impacts.

Table 3-42
SIGNIFICANCE OF EFFECTS ON MARINE FLORA AND FAUNA

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Changes to Biotic Community	Decreased water quality or increased sediment loading	Insignificant
Threatened or Endangered Species	Population reductions or disturbance to habitats	Insignificant

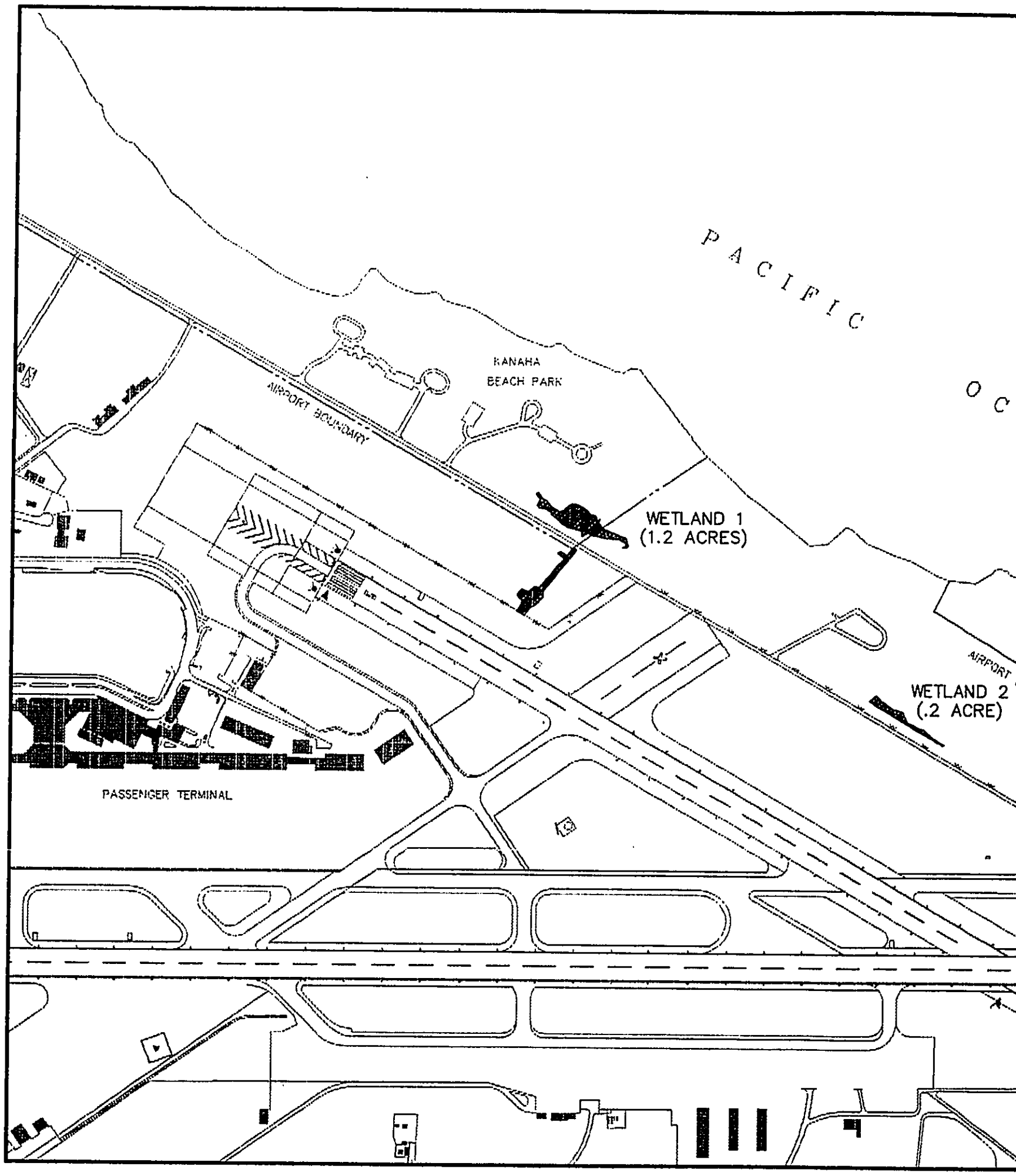
3.11.4.4 Mitigation Measures

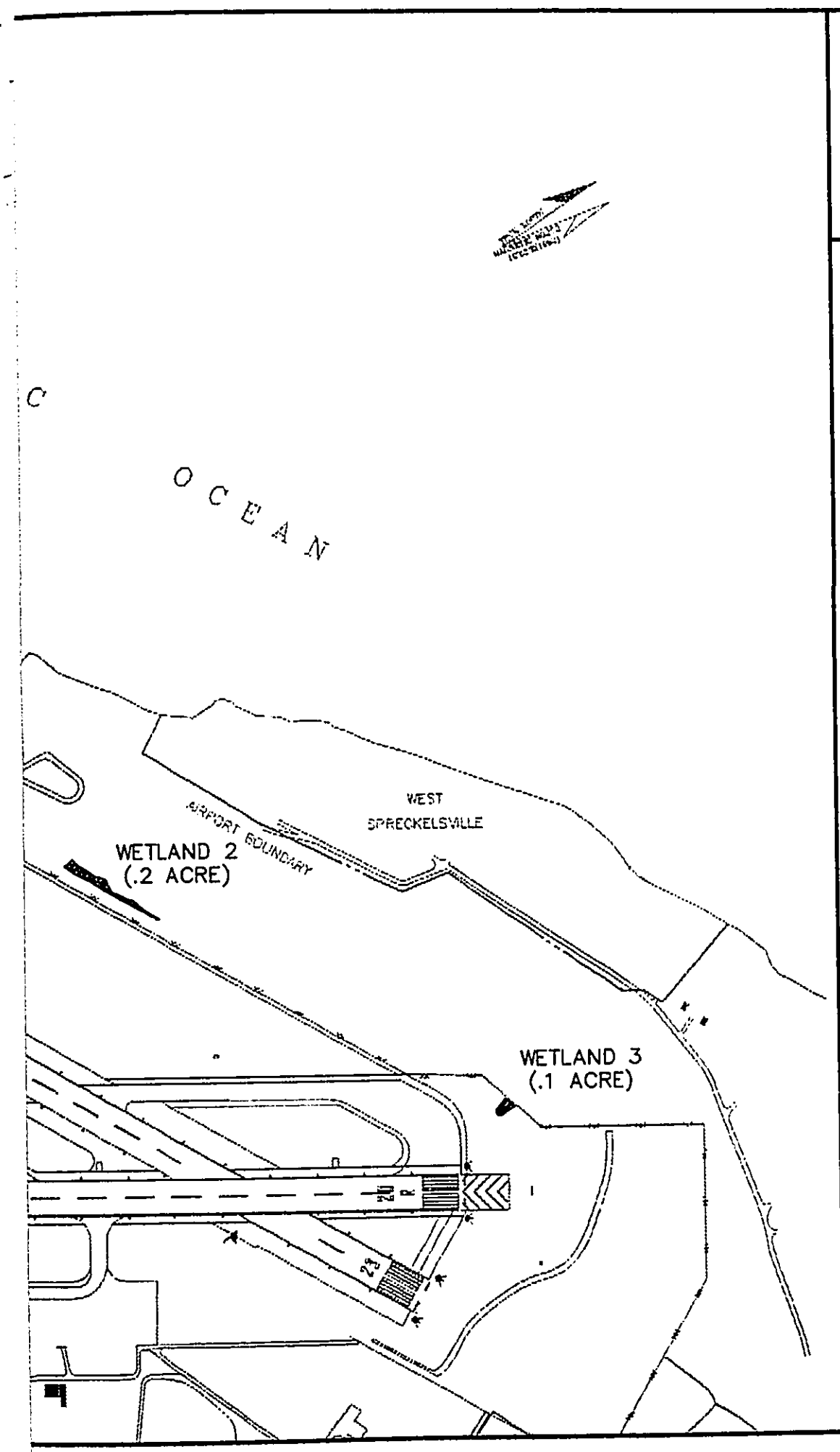
The Project is not expected to result in significant adverse impacts to marine life, so mitigation measures are not required. Nevertheless, the mitigation measures previously discussed to reduce and/or alleviate increased surface water runoff and potential increased sediment loading are also applicable to minimizing potential effects and minimizing environmental harm to the marine biota of the reef flat area off the Airport. The level of significance after implementation of mitigation measures will be reduced and remain insignificant.

3.12 WETLANDS

3.12.1 EXISTING CONDITIONS

The wetlands within the airport area, excluding those found in the Kanaha Pond Wildlife Sanctuary, are ephemeral or short-lived. These wetlands are depicted in Figure 3-22. Wetlands No. 1 and 3 are fed from rainwater runoff discharged from the Airport's drainage system. These wetlands do, however, meet the three wetland criteria established by the U.S. Army Corps of Engineers: (i) there is standing water


PACIFIC
KANAHA
BEACH PARK
AIRPORT BOUNDARY
WETLAND 1
(1.2 ACRES)
AIRPORT
WETLAND 2
(.2 ACRE)
PASSENGER TERMINAL



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

WETLAND

0 500 1000
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

LOCATION OF WETLANDS

DATE	FIGURE
MARCH, 1995	3-22

for more than seven days of the growing season; (ii) more than 50 percent of the vegetation consists of obligate or facultative wetland plants; and (iii) hydric and wetland soils are present within two feet of the surface layer. These conditions prevail in several places at and around the Airport. The largest (Wetland 1) is located north and south of Alahao Street, immediately east of the Kanaha State Park entry road. On the south side, wetland conditions extend from the edge of the airport paving to Alahao Street. On the north side, wetland conditions extend eastward and westward. These wetlands have been delineated by the U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service in 1995.

The obligate plants with the project-area wetlands include cat tail (*Typha latifolia*), duck weed (*Lemna perpusilla*), Kahula (*Bolboschoenus maritimus*) and pickle weed (*Batis maritima*). Facultative plants include 'Ahu'awa (*Mariscus javanicus*), barnyard grass (*Echinochloa crus-galli*), *Leptochloa uninerva*, California grass (*Brachiaria mutica*) and white daisy (*Eclipta alba*). Almost the entire wetland area is surrounded by Indian fleabane (*Pluchea indica*), a transition zone shrub.

Wetland conditions are also found east of the north gate into the airport. There is a series of small, intermittent, open water ponds located between the dunes north of the dirt road. These ponds also contain many of the same obligate species noted above.

In the northeastern corner of Runway 2-20, there is a broad drainage ditch which, at times, is partially filled with water. The vegetation is partially hydrophytic and hydric soils are found in the ditch. The total wet area is generally less than three square meters.

The intermittent wetlands are habitat to waterbirds when water is available. The airport area wetlands contain Black-crowned Heron, Hawaiian Duck or Koloa (*Anas wyvillana*), Northern Shoveler and Pacific Golden Plover. The black-necked Stilt has been observed on the airport wetlands.

KANAHA POND WILDLIFE SANCTUARY. Kanaha Pond Wildlife Sanctuary (KPWS), which is southwest of Runway 5-23, contains wetlands and is separated from the Airport proper by two drainage structures, Kalialinui Gulch and the A&B Ditch. The KPWS, which is on Airport property, is managed by the State of Hawaii, Department of Land and Natural Resources (DLNR) under a Memorandum of Agreement between the FAA, HDOT and DLNR, signed in 1973. Under the 1984 Land Exchange Agreement the ownership of KPWS was to be transferred to DLNR. However, the land is governed by deed restrictions between the State of Hawaii and Federal Aviation Administration, and during the final review of the proposed transfer, the FAA determined that this transfer would be inconsistent with the provisions of that deed. Consequently, the transfer of the property between the state agencies was halted and it has now been determined that all of the KPWS will remain within the airport boundary. The HDOT and DLNR have completed a Memorandum of Understanding (MOU) to set the boundaries of the 235 acre KPWS, and to define DLNR's management obligations with regard to the Sanctuary under the Endangered Species Act. The day-to-day management of the KPWS will not be affected by the Proposed Project and will continue to be the responsibility of DLNR.

3.12.2 IMPACT ANALYSIS

The proposed Kahului Airport improvements will not result in the loss of the intermittent wetland areas found near the Airport. The connecting emergency roadway between Alahao Street and Old Stable Road will be aligned to miss these wetlands. The primary wetland habitat within the airport area, Kanaha Pond, will be unaffected by the proposed airport improvements. The MOU sets the boundary of the KPWS and will assist in providing habitat security as per the *Hawaiian Waterbirds Recovery Plan*, 1985.

3.12.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Significant adverse impacts on wetlands include the following:

- Development within wetlands, including dredging, filling, draining, channelization, diking, impounding or otherwise directly impacting the wetlands; and
- Indirect impacts due to actions upstream or downstream which affect the wetlands.

Insignificant adverse or no impacts would result if the proposed improvements do not affect wetlands.

Based on the wetlands surveys performed for this EIS and the evaluation criteria listed above, the Proposed Project will have no significant impact on wetlands. Table 3-43 summarizes the significance of the potential effects of the proposed improvements on the wetlands of the project area. The Airport Access Roadway Project will not impact any wetlands.

Table 3-43
SIGNIFICANCE OF EFFECTS ON WETLANDS

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Development Within Wetlands (Direct Impacts)	Destruction of wetlands	Insignificant
Development Upstream/Downstream of Wetlands (Indirect Impacts)	Interruptions of water flow	Insignificant

3.12.4 MITIGATION MEASURES

No wetland areas will be affected by the proposed improvements; therefore, no mitigation measures are required. The alignment of the Alahao Street/Old Stable road emergency connection will be designed to miss these wetlands.

Wetland No. 1 has historically served as an important element in the drainage system of the northwest corner of the airport. However, the U.S. Army Corps of Engineers (COE) has designated this area as a wetland and will not allow HDOT-AIR to install drainage improvements to reduce maintenance cost and improve the drainage capabilities in this area. Therefore, in the future, if the area in Wetland No. 1 south of Alahao Street needs to be modified, HDOT-AIR would propose to replace, in kind, the wetland area lost because of future drainage improvement projects in this area. The proposed replacement wetland would be created by enlarging the portion of Wetland No. 1 located to the north of Alahao Street such that there would be no net loss of wetland area. The drainage improvements will be designed so that they do not create a habitat that attracts wildlife that may be hazardous to airport operations (refer to Advisory Circular 150.5200-33). In addition, HDOT-AIR would enhance the northern portion of Wetland No. 1 to serve as an educational feature of Kanaha Beach Park. At the appropriate time, plans and specifications for this wetland improvement will be coordinated with the COE (COE file number PO95-027/950010027).

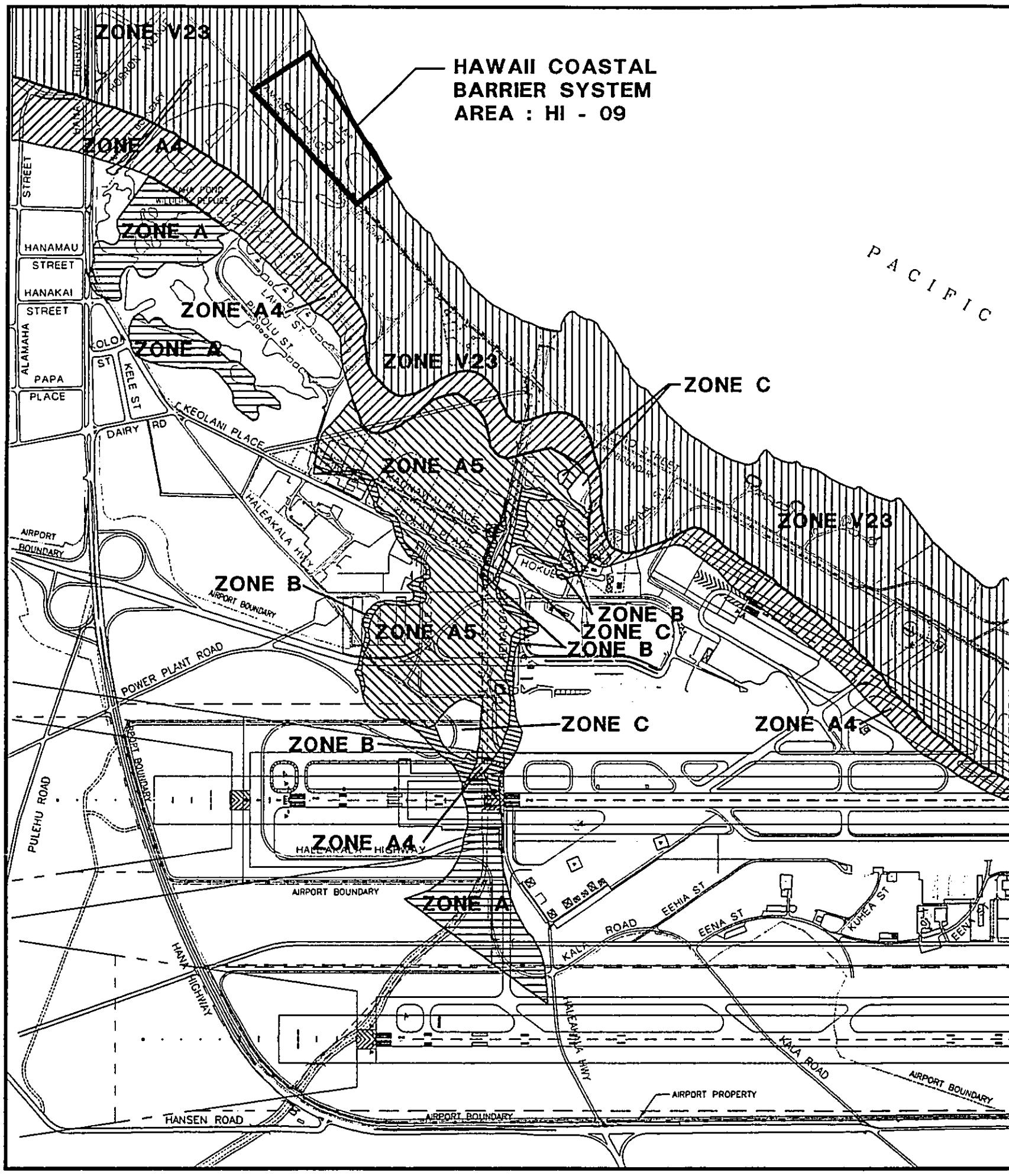
3.13 HYDROLOGY, FLOODPLAIN MANAGEMENT AND DRAINAGE

3.13.1 EXISTING CONDITIONS

The Airport is at an elevation of between +10 and +70 feet mean sea level (msl) and is underlain by a thin, saline brackish water lens. There are no potable water supplies found within the airport area. Potable water supplies are found at higher elevations, as they are on all other Hawaiian islands. The Airport does not overlay any of the drinking water aquifers on Maui and is below the Underground Injection Control line.

Tsunamis have been recorded on all of the Hawaiian islands. On Maui, wave heights ranging from 8 to 17 feet have been recorded along the shoreline area between the Spreckelsville Beach Houselots and Kahului Harbor. During the 1946 tsunami, wave heights of 22 and 28 feet were recorded at Kahului Harbor and the shoreline near the end of Runway 20. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM), the northeastern end of Runway 2-20, portions of Runway 5-23 and all of the beach areas fall within the tsunami flood zone (V32). A tsunami flood study has been performed, by Edward K. Noda and Associates, Inc., to re-evaluate the flood boundaries based on current topographic conditions. A Letter of Map Revision request was submitted to and approved by FEMA based on the results of this study (Section 11, Reference 33). Other portions of the Airport and all of the beach areas fall within the 100-year flood zone (Figure 3-23, and Figure 3-23A shows the revised flood zones).

Airport drainage is presently accommodated primarily by natural percolation and sheet runoff into Kalialinui Gulch and adjacent to agricultural lands. Drainage from the eastern side of the Airport is directed towards low areas behind the coastal dunes and percolates into the ground. There are no drainage outlets from the Airport to the shoreline east of Kalialinui Gulch. Airport drainage is isolated from Kanaha Pond by Kalialinui Gulch and the A&B Ditch. Non-airport lands to the west of Kanaha Pond drain into Kanaha Pond.



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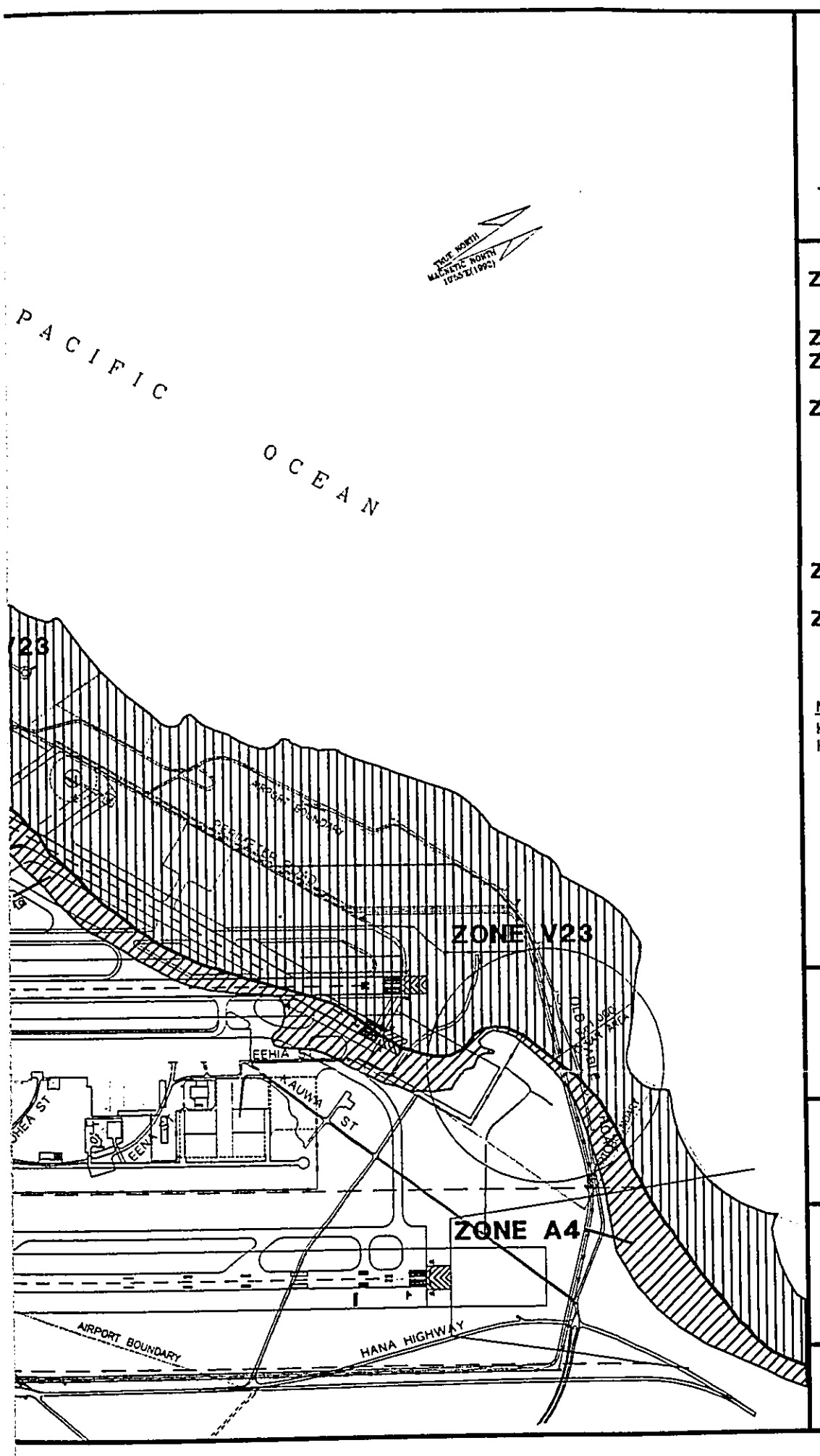

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ZONE A	AREAS OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS NOT DETERMINED.
ZONE A4 **ZONE A5**	AREAS OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS DETERMINED.
ZONE B	AREAS BETWEEN LIMITS OF THE 100-YEAR FLOOD AND 500-YEAR FLOOD; OR CERTAIN AREAS SUBJECT TO 100-YEAR FLOODING WITH AVERAGE DEPTHS LESS THAN ONE (1 FOOT OR WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN ONE SQUARE MILE; OR AREAS PROTECTED BY LEVEES FROM THE BASE FLOOD.
ZONE C	*AREAS OF MINIMAL FLOODING.*
ZONE V23	AREAS OF 100-YEAR COASTAL FLOOD WITH VELOCITY (WAVE ACTION; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS DETERMINED.

NOTE:
KALIALINUI GULCH FLOOD PLAIN HAS NOT BEEN UPDATED.

0 500 1000 1500
GRAPHIC SCALE IN FEET

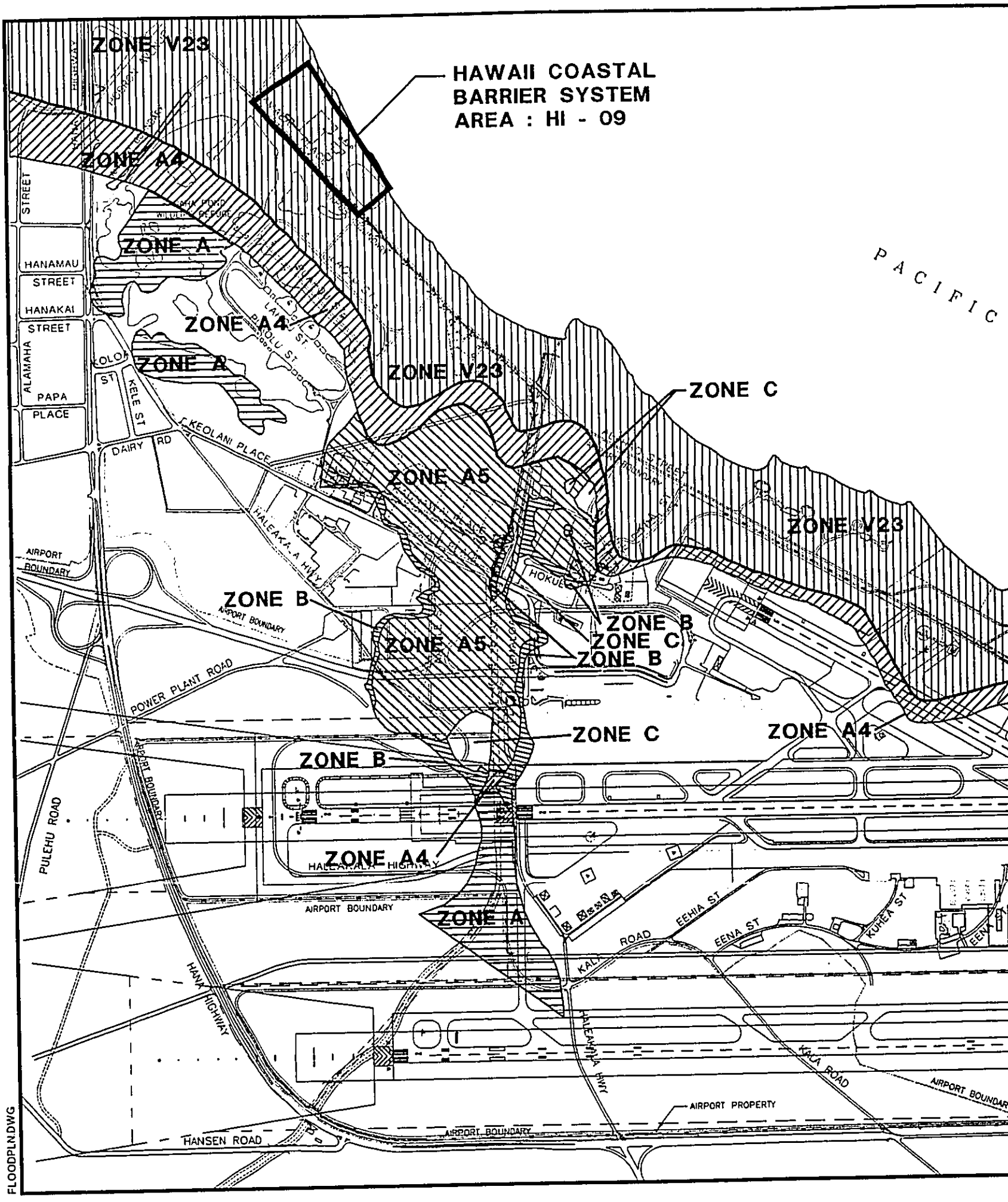
SOURCE:
NATIONAL FLOOD INSURANCE PROGRAM

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

FLOOD PLAIN MAP

DATE	FIGURE
JANUARY, 1997	3-23


HAWAII COASTAL
BARRIER SYSTEM
AREA : HI - 09
ZONE V23
ZONE A4
ZONE A
ZONE A4
ZONE A
ZONE V23
ZONE C
ZONE A5
ZONE V23
ZONE B
ZONE A5
ZONE B
ZONE C
ZONE B
ZONE C
ZONE A4
ZONE B
ZONE A4
ZONE A
PACIFIC
HANAMAU STREET
HANAKAI STREET
ALAMAHA PAPA PLACE
KOLOA ST
KELE ST
DAIRY RD
KEOLANI PLACE
PIILANI ST
HALEAKA-A HWY
AIRPORT BOUNDARY
POWER PLANT ROAD
PULEHU ROAD
HANA HIGHWAY
HALEAKALA HIGHWAY
EEHIA ST
EENA ST
KUHEA ST
KAIA ROAD
AIRPORT PROPERTY
HANSEN ROAD
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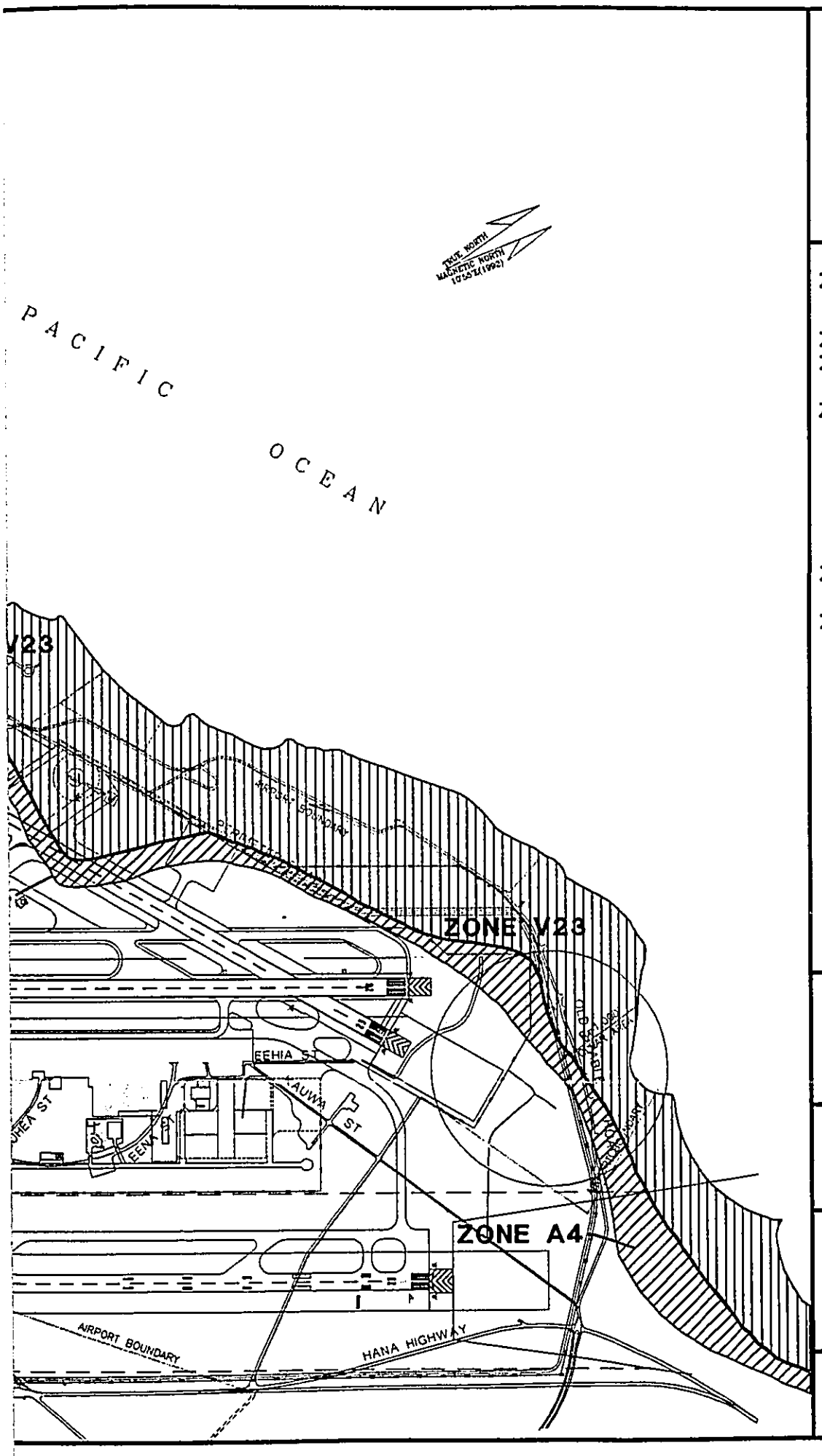

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

ZONE A	AREAS OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS NOT DETERMINED.
ZONE A4 **ZONE A5**	AREAS OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS DETERMINED.
ZONE B	AREAS BETWEEN LIMITS OF THE 100-YEAR FLOOD AND 500-YEAR FLOOD; OR CERTAIN AREAS SUBJECT TO 100-YEAR FLOODING WITH AVERAGE DEPTHS LESS THAN ONE (1 FOOT OR WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN ONE SQUARE MILE; OR AREAS PROTECTED BY LEVEES FROM THE BASE FLOOD.
ZONE C	AREAS OF MINIMAL FLOODING.
ZONE V23	AREAS OF 100-YEAR COASTAL FLOOD WITH VELOCITY (WAVE ACTION); BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS DETERMINED.

NOTE:
KALIALINUI GULCH FLOOD PLAIN HAS NOT BEEN UPDATED.

0 500 1000 1500
GRAPHIC SCALE IN FEET

SOURCE:
NATIONAL FLOOD INSURANCE PROGRAM

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

FLOOD PLAIN MAP

DATE	FIGURE
JANUARY, 1997	3-23A

Kalialinui Gulch is the only ocean outlet for storm water originating on the Airport as well as for extensive agricultural activities south and west of the Airport. Flow into Kalialinui Gulch is intermittent with little water entering the Gulch during the dry, summer months. The 1990 increased flow capacity improvements to Kalialinui Gulch greatly reduced the area of the Airport subject to flooding, especially the area west of the passenger terminal. HDOT-AIR has obtained a stormwater permit and is in the process of completing a stormwater pollution control plan.

3.13.2 IMPACT ANALYSIS

Except for the Airport Access Roadway, the proposed airport improvements will not affect the hydrology of the project area. The proposed improvements include expanding and improving the airport storm water drainage system to remove storm water from the airport area more effectively and efficiently. There will be no impact to the drinking water aquifers.

The proposed improvements on the northern side of the Airport, *i.e.*, between the existing passenger terminal and the shoreline, will fall within the coastal high hazard area. These improvements include: (i) expansion to the Kanaha Beach Park parking area; (ii) relocation of the ground transportation facilities; (iii) widening the runway safety areas for Runway 5-23; (iv) extending the perimeter service road and fence; (v) the ARFF Training Facility; (vi) the roadway connecting Alahao Street with Old Stable Road; (vii) the transient aircraft parking apron and additional air cargo facilities; and (viii) the extension of the parallel taxiway for Runway 5-23. Most of these projects do not include large concentrations of people. The Alahao Street/Old Stable Road connection will provide an alternate evacuation route for airport area employees, residents and visitors when flooding conditions block their normal ingress and egress routes. It will also serve as a bypass road for vehicular traffic should flooding occur along Hana Highway.

As planned, the Airport Access Roadway will be an elevated structure with drainage culverts and inlets to allow water to pass through. Thus, the Airport Access Roadway will not change the water flow or change the volumes expected without the Airport Access Roadway in the drainage basin. In addition, the major components of the Proposed Project would add the following flows to Kalialinui Channel, whose 100 year storm flow is approximately 7,500 cfs:

- The proposed runway extension and taxiway would add an additional 69 cfs, or less than 1 percent of the flow during a 100 year storm.
- The Ground Transportation Facilities would add about 59 cfs.
- In total the Runway extension and Ground Transportation Facilities would add about 1.5 percent (128 cfs) to the flow in Kalialinui Channel during a 100 year event.

The design of the new on-airport Fuel Storage Facilities and the associated piping to the aircraft apron shall be designed in compliance with all applicable Federal and State codes, rules and regulations to prevent the contamination of soil, runoff and groundwater. These regulations include the State's Waste Water Management Regulations, Uniform Building Code, and National Fire Protection Association, 40 CFR 112, and US DOT Regulations, Title 49, Part 195 - *Transportation of Hazardous Liquids by Pipeline*. The mitigation measures which will be designed for the new Fuel Storage facility and piping will include: (i) containment berms or walls; (ii) oil/water separation systems; (iii) corrosion resistant coatings; (iv) filters; (v) applicable Spill Protection Containment and Countermeasures; and (vi) leak detection and monitoring. These facilities will be designed, constructed and operated by HFFC. Likewise, the future supply pipeline from the Harbor to the Airport's Fuel Storage Facility will be designed, installed and operated by HFFC. Due to the long-range nature of this facility, the potential impacts or proposed mitigation measures will be addressed in a future environmental analysis and required documentation. Prior to constructing the pipeline, an environmental analysis will include assessing prudent and feasible alternatives to minimize the pipeline's effects on Kanaha Pond. One of those alternatives includes considering locations further from Kanaha Pond to avoid *constructive use* of Kanaha Pond that could result if the pipeline breaks, or leaks. If alternative locations are not prudent or feasible, mitigation measures as discussed above could be implemented to minimize impacts to Kanaha Pond.

3.13.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Potential effects related to hydrology/floodplain management/drainage include surface runoff, drainage improvements, and surface and groundwater contamination. For the proposed project improvements, potential hydrology/floodplain management/drainage concerns include: (i) the generation of additional runoff; (ii) increased sediment loading; (iii) decreased water quality from development (due to construction of impervious surfaces, compaction, etc.); (iv) the construction of facilities within an identified floodplain; and (v) the generation of additional urban contaminants in association with site development.

Significant hydrology adverse impacts effects are defined as those which: (i) result in deterioration of groundwater quality or lowering the groundwater table; (ii) interrupt existing flood drainage patterns or cause those patterns to be altered to the extent adjacent land uses are affected; or (iii) creating stormwater runoff volumes and velocities that exceed the drainage system capacity. Positive or beneficial impacts would occur if stormwater runoff is reduced. If stormwater volumes increase but are within the capacity of the existing or enlarged drainage system, the Proposed Project improvements would be considered to have insignificant effects. Similarly, if the Proposed Project improvements were to maintain existing runoff and leave the surface and groundwater unaffected, the effects would also be deemed insignificant. Surface water quality effects are discussed in Section 3.8, Water Quality, of this EIS.

Potential impacts related to flooding hazards include increased exposure to 100-year floods and tsunamis. Two classes of flooding impacts are defined: significant adverse and insignificant. The first impact would occur if the Proposed Project were to place building structures within the 100-year floodplain and appropriate engineering measures were not taken to accommodate potential flooding hazards.

Insignificant impacts would occur if the Proposed Project improvements lie outside these areas or if appropriate engineering measures are taken to accommodate potential flooding hazards.

Based on the hydrology/floodplain management/drainage analyses conducted for this EIS and the evaluation criteria listed above, there are no significant impacts to hydrology, floodplain management and drainage due to the Proposed Project. The proposed drainage system improvements are planned to reduce the potential for airport flooding. These factors will result in insignificant or beneficial effects on the hydrology, floodplain management and drainage of the airport area. Table 3-44 summarizes the significance of the potential effects of the proposed improvements on the hydrology/floodplain management/drainage characteristics of the project area.

The drainage from the parallel runway will be addressed in future environmental documentation.

Table 3-44
SIGNIFICANCE OF EFFECTS ON HYDROLOGY, FLOODPLAIN MANAGEMENT AND DRAINAGE

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Surface Runoff	Increases	Insignificant
Alterations to Drainage System	Increase beyond capabilities of existing or planned system capacity	Insignificant
Alterations of Drainage Basin	Changes the drainage volumes and flow patterns	Insignificant
Surface Water Quality	Alteration to existing quality	Insignificant
Ground Water Quality	Alteration to existing quality	Insignificant
Floodplain	Construction within floodplain	Insignificant

3.13.4 MITIGATION MEASURES

There will be no significant impacts, therefore, no mitigation measures will be required. However, new facilities will be designed and constructed to meet Federal and State flood zone and coastal high hazard rules and regulations to minimize potential damage from flooding or tsunamis. Additionally, the airport area warning system will be extended to new facilities.

3.14 COASTAL ZONE MANAGEMENT PROGRAM

3.14.1 EXISTING CONDITIONS

Hawaii's Coastal Zone Management Program (CZMP) (Chapter 205A, HRS), is administered by the Office of State Planning, Coastal Zone Management Program (OSP) (currently the Office of Planning within the Department of Business Economic Development & Tourism). In Hawaii, the coastal zone includes the waters from the shoreline to the seaward limit of the State's jurisdiction, and all lands of the State. In addition, two "belts" circling the islands, referred to as the Special Management Area (SMA) and the Shoreline Setback Area, respectively, have been established for more intensive management by the counties. While Federal lands are administratively excluded from the State's CZMP, Federal actions on these lands may be subject to state consistency requirements when they generate spill-over impacts that significantly affect the area, uses or resources within the purview of the State's CZMP.

Projects located within the State's CZM area require a determination by OSP that they are consistent with the objectives and policies of the CZMP. The majority of the existing Kahului Airport is within the State's CZMP area and within the County's Special Management Area (SMA). As such, the facilities of Proposed Project which occur within the existing Airport boundary are subject to a State consistency determination. In addition, the County of Maui has stated that the Airport Access Roadway and the Runway 2-20 extension will also need to meet SMA requirements. The SMA boundary is shown on Figure 3-15. Similarly, because Federal monies may be used for the proposed airport improvements, a determination that the improvements are consistent with the State objectives and policies is required. A concurrence from the Office of Planning on the consistency of Phases 1 and 2 of the Proposed Project was issued on July 2, 1997 (Section 11, Reference 36). The Office of Planning has deferred their review of the Phase 3 projects until additional environmental analysis and documentation is completed.

3.14.2 IMPACT ANALYSIS

The proposed airport improvements are consistent with the State's CZMP. The improvements include: (i) improved access to and along the coastline as well as added space for vehicle parking with the extension of Kanaha Beach Park; (ii) measures to protect historical and cultural resources; (iii) the planning process incorporates the Maui County Coastal Scenic Views results; (iv) the Proposed Project does not impact the shoreline and beach systems; (v) the Proposed Project provides improvements to the Airport, which is a vital component of Maui's economy; (vi) the majority of the Proposed Projects are outside of the tsunami and flood hazard areas; and (vii) the planning process has included extensive public involvement and has responded to public comments. There will be no impact in the Shoreline Setback Area, because no facility will be constructed in this area.

The relationship of the proposed airport improvements to Hawaii's CZMP is described in greater detail in Section 7.6.2 of this EIS.

3.14.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Significant effects would result if the proposed improvements did not meet the national and state objectives of the CZMP. Insignificant effects would result if the proposed improvements did meet or was otherwise consistent with objectives of the CZMP. (Also see Section 7.5 below).

Based on the evaluation criteria listed above, the Proposed Project will not have any significant impacts on Hawaii's CZMP. The Proposed Project is consistent with the CZMP and furthers its goals. Table 3-45 provides a graphic summary of the significance of the Project's potential effects on the coastal zone management program characteristics of the project area. The Office of Planning has deferred their review of the Phase 3 projects until additional environmental analysis and documentation is completed. As the Phase 3 projects are beyond the year 2009 time frame, additional environmental analysis will be completed, prior to construction, in order to determine what, if any, further environmental documentation is required.

Table 3-45
SIGNIFICANCE OF EFFECTS ON COASTAL ZONE MANAGEMENT PROGRAM

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Coastal Zone Management Area	Development inconsistent with CZM objectives and policies	Insignificant
Special Management Area	Development inconsistent with SMA objectives and policies	Insignificant
Shoreline Setback Area	Development inconsistent with shoreline setback objectives and policies	Insignificant

3.14.4 MITIGATION MEASURES

The proposed airport improvements are consistent with the State's CZMP; therefore, there are no identifiable significant impacts. Consequently, measures to minimize or mitigate potential adverse effects are not required.

3.15 WILD AND SCENIC RIVERS

3.15.1 EXISTING CONDITIONS

There are no Wild and Scenic Rivers listed in the National Inventory of the Wild and Scenic River System within the proposed Kahului Airport improvements areas. Consequently, the proposed improvements will not affect any wild and scenic rivers.

3.15.2 IMPACT ANALYSIS

Not applicable to the Proposed Project.

3.15.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Not applicable to the Proposed Project.

3.15.4 MITIGATION MEASURES

Not applicable to the Proposed Project.

3.16 COASTAL BARRIERS

3.16.1 EXISTING CONDITIONS

The Coastal Barriers Resources Act of 1982, PL 97-348, as amended (CBRA), prohibits, with some exceptions, Federal financial assistance for development within the Coastal Barriers Resource System (CBRS). In 1993, several Hawaii coastal areas were proposed to be added to the CBRS. One of these areas encompasses the Wailuku-Kahului Wastewater Treatment facility and is north of KPWS (Map Area HI-09). This area designated "HI-09" is shown on Figure 3-23. A draft Pacific Coastal Barriers Study was prepared by the US Fish and Wildlife Service (USFWS). A review of that study by the HDOT-AIR indicated that the proposed Hawaii Coastal Barrier System would not have any impact on present or future state-wide airport operations.

3.16.2 IMPACT ANALYSIS

The proposed airport improvements will not adversely affect the Kanaha Pond CBRS area. Further, the proposed improvements, if consistent with the purposes of the CBRA, may qualify as an exception to the funding prohibition. Specifically listed as exceptions to the CBRA funding prohibition include: (i) maintenance, replacement, reconstruction, or repair of publicly owned or operated roads, structures, or facilities; and (ii) establishment, operation and maintenance of air and water navigation aids and devices and access thereto.

3.16.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Significant adverse impacts would result from the proposed improvements not meeting the objectives of the CBRA. Insignificant adverse impacts would result if the proposed improvements are consistent with the Act.

Based on the evaluation criteria listed above, and because there are no facilities near or in the "HI-09" there will be an no impact. Therefore, the Proposed Project is consistent with the CBRA. Table 3-46 summarizes the significance of the impacts.

The proposed Phase 3, supply pipeline will border the "HI-09" area to the south, and is not expected to affect the coastal barrier. However, this project is slated beyond the 2016 time frame, the full impacts may not be known and cannot be properly assessed at this time. However, prior to the construction of this facility additional environmental analysis will be completed in order to determine what, if any, further environmental documentation is required.

Table 3-46
SIGNIFICANCE OF EFFECTS ON COASTAL BARRIERS RESOURCE ACT

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Hawaii Coastal Barrier System (HCBS)	Development inconsistent with HCBS objectives and policies	None
National Coastal Barrier System (NCBS)	Development inconsistent with NCBS objectives and policies	None

3.16.4 MITIGATION MEASURES

The proposed airport improvements are consistent with the goals and objectives of both the State and national Coastal Barriers Resource programs. Consequently, measures to minimize or mitigate potential adverse effects are not warranted.

3.17 FARMLAND

3.17.1 EXISTING CONDITIONS

In 1992, there was approximately 350,000 acres in agricultural production with a crop value of over $140 million. The major crops were sugar cane and pineapple, with diversified agriculture, mainly vegetables and flowers, slowly gaining in market share. The economic value of the crops is discussed in Section 3.5.1.8 and Appendix E. There is over 1000 acres of land surrounding Kahului Airport currently planted with sugar cane. Additional acreage within the Kahului Airport flight path is planted with sugar cane, macadamia nuts and other crops. The agricultural lands are designated "Prime Agricultural Land" by the State Department of Agriculture under the Agricultural Lands of Importance to the State of Hawaii

(ALISH).[18] However, this Prime classification is dependent upon water supply. Kahului receives about 20 inches of rain annually and, thus, the agricultural lands are dependent on irrigation for productivity.

Access to water from the East Maui irrigation system is a major issue for the sugar plantation because this water is provided through State leases that have expired and the plantation has been unable to renegotiate new long-term leases. The implementation of minimum stream flow standards by the State Water Resources Management Commission has also resulted in less water available for irrigation of the sugar lands. The irrigation systems for these areas are being or have been converted to be irrigated with Mill water and will reduce the load on the aquifer.

3.17.2 IMPACT ANALYSIS

The proposed Airport Access Road and relocation of the Runway 2-20 navigational and lighting aids will withdraw from production approximately 139 acres of sugar cane cropland by the year 2010. In addition, the Airport Access Roadway will limit the agricultural use of 29 acres of land located south (mauka) of the K-Mart Store on Dairy Road, on the northern side of Hana Highway. Although this acreage remains in ownership with A&B Hawaii, the Airport Access Roadway limits access to this 29 acre parcel, making it unusable for sugar cane cultivation. The total amount of lost farmland will increase to 700 acres if the parallel runway (Runway 2R-20L) is constructed. Until the parallel is needed, this area will remain in agricultural use. A&B Hawaii, Inc., the primary landowner of the sugar cane lands, has indicated that removal of sugar cane lands for airport improvements will not adversely affect its operations. The 700 acres make up about two (2) percent of A&B Hawaii, Inc.'s agricultural lands. The impact of the 168 acres (139+29) will not have a materially adverse impact on A&B Hawaii, Inc. The remaining 550 acres will remain in agriculture and the impact will be assessed in the future, if and when, the land is required for use in connection with the parallel runway. Similarly, A&B Hawaii, Inc. has requested to defer their analysis on the conversion of the agricultural land until a later date, if and when the parallel runway is needed and the conversion occurs.

An additional 85 acres of land required for airport purposes will be for avigation easements. Existing uses will be unaffected by the proposed airport improvements except for the imposition of height restrictions. These height restrictions could, as previously noted (see Section 3.3), serve to retain the lands in agricultural production. Figure 3-23B shows the agricultural lands to be disturbed and the current ownership of those lands.

Farmlands within the flight path of the Airport will continue to be subjected to air pollutants generated by aircraft. However, emissions levels of these pollutants will be less under the Proposed Project than under the No-Action Alternative (See Section 3.8.) Farmlands will be unaffected by construction of the proposed improvements.

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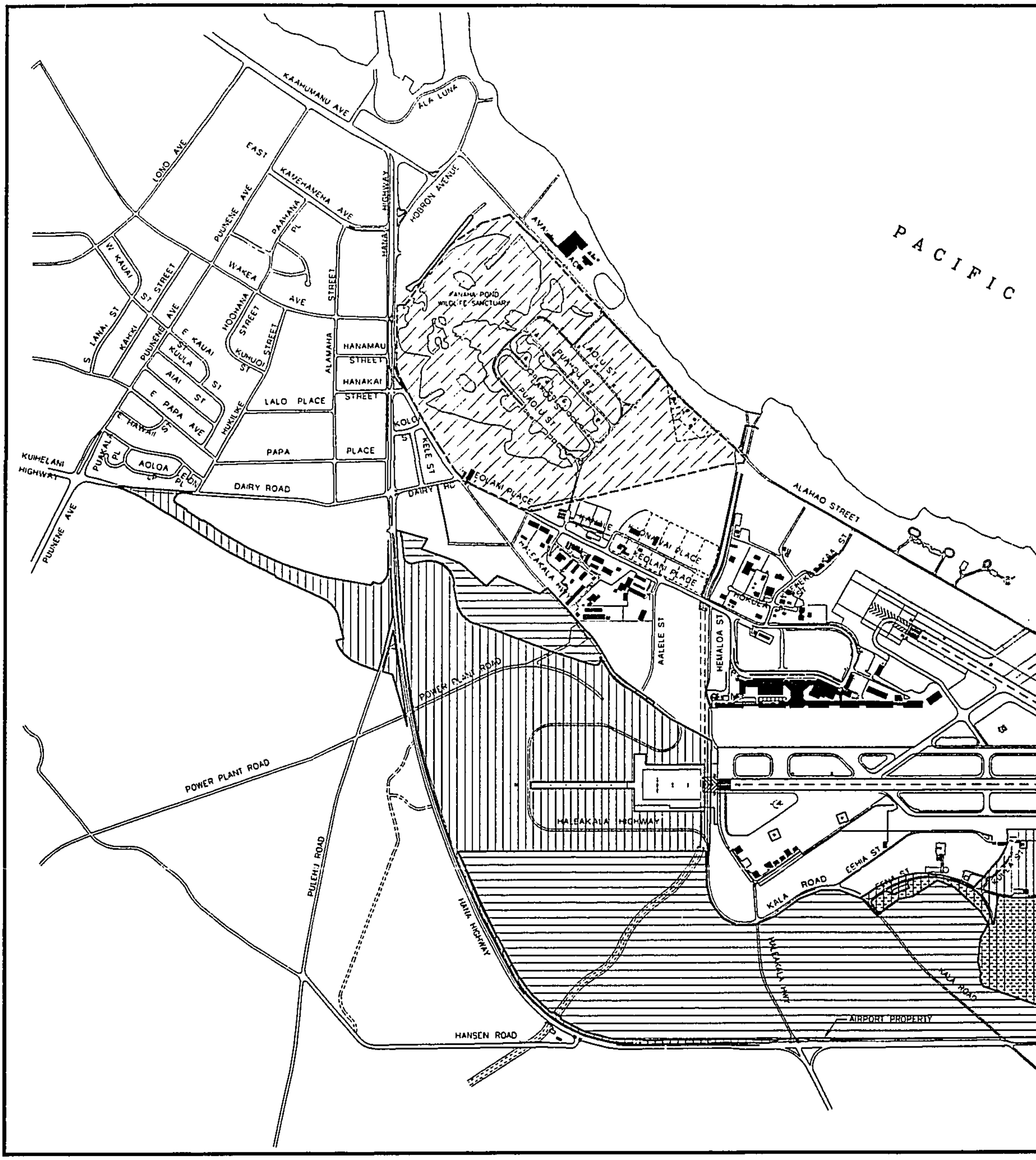
[18] The 139 acres has been rated by the Natural Resource Conservation Service (Soil Conservation Service) using Form AD-1006. The form is included in Appendix D.



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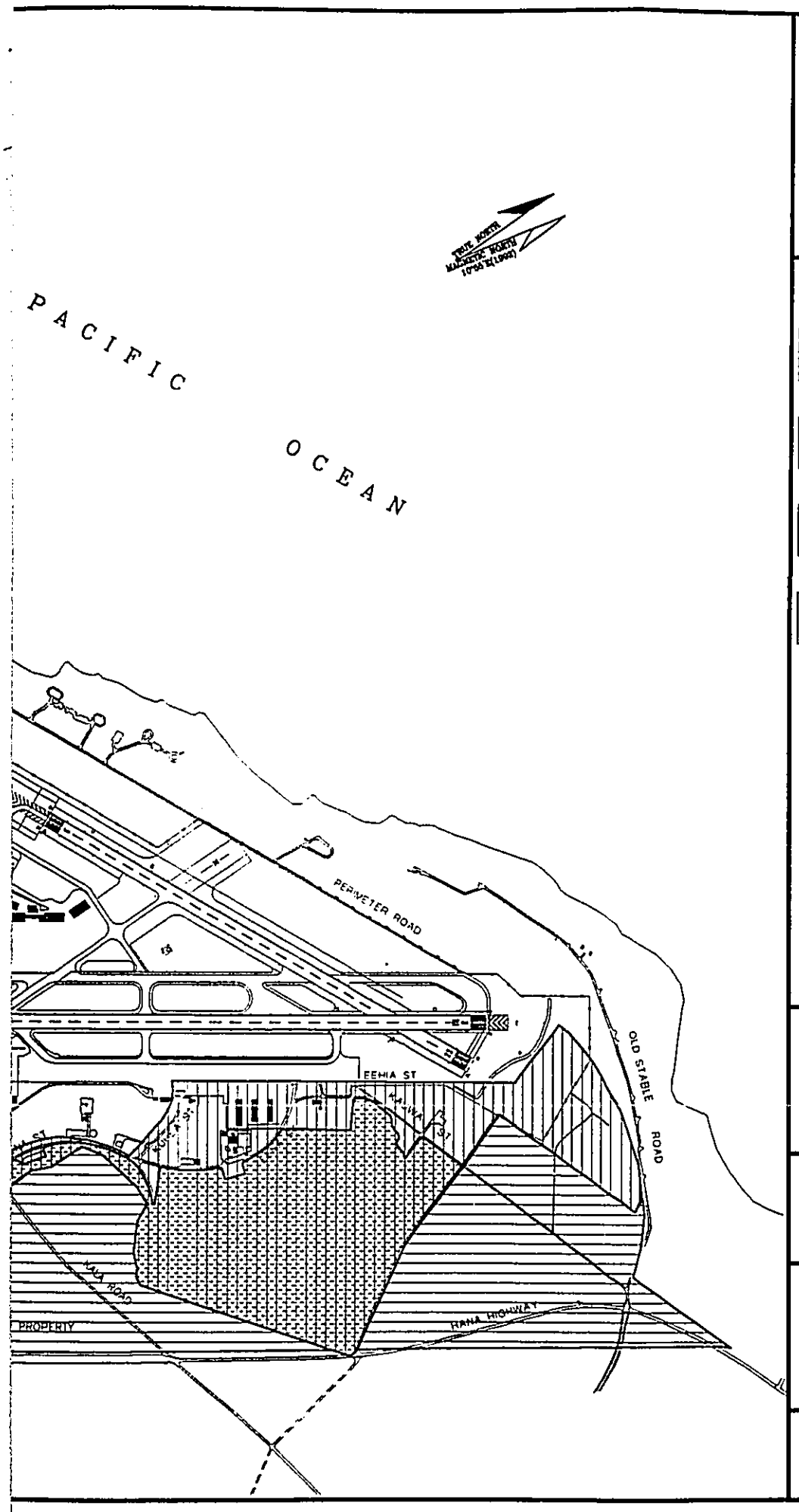

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LEGEND

- Kanaha Pond Wildlife Sanctuary
- A & B Hawaii Inc. Agricultural Land
- State of Hawaii Agricultural Land
- State of Hawaii Land Leased for Sugar Cultivation (1994), that are Potentially Impacted by Proposed Project

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GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

OWNERSHIP OF AGRICULTURAL LANDS

DATE	FIGURE
JULY, 1997	3-23B

3.17.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Significant adverse effects would result if additional sugar cane acreage, over and above that planned to be taken out of production, were to be lost due to the proposed improvements or if increased airport operations resulted in adverse air quality impacts on outlying farm lands. Insignificant or negligible effects would result if the proposed improvements resulted in no effects on the present farm land acreage. The Phase 1 improvements that impact farmland are the new Airport Access Roadway project, including the Airport Access Roadway and the relocation of Hansen Road, and the relocated Runway 2-20 navigational aids and lights. The U.S. Department of Agriculture, Soil Conservation Service rating form (form AD-1006) was used in the significance evaluation for the conversion of the Phase 1 farmland (approximately 139 acres). A copy of the form is in Appendix D. The evaluation results indicate that the conversion would not be significant. A similar rating will be performed for the farmland for the parallel runway and associated facilities prior to construction of those facilities, as these lands will remain in agricultural production until needed for airport related functions. The long-range nature of these Phase 3 projects would require future environmental analysis to assess their impact prior to construction.

Based on the evaluation criteria listed above, there will be no significant impacts to farmlands due to the Proposed Project. Removal of 139 acres of sugar cane lands from active production will not have an adverse impact on farming operations in the immediate vicinity of the airport at this time. The agricultural use of 550 acres of land will be maintained until the parallel runway is needed and its impact will be assessed in the future, prior to the conversion to aviation use. As explained in the Air Quality section of this EIS, airport-related emissions of criteria air pollutant will be less with the Proposed Project than without it. The impact of the parallel runway and appropriate mitigation measures, if appropriate, will be the subject of a future environmental document. Table 3-47 summarizes the significance of the potential effects of the proposed improvements on the farmland characteristics of the project area.

Table 3-47
SIGNIFICANCE OF EFFECTS ON FARMLANDS

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Loss of Prime Agricultural Lands	Losses of acreage greater than that planned	Insignificant
Air Quality	Decreased productivity	Insignificant

3.17.4 MITIGATION MEASURES

Because the Project will not result in significant impacts to farmland, mitigation measures specifically related to the proposed airport improvements are not warranted. However, the State and County of Maui are encouraging diversified agriculture activities in other areas of the island. These measures will

help offset the loss of sugar cane production in the airport area and have been implemented due to the declining sugar industry statewide.

3.18 ENERGY ANALYSIS

3.18.1 EXISTING CONDITIONS

Kahului Airport is connected to Maui Electric Company's (MECO) electrical power grid. The major sources providing electrical power to this grid are MECO's Kahului and Maalaea power plants, and Hawaiian Commercial and Sugar's power plants. Electrical power at the airport is received via two 12.47 kV, 3-phase distribution lines. The 12.47 kV lines are fed from Kanaha Substation #2. A 4.16 kV line originates from MECO's Paia Substation, and may be a possible feeder line to the airport in the future.

The Kanaha Substation #2, located at the intersection of Hana Highway and Dairy Road, provides most of the electrical power to the airport. This substation has a 7,500 kVA transformer that generally operates at about 50 percent of its rated capacity. Approximately 25 percent of its capacity is used by the Airport. In addition, the Airport has two 2,000 kVA substations installed in the passenger terminal building. These state-owned substations have their own switchgears and transformers.

Based on reviews of the 1994 billing statements, the passenger terminal area uses about 730,000 kilowatt hours (KWH) per month. In 1994, the other Airport areas are estimated to consume about 55,754 KWH per month. According to MECO the present usage of the Airport is about 860,000 KWH per month. This consumption is well within MECO's present generating capacity. HDOT-AIR is undertaking the "Green Lights Project" that will retrofit the existing lighting systems at the Kahului Airport with state-of-the-art and energy efficient lighting systems, and thereby, reducing the energy needs for Kahului Airport.

3.18.2 IMPACT ANALYSIS

The potential impacts of the proposed airport improvements on electrical power have been evaluated based on increased consumption requirements. It is estimated that the proposed improvements will require approximately 16,000 KWH more than the present electrical power consumption. According to MECO, the existing 12.47 kV power lines serving the Airport have sufficient capacity to serve the proposed airport improvements. Additionally, the capacity of the Kanaha Substation #2 can be increased to accommodate the potential increase in electrical demand (Section 11.0, Reference 9).

3.18.3 SIGNIFICANCE CRITERIA AND ANALYSIS

The proposed improvements and the forecast aviation and passenger demands are expected to increase airport facilities electrical energy demands. Present Maui Electric Company (MECO) planning, via the on-going Integrated Resource Planning process and MECO internal planning and forecasting, has incorporated the proposed airport improvements into long-term demand scenarios. Significant adverse effects

would result if the proposed improvements required more electrical energy than that presently forecast. Insignificant effects would result from electrical energy demands being the same as or less than that presently forecast.

Based on the evaluation criteria listed above, the Proposed Project will have insignificant impacts on energy consumption. Although the new airport improvement will require some 16,000 KWH in additional electricity, current sources have adequate capacity to meet the increased demand. Table 3-48 summarizes the significance of the potential effects of the proposed improvements on the electrical energy characteristics of the project area.

Table 3-48
SIGNIFICANCE OF EFFECTS ON ELECTRICAL ENERGY

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
MECO System Capabilities	Demands increased beyond existing or planned system capabilities	Insignificant
Airport Electrical Power Distribution System Capabilities	Demands increased beyond existing or planned system capabilities	Insignificant

3.18.4 MITIGATION MEASURES

Because the Proposed Project will create no significant impacts on energy, no mitigation measures are required. However, to keep energy consumption to a minimum, the proposed airport improvements include expansion and upgrading of the airport electrical distribution system and management systems. Additionally, it is expected that energy efficient lighting fixtures will be used where appropriate and that other energy conservation measures will be employed. Buildings will be appropriately insulated to reduce heat loss and gain and some facilities may utilize motion sensors to control lighting requirements.

3.19 LIGHT EMISSIONS

3.19.1 EXISTING CONDITIONS

The existing Kahului Airport lighting consists of: (i) appropriate runway, taxiway, apron area and control tower lighting; (ii) passenger terminal and air cargo facilities lighting; (iii) parking lot and rental car area lighting; and (iv) access road lighting. These areas are well lit to permit early morning and nighttime aircraft operations and maintenance activities. The majority of the lighting is provided by pole mounted lights that are specifically directed toward the operational areas. Note also that most of the lights are of the low sodium variety which reduce glare and intrusion into non-operational areas.

3.19.2 IMPACT ANALYSIS

Additions to the present airport lighting system will include the extension of the runway, taxiway and apron area lights, lighting for new air cargo and lease lot facilities, and new lighting for the new access road and expanded parking areas. The new lighting system will relocate the existing runway end lights and MALSR to the end of the extended runway. The majority of the new lighting will be part of the Runway 2-20 extension and the new Airport Access Roadway. The Runway 2-20 extension and associated taxiways will be lighted similar to the existing lighting scheme. The new Airport Access Roadway will be illuminated with similar lighting configurations as other roadways in the Airport's vicinity. Other new lighting will be compatible with and operationally similar to existing lights. Lighting for the proposed airport improvements is not expected to intrude on areas outside the airport boundaries to any greater degree than at present. The new lighting will not include strobe, multi-directional or other types of lighting that will shine directly into residences or businesses in the vicinity of the Airport. As the new lighting systems will be similar to present, it will not have high-intensity lights. There will be an increase in aircraft light emissions, proportional to the increase in aircraft operations. There is a potential for increased annoyance from automobile lights impacting residences near the intersection of Dairy Road and the New Airport Access Roadway.

The light impacts on fauna are discussed in Section 3.11.2 and are considered to be insignificant. The parallel runway and associated taxiways will also have additional lighting requirements. These impacts will be analyzed in future environmental documents due to the long-range nature of this project.

3.19.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Significant effects of light emissions would result if the proposed improvements create situations where airport lighting is an annoyance to people in the vicinity of the Airport, or would disturb or otherwise alter the behavior of terrestrial fauna and birds. Insignificant effects would result if increased lighting requirements do not cause an annoyance.

Based on the evaluation criteria listed above, the proposed improvements will have an insignificant adverse impact. Table 3-49 summarizes the significance of the potential effects. There is a potential for intermittent light annoyances from the new intersection at Dairy Road and the New Airport Access Roadway. With the existing landscaping along Dairy Road/Kuihelani Hwy. in this area, the potential for annoyance is minimal and therefore this impact is considered insignificant. In addition, if the noise barrier is constructed, the light impacts will be further reduced.

3.19.4 MITIGATION MEASURES

Although the proposed airport improvements are expected to have no significant impact on light emissions, certain measures will be undertaken to minimize any spillover effect from the Airport's lights and to reduce environmental harm. For example, new lighting will be properly shielded and directed to

prevent intrusion into areas outside the airport areas. In addition, new lighting will be in compliance with applicable lighting codes and standards. It is also recommended that the designers follow the guidelines for the Newell's shearwater as published by DLNR. The publication is entitled *The Newell's Shearwater Light Attraction Problem.*

To mitigate the intermittent light annoyance from the automobile traffic, adequate landscaping or the noise wall proposed as a noise mitigation measure would alleviate the situation.

Table 3-49
SIGNIFICANCE OF EFFECTS ON LIGHT EMISSIONS

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Increased Airport Area Lighting	Intrusions into residences or businesses outside the airport	Insignificant
New Types of Lighting	Increased lighting effects outside the airport area, increased intrusions	Insignificant

3.19.5 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The mitigation measures would reduce the impacts to a level of insignificance.

3.20 SOLID WASTE, HAZARDOUS/TOXIC WASTE AND WASTE WASH WATER

3.20.1 EXISTING CONDITIONS

3.20.1.1 Existing Solid Waste Disposal

There are currently two solid waste disposal landfill operations on Maui: Central Maui; and Hana. Two other landfills, Olowalu and Makani, were recently closed. The landfills are operated by the Maui County Department of Public Works.

The Central Maui Landfill is located approximately four miles southeast of Kahului Airport in a former Puunene quarry site. The landfill opened in 1987 and encompasses about 55 acres. The landfill site is underlain by brackish basal (non-potable) water and located down gradient from potable groundwater sources. The closest potable water wells are about 7 miles up-gradient from the landfill.

The *1989 County of Maui Comprehensive Solid Waste Management Plan* indicated that about 55 percent of the total rubbish entering the landfill is generated from Wailuku, Kahului,

Waiehu, Paia, Waikapu and Puunene. The remainder of the rubbish is generated in South Maui, West Maui areas other than Wailuku and Kahului, and Upcountry Maui. Maui County has completed two new studies in 1994 for solid waste disposal, these studies are the: (i) "*County of Maui Integrated Solid Waste Management Plan*," and (ii) the "*Solid Waste Characterization Study - Maui, Hawaii.*" The 1994 Management Plan study was developed to provide the decision makers in Maui County with a set of goals and policies for implementing and evaluating future solid waste management efforts. This plan was developed in accordance with the Hawaii Integrated Solid Waste Management Act (No. 324-91), which requires each county to prepare an integrated solid waste management plan. This Plan is an update to the 1989 County of Maui Comprehensive Solid Waste Management Plan. The 1994 characterization study was prepared to: (i) quantify the total solid waste being generated on Maui, in the forms of disposed waste and diverted materials; (ii) provide solid waste composition data by generator type and by geographic area for solid waste being disposed at the Central Maui Landfill; and (iii) summarize the composition and quantity data obtained in the study to allow the County to measure its progress to date, generator by generator, and material by material, in meeting its solid waste reduction objectives.

The Central Maui Landfill was designed to serve as the island's primary landfill, thus allowing the closure of other landfills that have exceeded their capacity. The landfill accepts commercial, industrial and residential waste but does not accept hazardous materials. At present, the Maui landfills are accepting asbestos containing materials (ACM) and lead containing paints (LCP) on construction debris with the proper documentation. A 1988 county survey indicated that the waste stream flow was greater than anticipated and that the landfill is rapidly reaching its design capacity. Currently, Maui County is studying methods of increasing the landfill's capacity to meet forecast demand up to the year 2016. The 1994 Management Plan states that the capacity of the planned Phase III of the Central Maui Landfill is unknown, but has a limited future. It recommends the County to proceed with Phase III expansion of the Central Maui Landfill and to begin the new process of siting/constructing a new landfill on the island of Maui. Waste oils, contaminated soils and hazardous materials are currently sent off island for disposal per U.S. EPA and State Department of Health requirements. Hazardous materials are sent to an out-of-state disposal site.

Based on the County's 1988 waste stream flow quantity and composition survey, it was determined that approximately 349 tons per day (tpd) of waste is generated in Central Maui. Of this, it is estimated that airport operations, including car rental agencies, account for approximately 3.5 tpd or approximately one (1) percent of the total Central Maui waste stream. The 1994 characterization study estimated that the total disposed solid waste at the Central Maui Landfill was about 419 tons/day, with approximately 45 percent from the central area. However, the 1994 management plan report used the 1992 solid waste disposal figure of 700 tons/day.

The Kahului Airport started a recycling program for glass and paper/cardboard products for airport users, tenants and airlines. However, due to a lack of volume the recycling of glass products was discontinued. The recycling of the paper/cardboard continues, with pickup

by private organizations for recycling. The green waste is hauled separately to the City and County Green Waste facility for recycling.

3.20.1.2 Hazardous Waste Investigation

A hazardous waste survey and investigation of the airport project site was conducted specifically for this EIS. The results of that investigation are contained in the Hazardous Material Survey (HMS) attached as Appendix K. The HMS analyzed five categories of hazardous materials believed to exist at the airport site: (i) petroleum products; (ii) hazardous/toxic waste; (iii) polychlorinated biphenyls; (iv) asbestos-containing building materials (ACMs); and (v) lead-containing paints (LCPs). A summary of the HMS is provided below:

PETROLEUM PRODUCTS. The primary use of petroleum products at Kahului Airport is fuel, including aviation gasoline, jet fuel and motor fuels such as gasoline and diesel. These products are stored in both underground and above ground tanks. A previous investigation conducted in 1992 indicated that petroleum products are stored at Kahului Airport in underground storage tanks at 24 tenant locations, and in above ground tanks at six (6) tenant locations.

Due to relocation of the facilities situated within the Runway 5-23 runway protection zone, several ground transportation tenants will be directly impacted. The majority of these tenants have underground fuel storage tanks associated with their operations. The field survey identified two (2) abandoned underground storage tanks at the former locations of Trans-Maui Car Rentals and Thrifty Rent-A-Car on Mokuea Place in the ground transportation subdivision. Both of these tenants have ceased operations and vacated the premises. The tanks remain in place and the status of their contents and integrity is not known.

Of the aboveground storage facilities, one -- the Hawaiian Airlines Jet Fuel Storage Tank -- will be demolished/relocated as a result of the proposed airport improvements. There are indications that this tank facility has experienced several leaks or spills. The other major aboveground storage facility, Century Aviation, is not scheduled to be impacted by the proposed airport improvements. The owners of the facility have brought the facility into compliance with current regulations related to aboveground storage tanks, such as secondary containment and development of a Spill Prevention, Control and Countermeasures Plan.

A field reconnaissance conducted as part of the HMS identified the potential for subsurface hydrocarbon contamination at the existing ARFF training area. This training area was constructed at the westerly end of former Runway 17-35. Generally, construction of the burn pit for the training area consisted of the placement of low asphaltic concrete berms in a square on the existing paved runway surface. An old tank was placed in the burn pit to serve as a mock aircraft. Training is conducted by dousing the burn pit and tank with fuel and igniting it. Visual observations made during the field reconnaissance indicated that the asphaltic concrete pavement within the burn pit area has eroded and that

soil is exposed in some areas. In addition, the containment berms are discontinuous and staining indicates that fuel has leaked on to the weathered and cracked pavement around the burn pit.

HAZARDOUS WASTES. There are 43 tenants at Kahului Airport that generate hazardous wastes. Of this number, 13 facilities are conditionally exempt from regulation as they generate less than 100 kilograms of hazardous waste per month. An additional two (2) facilities are exempt, because they generate only recyclable hazardous wastes which are exempted under 40 CFR 261.

During the October 1994 field survey, the two (2) abandoned car rental facilities, Trans-Maui and Thrifty, contained articles of potentially hazardous waste. These items include, but are not limited to, used lead-acid batteries, lubricants and cleaning solvents. Both sites had several unlabeled drums believed to contain used oil. Gross staining and petroleum sludge accumulations were noted in the former Trans-Maui vehicle maintenance area.

POLYCHLORINATED BIPHENYLS. The proposed airport improvements will require the relocation/replacement of a fluid filled transformer associated with the existing Glide Slope Indicator facility. Previous testing of this transformer indicates that the dielectric fluid of this transformer does not contain polychlorinated biphenyls (PCB). However, the 1992 report cites the presence of two (2) drums labeled as containing "PCB Wastes" at the Federal Aviation Administration approach radar site. These drums were intended to be used for storage, but were never used and have been properly disposed. (Section 11.0, Reference 34).

The proposed improvements will also impact several facilities containing fluorescent lighting fixtures. The starter ballasts of older fluorescent fixtures contain small amounts of PCBs. Current regulations allow landfill disposal of these fixtures, or disposal into an authorized treatment/disposal facility depending on the quantity generated.

ASBESTOS CONTAINING BUILDING MATERIALS. The proposed airport improvements will involve the demolition/relocation of several existing structures. Given the age and type of construction of many of the structures at Kahului Airport, these impacted structures may have asbestos-containing building materials (ACMs), such as vinyl asbestos floor tiles, linoleum flooring, roofing materials, transite panelling, penetration sealants and wallboard. A previous survey of Federal Aviation Administration facilities at Kahului Airport identified the presence of ACMs in the Glide Slope Indicator and Middle Marker buildings. During the course of the 1994 field survey, samples of suspect ACMs were collected from existing structures at the two abandoned car rental facilities, Trans-Maui and Thrifty. A concentration of 3% chrysoltile asbestos was found in the floor tiles from both facilities. Both of these facilities were probably constructed in the mid-1980's.

LEAD CONTAINING PAINTS. During the course of a field survey conducted for this EIS, samples of paints were collected from selected Federal Aviation Administration

navigational aids for lead analysis. The following is a summary of the laboratory testing, where the concentration of lead is expressed in parts per million (ppm):

Location	Lead Content (ppm)
• REIL Lights	Less than Limit of Detection
• VASI Light Box	130,000 and 120,000
• Glide Slope Bldg. - North Exterior Walls	58,000 and 4,700
• Glide Slope Bldg. - South Exterior Walls	870 and 130
• Glide Slope Antenna	95,000 and 83,000
• Automated Weather System Antenna	Less than Limit of Detection
• Glide Slope Bldg. - North Interior Wall	740
• Glide Slope Bldg. - East Interior Wall	750
• Glide Slope Bldg. - Interior Electric Panel	1,300

WASTE WASH WATER. Waste wash water is generated during the washing of airport service equipment. At present, this wash water enters the Airport storm drain system and/or is allowed to collect and evaporate from wash down areas. The quantity of waste wash water is minimal. In addition, there is an incident recovery system at the Airport.

3.20.2 IMPACT ANALYSIS

Solid waste will be generated during the construction of the proposed Kahului Airport improvements. This waste stream will primarily consist of construction debris. Following development of the proposed improvements, additional solid wastes will be generated by airport operations as well as by flight kitchens, car rental agencies and tour operators. The amount of increased solid waste generation is estimated to be approximately 0.8 tpd, or approximately 20 percent of the total solid wastes presently generated at the Airport. The County *Comprehensive Solid Waste Management Plan* waste projections for commercial activities on Maui indicate an island-wide increase of about 170 tpd between 1990 and 2010. Based on this information, it is estimated the Airport will continue to produce about one percent of the total commercially generated solid waste on the island.

The projected increases in visitor arrivals and population are expected to occur regardless of the proposed airport improvements. Therefore, it is expected that there will be natural increases in solid waste generated by the public, but that such increases will not be caused by the Proposed Project.

Petroleum based hazardous/toxic wastes will continue to be generated at the Airport regardless of whether the proposed improvements proceed. It is estimated that future quantities will be similar to those currently produced. The demolition of several structures in the Ground Transportation Subdivision and the relocation of tenants from the Runway 5-23 runway protection zone will impact several

USTs. In addition, several sites contain potentially hazardous wastes, including used lead-acid batteries, lubricants and cleaning solvents. Because some of these facilities were used for vehicle maintenance, gross staining and accumulations of petroleum sludges were found. Removal and disposal of this material would be performed in accordance with applicable Federal and State rules and regulations.

The design of the new on-airport Fuel Storage Facilities and the associated piping to the aircraft apron shall be design in compliance with all applicable Federal and State codes, rules and regulations to prevent the contamination of soil, runoff and groundwater. These regulations include the State's Waste Water Management Regulations, Uniform Building Code, and National Fire Protection Association, 40 CFR 112, and US DOT Regulations, Title 49, Part 195 - *Transportation of Hazardous Liquids by Pipeline*. These facilities will be designed, constructed and operated by HFFC. Likewise, the future supply pipeline from the Harbor to the Airport's Fuel Storage Facility will be designed, installed and operated by HFFC. Due to the long-range nature of this facility, the potential impacts or proposed mitigation measures will be addressed in a future environmental analysis and required documentation.

No structures containing polychlorinated biphenyls were found except for small amounts in the fluorescent light ballast. Given the age and type of structure slated for demolition under the Proposed Project, there is a potential for impacting asbestos-containing material (ACM). These materials include vinyl asbestos floor tiles, linoleum flooring, roofing materials, transite paneling, penetration sealants and wallboard. The present Glide Slope indicator and Middle Marker buildings have been identified as containing ACMs. Some of the buildings slated for demolition may contain lead-containing paints (LCPs). In addition, the Runway 2-20 lighting and navigational facilities are also painted with LCPs. The structures slated for demolition will be tested for ACMs and LCP prior to their being disturbed. The removal and disposal of structures containing ACMs and LCPs will be performed in accordance with applicable OSHA, State and Federal rules and regulations.

Waste wash water will also continue to be generated at the Airport regardless of whether the proposed improvements proceed. Future quantities of waste wash water are estimated to be approximately the same as at present.

3.20.3 SIGNIFICANCE CRITERIA AND ANALYSIS

An increase in the quantity of solid waste requiring collection and disposal services would be considered a significant impact if the Proposed Project's additional contribution exceeds the capacity of the existing or planned Maui County disposal facilities; otherwise, the effects would be insignificant.

The criterion used to define significance of hazardous/toxic materials effects associated with the various project alternatives is the potential for public exposure to hazardous substances. If the proposed improvements would result in public exposure to hazardous substances, the effects would be potentially significant. If the proposed improvements would not result in public exposure, the effects would be identified as insignificant.

The criterion used to define significance of waste wash water disposal is the potential for that water to enter the existing or planned disposal or drainage system prior to receiving appropriate treatment. Insignificant effects would result from treated wash waste water entering the disposal or drainage system.

Based on the evaluation criteria listed above, the proposed improvements, including the Airport Access Roadway Project, will not result in significant solid waste, hazardous waste or waste wash water impacts. Table 3-50 summarizes the significance of the Proposed Project's potential effects on the solid waste, hazardous/toxic waste and waste wash water characteristics of the proposed airport improvements. Although the Proposed Project will continue to generate certain amounts of solid waste, hazardous waste, and waste wash water, these amounts will not overburden existing disposal facilities or result in additional exposure of the public to hazardous substances.

3.20.4 MITIGATION MEASURES

As there are no significant impacts, no mitigation measures are required. However, as stated above, the removal and disposal of hazardous materials will be performed in accordance applicable Federal and State rules and regulations to minimize the potential impact of the demolition and relocation on existing structures. In addition, HDOT has and is updating its emergency response plans to conform to applicable rules and regulations. If petroleum contaminated soils are found during construction, HDOT-AIR will remediate the soil on-site, following all applicable rules and regulations. The demolition/relocation of existing structures containing asbestos will be in compliance with Federal, State (HRS Chapter 342-P-1) and OSHA requirements.

Table 3-50
SIGNIFICANCE OF EFFECTS ON SOLID WASTE, TOXIC/HAZARDOUS WASTE AND WASTE WASH WATER

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Solid Waste Generation	Increases beyond capabilities of existing or planned disposal facilities	Insignificant
Hazardous/Toxic Waste Generation	Exposure of public to hazardous/toxic wastes	Insignificant
Waste Wash Water Generation	Untreated waters entering drainage system or nearshore waters	Insignificant

The removal of USTs will be in compliance with 40 CFR 280, *EPA Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks*, and the American Petroleum Institute Recommended Practice 1604, *Removal and Disposal of Used Underground Petroleum Storage Tanks*. In addition, the HDOT-AIR will include specifications in the construction document for the removal of USTs. The specifications will be in substantial compliance with the guide specifications presented in Appendix K. In summary the major items in the guide specifications, include: Preparation; Demolition, Excavation and Removal of UST systems; Monitoring/Screening for Subsurface Contamination; Residual Sludge and Rinsate; Sampling/Testing/Handling Soil and Ground Water; and Response to Contaminated Soils and Ground Water. In addition, if subsurface contamination originating from releases from these USTs is discovered during removal, the appropriate measures will be taken in compliance with the State of Hawaii Department of Health, UST Technical Guidance Manual for Underground Tank Closure and Release Response, and 40 CFR Part 280.

The mitigation measures which will be incorporated into the design of the new Fuel Storage facility and piping will include a containment berms or walls, oil/water separation systems, corrosion resistant coatings, filters, applicable Spill Protection Containment and Countermeasures, leak detection and monitoring.

Maui County does not have an official waste reduction program at this time. However, there are several private recycling operations, including the composting of green wastes and the collection and recycling of glass, aluminum cans and paper products. Present worldwide recycling markets are severely depressed and state-wide solid waste material recycling efforts are being adversely affected by this situation. It is expected that to the extent economically and operationally possible, recycling services will be used by the various airport operations for the disposal of solid wastes generated during and after construction of the proposed improvements.

Solid wastes generated during operations of airport facilities should be recycled to the extent economically and operationally possible, providing there are qualified recyclers to accept the materials.

3.21 VISUAL EFFECTS

3.21.1 EXISTING CONDITIONS

The visual effects of the proposed airport improvements have been analyzed based on the *Maui Coastal Scenic Resources Study* (1990) and the *Coastal View Study* (1987) prepared for the City and County of Honolulu. The *Scenic Resources Study* identifies resources in terms of five classifications: (i) Land Forms; (ii) Coastal Views; (iii) Mauka Views; (iv) Open Space; and (v) Sites of Natural Beauty. These resources are identified as being either "Distinctive" or "Noteworthy" visual resources. Seven design principles: (i) Scale and Proportion; (ii) Unity and Variety; (iii) Repetition and Rhythm; (iv) Balance; (v) Directional Forces; (vi) Emphasis and Subordination; and (vii) Contrast, provide the framework for evaluating the quality of existing visual resources.

In the Kahului Airport area, the view from the coastline toward West Maui was identified as a "Noteworthy Coastal View." The views of Haleakala and the West Maui mountains from, respectively, Hana Highway are unique due to the size and natural features of the mountains. Both views have been classified as Distinctive Mauka Views, and are considered to have generally high visual qualities.

The Airport itself was identified as a "Noteworthy Important Open Space." The open area surrounding the Airport consists primarily of agricultural lands used for sugar cane. As a result, this manmade open space area is considered to have only moderate visual qualities.

The line of trees seen from Hana Highway at its intersection with Kala Road is classified as a "Noteworthy" site; and Kanaha Pond, as viewed from Hana Highway north of its intersection with Dairy Road, is considered a "Visual Site of Natural Beauty." These views, respectively, have moderate and high visual qualities.

3.21.2 IMPACT ANALYSIS

The probable visual effects of the Project have been assessed based on the degree to which the proposed airport improvements will change existing visual characteristics of identified visual resources. In general, the proposed improvements are in keeping with the design principles established in the County's *Scenic Resources Study*. The proposed facilities will result in few changes to the existing visual character or visual resources of the area. The most important visual resources will retain their existing high visual qualities.

The proposed improvements to Kanaha Beach Park will not be located within the coastal view toward the West Maui mountains. Moreover, the improvements will create additional opportunities for residents and visitors to take advantage of the coastal views. The proposed Airport Access Road interchange with Hana Highway may affect the visual quality of the mauka (toward the mountain) view of Haleakala from the highway but is not expected to affect the visual quality of the mauka view of the West Maui mountains. The impact would be caused by the overpass at the intersection of new Airport Access Roadway and Hana Highway. The overpass is planned to be approximately 20 feet above Hana Highway and approximately 200 feet in length. The extension of Runway 2-20 and the new parallel taxiway will affect the existing character of the open space area. These impacts could be considered a decrease in visual quality by some people. The line of trees located at the intersection of Hana Highway with Kala Road may be affected by construction due to the potential need to remove some of the trees. The majority of the trees will remain.

The parallel runway will change the visual character of the area west of Hana Highway from agricultural land to airport use. In addition, the trees lining the roadways in that area will be removed.

3.21.3 SIGNIFICANCE CRITERIA AND ANALYSIS

Visual effects tend to be subjective, as it is difficult to evaluate and quantify the significance of the view obstructions and/or changes. Issues of scale, massing and architectural compatibility with surrounding structures are often used to gauge the visual compatibility of a project. However, in this case, these design details are not available. The proposed improvements are conceptual at this time. For purposes of this EIS, a significant adverse effect would occur where the proposal would substantially obstruct long-range views, unique environmental or manmade visual features, or views from important public gathering places. If the proposal is of a substantially different mass or height from surrounding development, the disparity would be considered an adverse, but not significant, effect. Projects that are visually compatible with their surrounding buildings and do not obstruct significant views would have insignificant effects.

Based on the evaluation criteria listed above, there will be no significant impacts due to the Proposed Project, except for the parallel runway. Although the Airport Access Road interchange with Hana Highway may affect the mountain views from the highway, the effect will be relatively minor and is not considered a significant impact. Similarly, the loss of open space due to the Runway 2-20 extension and the new parallel taxiway is also considered an insignificant visual impact. The tree line near the intersection of Hana Highway and Kala Road will lose a few trees but most will remain. This impact is considered insignificant. However, construction of the parallel runway has potential visual impacts and will be addressed in a future environmental document at the appropriate time. Until such time the parallel runway is constructed, the area is planned to remain in agricultural use. Table 3-51 summarizes the significance of the potential effects of the proposed improvements on the visual characteristics of the project area.

Table 3-51
SIGNIFICANCE OF EFFECTS ON VISUAL CHARACTERISTICS

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Land Forms	Alteration of existing character or views	Insignificant
Coastal Views	Alteration of existing character or views	Insignificant
Mauka Views	Alteration of existing character or views	Insignificant
Open Space	Alteration of existing character or views	Insignificant
Sites of Natural Beauty	Alteration of existing character or views	Insignificant

3.21.4 MITIGATION MEASURES

There are no significant impacts, therefore, no mitigation measures are required. However, to minimize environmental harm, the proposed airport improvements will be designed to blend with the existing environment and views to the greatest extent possible. Buildings will be designed in keeping with the architectural character of the airport. Horizontal facilities (runways, taxiways, etc.) will be designed and constructed to avoid alteration of existing views to the extent possible. New facilities will be landscaped with trees and plantings to enhance their visual character. Xeriscape (drought-tolerant), salt tolerant and native plants should be considered during design.

To minimize visual effects to the line of trees along Kala Road, the remaining trees located mauka of the highway will be preserved. If possible, those trees requiring removal will be transplanted next to the remaining trees. The removal of agricultural lands will be mitigated by the land serving as an open space resource and appropriate landscaping will provide an open space buffer between Hana Highway and the runway.

Because of the speculative and long-range nature of the parallel runway, it is difficult at this time to evaluate its impact on the visual characteristics of the project area. Therefore, prior to construction of the parallel runway, an environmental document will be prepared to assess its impacts and provide mitigation measures, if applicable.

3.22 PUBLIC FACILITIES, INFRASTRUCTURE AND SERVICES AND AVIATION SAFETY

A detailed analysis of the infrastructure requirements for Kahului Airport is presented in Appendix L. Traffic impact reports are presented in Appendix M and P, and an aviation safety analysis in Appendix N, while the impacts on public facilities and services are analyzed in Appendix E.

3.22.1 WATER SUPPLY

3.22.1.1 Existing Conditions

The County of Maui Department of Water Supply (DWS) administers and operates the water systems on Maui. The Central Water System (CWS), one of five island systems, serves the Airport, the urban and rural areas of Wailuku-Kahului, Kihei-Makena and the smaller portions of Paia. The CWS draws water from four aquifers: (i) Kahakuloa; (ii) Waihee; (iii) Waikapu; and (iv) Iao. The Airport receives all of its water from the Iao aquifer.

The Iao aquifer has an estimated sustainable yield of 20.1 million gallons per day (mgd). Recently, the state Commission on Water Resource Management warned the Maui Board of Water Supply that the water demand has exceeded the sustainable yield. Based on actual 1994 water bills, the existing Kahului Airport demand is estimated to be approximately 0.23 mgd, or slightly more than one

percent of the sustainable yield. It is further estimated that approximately 25 percent of this demand, or 0.05 mgd, is for landscape irrigation and construction projects. Within the Wailuku-Kahului district, the Kahului-Spreckelsville area accounts for about 4.5 mgd or approximately 22 percent of the aquifer's sustainable yield.

As noted above, the County's Department of Water Supply (DWS) has estimated that the Iao aquifer has sustainable yield of 20.1 mgd. DWS has also estimated that the future average demand for all uses will be 30.5 mgd. As the forecast future demand for all uses exceeds the estimated aquifer yield, the County has initiated the development of other water sources in East Maui. The existing water system serving the Airport is made up of a network of pipelines with diameters ranging between 6 and 16 inches. These pipes connect to a 16 inch diameter main line running along Hana Highway. The lines are maintained by the DWS. Some sections of the water system serving the Airport's terminal area, East Ramp facilities and ground transportation lots are old World War II lines that are deteriorating and leaking. The amount of leakage is unknown. The use of County water (potable water) is not being allowed for landscape irrigation for the new Airport Access Roadway. The use of salt tolerant plants, drought-resistant plants, and the use of a non-potable water system will be investigated during design (refer to Appendix L).

3.22.1.2 Impact Analysis

Water demand at Kahului Airport, as with other airports, generally corresponds with passenger activity levels. Based on actual fiscal year 1994 passenger levels, the airport terminal demand, including car rental operations, is estimated to be approximately 16 gallons per day per passenger (gppd). This rate is similar to that of other Hawaii airports and is considered to be a reasonable rate to estimate future demand.

Based on the latest aviation demand forecasts (Appendix N), it is estimated that the 2010 total passenger levels at Kahului Airport will be 7,988,000. Using the 16 gppd demand rate, the airport water demand is expected to increase from 0.23 mgd to about 0.35 mgd in 2010. Thus, airport water demand, as a percentage of the total water consumption, will remain essentially unchanged, *i.e.*, slightly more than one percent. The new flight kitchens, increased commercial activities and natural increases in population and average daily visitor levels will add to demands on the Island's potable water supplies. These latter increased demands are expected to occur regardless of the Proposed Project improvements.

3.22.1.3 Significance Criteria And Analysis

Potential effects related to water supply include demand exceeding capacity of the water distribution system or exceeding capacity of the supplies. A significant adverse effect would occur if Maui County could not meet the Airport's projected water requirements. Adverse but insignificant effects would occur if the Project required major expansions of existing distribution lines and facilities. Negligible effects would occur if the Project only required water line extensions that would tie into existing water mains.

Based on the evaluation criteria listed above, there is a significant impact on water supply as the demand in the region will exceed the Iao aquifer's sustainable yield. However, because this exceedance of the regional water supply will occur with or without the Proposed Project, the Project's contribution to the water shortage is, by itself, insignificant. Only in the cumulative sense is project-related water consumption "significant." All other impacts are insignificant. Table 3-52 summarizes the significance of the potential effects of the proposed improvements on the potable water system of the project area.

Table 3-52
SIGNIFICANCE OF EFFECTS ON POTABLE WATER SYSTEM

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Water System	Demand exceeding existing or planned system capabilities	Insignificant
Water Supplies	Demand exceeding existing or planned supply	Insignificant

3.22.1.4 Mitigation Measures

The water supply shortage expected by the year 2010 is a function of the projected increase in growth on the island. This growth, and the corresponding strain on potable water resources, would occur with or without the Proposed Project. Therefore, no mitigation measures specifically related to the Project are necessary. However, HDOT-AIR will reduce the amount of potable water consumption at the Airport with the Proposed Project. An integral part of the proposed airport improvements includes the expansion and rehabilitation of the existing airport water supply system. This work will alleviate much of the present leakage that is occurring from the older distribution lines. The Proposed Project will use non-potable water for landscape irrigation, use of plant species that are salt tolerant and drought-resistant, recycling rental car wash water and replacing deteriorating water lines will assist in reducing airport water consumption. The non-potable water development includes the use of brackish water wells, installation of pumps and the installation of 6-inch distribution PVC piping. The initial areas that would be served, are the West Ramp facilities along Keolani Place including; the parking areas, frontal roads and the commuter facilities. In addition, landscaping for the new Airport Access Roadway and the Kanaha Beach Park Expansion could be served by non-potable water.

3.22.1.5 Level of Significance After Mitigation

There will be insignificant impacts on the water supply system and the water demand due to the Proposed Project. However, as water conservation measures are implemented the water

consumption on a per passenger basis at the Airport will be reduced. This issue will continue to be a significant cumulative impact with or without the Proposed Project and is discussed in Section 5.0, Cumulative Impacts.

3.22.2 WASTEWATER COLLECTION, TREATMENT AND DISPOSAL

3.22.2.1 Existing Conditions

Kahului Airport is served by the Wailuku-Kahului Wastewater Reclamation Facility (WRF), the primary County wastewater treatment facility. The WRF is located along Alahao Street, northwest of the Airport. This secondary, activated-sludge treatment facility has a design capacity of 7.9 mgd. Effluent is disposed of through four injection wells located north of the treatment plant. The plant also has a storage pond available to accommodate peak flows. Because of its location in the tsunami inundation zone and the high corrosion maintenance costs due to its location near the ocean, the plant will not undergo further upgrades.

The existing airport sewage system serves the main and commuter passenger terminals, the ground transportation subdivision and light industries operating within the airport boundaries. Sewage from these areas is collected by 8-, 10- and 15-inch lines that convey it to the (Naval Air Station - Kahului) NASKA sewage pump station near the eastern boundary of Kanaha Pond. From there the sewage is pumped to the WRF via a 8-inch force main along Alahao Street.

The general aviation and helicopter facilities on the East Ramp are served by nine (9) unlined cesspools. A County 12-inch force main along Spreckelsville Beach Road that connects to a 18-inch gravity flow main serves the areas of Spreckelsville, Paia and Kuau town.

The NASKA Pump Station was constructed in the early 1980's and serves the entire airport property, including the airport industrial area and the ground transportation subdivision. The pump station is equipped with two wells (wet and dry) and an emergency generator. The capacity of the pump station is 800 gallons per minute (gpm) or 1.15 mgd. The average daily sewage flow is about 170 gpm or 245,000 gpd. This is equal to about 21 percent of the pump station capacity and about 3 percent of the WRF capacity.

3.22.2.2 Impact Analysis

Sewage generated by Kahului Airport, including rental car operations, generally corresponds with passenger activity levels. It is estimated that airport sewage flow will increase from the present 245,000 gpd to about 400,000 gpd (approximately 280 gpm). The WRF currently processes about 5.5 mgd and the NASKA Pump Station currently pumps sewage at the rate of about 445 gpm.

Increases in population and average daily visitor population will also increase the quantity of sewage generated on the island. Similarly, the development of new flight kitchen facilities and other industrial activities are expected to result in an increase in sewage generation.

The cesspools on the East Ramp will be abandoned upon installation of the new sewer lines on the East Ramp. These cesspools will be closed to meet applicable Federal and State rules and regulations.

3.22.2.3 Significance Criteria And Analysis

A significant adverse effect would occur if the proposed improvements generate wastewater flows in excess of the capacity of Maui County's wastewater collection, treatment and disposal system. Adverse but insignificant effects would occur if the Project required major expansions of existing collection lines. Negligible effects would occur if the proposed improvements would tie into existing lines without requiring that those lines be improved.

Based on the evaluation criteria listed above, Table 3-53 summarizes the significance of the potential effects of the proposed improvements on the wastewater collection and disposal system of the project area.

Table 3-53
SIGNIFICANCE OF EFFECTS ON WASTEWATER SYSTEM

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Wastewater Collection and Disposal System	Flow exceeding existing or planned system capabilities	Insignificant
Airport Wastewater Collection System	Flow exceeding existing or planned system capabilities	Negligible

3.22.2.4 Mitigation Measures

There are no significant impacts due to the Proposed Project and, therefore, no mitigation measures are required. As with the potable water system, the wastewater collection and disposal system within the Airport will be expanded to accommodate estimated increased flows. Similarly, wastewater reduction strategies will be implemented, including: (i) the reuse of rental car wash water; (ii) improvements to the storm water drainage system to alleviate flooding of and stormwater intrusion into the sewage system; and (iii) the repair of deteriorated and broken sewer lines to decrease water infiltration into the sewer collection system. In addition, HDOT-AIR should monitor the flows into the Sewage Pump

Station. As the peak flow exceeds 80 percent of the design capacity, HDOT-AIR should initiate plans to upgrade the sewage pump station.

3.22.3 TELECOMMUNICATIONS

3.22.3.1 Existing Conditions

Kahului Airport currently receives telecommunications service via 1,500 lines from the Hawaiian Telephone Company's Kahului switching station. The passenger terminal is equipped with a State-owned PBX switch that serves about 180 telephone lines and has the capacity to accommodate 45 more lines. Tenants within the passenger terminal have their own private telephone systems with approximately 100 lines, total. Rental car agencies also have their own systems.

A Hawaiian Telephone Company network cable runs along Keolani Place serving the ground transportation subdivision and passenger terminal area. This network cable has the capacity to accommodate future expansion in the airport area.

There are about 400 overhead telephone lines that run from Keolani Place to Aalele Street and Haleakala Highway. The lines then run underground from the threshold of Runway 2 to the intersection of Kala Road and Haleakala Highway and then overhead to the East Ramp area.

3.22.3.2 Impact Analysis

The proposed airport improvements will increase the number of telephone lines serving the Airport. Similarly, increases in the island's population and average daily visitors will increase telecommunication requirements. These latter increases will occur regardless of the airport improvements.

The existing Hawaiian Telephone Company system has been designed to accommodate increased usage for both voice and data communications.

Several communication and power lines will need to be placed underground with the relocation of the helicopter apron to the interim location.

3.22.3.3 Significance Criteria And Analysis

Potential adverse effects would occur if the Project would cause the capacity of existing or planned communications systems to be overloaded, requiring significant capital improvements to expand the systems. However, major expansion of the communication system would be an insignificant effect so long as the communication utility would be able to accommodate projected demand.

Based on the evaluation criteria listed above, there will be no significant impacts on telecommunications as a result of the Proposed Project. Table 3-54 summarizes the potential effects of the proposed improvements on the telecommunications system of the project area.

Table 3-54
SIGNIFICANCE OF EFFECTS ON TELECOMMUNICATIONS SYSTEM

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Island-wide Telecommunications System	Increased usage and demands exceeding existing or planned system capabilities	Insignificant
Airport Area Telecommunications System	Increased usage and demands exceeding existing or planned system capabilities	Insignificant

3.22.3.4 Mitigation Measures

No significant effects on the island-wide and airport area telecommunications system are expected to result from the proposed airport improvements. Therefore, measures to minimize and/or mitigate potential adverse effects are not warranted.

3.22.4 POLICE AND FIRE SERVICES AND PUBLIC SAFETY

3.22.4.1 Existing Conditions

County police services are provided to the Airport and Central Maui areas from the police station located within the Wailuku Civic Center. The County Police Department, in association with State and private security services, presently provides security services to the Airport. Police Department services are primarily directed toward drug interdiction programs. State airport security personnel provide airport security and safety services.

County fire services are provided to the airport from the Wailuku Fire station, located approximately five miles from the airport passenger terminal area. Airport fire protection services are also provided by the Airport Rescue and Fire Fighting Facility (ARFF) crew.

3.22.4.2 Impact Analysis

Potential impacts on the airport and general community security/police services would occur as a result of increased population and visitors. However, these effects would result

regardless of the proposed airport improvements. Similarly, as population and the numbers of visitors increase, the possibility of increased numbers of fires occurring also increases. The Proposed Project's new roadways will reduce congestion at key intersections and may provide improved response times in the Airport vicinity, especially during peak traffic hours.

3.22.4.3 Significance Criteria And Analysis

Potential effects from the proposed improvements include greater demand on Maui County law enforcement and fire protection services. Expansion of these services would be considered significant if the service providers could not respond to emergencies within their operational standards (typically, 5 minutes for life-threatening calls) or, in the case of fire protection, if there were inadequate water flow. Similarly, significant effects would occur if the proposed improvements generated population and visitor increases that outpace the County's ability to enlarge the Police Department and/or the State's ability to increase security personnel at the Airport. Increase in demand for services would be insignificant if they could be met according to operational standards and service capacities. Negligible effects would result when no increase in calls for service occurs, or if the proposed improvements result in the timely and orderly growth of the Police Department and state airport security forces.

Based on the evaluation criteria listed above, Table 3-55 summarizes the significance of the potential effects of the proposed improvements on the police and security services for the airport and general Maui community.

Table 3-55

SIGNIFICANCE OF EFFECTS ON POLICE, FIRE AND SECURITY SERVICES

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
County Police Department	Service demands exceeding existing or planned departmental capabilities	Insignificant
State Airport Security Force	Service demands exceeding existing or planned Security Force capabilities	Insignificant
County Fire Department	Service demands exceeding existing or planned departmental capabilities	Insignificant
Airport Rescue and Fire Fighting Services	Service demands exceeding existing or planned facility capabilities	Insignificant

3.22.4.4 Mitigation Measures

There are no significant impacts; therefore no mitigation measures are required. Nevertheless, the proposed airport improvements include the relocation of the ARFF station and the construction of a new ARFF Training Facility. The relocation of the ARFF should reduce the ARFF crew's response time to aviation related fires. Additionally, the County Council is expected to allow increases in the Police Department as population and tax revenues increase. The State will increase the size of the airport security force as the passenger levels increase and the Airport expands. These measures will be required regardless of the proposed airport improvements.

3.22.5 HEALTH CARE FACILITIES

3.22.5.1 Existing Conditions

Health care and hospital services on Maui are provided by Maui Memorial Hospital, the island's only full service hospital for acute care. Maui Memorial Hospital has 145 acute care beds and operates within the state hospital system administered by the State Department of Health, Community Hospital Division. Other private facilities treat long-term and specialty care patients. Tertiary services are provided on Oahu and/or the mainland U.S. Private clinics, such as Kaiser Clinic and the Maui Medical Group, as well as private physicians, also provide health care services to island residents and visitors.

Maui Memorial Hospital, as with other state and private health care providers, is subject to insufficient funding, shortages of acute care beds and difficulties in hiring staff. The shortage of acute care beds is critical, with occupancy generally over 90 percent. Visitors to Maui use approximately 5 to 10 percent of the total beds at the hospital.

The 1990 *Strategic Plan for Maui Memorial Hospital and Hana Medical Center* noted that planning issues related to the Rapid Deployment System for Emergencies were of importance to the proposed airport improvements. Several doctors and hospital staff have indicated that the hospital would have difficulty handling a major aircraft accident.

A Rapid Deployment Team (RDT), which is recognized by the State Department of Health and is a part of an advisory committee to the Director of the Department, has been developed on Maui. The purpose of the RDT is to rapidly deploy trained medical personnel and disaster emergency medical supplies to the scene of a mass casualty incident within the County of Maui. The RDT has four resources available to it for the transfer of RDT members and/or patients to appropriate medical care facilities on Maui or Oahu. These resources include ambulances, private vans with police escort, fixed wing aircraft and helicopters.

3.22.5.2 Impact Analysis

For reasons unrelated to the Airport and airport operations, health care facilities on Maui are presently hampered in the efficient delivery of medical services. These deficiencies require correction to accommodate natural increases in population and visitors. The proposed airport improvements in and of themselves are not expected to affect or be affected by existing or planned health care services and facilities.

It can be expected that as the demand for increased health care facilities and services increase, private providers will increase their services, provided they can be reasonably assured of a return on their investment.

3.22.5.3 Significance Criteria And Analysis

The proposed improvements could adversely affect health care facilities by increasing the need for these services beyond the expansion capabilities of existing or planned facilities. Significant adverse impacts would occur if facilities were not available to accommodate the emergency health needs of increased levels of residents and visitors to Maui. Insignificant impacts would occur if the Project resulted in increased demand which could be met within the capacity of existing or planned hospitals and health care facilities. No impacts would occur if the proposed improvements resulted in no additional demand on health care facilities.

Based on the evaluation criteria listed above, Table 3-56 summarizes the significance of the potential effects of the proposed improvements on the health care services for the airport and general Maui community. The health care facilities on Maui are presently hampered in the efficient delivery of medical services that are unrelated to the airport and airport operations. These deficiencies require correction to accommodate natural increases in population and visitors. The Proposed Project is not expected to increase the natural increase of visitors or resident population. Therefore, the Proposed Project, in and of itself, is not expected to add to the existing or projected strain on health facilities and services and would be considered an insignificant impact. The impact on health care services/facilities is considered significant only in a *cumulative* sense.

3.22.5.4 Mitigation Measures

The proposed airport improvements are not expected to affect health care facilities or services on the island. Therefore, mitigation measures are not warranted.

Table 3-56
SIGNIFICANCE OF EFFECTS ON HEALTH CARE SERVICES

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Maui Memorial Hospital	Service demands exceeding existing or planned hospital capabilities	Insignificant
Private Health Care Facilities	Service demands exceeding existing or planned facility's capabilities	Insignificant

3.22.6 SCHOOLS

3.22.6.1 Existing Conditions

The State Department of Education (DOE) administers the Baldwin educational complex in the Wailuku-Kahului area and Maui High School. These facilities consist of elementary, intermediate and high schools. In 1990 the Baldwin complex had an enrollment of 6,400 students. Projected enrollments for the Baldwin complex for 1996 is 8,358 students. The 1990 total island-wide school capacity was 13,789 students, while total projected enrollment for 1996 is 17,066 students. The DOE projects additional classroom facilities will be required to accommodate the forecast student population. New elementary schools in Wailuku are helping to alleviate some of the shortfall in classrooms.

3.22.6.2 Impact Analysis

Previous estimates in the (Kahului Airport Master Plan EIS 1992) indicated that without the proposed airport improvements, there would be an increase of approximately 4,000 students, island-wide. This increase is greater than that projected by the DOE. Airport Operational forecasts for the Airport show continued growth in passenger levels, but at a rate slower than that forecast in 1992. The DOE plans to address the impacts of projected growth on educational facilities and services independent of the Proposed Project.

3.22.6.3 Significance Criteria And Analysis

Significant impacts would occur if the Proposed Project caused student enrollment to increase beyond the capacity of the school system. However, increased residential development generally generates increased enrollment at local schools. The proposed improvements, in and of themselves, are not expected to increase significantly the island's resident population level. Consequently, the proposed

improvements are expected to have insignificant effects on the island's school facilities. Table 3-57 summarizes the significance and potential impacts on schools.

Table 3-57
SIGNIFICANCE OF EFFECTS ON SCHOOLS

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
School Facilities	Increased enrollment	Insignificant

3.22.6.4 Mitigation Measures

There will be insignificant impacts to schools due to the Proposed Project and therefore no mitigation measures are required. However, student enrollment will increase regardless of whether the Proposed Project is implemented, and with increased student enrollment, additional school facilities beyond that which the DOE is projecting, will be required. It is expected that DOE will continue to monitor school enrollment projections and, along with the State Legislature, take the necessary steps to ensure adequate classrooms and other school facilities are available to handle increased enrollment.

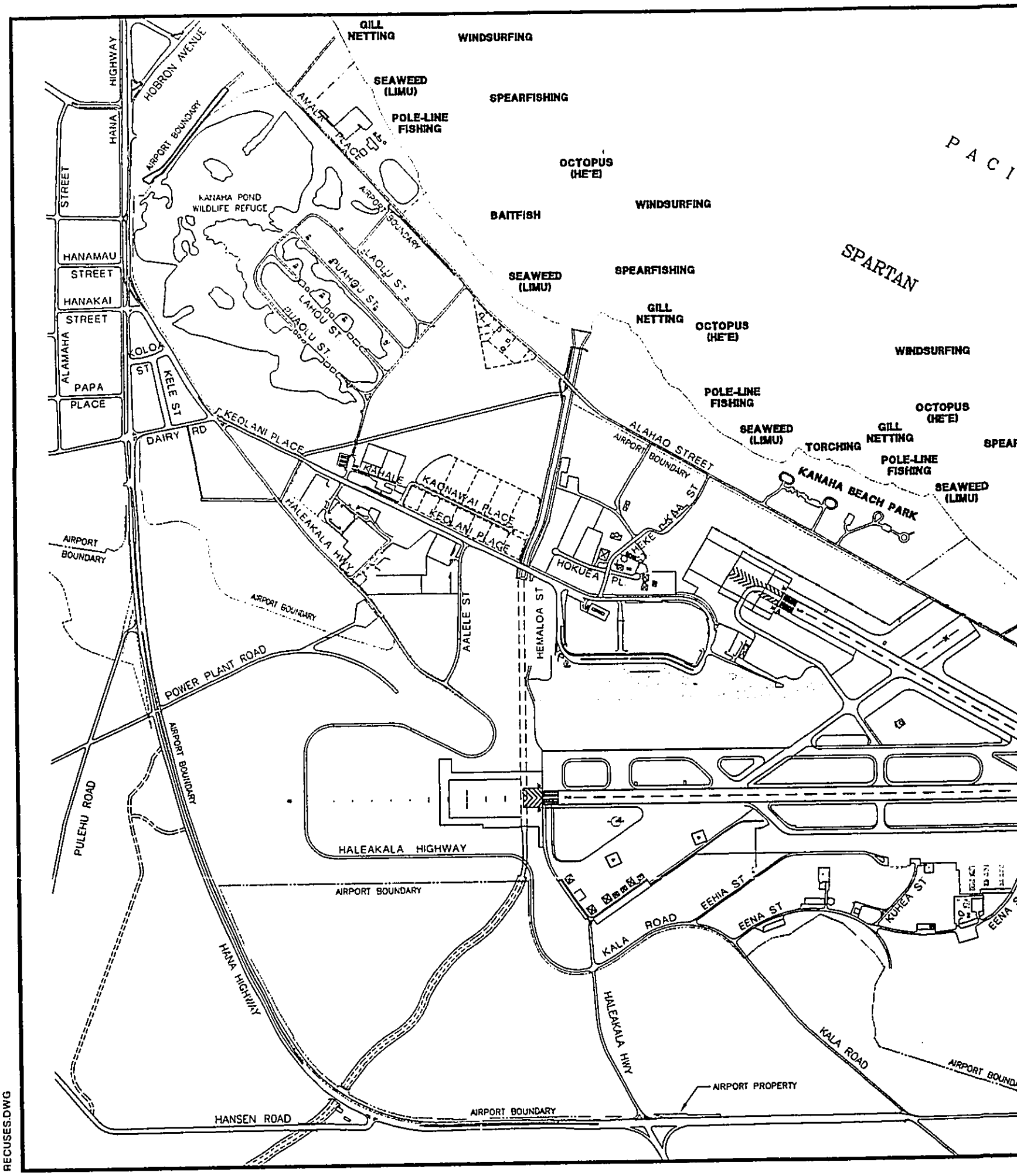
3.22.7 RECREATIONAL FACILITIES

3.22.7.1 Existing Conditions

Most recreational activities in the vicinity of Kahului Airport are ocean related and occur along the coastline from Kahului Harbor to Spreckelsville Beach. Existing facilities include Kahului Harbor Park and Kahului Beach within the harbor, Kanaha Beach Park and Spreckelsville Beach. Figure 3-24 shows the recreational uses along the coast fronting the airport.

Kahului Harbor Park is maintained by the Maui County Department of Parks and Recreation. A small boat ramp is also located near the park. This area of the harbor is generally used by fishermen, surfers and limu pickers. Swimming is not popular in the harbor due to the murky water and rocky bottom.

Kanaha Beach Park is also maintained by the County and consists of numerous small pocket beaches formed by rock groins placed to minimize erosion. This park is one of the popular windsurfing sites on Maui. In addition, it is a popular swimming site for children even though the water is murky. The park beach areas are also used by fishermen, limu pickers, and picnickers. Facilities at the park include restrooms, showers, barbecue grills, picnic tables and paved parking lots. Use of the facilities is at a maximum on most weekends, as this park is one of the most highly used parks in Maui.


GILL NETTING
WINDSURFING
SEAWEED (LIMU)
SPEARFISHING
POLE-LINE FISHING
OCTOPUS (HE'E)
BAITFISH
WINDSURFING
SEAWEED (LIMU)
SPEARFISHING
GILL NETTING
OCTOPUS (HE'E)
WINDSURFING
POLE-LINE FISHING
SEAWEED (LIMU)
TORCHING
GILL NETTING
POLE-LINE FISHING
SEAWEED (LIMU)
OCTOPUS (HE'E)
SPEAR
SPARTAN
PACI
HANA HIGHWAY
HOBRON AVENUE
AIRPORT BOUNDARY
ANAAU PLACE
KANAHA POND WILDLIFE REFUGE
PUAHOU ST.
LAOLU ST.
LAHOU ST.
HANAMAU STREET
HANAKAI STREET
ALAMAHA
PAPA PLACE
KOLOA ST
KELE ST
DAIRY RD
KEOLANI PLACE
KAHALE ST
KAONAWAI PLACE
HALEAKALA HWY
ALAHAO STREET
KANAHA BEACH PARK
HEKE ST
HOKUEA PL.
AALELE ST
HEMALOA ST
POWER PLANT ROAD
PULEHU ROAD
HALEAKALA HIGHWAY
EEHIA ST
EENA ST
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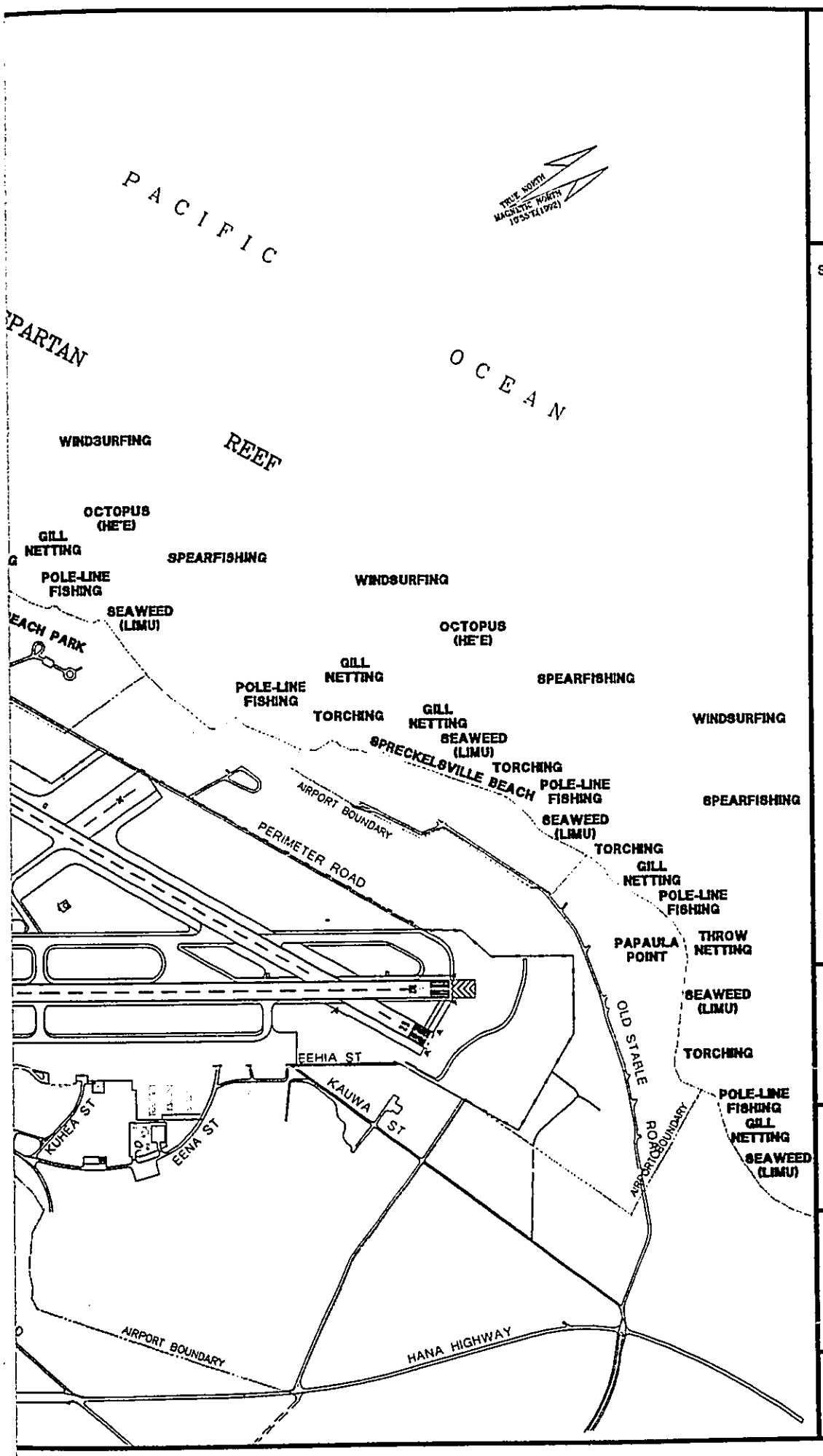
KALA ROAD
HANA HIGHWAY
HALEAKALA HWY
AIRPORT PROPERTY
HANSEN ROAD
RECUSES.DWG



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

SOURCE:
MAUI COSTAL ZONE ATLAS
HARBORS DIVISION/CZM ---
OVERPRINT EDITION - 1981
DEPARTMENT OF TRANSPORTATION

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GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

MAP OF RECREATIONAL USES

DATE	FIGURE
JANUARY, 1997	3-24

Activity level is estimated to be approximately 500 visitors a day on weekdays and 1,000 visitors a day on weekends. About 80 percent of the weekday visitors are tourists with local residents making up the remaining 20 percent. On weekends, about 50 percent of the visitors are tourists and 50 percent are local residents. The predominant activity at the park is windsurfing.

Spreckelsville Beach stretches for over two miles along the coast, beginning at West Spreckelsville near the end of Old Stable Road and ending at the Maui Country Club. This shoreline is broken into a series of short beaches by points of lava, boulders, beach rock and groins constructed to retain sand. The open shoreline between "Stables" and East Spreckelsville is the only publicly accessed section of this beach. Other sections can be reached by following the shoreline from Kanaha Beach Park or H. A. Baldwin Park. Spreckelsville Beach, as with Kanaha Beach Park, is popular with windsurfers, fishermen and divers. The most popular area is "Stables," which is located near the intersection of Hana Highway and Spreckelsville Beach Road. Daily activity is about 500 visitors on weekdays and 750 visitors on weekends.

3.22.7.2 Impact Analysis

Potential impacts to the airport area recreational facilities will be primarily generated by increased population and visitor levels. Improved facilities, primarily in the form of increased parking spaces at Kanaha Beach Park, will likely result in increased usage of the recreational areas. Improved access to these areas will also encourage greater patronage. The offshore recreational uses are compatible land uses with respect to aircraft noise levels.

3.22.7.3 Significance Criteria And Analysis

The proposed airport improvements are expected to allow increased numbers of visitors and residents to visit/return to the airport area recreational facilities more efficiently. Consequently, the proposed improvements could be expected to affect existing and planned recreation facilities and the behavior of users of those facilities. However, they will not, in and of themselves, increase visitor or population levels. Given that many of the present users are residents of the island, increased parking and better access to Kanaha Beach Park could significantly affect use and behavior. The lack of additional parking and access could have a significant adverse impact by limiting use and causing conflicts between visitors and residents as use increases due to natural increases in population and visitor levels. The proposed beach park improvements have been planned to reduce these potential conflicts and allow both residents and visitors to use the facilities efficiently. Table 3-58 summarizes the potential effects of the Proposed Project on recreational facilities.

3.22.7.4 Mitigation Measures

There are no significant impacts, and therefore, no mitigation is required. The proposed Kanaha Beach Park improvements have been planned as a measure to mitigate present

overcrowding and access difficulties. As such, additional measures to minimize potential adverse effects are not warranted.

Table 3-58
SIGNIFICANCE OF EFFECTS ON RECREATIONAL FACILITIES

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Recreational Facilities	Increase usage of facilities	Insignificant
	Improved facilities and increase shoreline access	Positive

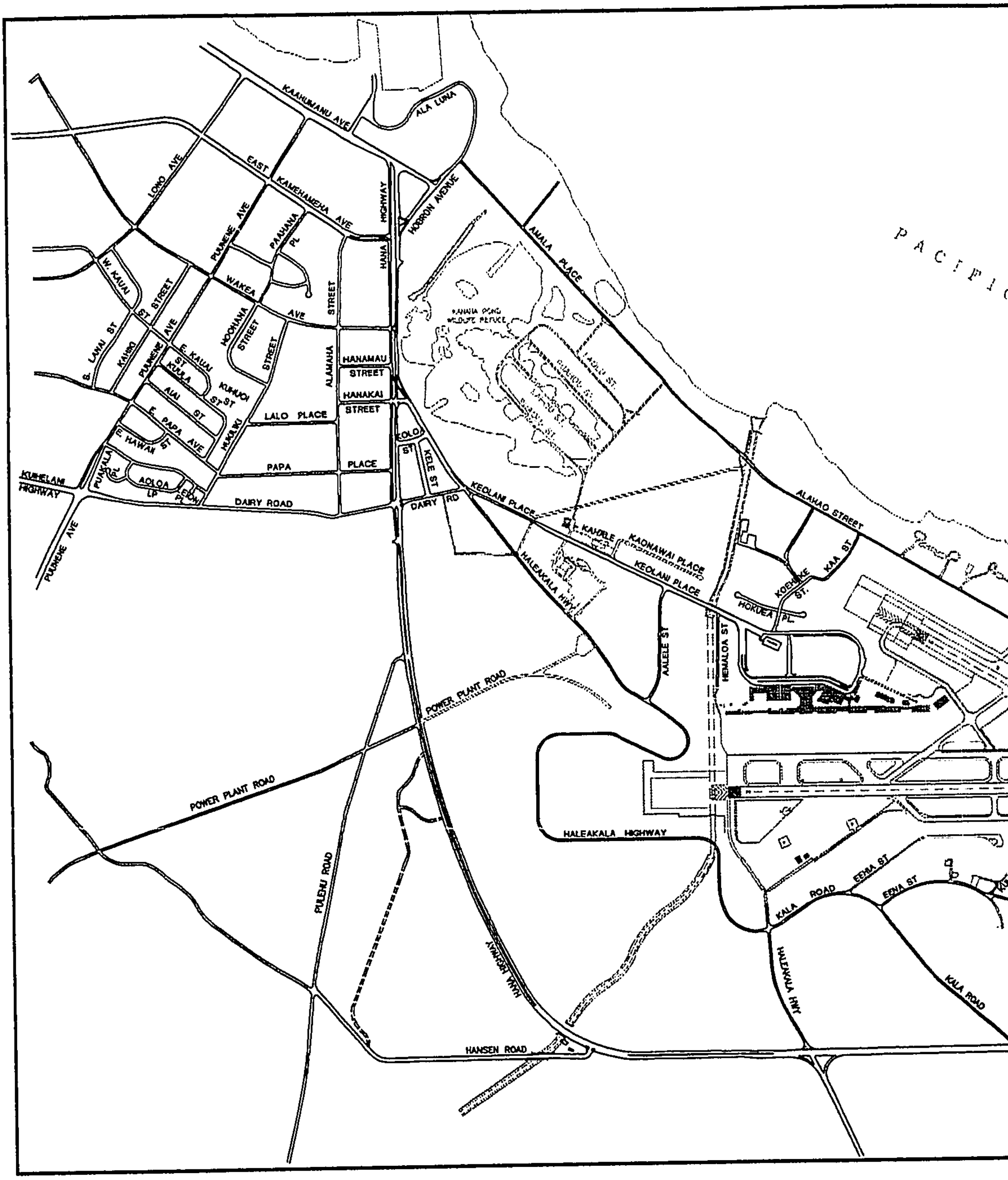
3.22.8 SURFACE TRANSPORTATION SYSTEM

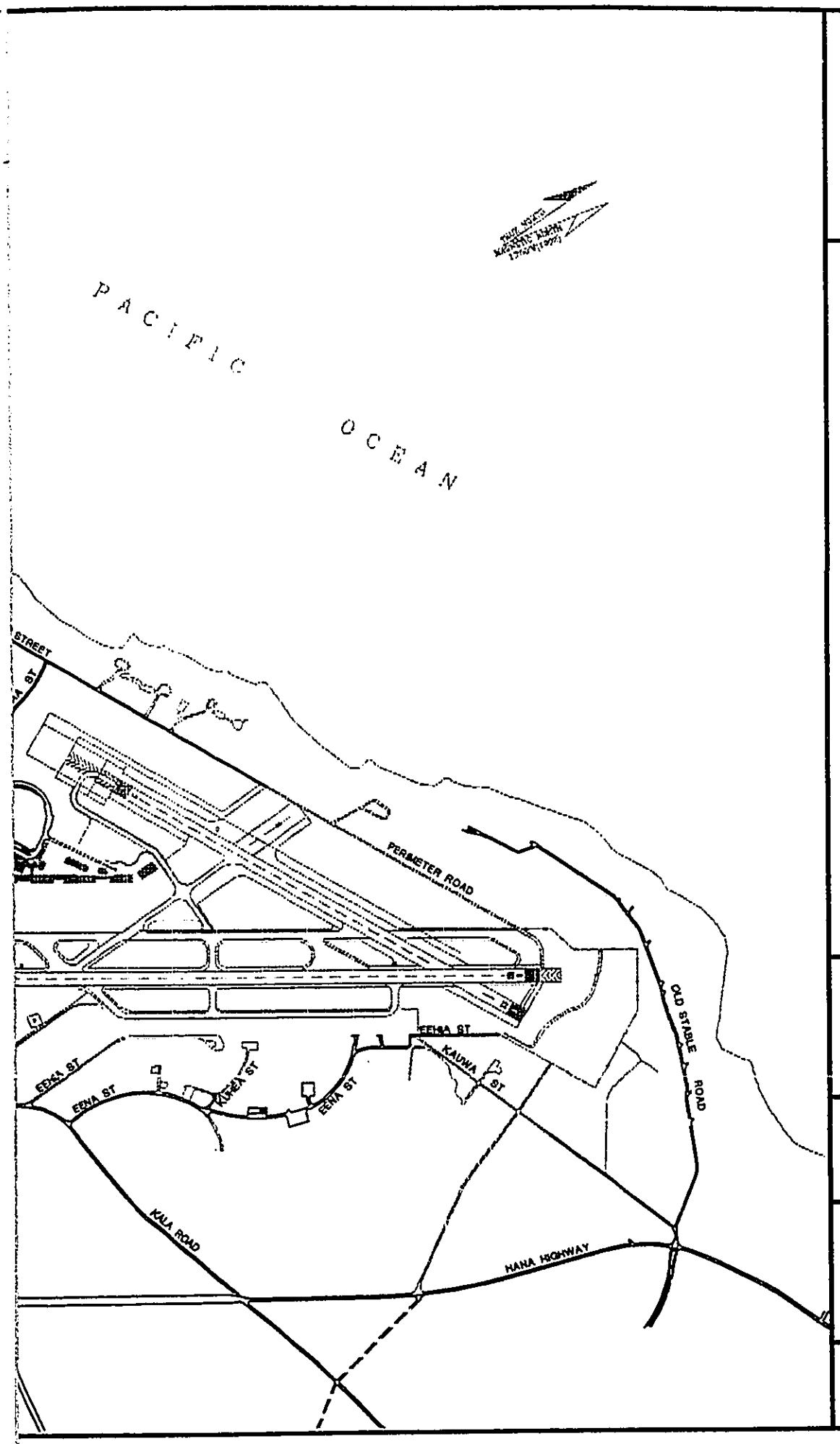
3.22.8.1 Existing Conditions

To determine existing and potential future surface traffic conditions in and around Kahului Airport, two traffic studies were conducted specifically for this EIS. These traffic studies were performed using commonly accepted and proven methods, including field traffic counts.

The first traffic study was based on the 1993 Kahului Master Plan and the updated aviation demand forecasts, and assumed a planning horizon of 2010. It is presented in Appendix M. The second study assumed a planning horizon of 2020, and was specifically performed to evaluate impacts of the Airport Access Road (including Hansen Road and the interchange at Airport Access Road/Hana Highway). This second analysis, presented in Appendix P, was performed to meet the FHWA requirement for the use of ISTEA funds for the Airport Access Road (including Hansen Road and the interchange). As part of this second analysis: (i) the interchange alternatives were evaluated for cost effectiveness; and (ii) the new Airport Access Roadway was assessed to determine if it could accommodate the forecast 2020 traffic demands. To determine the cost effectiveness of the Airport Access Roadway project, a cost/benefit analysis was performed on the partial cloverleaf and the diamond interchange configurations.

EXISTING SURFACE TRANSPORTATION FACILITIES. The existing Kahului Airport surface transportation system (Figure 3-25) consists of a network of roadways serving both local Kahului and regional traffic, with Hana Highway and Dairy Road functioning as key links in the regional roadway system. Relevant characteristics of each of the key streets, highways and intersections


PACIFIC
KAAHUMANU AVE
ALA LUNA
EAST KAMEHAMEHA AVE
HANA HIGHWAY
HOBRON AVENUE
AMALA PLACE
LOWO AVE
PUUNENE AVE
PAAHANA PL
WAKEA AVE
W. KAUAI ST
STREET
S. LANAI ST
KAIHEE
HOOHANA STREET
STREET
ALAMAHA STREET
HANAMAU STREET
HANAKAI STREET
E. KAUAI ST
KUULA ST
KUHUOI ST
AIAI ST
E. PAPA AVE
E. HAWAII ST
HUKILIKU
LALO PLACE
PAPA PLACE
PUAKALA PL
AOLOA LP
EEOH PL
KUHELANI HIGHWAY
DAIRY ROAD
DAIRY RD
KOLO ST
KELE ST
KEOLANI PLACE
KAOHAWAI PLACE
ALAHAO STREET
KAA ST
KOEHUKE ST.
HOKUEA PL.
HALEAKALA HWY
AALELE ST
HEMALOA ST
POWER PLANT ROAD
POWER PLANT ROAD
HALEAKALA HIGHWAY
PULEHU ROAD
HANA HIGHWAY
HANSEN ROAD
KALA ROAD
EEMIA ST
EENA ST
HALEAKALA HWY
KALA ROAD



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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING SURFACE TRANSPORTATION SYSTEM

DATE	FIGURE
MARCH, 1996	3-25

are described in detail in Appendices M and P (see Figure 3-26). The key streets and highways relevant to the proposed airport improvements and the traffic studies[19] are:

- Keolani Place. Keolani Place is the primary access route into the main airport passenger terminal area (West Ramp). Many of the airport-related uses (car rentals, airport maintenance, air cargo) are reached via this street. This street provides four lanes between Haleakala Highway and the airport terminal loop roadway, with a speed limit of 30 mph.

- Hana Highway. Hana Highway is a State highway and is the principal east-west roadway through the study area. The highway connects the East Maui and Upcountry Maui areas to the Kihei and West Maui areas. Between Kaahumanu Avenue and Haleakala Highway (Pukalani junction), Hana Highway has two through lanes in each direction with a landscaped median divider. East of Haleakala Highway, Hana Highway narrows to a two-lane roadway. The posted speed limit is 45 miles per hour (mph) west of Dairy Road and 55 mph east of Dairy Road.

- Haleakala Highway. Haleakala Highway is a State highway which links the Upcountry areas to Hana Highway and to Kahului Airport. North of Hana Highway, Haleakala Highway is a two-lane road with a posted speed limit of 30 mph. South of Hana Highway, it is a three-lane road with the section closest to the intersection providing two northbound lanes and one southbound lane, with a changeover about one-quarter mile from the intersection to two southbound (uphill) lanes and one northbound lane. South of Hana Highway, the speed limit increases to 55 mph. The East Ramp area of the airport (general aviation, helicopter facilities, control tower) is accessed primarily via Haleakala Highway, which also provides a connection between the main airport terminal area and the East Ramp area.

- Dairy Road. Dairy Road is a two-lane roadway with a 30 mph speed limit between Haleakala Highway and Puunene Avenue. South of Puunene Avenue, it becomes Kuihelani Highway, a two-

[19] The 2020 traffic study area focused on the traffic impacts of the Airport Access Road (including the Hansen Road modifications and the interchange) only, and therefore, some of the other key intersections analyzed in the 2010 study were not impacted and not included in the 2020 study.

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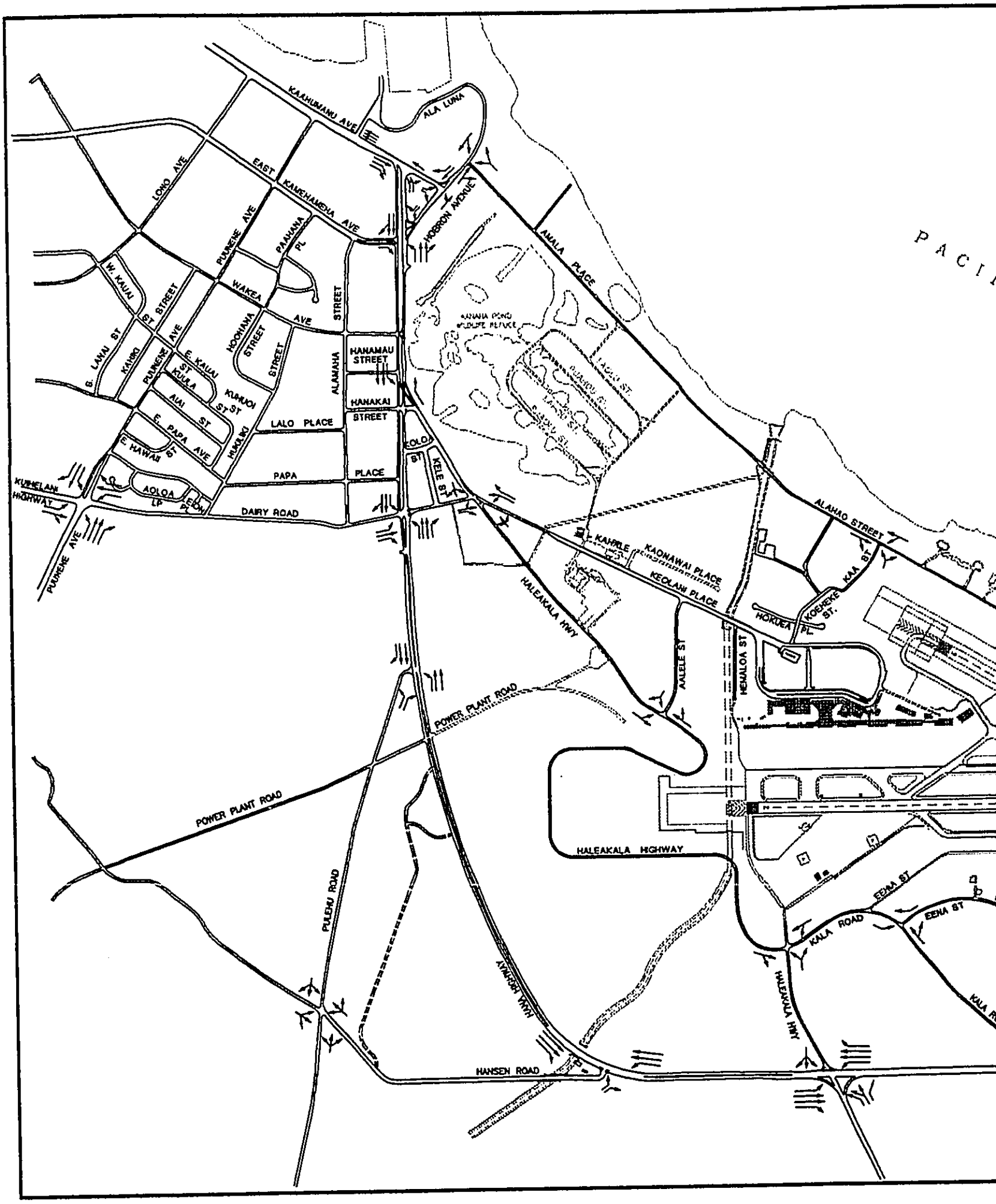
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ALA LUNA
LOHO AVE
EAST KAMEHAMEHA AVE
PUUNENE AVE
PAUHANA PL
HOBRON AVENUE
AMALA PLACE
W. KAUAI ST
STREET
WAKEA AVE
STREET
HOOHANA STREET
E. LANAI ST
KAHRO
PUUNENE AVE
E. KAUAI ST
KUIKA STREET
ALAMAHA
HANAMAU STREET
KUAUOI ST
AIAI ST
HANAKAI STREET
LALO PLACE
E. PAPA AVE
E. HAWAII ST
HUKALKI
KOLOA ST
KELE ST
KUIHELANI HIGHWAY
AOLOA PL
LP
PEDN PL
PAPA PLACE
DAIRY ROAD
PUUNENE AVE
ALAHAO STREET
KAONAWAI PLACE
KEOLANI PLACE
HOKUEA PL.
KOERENE ST.
KAA ST
HALEAKALA HWY
AALELE ST
HANALOA ST
POWER PLANT ROAD
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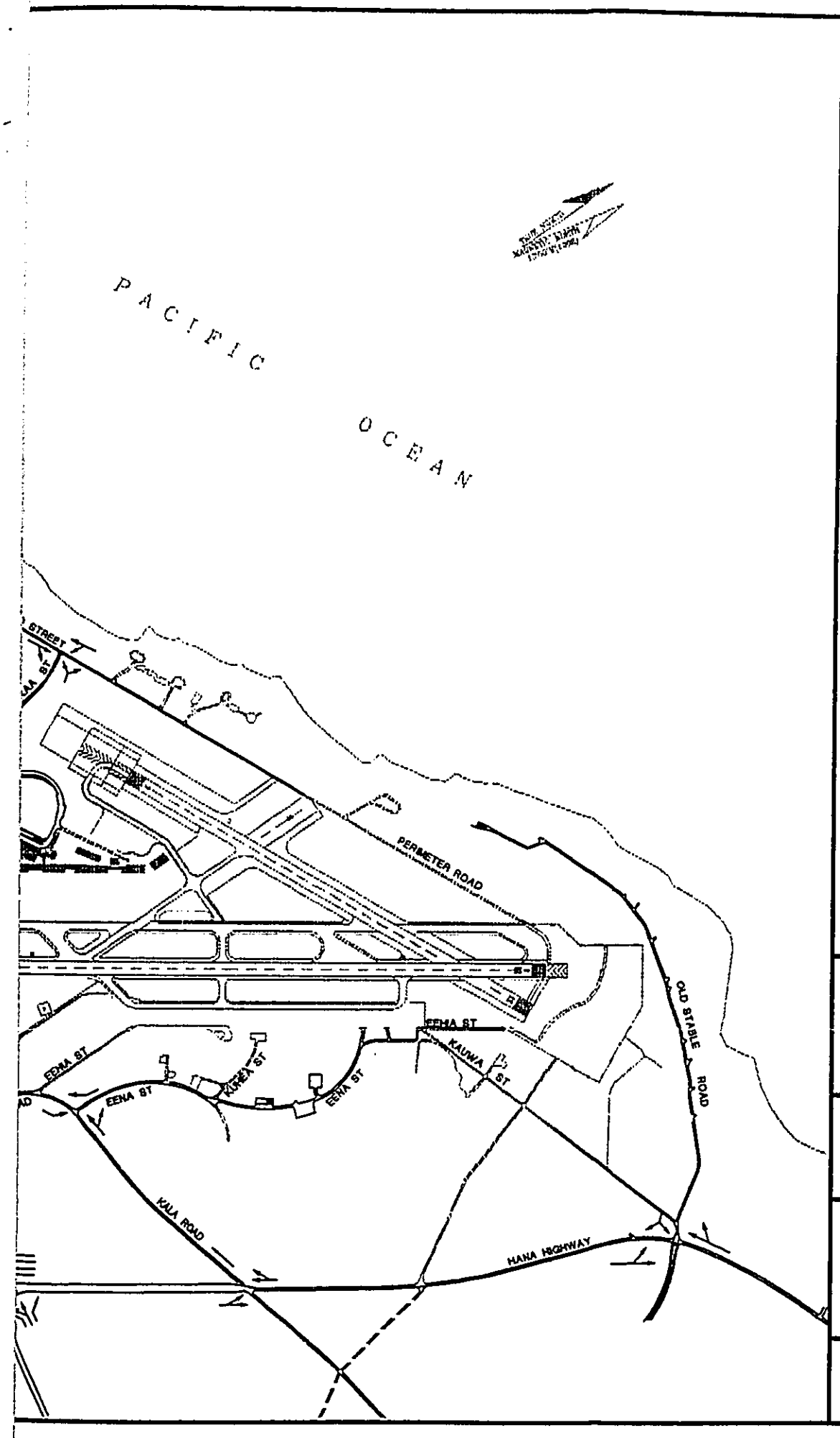
KALA ROAD
PULEHU ROAD
HANA HIGHWAY
HALEAKALA HWY
HANSEN ROAD



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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING LANES AT KEY INTERSECTIONS

DATE	FIGURE
MARCH, 1996	3-26

lane roadway with a 55 mph speed limit that connects the Wailuku-Kahului area to the south and west Maui coastal areas.

- Amala Place / Alahao Street. This is a two-lane street which provides access to the Kanaha Beach Park, as well as the industrial activities and wastewater treatment plant located closer to the harbor end. This street also provides a secondary route into the airport terminal and car rental areas via Kaa Street and Koeheke Place. The speed limit is 30 mph.

- Hobron Street. Hobron Street is a short two-lane roadway connecting Hana Highway and Kaahumanu Avenue to Amala Place and to Kahului Harbor. A number of harbor-related uses are on this street, with resultant large volumes of truck traffic. Access to the Hobron Street area is awkward, with left-turns into the area permitted via the Hana Highway-Kaahumanu Avenue intersection and left-turns out of the area restricted to the Hobron Street-Hana Highway intersection. Right-turns in/out are permitted at both intersections.

- Old Stable Road. This is a privately-owned, unimproved two-lane roadway that provides access to the West Spreckelsville residential area and to the adjacent beach area. The roadway pavement is approximately 15 feet wide.

- Puunene Avenue. Puunene Avenue is a state roadway which extends from the Kahului Harbor area south to the Puunene community. In Puunene, it connects to Mokulele Highway, to provide access between the Kihei-Wailea area and Kahului. The roadway provides one lane in each direction for most of its length.

- Pulehu Road. Pulehu Road is a two-lane minor roadway that parallels Haleakala Highway between the airport and Kula areas. It primarily serves the agricultural areas west of Haleakala Highway and has a posted speed limit of 45 mph near the airport.

- Hansen Road. Hansen Road connects Puunene to Hana Highway at the south boundary of the airport. The two-lane roadway is primarily used by traffic between the East Maui/Maui Upcountry areas and the Kihei area.

Most of the intersections in the vicinity of the Airport are presently controlled by STOP signs. Three intersections are currently controlled by traffic signals. These are:

- Dairy Road at Hana Highway: The signal operations include separate left-turn phases and overlapping through/left-turn phases for Hana Highway traffic, primarily to accommodate the large volume of traffic turning left from westbound Hana Highway. Dairy Road traffic operates on a single phase.

- Dairy Road at Puunene Avenue: Both Puunene Avenue and Dairy Road/Kuihelani Highway approaches are provided separate, protected left-turn phases.

- Hana Highway at Haleakala Highway: Hana Highway traffic is provided with protected left-turn phases, as well as overlapping left-turn/through phases. Each approach on Haleakala Highway is provided with separate signal phases.

A traffic signal is planned for installation at the intersection of Haleakala Highway and Keolani Place/Dairy Road[20]. Currently, this intersection provides free flow for the westbound approach of Haleakala Highway, with the other three approaches controlled by STOP signs.

Maui Economic Opportunity, Inc. (MEO) provides public transit service in the Wailuku-Kahului area and there are a broad range of private operators providing public transportation services to and from Kahului Airport. Most private services focus on service between the Airport and the major visitor lodging concentrations in the Lahaina/Kaanapali/Kapalua and Kihei/Wailea areas. Rental car agencies provide shuttle bus service between the airport terminal and their pickup/drop-off facilities in the Ground Transportation Subdivision.

Existing surface transportation facilities in and around the airport also include bicycle lanes along the segment of East Kamehameha Street between Hana Highway and Puunene Street. A number of other bikeways are planned under the state's bicycle master plan (*Bike Plan Hawaii*, Section 11.0, Reference 32) and not part of the Proposed Project. These include the following:

- Designation of Hana Highway as a bike route;

- Designation of Haleakala Highway, south of Hana Highway, as a bike route;

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[20] The traffic signal has recently been installed and is operational.

- Designation of Keolani Place, Dairy Road and Kuihelani Highway as a bike route; and

- Development of a continuous separate bike path facility along the ocean side of Amala Place, Alahao Street and Old Stable Road, including a connection across the airport between Alahao Street and Old Stable Road.

The "bike route" designation indicates a roadway with a widened curb lane or paved shoulder available for bicycle use, that is designated for the shared use of bicycles and motor vehicles or pedestrians or both. Additionally, the Northshore Greenway Bikeway being constructed by Maui County provides for a slightly different plan along Amala Place, Alahao Street and Old Stable Road. This plan provides for a 4- to 6-foot-wide bike lane along each side of the above streets rather than a parallel bike path.

EXISTING GROUND TRAFFIC CONDITIONS. The analysis of existing ground traffic conditions is presented for the morning and afternoon commute peak hours, rather than the early afternoon period when airport-related traffic typically peaks. The commute peak hours represent the highest traffic volumes on most major roads within the airport vicinity. Given the relationships of airport and total traffic volumes, additional airport-related traffic would likely have more effect on traffic conditions during these heavily-traveled commute hours than on conditions during the lower-volume midday period when airport-related traffic is highest.

Existing commute peak hour traffic volumes at key intersections were developed from intersection turning movement counts. Manual intersection traffic counts were made in May 1994 at the following key intersections:

- Hana Highway with Dairy Road;

- Hana Highway with Haleakala Highway (east Pukalani junction);

- Hana Highway with Old Stable Road;

- Pulehu Road with Hansen Road;

- Amala Place with Kaa Street and with Hobron Street; and

- Hobron Street with Kaahumanu Avenue.

The traffic counts were adjusted to reflect an average weekday in August 1994 (the peak air passenger month). Traffic conditions at traffic signal-controlled intersections were

evaluated using the *Operations Analysis* methodology described in the *1985 Highway Capacity Manual* (1985 HCM), a publication of the Transportation Research Board which is a division of the National Science Foundation.

Using this method, the level-of-service (LOS) is based on the average delay time per vehicle passing through the intersection. The delay time, calculated in seconds, is the result of phasing and timing of the traffic signal, the intersection's physical layout and the composition of the traffic. Average delay time and LOS are determined for the entire intersection, for each roadway approach and for each traffic movement or lane group. LOS describes traffic conditions based on a letter designation (A to F), signifying excellent to unacceptable conditions, i.e., LOS A signifies excellent conditions and LOS F signifies unacceptable conditions.

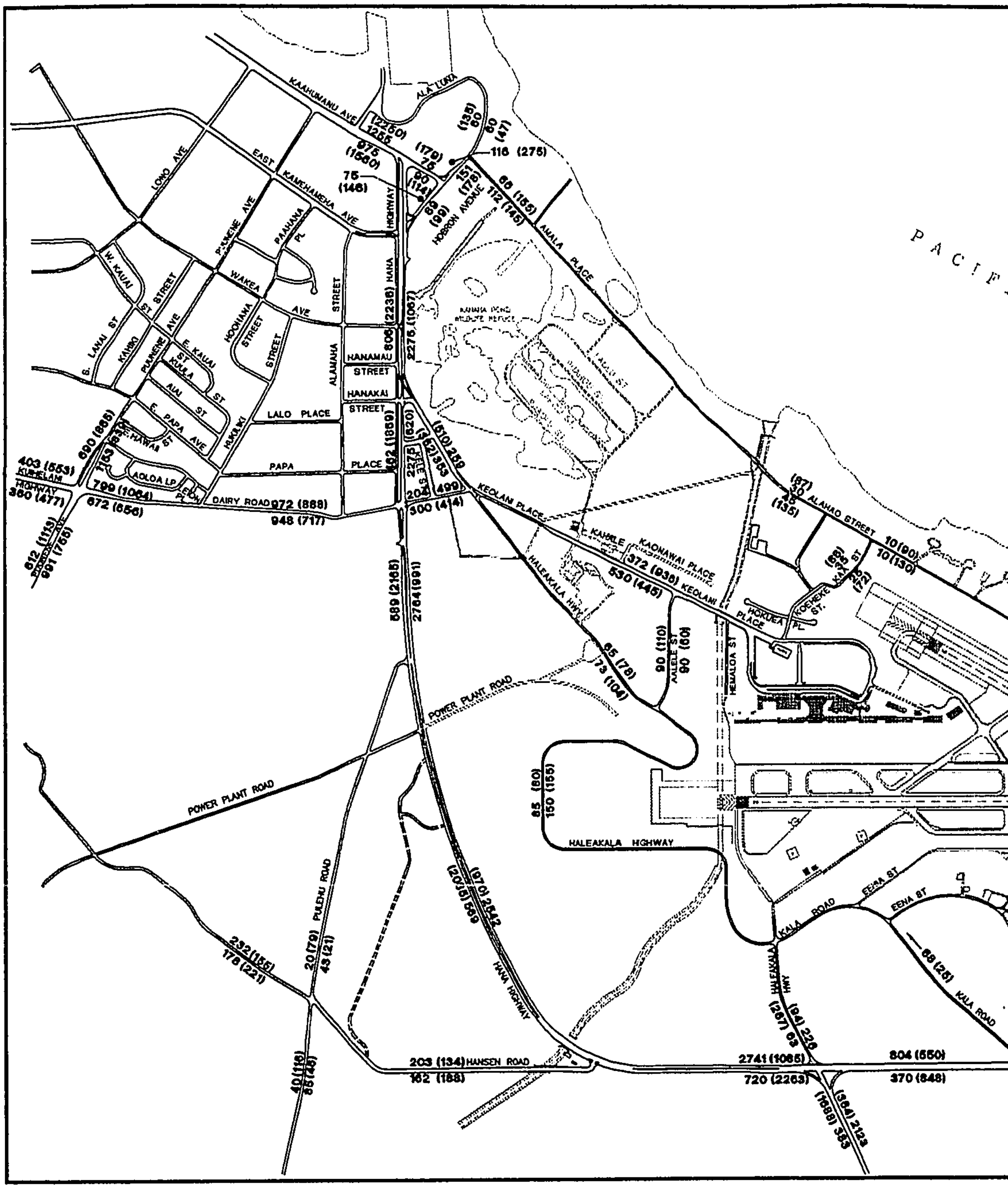
The methodology also calculates the ratio of actual or estimated peak hour traffic volumes to the theoretical capacity of the intersection. This indicates the proportion of available capacity being used by traffic volumes and identifies locations where there is unused capacity available for future traffic increases. This volume-to-capacity (V/C) reflects the physical characteristics of the intersection and the traffic characteristics, and is somewhat independent of the LOS, which is also affected by the efficiency of the traffic signal phasing/timing.

In addition, 1985 HCM procedures for the calculation of the LOS for intersections controlled by STOP or YIELD signs were used to determine existing conditions at those intersections. As with signalized intersections, LOS is stated in terms of A through F.

Existing ground traffic volumes and characteristics in and around the Airport are determined by a combination of factors, which are listed below. A detailed description of these factors is provided in Appendices M and P.

- The distribution of aircraft operations throughout the day (and week);
- The type (passenger capacities) of aircraft;
- Passenger ground travel characteristics; and
- Employee travel patterns.

Figure 3-27 presents the morning and afternoon peak hour traffic volumes for the key roadways for 1994.



KAAHUMANU AVE
ALA LUNA
(2250) 1255
975 (1560)
75 (146)
(179) 75
90 (114)
89 (99)
151 (178)
(135) 60
60 (47)
116 (275)
66 (155)
112 (145)
HOBRON AVENUE
AMALA PLACE
LONO AVE
EAST KAMEHAMEHA AVE
PUUNENE AVE
PAAHANA PL
W. KAUAI
ST STREET
WAKEA AVE
HOOHANA STREET
STREET
HANA HIGHWAY
806 (2238)
2275 (1067)
KANAHA POND WILDLIFE REFUGE
S. LANAI ST
KAHIKI
PUUNENE AVE
E. KAUAI ST
KUULA ST
AIAI ST
E. PAPA AVE
ALAMAHA
HANAMAU STREET
HANAKAI STREET
LALO PLACE
PAPA PLACE
AOLOA LP
DAIRY ROAD 972 (888)
948 (717)
690 (866)
403 (553)
KUIHELANI HIGHWAY
360 (477)
799 (1064)
672 (656)
612 (1113)
991 (765)
462 (1859)
(620)
(610) 259
204
499
300 (414)
KEOLANI PLACE
KAHILE
KAONAWAI PLACE
372 (938)
530 (445) KEOLANI
HALEAKALA HWY
(87) 30
45 (135)
ALAHAO STREET
10 (90)
10 (130)
KOEHEKE ST.
HOKUEA PL
PLACE
HEMALOA ST
AALELE ST
90 (110)
90 (60)
65 (78)
73 (104)
589 (2165)
2764 (991)
POWER PLANT ROAD
POWER PLANT ROAD
65 (80)
150 (155)
HALEAKALA HIGHWAY
PULEHU ROAD
20 (79)
43 (21)
232 (155)
178 (221)
40 (116)
55 (45)
(970) 2542
(2015) 669
HANA HIGHWAY
203 (134) HANSEN ROAD
162 (188)
KALA ROAD
EENA ST
EENA ST
68 (25)
KALA ROAD
HALEAKALA HWY
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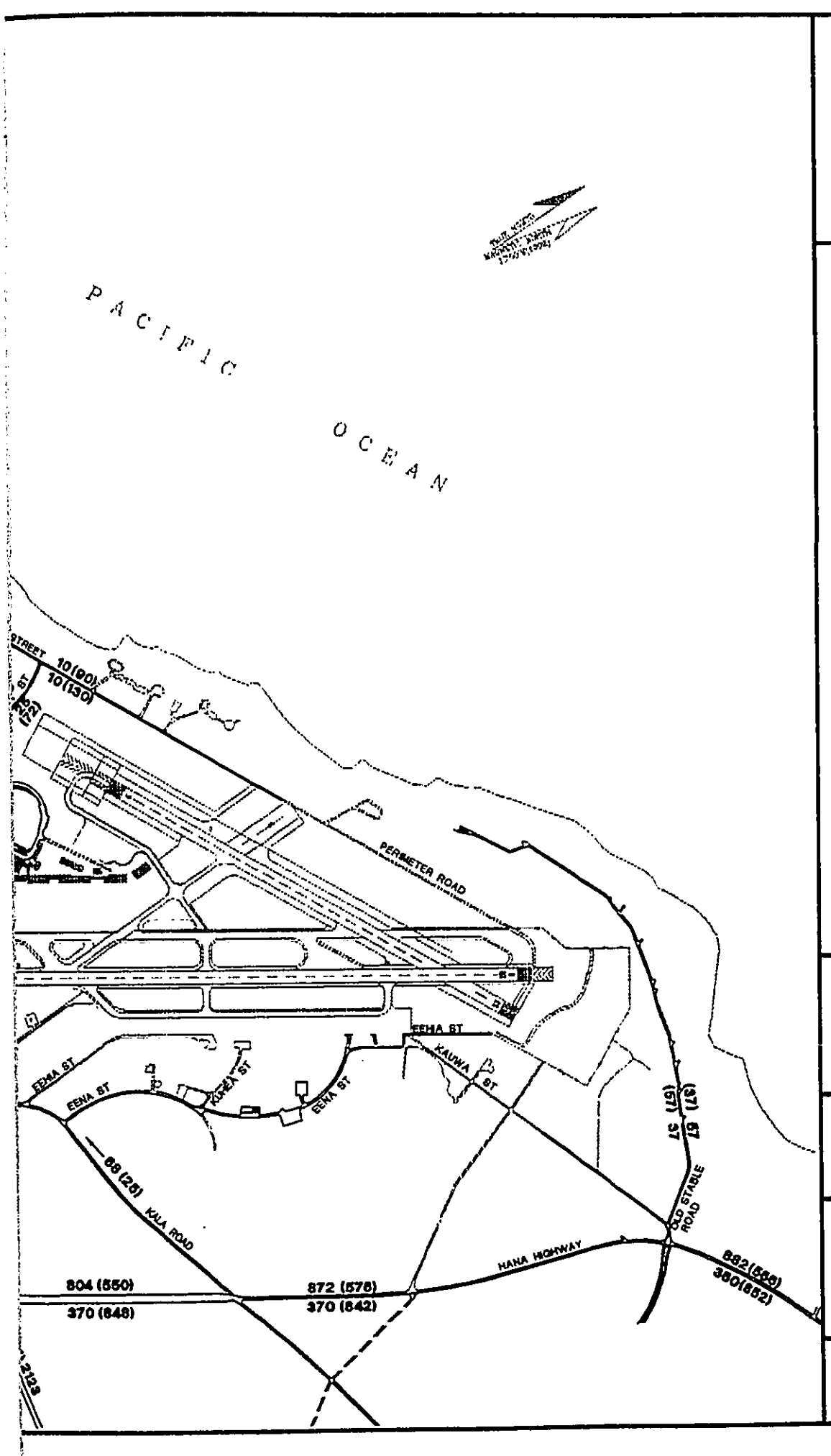
(267) 63
2741 (1065)
720 (2263)
804 (550)
370 (848)
(364) 2123
(1688) 383



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

000 - MORNING PEAK HOUR
(000) - AFTERNOON PEAK HOUR

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Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

EXISTING TRAFFIC VOLUMES ON ROADWAY

DATE	FIGURE
MARCH, 1996	3-27

3.22.8.2 The 2010 "Design Day" Analysis.

The 2010 traffic study was based on a "design day" analysis, which measures travel demand for an *average* day in the *highest* activity month of the year. Typically, transportation planners perform "design day" analyses to evaluate airport access conditions and to estimate the "size" of roadway facilities needed to accommodate travel demands. The "design day" peak hour traffic volumes usually represent the 30th highest hourly volume of the year, and do not represent the highest hourly traffic volumes of the year. Kahului Airport passenger counts for 1993 and 1994 indicate that August is the peak month, with March, April and July also being high activity months. For the purpose of the existing conditions, as well as future forecasts, most traffic volumes have been adjusted to represent the peak volume of levels occurring in the August peak month for airport travel. The analysis performed for this EIS assumes that the recommended actions of the 1991 *Maui Long-Range Highway Planning Study, Island-Wide Plan Final Report* would be implemented.

3.22.8.3 The 2020 "Average Weekday" Analysis

Unlike the 2010 study, the 2020 study was based on an "average weekday" analysis, not on a "design day" analysis. The "average weekday" represents the traffic demand which would occur on the majority of days during the year, typically an average weekday. This analysis is used by transportation planners when determining the economic feasibility of roadway projects. The benefits and costs of these roadway projects are analyzed for traffic on an "average weekday," and then these benefits and costs are factored to an annual basis. Use of a high- or low-volume of traffic scenarios (such as in the "design day" analysis) would overstate or understate, respectively, the traffic benefits of a project when converted to a annual period.

For this EIS, the "average weekday" traffic volumes are 4.7 percent lower than the "design day" volumes. Therefore, at an intersection where the "average" demand is 96 percent or more of the intersection's capacity, that intersection's capacity would be exceeded under "design day" conditions.

3.22.8.4 Impact Analysis

The Proposed Project includes changes to the roadway network within and adjacent to the Airport, as well as changes to Airport facilities themselves, which could affect activity levels at the Airport. These modifications could potentially affect:

- The level of traffic demands at the Airport;
- Ground travel conditions to and from the Airport; and
- Travel conditions for regional through traffic and local traffic passing near the Airport.

Modifications that could affect traffic demands include:

- Relocation of the helicopter facilities away from the airport; and
- Runway extension and parallel runway that could facilitate more direct overseas flights.

Modifications that would affect the roadway network include:

- Construction of a new Airport Access Road with an interchange at Hana Highway that would allow airport traffic to bypass Keolani Place/Dairy Road when entering or exiting the Airport;
- Abandonment of Haleakala Highway between Hana Highway (Pukalani junction) and Aalele Street to accommodate the extension of the present runway. It should be noted that Hana Highway was previously widened to mitigate the closing of Haleakala Highway.
- Construction of a new Spine Road parallel to the east side of the existing runway that would serve the general aviation, air cargo and airport operations facilities; and
- Abandonment of the present segments of Hansen and Pulehu Roads between their junction with Hana Highway and replacement with a single roadway intersecting Hana Highway opposite the Spine Road.

The Proposed Project also includes relocation of Hana Highway eastward to permit construction of a parallel runway. When and if such construction is initiated, it will cause primary short-term traffic impacts on Hana Highway. In addition, the relocation of Hana Highway will require the reconstruction of the intersection at Hana Highway and Old Stable Road.

The future traffic volumes for the Proposed Project and the No-Action alternative were evaluated using the same methodology; and non-airport traffic forecasts for both the Project and No-Action alternatives assumed the same level of traffic. Trip generation and distribution rates were also applied uniformly. For the Proposed Project, the West Ramp terminal would serve 7,988,000 air passengers in 2010 and 9,712,000 air passengers by 2020. This estimate is 3.4 percent greater than the estimated passengers under the No-Action alternative. An estimated 25,770 air passengers would use the terminal for the 2010 design day conditions (average day in August), or 850 more than under the No-Action alternative.

Ground traffic forecasts for the Proposed Project are based on a small increase in air passenger activity above the level projected for the No-Action alternative. The Proposed Project traffic estimates are based on:

2010 Annual Air Passengers = 7,988,000
2020 Annual Air Passengers = 9,712,000
2010 Based General Aviation Aircraft = 59
2020 Based General Aviation Aircraft = 63
Helicopters are assumed to be relocated to an off-airport site.

For the August 2010 design day, the Proposed Project results in an estimated 26,290 daily vehicle trips to or from the West Ramp area and 610 daily vehicle trips to the East Ramp area. For the 2020 analysis, an estimated 32,450 daily vehicle trips are expected to and from the West Ramp area and 650 daily vehicle trips are expected from the East Ramp area. The estimated daily vehicle trips to/from the West Ramp area are about 3.4 percent higher under the Proposed Project than under the No-Action alternative. However, relocation of helicopter facilities substantially lowers traffic generation for the East Ramp area, and lowers trip generation for the combined East and West Ramp activities by 2 percent.

The projected 2010 design day traffic volumes on roadways in the vicinity of the Airport are shown on Figures 3-28 and 3-29 for the morning and afternoon commute hours, respectively. The traffic assignments reflect both the proposed roadway modifications for the Airport and the changes in Airport activity levels.

The new Airport Access Road is estimated to absorb over one-half of the traffic volumes assigned to Keolani Place under the No-Action alternative. On the segments entering/leaving the West Ramp terminal area, the Airport Access Road would accommodate almost 50 percent higher volumes than Keolani Place in the morning peak hour and almost 100 percent higher volumes in the afternoon peak hour.

The largest changes to peak hour traffic volumes would occur along Dairy Road. Diversion of most West Ramp terminal airport traffic to the new Airport Access Road would reduce traffic volumes on the segment north of Hana Highway, in the Kmart/Triangle Square blocks, by about 50 percent as compared to the No-Action alternative. A similar reduction would occur along Keolani Place. A larger reduction would occur on the segment south of Hana Highway (about 70 to 75 percent) because the Airport Access Road would also absorb from this segment the traffic between East Maui and the South and West Maui areas. Additional effects of the Proposed Project are described in greater detail in Appendix M.

The Proposed Project would also result in the following improved conditions by 2010 at the four signal-controlled intersections (Table 3-59):

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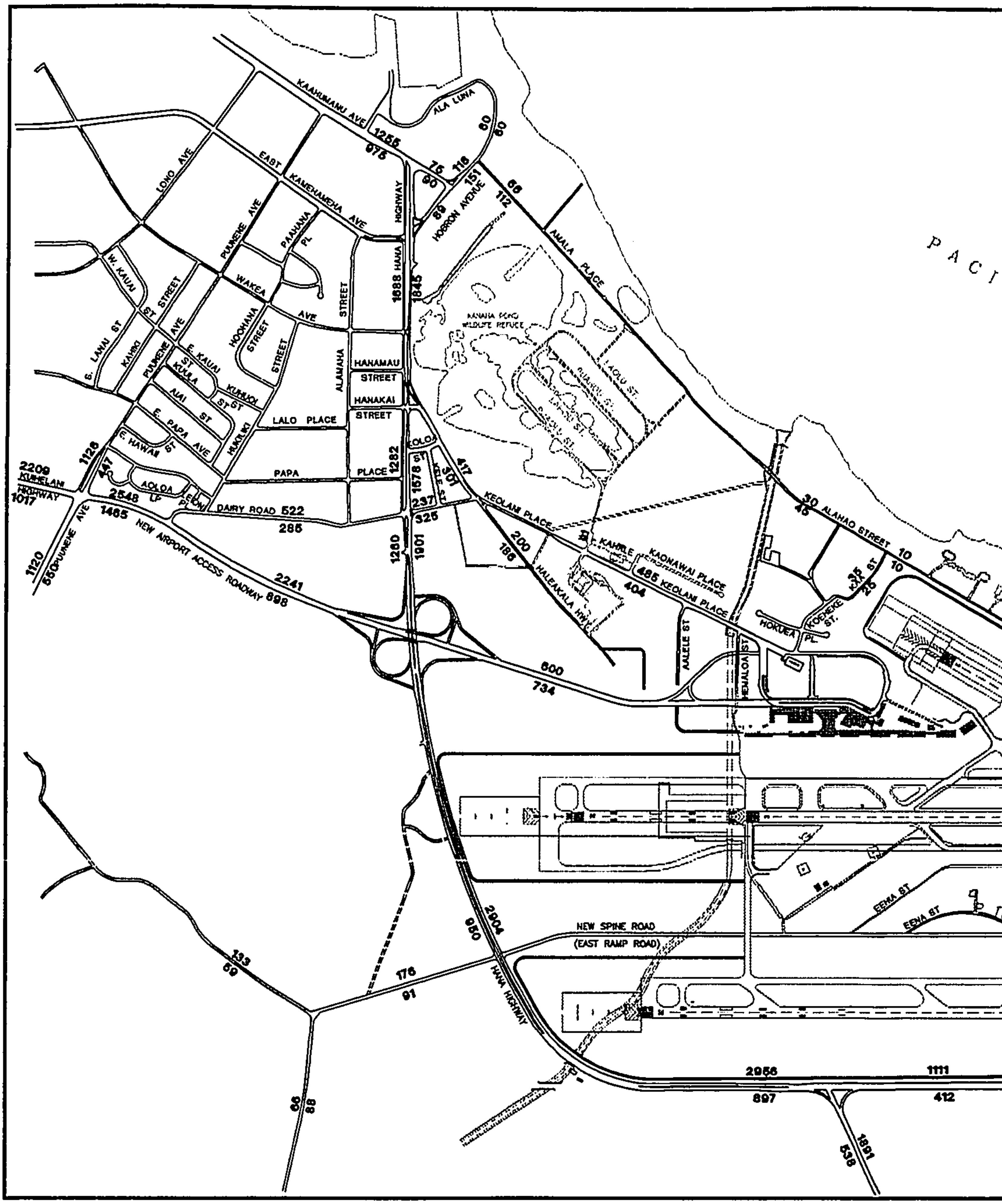

KAAHUMANU AVE
ALA LUNA
EAST KAMEHAMEHA AVE
LONO AVE
PUUNENE AVE
PAAHANA PL
HANA HIGHWAY
HOBRON AVENUE
AMALA PLACE
PACI
W. KAUAI ST
STREET
WAKEA AVE
S. LANAI ST
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E. KAUAI ST
KUULA ST
KUHUAI ST
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C. HAWAII ST
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HANAMAU STREET
HANAKAI STREET
LALO PLACE
HUKILIKE
PAPA PLACE
AOLOA PL
KUHELANI HIGHWAY
DAIRY ROAD
NEW AIRPORT ACCESS ROADWAY
KEOLANI PLACE
HALEAKALA HWY
KAHELE
KAONAWAI PLACE
LAOLU ST
ALAHAO STREET
AALELE ST
HOKUEA PL
KOEHEKE ST.
EENA ST
NEW SPINE ROAD
(EAST RAMP ROAD)
HANA HIGHWAY
1255
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151
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325
2209
1017
1126
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2548
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285
1120
550
1260
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485
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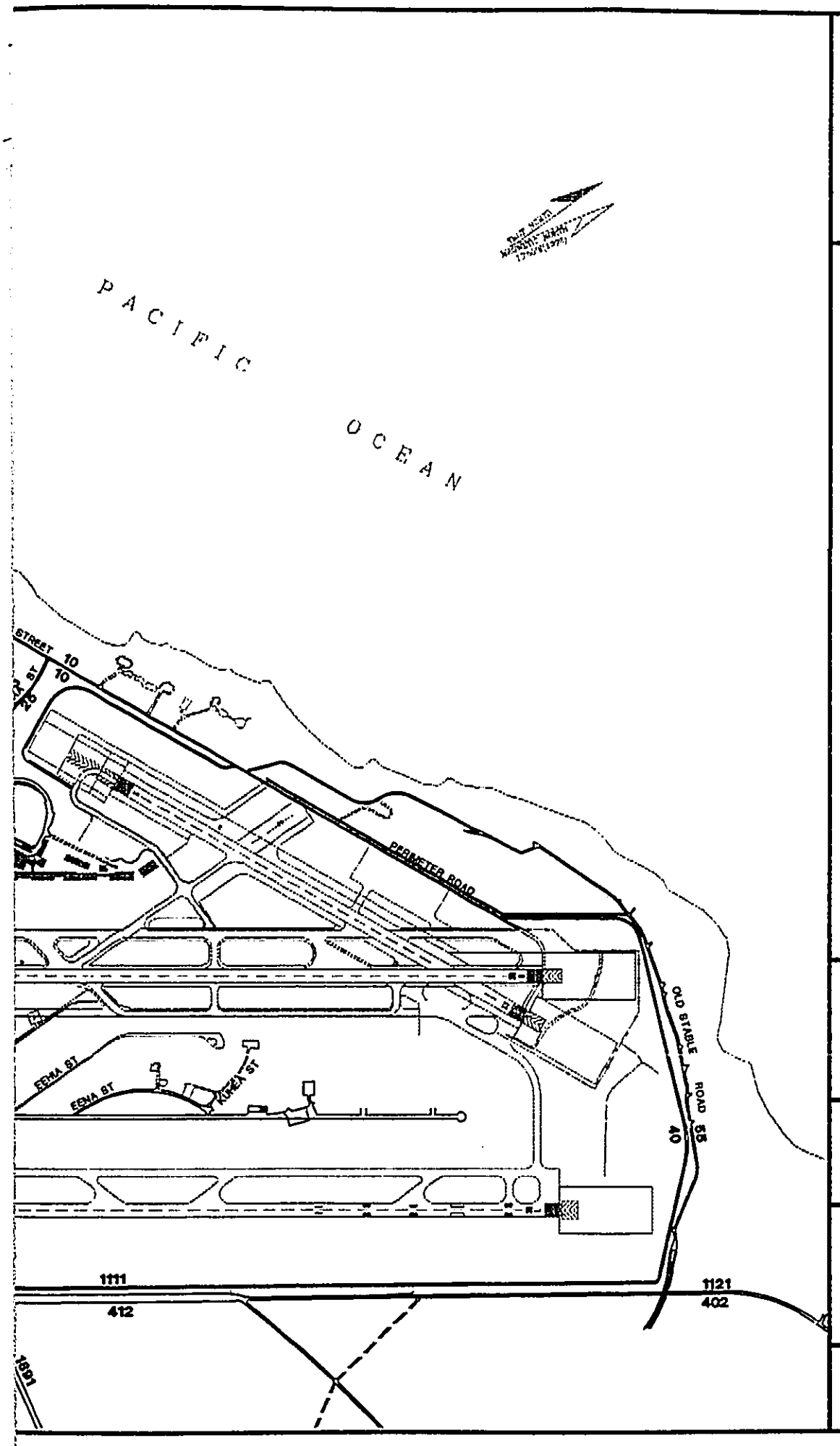

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STATE OF HAWAII

000 - MORNING PEAK HOUR

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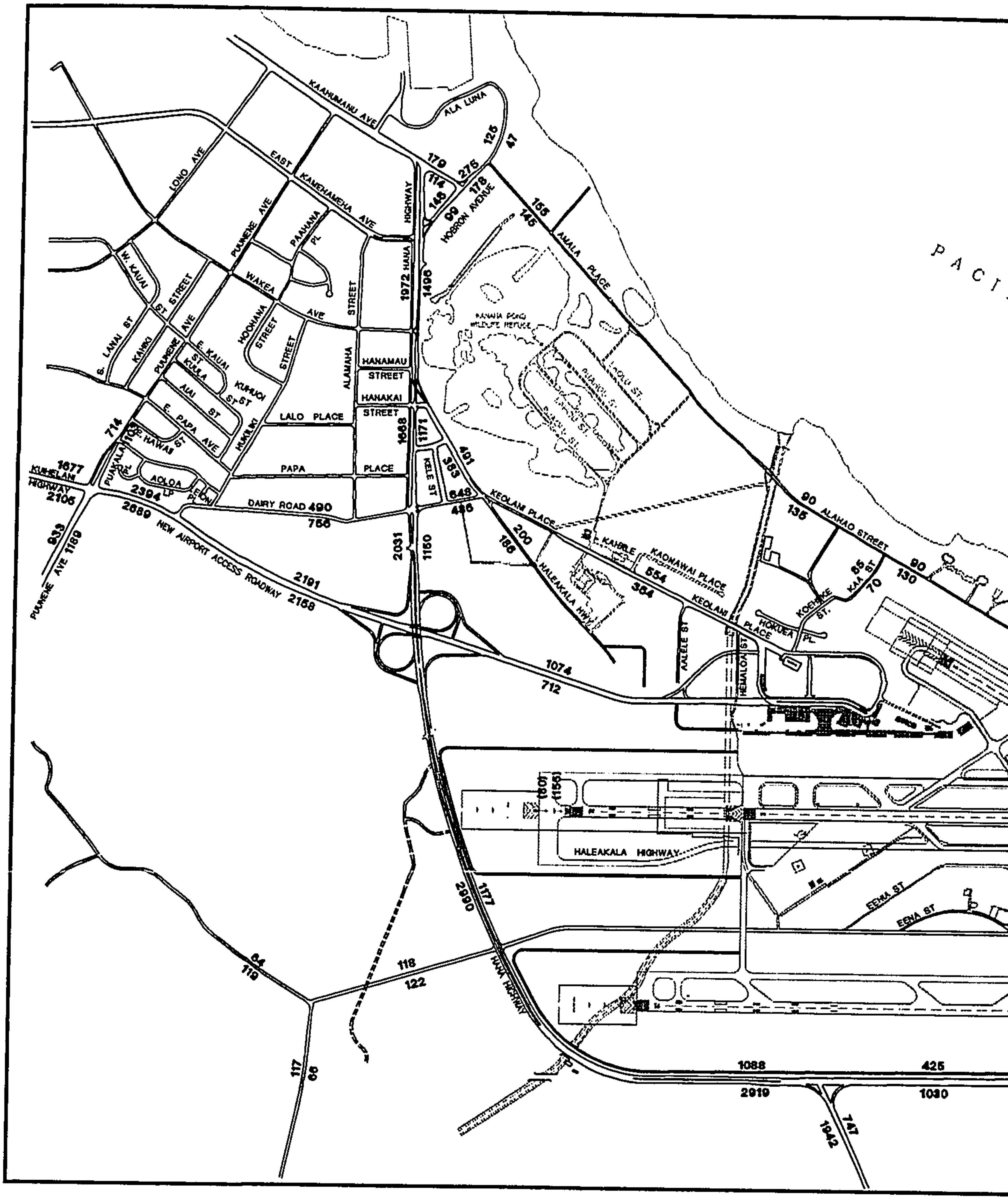
KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

2010 TRAFFIC VOLUMES ON ROADWAY, MORNING PEAK HOUR

DATE	FIGURE
MARCH, 1996	3-28



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ALA LUNA
EAST KAMEHAMEHA AVE
LONO AVE
PUUNENE AVE
PAAHANA PL
HANA HIGHWAY
HOBRON AVENUE
AMALA PLACE
PACI
W. KAUAI ST
STREET
WAKEA AVE
S. LANAI ST
KAHIKI
PUUNENE AVE
E. KAUAI ST
KUULA
HOOHANA STREET
STREET
ALAMAHA STREET
HANAMAU STREET
HANAKAI STREET
KUHUOI ST
AIAI ST
E. PAPA AVE
HUKILIKE
LALO PLACE
PAPA PLACE
E. HAWAII ST
PUUKALANI
AOLOA LP
KUHELANI HIGHWAY
DAIRY ROAD
KELE ST
KEOLANI PLACE
NEW AIRPORT ACCESS ROADWAY
PUUNENE AVE
HALEAKALA HWY
KAHIBLE
KAONAWAI PLACE
ALAHAO STREET
KOEHOKE ST
KAA ST
HOKUEA PL
KEOLANI PLACE
KALELE ST
HEMALOA ST
HALEAKALA HIGHWAY
EENA ST
EENA ST
HANA HIGHWAY
179
114
275
125
47
146
178
90
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145
1972
1496
714
1677
2106
2394
2689
933
1169
490
756
1668
1171
383
401
648
436
2031
1150
200
186
554
364
90
136
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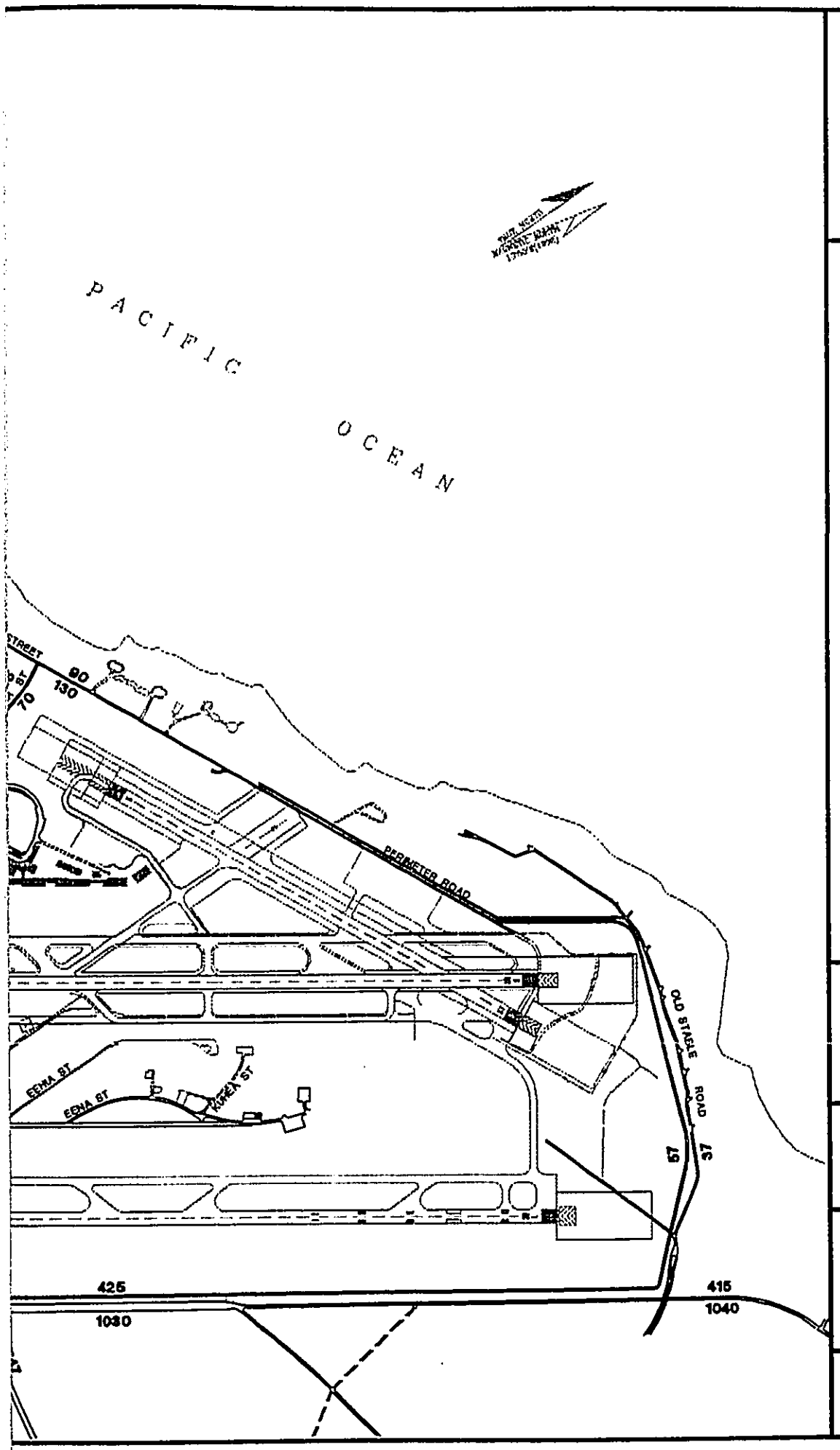

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

(000) - AFTERNOON PEAK HOUR

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GRAPHIC SCALE IN FEET

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

2010 TRAFFIC VOLUMES ON ROADWAY, AFTERNOON PEAK HOUR

DATE	FIGURE
MARCH, 1996	3-29

Table 3-59
LEVEL-OF-SERVICE (LOS) AT KEY INTERSECTIONS
2010 DESIGN DAY

Intersection		Scenario	Morning Peak Hour LOS	Afternoon Peak Hour LOS
North-South Street	East-West Street			
Hobron St.	Amala Pl.	Existing (1994)	A	A
		2010 No-action	A	A
		2010 Proposed Project	A	A
Kaahumanu Ave.	Hana Hwy.	Existing (1994)	F	E
		2010 No-action	E	E
		2010 Proposed Project	E	E
Hobron St.	Kaahumanu Ave.	Existing (1994)	A	B
		2010 No-action	A	B
		2010 Proposed Project	A	B
Hobron St.	Hana Hwy.	Existing (1994)	F	F
		2010 No-action	F	F
		2010 Proposed Project	F	F
Haleakala Hwy.	Hana Hwy. (West Jct.)	Existing (1994)	F	D
		2010 No-action	F	F
		2010 Proposed Project	F	F
Dairy Rd.-Keolani Pl.	Haleakala Hwy.	Existing (1994)	D	F
		2010 No-action	C	E
		2010 Proposed Project	B	C
Dairy Rd.	Hana Hwy.	Existing (1994)	D	F
		2010 No-action	E	F
		2010 Proposed Project	B	C
Dairy Rd.-Kuihelani Hwy Airport Access Rd.	Puunene Ave.	Existing (1994)	D	E
		2010 No-action	E	F
		2010 Proposed Project	E	F

Table 3-59 (Continued)
LEVEL-OF-SERVICE (LOS) AT KEY INTERSECTIONS
2010 DESIGN DAY

Intersection		Scenario	Morning Peak Hour LOS	Afternoon Peak Hour LOS
North-South Street	East-West Street			
Pulehu Rd.	Hansen Rd.	Existing (1994) 2010 No-action 2010 Proposed Project	B A A	B A A
Haleakala Hwy.	Hana Hwy. (Pukalani Jct.)	Existing (1994) 2010 No-action 2010 Proposed Project	E F C	C D B
Old Stable Rd.	Hana Hwy.	Existing (1994) 2010 No-action 2010 Proposed Project	E E E	E E E
Hansen - Spine Rd.	Hana Hwy.	2010 Proposed Project	F	F
Airport Access Rd.	Dairy Rd.	2010 Proposed Project	D	D
Airport Access Rd.	Hana Hwy. EB On-Ramp	2010 Proposed Project	C	E
Airport Access Rd.	Hana Hwy. WB On-Ramp	2010 Proposed Project	B	F

- Dairy Road/Haleakala Highway/Hana Highway. Traffic conditions would improve from LOS D and F to LOS B and C in the morning and afternoon peak hours, respectively. The traffic volumes would be between 43 and 88 percent of the available capacity. These improved conditions would result from diversion of traffic to the new Airport Access Road.

- Airport Access Road (Dairy Road/Puunene Avenue/Kuihelani Highway). Nominal improvement in the V/C ratio, but intersection conditions would remain at congested levels.

- Hana Highway/Haleakala Highway (Pukalani junction). Substantial improvement in traffic conditions for both peak hour periods, with capacity use dropping to 90 percent (from 103 percent) in the morning peak hour.

- New Airport Access Road/Dairy Road. With traffic signal controls, the projected traffic volumes would exceed the planned capacity of the intersection during both peak hour periods. The traffic would exceed capacity by 7 and 11 percent during the morning and afternoon peak hours, respectively.

For the existing STOP sign-controlled intersections, the Proposed Project would have the largest effect on the left-turn from Hana Highway onto Haleakala Highway at Triangle Square. The Proposed Project would reduce the left-turn volume and thereby reduce the delays, although the left-turn conditions are projected to remain at LOS F during both peak hours.

The LOS for each intersection is provided on Table 3-59 for the 2010 planning horizon, and on Table 3-60 for the 2020 planning horizon. For the new Airport Access Road interchange, during the morning peak hour, each ramp terminus would operate at LOS C or better except for the two westbound off-ramps. With regard to the westbound loop off-ramp (Hana to Lahaina movement) and the adjacent Hana Highway, entering traffic would operate at LOS E due to projected heavy use of the ramp. The nearby upstream (east side) entry to the westbound off-ramp to the Airport would operate at LOS D.

For the afternoon peak hour, all of the ramp's merge-diverge locations would operate at LOS C or better, except for the eastbound on-ramp terminus. At the eastbound ramp, the larger volume of ramp traffic, coupled with the large volume of through traffic along Hana Highway, would result in LOS E conditions for Hana Highway traffic and LOS F conditions for traffic exiting the ramp. The benefit/cost ratio of the partial cloverleaf is 1.42.

A comparison of existing and future (2020) LOS are shown in Table 3-60 for these key intersections. The intersection which shows the most improvement due to the Proposed Project is Dairy Road/Keolani Place/Hana Highway. The traffic conditions would improve from LOS D and F to LOS A and B in the morning and afternoon peak hours, respectively. Although the Proposed Project will improve traffic conditions at most intersections, when compared to the No-Action Alternative, the following intersections would exceed capacity in 2020 and show a lower LOS than existing.

Table 3-60
LEVEL-OF-SERVICE (LOS) AT KEY INTERSECTIONS
2020 AVERAGE WEEKDAY

Intersection		Scenario	A.M. Peak Hour LOS	P.M. Peak Hour LOS
North-South Street	East-West Street			
Haleakala Hwy.	Hana Hwy. (West Junction)	Existing (1994)	F	D
		2020 No-action	F	F
		2020 Proposed Project	F	F
Dairy Rd.-Keolani Pl.	Haleakala Hwy.	Existing (1994)	D	F
		2020 No-action	C	D
		2020 Proposed Project	A	B
Dairy Rd.	Hana Hwy.	Existing (1994)	C	E
		2020 No-action	F	F
		2020 Proposed Project	E	E
Dairy Rd.-Kuihelani Hwy	Puunene Ave.	Existing (1994)	D	F
		2020 No-action	E/F	F
Airport Access Rd.	Puunene Ave.	2020 Proposed Project	E/F	F
Pulehu Rd.	Hansen Rd.	Existing (1994)	B	B
		2020 No-action	D	D
		2020 Proposed Project	C	C
Haleakala Hwy.	Hana Hwy. (Pukalani Junction)	Existing (1994)	E	C
		2020 No-action	F	E
		2020 Proposed Project	F	B
Hansen - Spine Rd.	Hana Hwy.	2020 Proposed Project	F	F
Airport Access Rd.	Dairy Rd.	2020 Proposed Project	D	E
Airport Access Rd.	Hana Hwy. EB On-Ramp	2020 Proposed Project	B	C
Airport Access Rd.	Hana Hwy. WB On-Ramp	2020 Proposed Project	A	C

- Airport Access Road (Dairy Road)/Puunene Ave./Kuihelani Highway. This intersection would exceed capacity with or without the Proposed Project.

- Hana Highway/Haleakala Highway (Pukalani Junction). The afternoon peak is improved in the year 2020. However, the morning peak is substantially over capacity.

- The new intersection of Airport Access Road/Dairy Road. It is estimated that this intersection will be over capacity in the afternoon peak hour.

The Proposed Project would positively affect public transportation through the reduction of future congestion on the roadways providing entry to and exit from the airport. This would apply to various private operators as well as public transit operations.

The direct effects of the Proposed Project on the planned bicycle routes in the vicinity of the airport would be as follows:

- The Proposed Project would have no effect on the development of the Northshore Greenway Bikeway project.

- Along Hana Highway: (i) The Airport Access Road interchange would have eastbound and westbound ramp connections to Hana Highway with vehicles crossing the bicycle lane to enter or leave the ramps; (ii) bicyclists along Hana Highway would have to cross the ramp entry/exit points with the attendant safety concerns; and (iii) the Proposed Project would consolidate the separate Pulehu and Hansen Road intersections into a single intersection and conflict point for bicyclists.

- The diversion of traffic volumes from Dairy Road and Keolani Place should reduce vehicle conflicts along these segments of planned bicycle routes.

3.22.8.5 Significance Criteria and Analysis

Projects, such as those planned for Kahului Airport, generally result in travel changes that may affect various components and segments of the surface transportation system. The importance of the effects, individually and cumulatively, is dependent upon the size and characteristics of the increases, and upon the capacities, usage levels and conditions of the surface transportation system.

In general, LOS D is considered by transportation engineers to be acceptable for urban traffic conditions during peak traffic hours at signal-controlled intersections. This service level provides a balance between service quality (delays), on one hand, and the efficient use of transportation resources, on the other. Therefore, significant impacts for traffic signal-controlled intersections would occur if the Proposed Project, when compared against the No-Action Alternative, would:

- degrade an intersection from LOS D or better to LOS E or F; or

- cause an intersection's volume-to-capacity (V/C) ratio to exceed 0.95, or result in an incremental increase in the V/C of 0.03 or more at any given intersection.

Similarly, significant adverse impacts would occur if traffic increases resulting from the Proposed Project worsened conditions at *unsignalized* intersections from LOS D or better to LOS E or F when compared to the No-Action Alternative. In this case, the level of significance also reflects the number of vehicles affected by the condition. In addition, any *new* roadways constructed as part of the Project which will result in: (i) LOS E or F, or (ii) V/C ratios greater than 0.95, will be deemed to create significant adverse traffic impacts.

Changes in the operation of an intersection that: (i) do not change the LOS; (ii) do not increase the V/C ratio by 0.03 or more; or (iii) change LOS from C or better to no lower than LOS D, are treated as insignificant but noticeable. Changes that result in improved conditions are considered positive.

Based on the evaluation criteria listed above, none of the *existing* intersections and roadways would experience significant adverse impacts as a result of the Proposed Project. In fact, the Proposed Project, when compared to the No-Action alternative, creates measurable positive impacts at certain intersections. Table 3-61 summarizes the significance of the potential effects of the proposed improvements on the surface transportation characteristics of the project area in the year 2010. For intersections not listed in Table 3-61, no effects resulting from the Proposed Project are expected.

However, with or without the Proposed Project, several existing intersections will be in excess of the planned capacity and/or will result in unacceptable service levels. Therefore, these impacts are considered insignificant.

HANA HIGHWAY INTERSECTION WITH HALEAKALA HIGHWAY (PUKALANI JUNCTION). The combined large volumes of westbound traffic on Hana and Haleakala Highways would exceed capacity during the morning peak hour. Construction of a new roadway between Upcountry Maui and the South and Central Maui to provide an alternative route for traffic between these two areas, should divert much of the forecast traffic away from this intersection. The alternative route would have to reduce the morning peak hour traffic by 25 to 30 percent to alleviate 2020 forecast problems at this intersection[21]. It will be further studied by HDOT-Highways Division and is not part of the Proposed Project.

AIRPORT ACCESS ROAD, KUIHELANI HIGHWAY AND PUUNENE AVENUE. The Proposed Project would not worsen conditions at the intersection of the Airport

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[21] The 2010 background traffic forecasts included the traffic patterns associated with a new roadway from Upcountry Maui to Kihei.

Access Road, Kuihelani Highway and Puunene Avenue, but this intersection would accommodate volumes in excess of planned capacity during both peak hours. The undesirable conditions would occur with either the No-Action alternative or Proposed Project. In 2010, the Proposed Project would result in nominal improvement in the V/C ratio, but the intersection will remain at congested levels.

Several of the new road intersections created by the Proposed Project will be accommodating traffic volumes in excess of the planned capacity and/or will result in unacceptable service levels.

HANA HIGHWAY INTERSECTION WITH HANSEN / SPINE ROAD. The proposed STOP sign controls would result in LOS F conditions for left-turns from the Hansen and Spine Road approaches. Traffic signal controls could be installed at this intersection to provide protected movement for traffic exiting the cross streets. For the design day volumes, the intersection would operate at LOS C, with peak hour volumes near the intersection capacity. In the 2020 analysis, even with signalized control the intersection would operate at LOS F for morning and afternoon peak hours. The congestion is due to the heavy traffic volumes on Hana Highway. The construction of a new roadway between Upcountry Maui and the South or Central Maui areas, and/or connect Old Stable Road and Alahao Street as a bypass route for East Maui traffic to Kahului, to provide alternate route(s) for traffic would need to divert about 20 percent or more of peak hour, peak direction traffic from this section of Hana Highway to reduce traffic volumes below the capacity of a four-lane Hana Highway. The Upcountry Maui/Kihei connection will be studied by HDOT and is not part of the Proposed Project. The connection of Alahao Street to Old Stable Road as a public thoroughfare is discussed in Section 8.1.

AIRPORT ACCESS ROAD INTERSECTION WITH DAIRY ROAD. The proposed lanes would result in volumes exceeding capacity during both peak hours. In the 2020 analysis, the capacity would only be exceeded during the afternoon peak hour. Provision of a second northbound left-turn lane on the Airport Access Road would improve the intersection to a V/C ratio of 1.00 in both peak hours in the 2010 and 2020 analysis.

NORTHBOUND LEFT-TURN FROM AIRPORT ACCESS ROAD TO WESTBOUND ON-RAMP TO HANA HIGHWAY. The large volume of left-turn vehicles would result in LOS F conditions during the afternoon peak hour.

AIRPORT ACCESS ROAD INTERCHANGE. The large volume of traffic using the eastbound on-ramp from the Airport Access Road to Hana Highway during the afternoon peak hour would result in LOS F condition (2010) or LOS E (2020) condition at the merge point with Hana Highway. The merge condition could be improved by construction of an auxiliary lane along eastbound Hana Highway to provide more distance for merging of the ramp traffic into the through traffic.

The westbound off-ramp from Hana Highway to the Airport Access Road during the morning peak hour would result in LOS E condition (2010) and LOS F condition (2020) for both

the Hana-to-Lahaina loop ramp. The Hana-to-Airport direct ramp would operate at a LOS F condition (2020) during the morning peak hour.

BIKE ROUTE. The proposed interchange would result in traffic crossing the Hana Highway shoulder bicycle lanes at six ramp entry or exit points, with two of these crossings accommodating very high volumes of traffic. These bicycle-vehicle conflicts would pose safety concerns and potential delay to cyclists.

Table 3-61
SIGNIFICANCE OF EFFECTS ON SURFACE TRANSPORTATION

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Levels of Service at Key Intersections:	Change in the intersection LOS to less than D or a substantial lowering of the intersection LOS due to the Proposed Project.	
Kaahumanu Ave/Hana Hwy		Positive
Haleakala Hwy/Hana Hwy		Insignificant/Positive
Dairy Rd-Keolani Pl/Haleakala Hwy		Positive
Dairy Rd/Hana Hwy		Positive
Dairy Rd-Kuihelani Hwy-Airport Access Rd/Puunene Ave		Significant
Airport Access Roadway/Dairy Road		Significant
Hana Highway/Spine Road/Hansen Road		Significant
Impact on Bike Route	Safety concerns	Significant

3.22.8.6 Mitigation Measures

The Proposed Project, in itself, will not have a significant adverse impact on *existing* key intersections, and will have positive impacts on other *existing* intersections. However, several *existing* intersections, will be congested with or without the Proposed Project. Although the Proposed Project

will not have significant negative impacts on *existing* roadways, it will result in congested conditions at *new* intersections associated with the *new* roadways constructed as part of the Project itself and on *existing or planned* bike routes (See *Bike Plan Hawaii*). Mitigation measures for these new intersections are provided below.

HANA HIGHWAY INTERSECTION WITH HANSEN / SPINE ROAD (LOS F AT LEFT-TURN LANE). One way to improve the situation at this intersection is to widen this section of Hana Highway to six lanes with traffic signal controls. The traffic signals will be part of the Proposed Project. However, the widening of Hana Highway will be studied by HDOT-Highways Division.

AIRPORT ACCESS ROAD INTERSECTION WITH DAIRY ROAD (EXCESSIVE V/C RATIO). Provision of a second right-turn lane on Dairy Road, in addition to the second northbound left-turn lane, would result in volumes at 84 percent of capacity. This will be part of the Proposed Project.

NORTHBOUND LEFT-TURN FROM AIRPORT ACCESS ROAD TO WESTBOUND ON-RAMP TO HANA HIGHWAY (LOS F AT LEFT-TURN LANE). Installation of traffic signal controls on Airport Access Road would provide protected left-turn movement, improving overall intersection conditions to LOS A.

AIRPORT ACCESS ROAD INTERCHANGE (LOS F). These conditions could be improved at the entry to these two ramps by relocating the entry to the Hana-to-Airport several hundred feet eastward to provide more separation between the two ramp entrances. This will be studied during the design phase of the Proposed Project and appropriate measures will be adopted.

BIKE ROUTE (BICYCLE-VEHICLE CONFLICTS). The alternative approaches to reduce these conflicts include:

- Delete the section of Hana Highway between Dairy Road and Haleakala Highway from planned use as a designated bicycle route. Bicyclists along Hana Highway would be directed to use the Northshore Greenway bicycle facility. This alternate route should be in place prior to or at the same time as the construction of the Airport Access Road. However, this does not eliminate the safety concerns or reduce delays for those bicyclists who choose to travel on Hana Highway.

- Establish a bicycle crossing for each ramp at a right angle to the respective ramp and at a location along the ramp that provides good visibility for both motorist and bicyclist. Establish a low

vehicle speed limit for the ramps and provide a marked bicycle lane between Hana Highway and the crossing. This alternative maximizes safety for an at-grade crossing, but does not eliminate the crossing.

- Construct a grade-separated crossing at all six ramps. This would be the most expensive option, requiring several million dollars depending on design, and may not be as convenient or secure for some bicyclists.

- Construct a grade-separated crossing at the two highest volume ramps (Hana-to-Lahaina and Lahaina-to-Hana) and establish at-grade crossings at the other ramps.

Upon consideration of the above mitigation measures, the most reasonable and feasible measure would be to maintain a bike route along Hana Highway, and to provide a crossing at the ramps for the bicyclist. The crossing shall be designed to maintain safety for both motorists and bicyclists and comply with the applicable rules and regulations at the time of design. The location of the crossing should provide for good visibility for both motorist and bicyclist. Adequate signage for both motorist and bicyclist shall be placed to warn both parties of the bike crossing. The intersection of the bike route and the ramps will be coordinated with the appropriate State and County officials during the design to insure that the current bikeway and highway safety standards are met. It is also anticipated that once the Northshore Greenway Bikeway is completed, the bicycle traffic on Hana Highway would be considerably less. In addition, with the proposed Airport Access Roadway, a bicycle route could be designated along the paved shoulder of the westbound Hana-to-Airport off-ramp and the east-bound Airport-to-Lahaina on-ramp, as well as the portion of Airport Access Road north of Hana Highway. Bicyclists using this route could avoid crossing the ramp entry-exit points along Hana Highway.

The Proposed Project will close Haleakala Highway within the Airport boundary. The impact on the closure of Haleakala Highway was previously mitigated by the widening of Hana Highway.

Mitigation measures will be adopted which are consistent with Federal, state and local regulations and will be implemented by the corresponding Federal, State and local agencies. The following key intersections will be overcapacity within the planning period with or without the Proposed Project. Therefore, the following are mitigation measures for those intersections which could be implemented by HDOT as the demand increases.

HANA HIGHWAY INTERSECTION WITH HALEAKALA HIGHWAY (PUKALANI JUNCTION) (EXCESSIVE V/C RATIO). Conditions at the intersections could be improved by:

- Widening the northbound Haleakala Highway approach to provide three lanes turning left towards Kahului. This would require widening a section of westbound Hana Highway to three lanes to receive the triple left-turn-lane movement. This would improve the intersection to a V/C or 0.97 for an average weekday condition; or

- Construction of a flyover ramp from northbound Haleakala Highway to westbound Hana Highway. This would eliminate the principal conflict between traffic movements, and reduce the remaining conflicting movements to a small fraction of the intersection capacity; or

AIRPORT ACCESS ROAD, KUIHELANI HIGHWAY AND PUUNENE AVENUE (EXCESSIVE V/C RATIO). Based on the 2010 analysis, the conditions at this intersection could be improved by:

- Adding a third northbound through lane on Kuihelani Highway, with the lane beginning just south of Puunene Avenue and extending north along the new Airport Access Road to the new Dairy Road intersection; and

- Adding a third southbound through-lane to the Airport Access Road from the Dairy Road intersection through the Puunene Avenue intersection, with the lane ending and traffic merging into the remaining two through-lanes a short distance south of Puunene Avenue. The lane could begin as a "free" right-turn lane from Dairy Road, with the right-turn traffic having to stop only for crossing pedestrians.

- Adding a second left-turn lane to the eastbound approach of Puunene Avenue.

These modifications would reduce the V/C ratio to 0.78 and 0.89 during the morning and afternoon peak hours, respectively.

However, based on the 2020 traffic analysis which have different trip movements, the following intersection modifications are recommended.

- Add a second left-turn lane on eastbound Puunene Avenue;
- Add a right-turn lane on southbound Airport Access Road;
- Add a right-turn lane on northbound Kuihelani Highway.

These improvements would result in an average weekday volume to capacity ratio of about 90 percent during both morning and afternoon peak hours.

The improvements will be dependent on the future traffic movements in this area. It is recommended that the HDOT-Highways study this intersection in the future as it approaches capacity and implement the appropriate mitigation measures to alleviate the problem.

3.22.8.7 Level of Significance after Mitigation

Implementation of the mitigation measures described above, as well as adoption of the Proposed Project, will result in traffic conditions in and around the Airport being at or above *acceptable levels of service.*

3.22.8.8 Construction Impacts and Potential Mitigation Measures

The proposed roadway improvements will cause a short-term impact on roadways in the Airport environs, especially on Hana Highway and Dairy Road. It is anticipated that the construction period for the Airport Access Roadway will be approximately 18 months, and includes the realignment of the Hansen Road. Fortunately, most of the work will be remote from the existing roadways and highways, and will not impact roadway traffic.

HDOT is very much aware of the importance of both Hana Highway and Dairy Road to the community and its congestion during peak morning and afternoon hours. It is anticipated that there will be some impacts during the construction of the Airport Access Roadway overpass and during the connections of the new roadway improvements to the existing roads. This period of impact will be several months long with intermittent interruption of traffic along Hana Highway or Dairy Road. The construction work will be designed and scheduled to allow for no lane closures during the peak traffic hours. If necessary, certain operations may be performed during the evening or night hours. To relieve the impact of the realignment of Hansen Road and the closure of Pulehu Road, it is anticipated that the new Hansen Road will be completed prior to the closure of the existing Hansen and Pulehu Roads.

The construction of the Spine Road is not anticipated to cause any significant short-term surface traffic impacts. These construction impacts due to the new roadways are short-term potential impacts and will not cause any significant adverse long-term impacts.

3.22.9 AVIATION SAFETY

3.22.9.1 Existing Conditions

The airport facilities at Kahului Airport are generally consistent with FAA standards and guidelines contained in the applicable FAA Advisory Circulars and Orders. The major exceptions to the FAA standards and guidelines relating to aviation safety are described below. A detailed study on airport safety is presented in Appendix N.

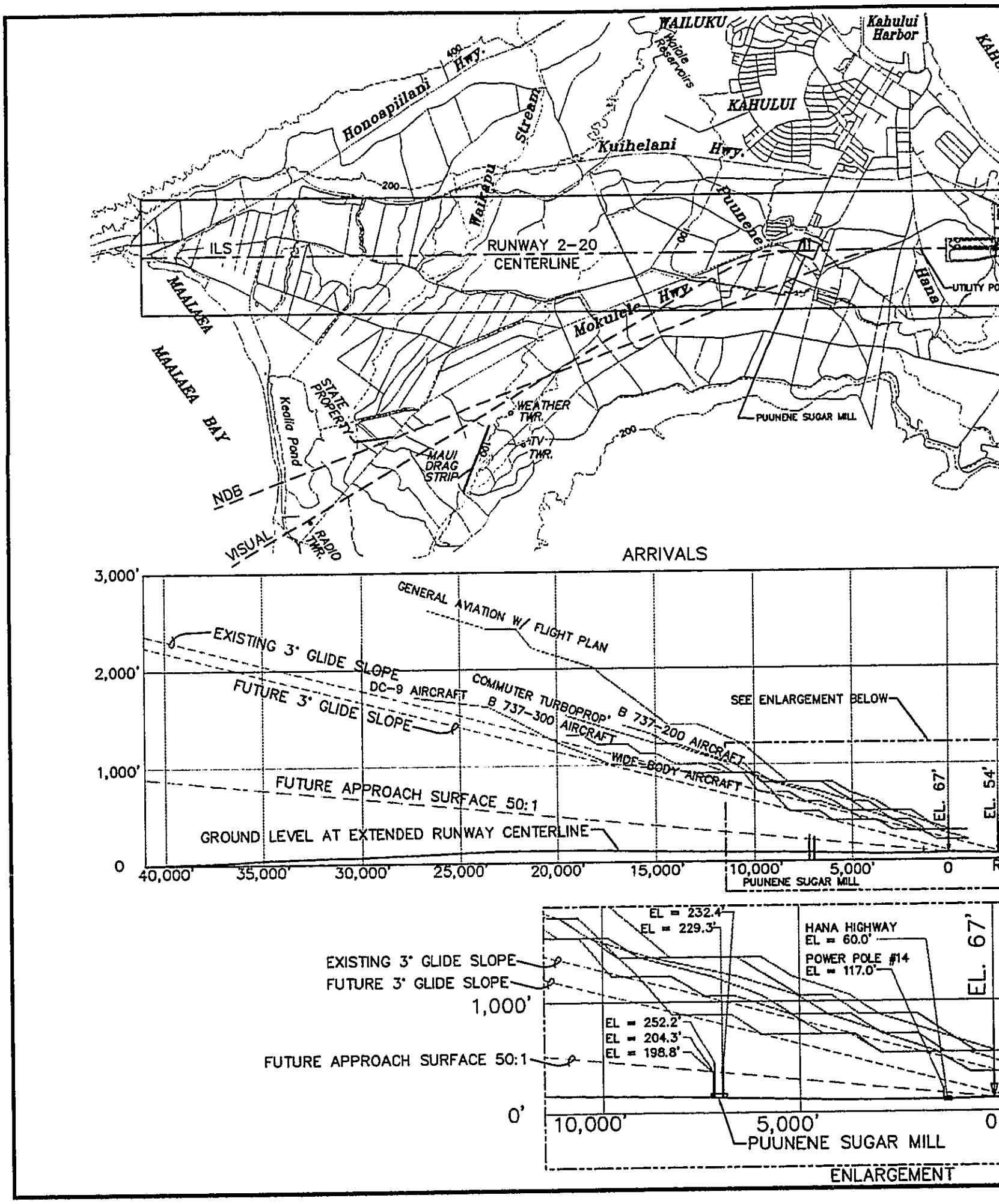
RUNWAY SAFETY AREA. Although the Runway Safety Areas (RSA) conform to the FAA Criteria which were in effect at the time of construction of the runway, they do meet the new FAA standards. The RSA at the ends of Runway 2-20 is 500 feet wide, and currently meet the new standards. The Runway 5-23 RSA is 370 feet wide, but should be 500 feet wide under the new FAA standards.

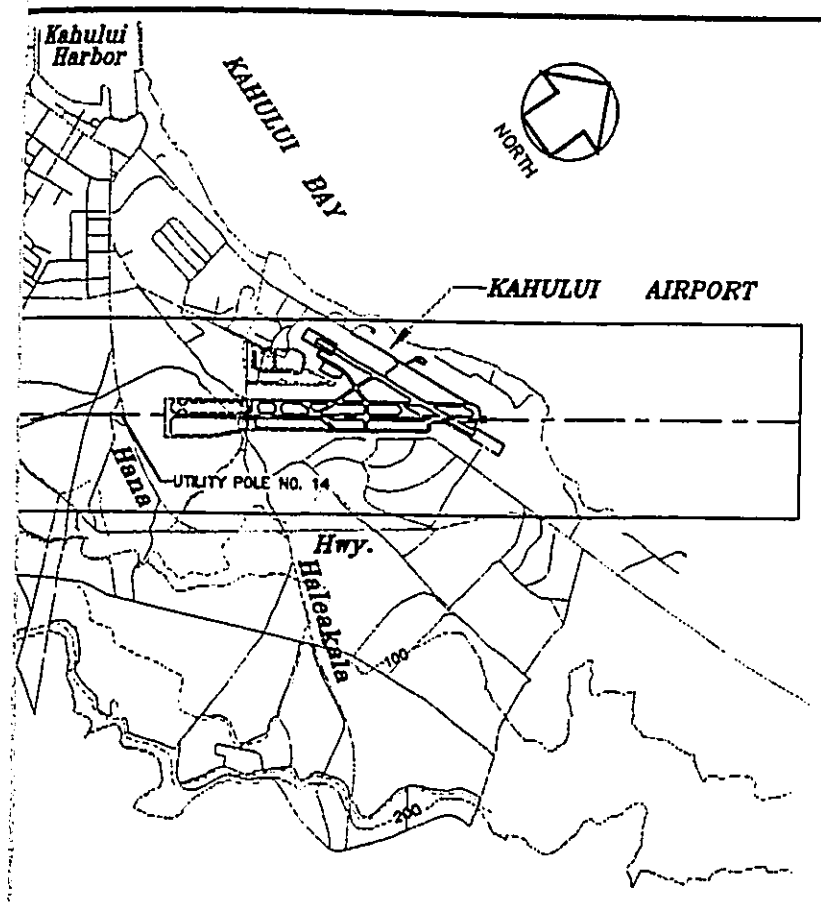
RUNWAY PROTECTION ZONE. A small portion on the east side of the Runway Protection Zone (RPZ) for Runway 5-23 is outside of the current airport boundary. This parcel of land should be acquired to allow the Airport to control the development of the area.

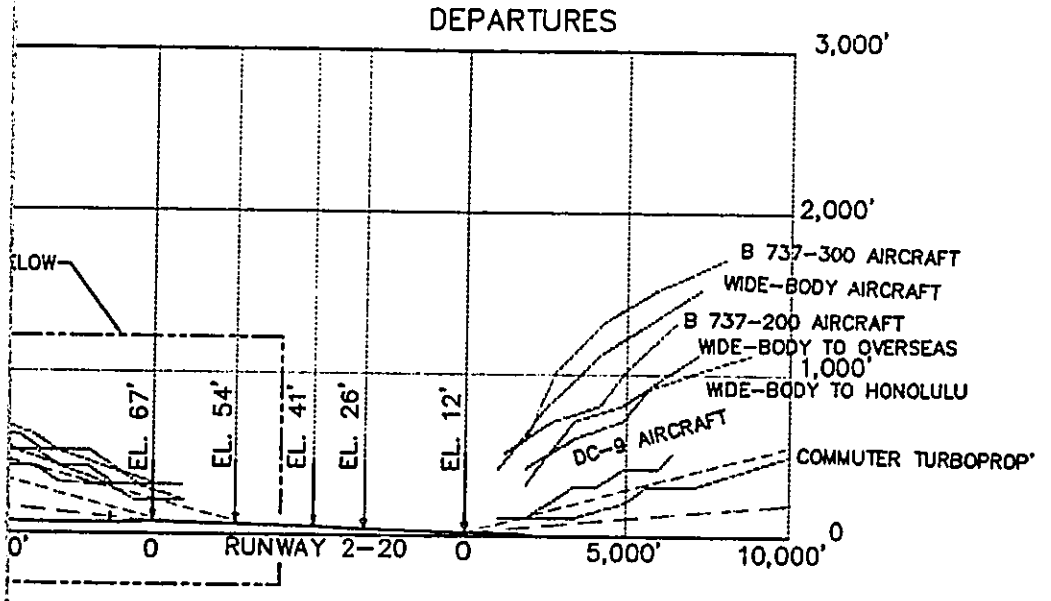
APPROACH SURFACE. The Runway 2-20 imaginary approach surface is penetrated by two groups of objects. The first penetration is by Kealoloa Ridge of the West Maui Mountains, which penetrates a portion of the 7:1 transitional surface approximately 9 miles south of the runway threshold. The second penetration, of approximately 6 feet, is by the tallest (252 feet above mean sea level) of the five smokestacks at the Puunene Mill. This smokestack is approximately 9,800 feet south of the Runway 2-20 threshold. Figures 3-30 and 3-31 show the average profiles for aircraft takeoff and approach for Runways 2-20 and 5-23, respectively.

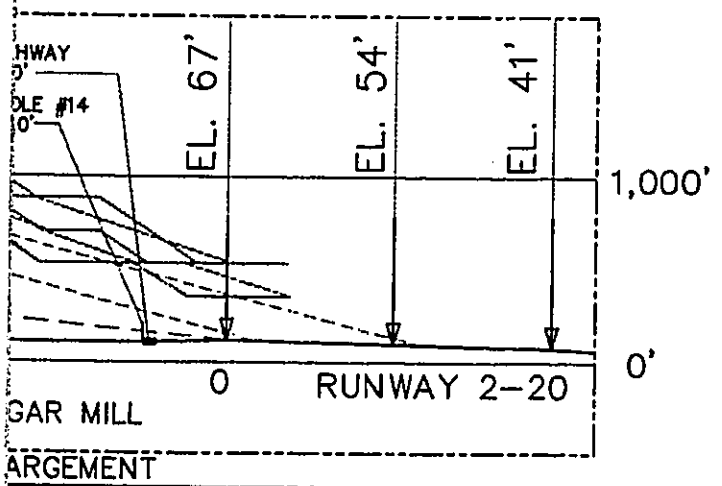
AIRCRAFT OPERATIONS. In recent years, the increase in helicopter operations has generated concern about the safety of flight operations at Kahului Airport. However, at this time there is no identifiable degradation of airport safety as a result of the relatively large mix of helicopter operations.

ACCIDENTS. Between 1964 and 1993 there have been sixteen aircraft accidents or mishaps, associated with Kahului Airport, involving air carrier, air taxi and general aviation operations. This includes the Aloha Airlines mishap on April 28, 1988, because the aircraft landed at Kahului Airport. The other fifteen aircraft mishaps were related to aircraft departing and arriving at Kahului Airport, of which ten occurred directly on the airfield. Of the fifteen, one was an air carrier operation, seven were air taxi/commuter operations, and seven were general aviation operations. None of the aircraft accidents were attributed to bird/aircraft interaction. When compared to national accident rates for these three categories (air carrier, commuter/air taxi, general aviation), Kahului Airport's accident rates are significantly lower.


WAILUKU
Kahului Harbor
Hwy.
Honoapiilani
Waiale Reservoirs
KAHULUI
Stream
Kuihelani Hwy.
Waikapu
Puunene
ILS
RUNWAY 2-20
CENTERLINE
Hana
UTILITY PO
MAALAEA
Mokulele Hwy
MAALAEA BAY
STATE PROPERTY
Kealia Pond
WEATHER TWR.
TV TWR.
PUUNENE SUGAR MILL
MAUI DRAG STRIP
NDB
VISUAL
RADIO TWR.
ARRIVALS
3,000'
2,000'
1,000'
0
GENERAL AVIATION W/ FLIGHT PLAN
EXISTING 3° GLIDE SLOPE
DC-9 AIRCRAFT
COMMUTER TURBOPROP
B 737-200 AIRCRAFT
FUTURE 3° GLIDE SLOPE
B 737-300 AIRCRAFT
WIDE-BODY AIRCRAFT
SEE ENLARGEMENT BELOW
FUTURE APPROACH SURFACE 50:1
GROUND LEVEL AT EXTENDED RUNWAY CENTERLINE
EL. 67'
EL. 54'
40,000'
35,000'
30,000'
25,000'
20,000'
15,000'
10,000'
5,000'
0
PUUNENE SUGAR MILL
EL = 232.4'
EL = 229.3'
HANA HIGHWAY
EL = 60.0'
POWER POLE #14
EL = 117.0'
EL. 67'
EXISTING 3° GLIDE SLOPE
FUTURE 3° GLIDE SLOPE
1,000'
EL = 252.2'
EL = 204.3'
EL = 198.8'
FUTURE APPROACH SURFACE 50:1
0'
10,000'
5,000'
0
PUUNENE SUGAR MILL
ENLARGEMENT







Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

NOTE : 3° TYPICAL GLIDE SLOPE. PILOTS APPROACH PROCEDURE MAY VARY.

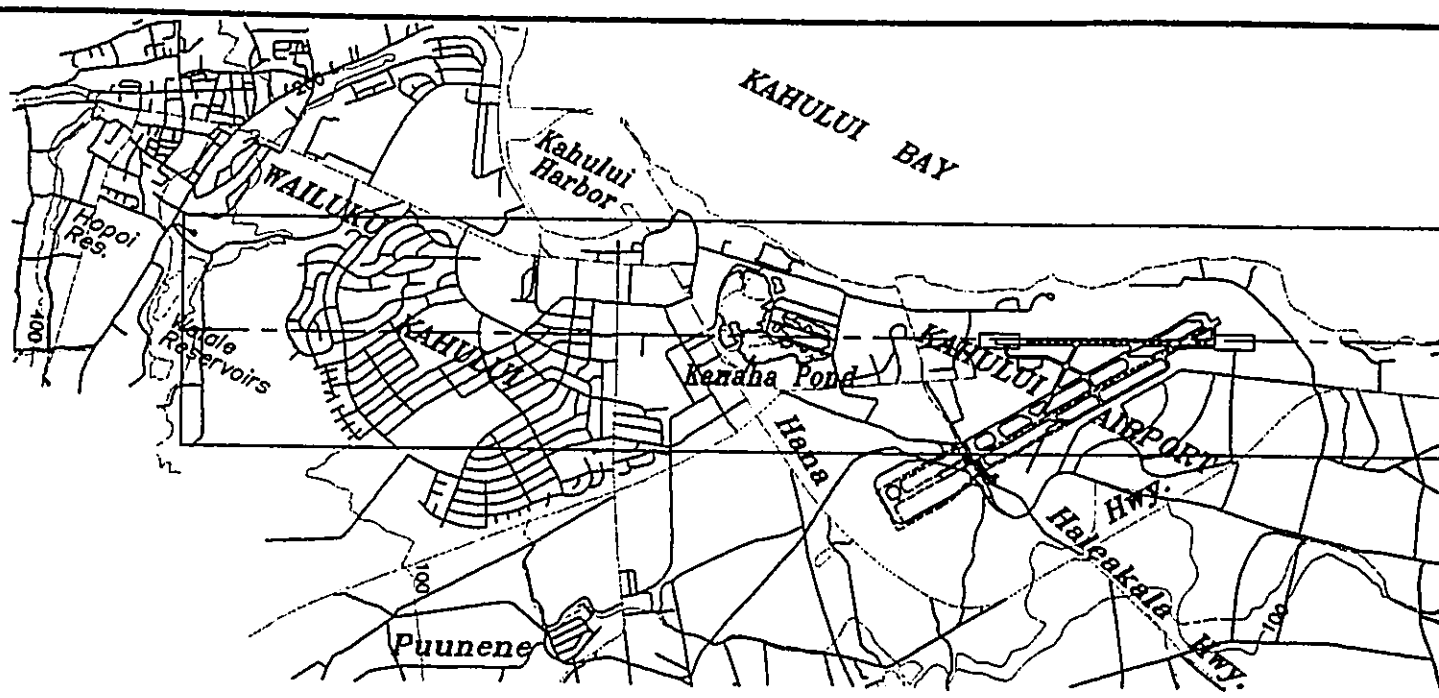
0 3,000 6,000 9,000
GRAPHIC SCALE IN FEET
ELEVATION IN FEET

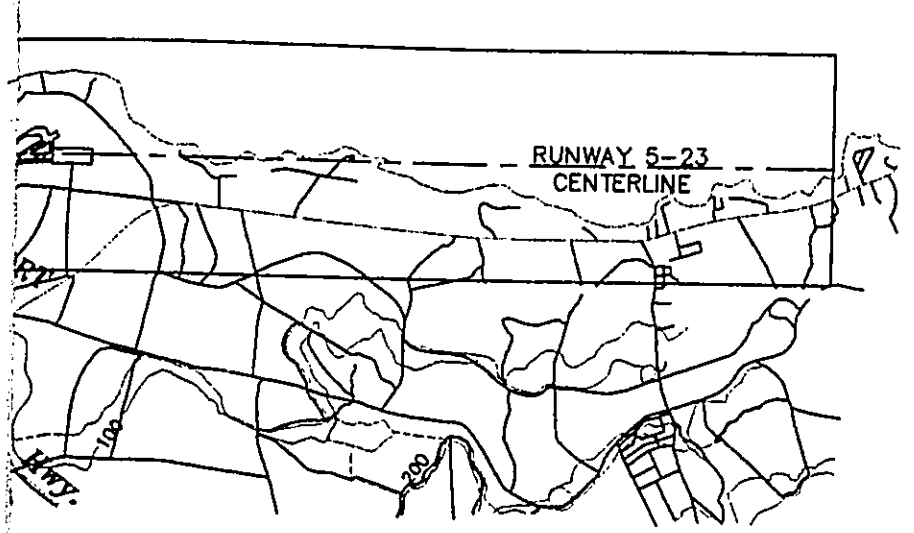
Edward K. Noda and Associates, Inc.

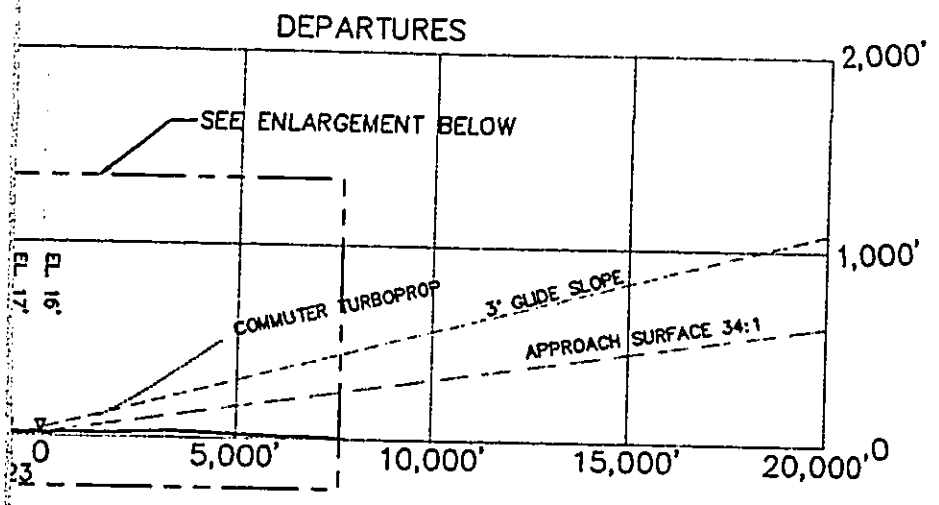
KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

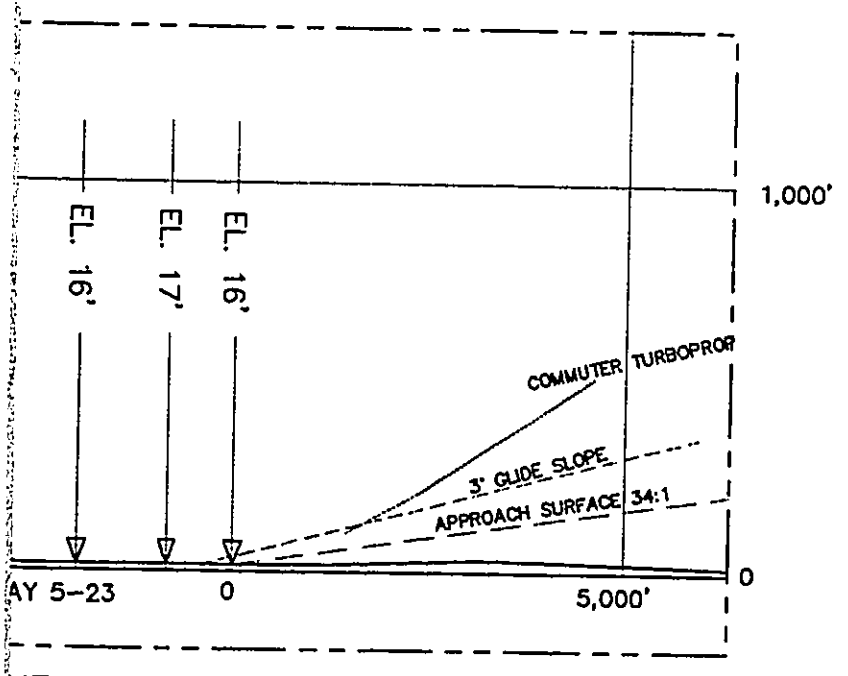
AIRCRAFT APPROACH & DEPARTURE PROFILES TO RUNWAY 2-20

DATE	FIGURE
MARCH, 1996	3-30


KAHULUI BAY
Kahului Harbor
WAILUKU
Hopoi Res.
Waiale Reservoirs
KAHULUI
Kanaha Pond
KAHULUI AIRPORT
Hana Hwy.
Haleakala Hwy.
Puunene
100
ARRIVALS
2,000'
1,000'
0
3° GLIDE SLOPE
APPROACH SURFACE 34:1
GENERAL AVIATION W/ FLIGHT PLAN
COMMUTER TURBOPROP
GROUND LEVEL AT EXTENDED RUNWAY CENTERLINE
TREE TOPS ±50'
EL. 20'
EL. 18'
EL. 16'
EL. 17'
EL. 16'
20,000'
15,000'
10,000'
5,000'
0
0
5,000'
RUNWAY 5-23
KANAHA POND
SEE EN
COMM
GENERAL AVIATION W/ FLIGHT PLAN
COMMUTER TURBOPROP
1,000'
3° GLIDE SLOPE
APPROACH SURFACE 34:1
TREE TOPS ±50'
GROUND LEVEL AT EXTENDED RUNWAY CENTERLINE
0
5,000'
KANAHA POND
EL. 20'
EL. 18'
EL. 16'
EL. 17'
EL. 16'
0
RUNWAY 5-23
0
ENLARGEMENT







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NOTE: 3° TYPICAL GLIDE SLOPE. PILOTS APPROACH PROCEDURE MAY VARY.

0 2,500 5,000 7,500
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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

AIRCRAFT APPROACH & DEPARTURE PROFILES TO RUNWAY 5-23

DATE	FIGURE
MARCH, 1996	3-31

3.22.9.2 Impact Analysis

In general, the Proposed Project would place the Airport and airfield facilities in conformance with current FAA standards and guidelines.

RUNWAY SAFETY AREAS. In addition, the Proposed Project shows conforming RSA's for Runway 5-23. The expansion of the RSA's for Runway 5-23 will be completed when Runway 5-23 is improved.

RUNWAY PROTECTION ZONES. The Proposed Project shows the acquisition of all property for the Runway 5-23 Runway Protection Zone.

APPROACH SURFACES. The recommended project, based on the FAA determination, provides a 400-foot displaced threshold for Runway 2-20 due to the penetration of the Puunene Mill smokestacks.

AIRCRAFT OPERATIONS. The parallel runway would require the demolition/relocation of two structures in the Runway Protection Zone for Runway 2-20. The Proposed Project will reduce the risk of aircraft-ground and aircraft-aircraft interactions by reducing the number of aircraft operations within the statewide system. The Proposed Project will reduce the number of interisland aircraft operations from the No-Action Alternative, and reduce the need for overseas aircraft to transit to Honolulu for the one-stop overseas flight. This will increase the margin of safety as it reduces the risk of the aircraft interaction. In addition, the longer runway will provide an additional margin of safety for aircraft landing at Kahului Airport.

The interim helicopter facility would increase the separation of Runway 2-20 fixed-wing aircraft landings and helicopter operations on the East Ramp. This will improve the margin of safety at the Airport. At the time the parallel runway is constructed, the helicopter operations would be relocated off of the Airport, to the Puunene site as recommended in the Maui General Aviation Site Selection Report (Appendix R).

3.22.9.3 Significance Criteria And Analysis

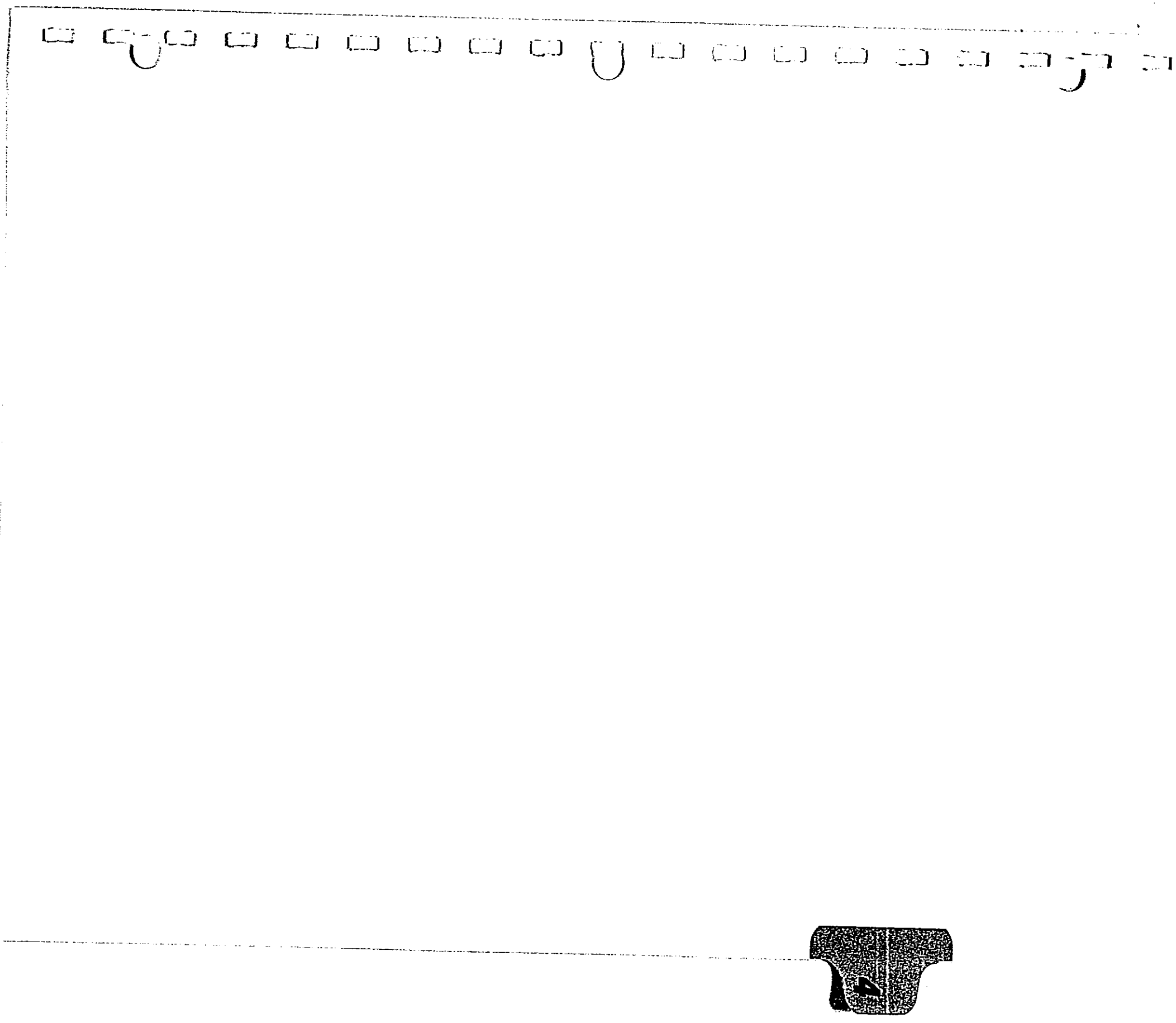
An impact would be considered adversely significant if it would increase the rate of accidents at the Airport or if a new development did not conform to FAA guidelines and standards. Positive significant impacts would allow for increasing the margin of safety at the airport. The risk of aviation accidents cannot be eliminated because safe aircraft operation is dependent upon human judgement, mechanical equipment and weather conditions, which to varying degrees can contribute to aircraft accidents. Table 3-62 summarizes the significance of the potential effects of the Proposed Projects on aviation safety. Because the proposed airport improvements will bring Kahului Airport into compliance with current safety FAA standards, the only safety impacts of the Project will be positive.

Table 3-62
SIGNIFICANCE OF EFFECTS ON AVIATION SAFETY

POTENTIAL EFFECT ISSUE AREA	SIGNIFICANCE CRITERIA	SIGNIFICANCE
Runway Safety Areas and Protection Zones	Comply with FAA standards and guidelines	Positive
Approach Surfaces	Comply with FAA standards and guidelines	Insignificant, with displaced threshold
Flight Operations	Comply with FAA standards and guidelines	Positive

3.22.9.4 Mitigation Measures

The majority of impacts for the Proposed Project would be positive. Any adverse impacts of the Proposed Project, would be insignificant, therefore, no mitigation measures are required.



SECTION 4.0
ALTERNATIVES TO THE PROPOSED PROJECT

4.1 INTRODUCTION

This section describes and evaluates the potential environmental impacts of the alternatives to the Proposed Project (preferred alternative). The methodology for the alternatives impact analysis and determination is identical to that developed and used for the Proposed Project in Section 3.0. The description of the Proposed Project (preferred alternative) which is the Recommended Master Plan is in Section 2.0. The alternative analysis meets both HEPA and NEPA requirements, and the format follows the HEPA guidelines.

Only the No-Action alternative and the alternatives which satisfy most of the purposes and needs of the project are assessed for environmental impacts. A reasonable range of alternatives were considered, and are as follows: (i) the No-Action alternative; (ii) six alternative development concept plans from the Kahului Airport Master Plan; (iii) several other runway alternatives; (iv) an at-grade intersection and different interchanges at the Hana Highway - Airport Access Roadway; and (v) other transportation modes. The runway lengths considered in the alternatives were based upon aircraft performance characteristics, AC 150/5325-4, availability of airport land, minimizing acquisition of airport property, avoiding relocation of Hana Highway and associated infrastructure, minimizing environmental impacts, and public input during the planning process. **The description of the environmental impacts for each alternative include only those that are different from the Proposed Project (preferred alternative). All other environmental impacts which are not described for the particular alternative are similar to the Proposed Project. The existing conditions are similar to those described in Section 3.0, unless otherwise noted.**

4.2 NO-ACTION ALTERNATIVE

4.2.1 DESCRIPTION

The No-Action alternative maintains the existing condition of Kahului Airport. No improvements would be made to the Airport or its environs. The length of Runway 2-20 would remain at 7,000 feet and Runway 5-23 would remain at 4,990 feet. In this alternative, both existing and projected airport facility deficiencies would persist.

Based on the Statewide Airport System Plan (SASP) updated aviation demand forecasts, the present airport facilities are inadequate to ensure safe, efficient, economical and convenient air transportation service to Maui. Without the proposed improvements, the existing limitations, such as aircraft takeoff restrictions, airfield operational delays, lack of tenant space and airport access, would worsen.

According to the 1993 Kahului Airport Master Plan, the following deficiencies would continue or worsen without implementation of corrective measures:

- The existing weight penalties for the overseas aircraft (DC-10 and L-1011 or larger) currently serving Kahului Airport would continue.
- The current inadequacies regarding air cargo facilities and shipping capacity would worsen within the planning period.
- Shortages of commercial aviation and Fixed Base Operator Lease Lots would worsen.
- Airport access roads will experience increased traffic congestion, and parking shortages would occur.
- Airline Ground Equipment Maintenance Facilities would be inadequate.
- Fuel Storage and loading would be inefficient and costly.
- Within the planning period, Kahului Airport would begin experiencing average aircraft delays greater than 4 minutes. This would result in higher operating costs to the airlines and inconvenience for passengers. By the year 2010, the Master Plan, using the Statewide Airport System Plan (SASP) forecasts, predicted an average aircraft delay of 11 minutes. Using the Updated Aviation Forecasts from HDOT-AIR, the average aircraft delay is reduced to 7 minutes in the year 2010 under the No-Action alternative.
- The increase in aircraft delays and ground vehicle traffic congestion would increase environmental impacts such as vehicular noise and air pollution.
- Anticipated increases in aircraft operations may also result in the crowding of airspace above the airfield and a need for additional airfield capacity. This overcrowding condition may consequently reduce the margin of safety at the Airport.

The effects of a No-Action alternative have been assessed and it has been determined that failure to make improvements to the Airport would result in conditions inconsistent with the Purposes and Needs for the project. However, for purposes of comparison, and to comply with NEPA and HEPA requirements, the specific impacts of the No-Action alternative are analyzed below.

4.2.2 NOISE

4.2.2.1 Aircraft Noise

Based on the assumption that by 2010 all aircraft will be Stage 3, aircraft noise within the Airport and its environs will significantly decrease by 2010, regardless of whether the No-Action alternative or one of the Project alternatives is selected. The assumption of an all Stage 3 fleet is based on current fleet age and the halt of Stage 2 and Stage 1 aircraft production. Also, information in the 1995 Noise Compatibility Program shows that Aloha Airlines is moving toward an all Stage 3 fleet[1]. Therefore, although the number of aircraft operations increase, the noise, and therefore the amount of incompatible lands, decreases. Figure 4-1 compares the 2010 Proposed Project aircraft noise contours with the 2010 aircraft noise contours for the No-Action alternative. When compared to the Proposed Project *minus the parallel runway* the "No-action" noise impacts on the Spreckelsville residential areas are greater. The "No-Action" alternative increases the incompatible land by approximately two acres use within the 60 DNL contour in East Spreckelsville, and by approximately two acres within the 65 DNL contour in West Spreckelsville.

When compared to the Proposed Project *with the parallel runway*, the noise impacts in the East Spreckelsville area are less with the No-Action alternative. In the West Spreckelsville area there is little difference between the No-Action alternative and the Proposed Project. Given that the Kahului NCP addresses the existing incompatible land uses in the East and West Spreckelsville areas, the impact of the No-Action alternative would be insignificant.

4.2.2.2 Ground Vehicle Noise

The ground vehicle noise on the existing airport ingress and egress roadways, namely Keolani Place, Hana Highway, Dairy Road and Kaahumanu Highway, would increase as the number of vehicles increases in proportion with the forecast traffic demand which includes forecast population growth, forecast background traffic levels and forecast passenger demand. The noise impacts on noise sensitive receptors on Dairy Road for the 2010 Master Plan planning horizon of the No-Action Alternative would be equal to or greater than (as much as 6.7 dBA) the noise impacts with the Proposed Project. These results are presented in Table 4-1. This increase in noise along Dairy Road would be significant as it exceeds the 67 Leq FHWA noise criteria for residences along Dairy Road.

Using the 2020 planning horizon the noise levels at the sensitive noise receptor sites are shown in Table 4-2. These noise levels are higher by 0.0 to 6.0 Leq. than those associated with the Proposed Project. Also, under the No-Action alternative the residential areas along Dairy Road, north of Hukilike Street, would have much higher noise levels than under the Proposed Project; only site 1A and 1B would experience similar noise levels under both alternatives. The noise levels along Dairy Road would exceed the FHWA exterior noise criteria of 67 Leq for noise sensitive receptors and, therefore, would be a

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[1] Recently, Aloha Airlines has announced that they are reverting back to the older Stage 2 aircraft.

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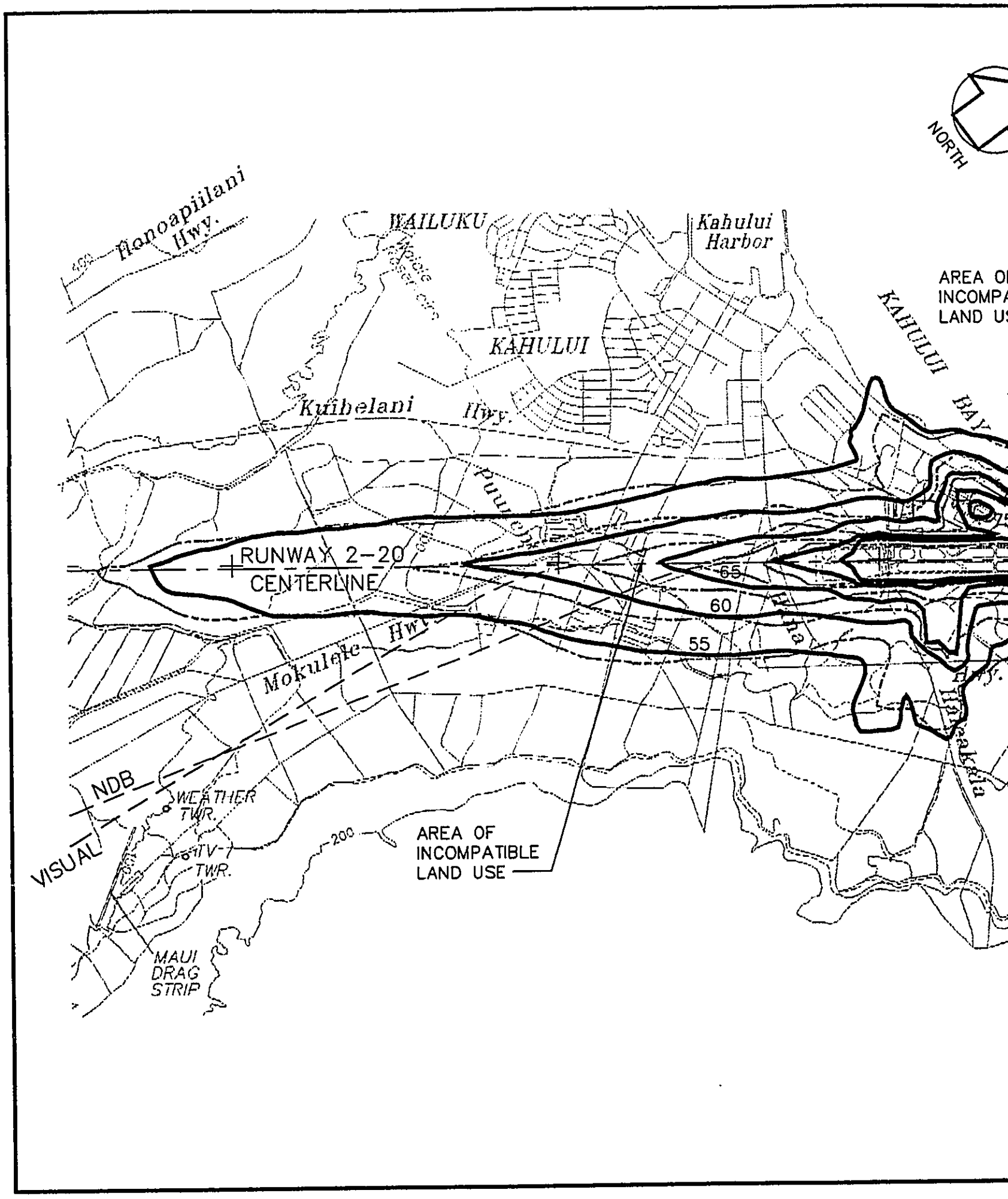
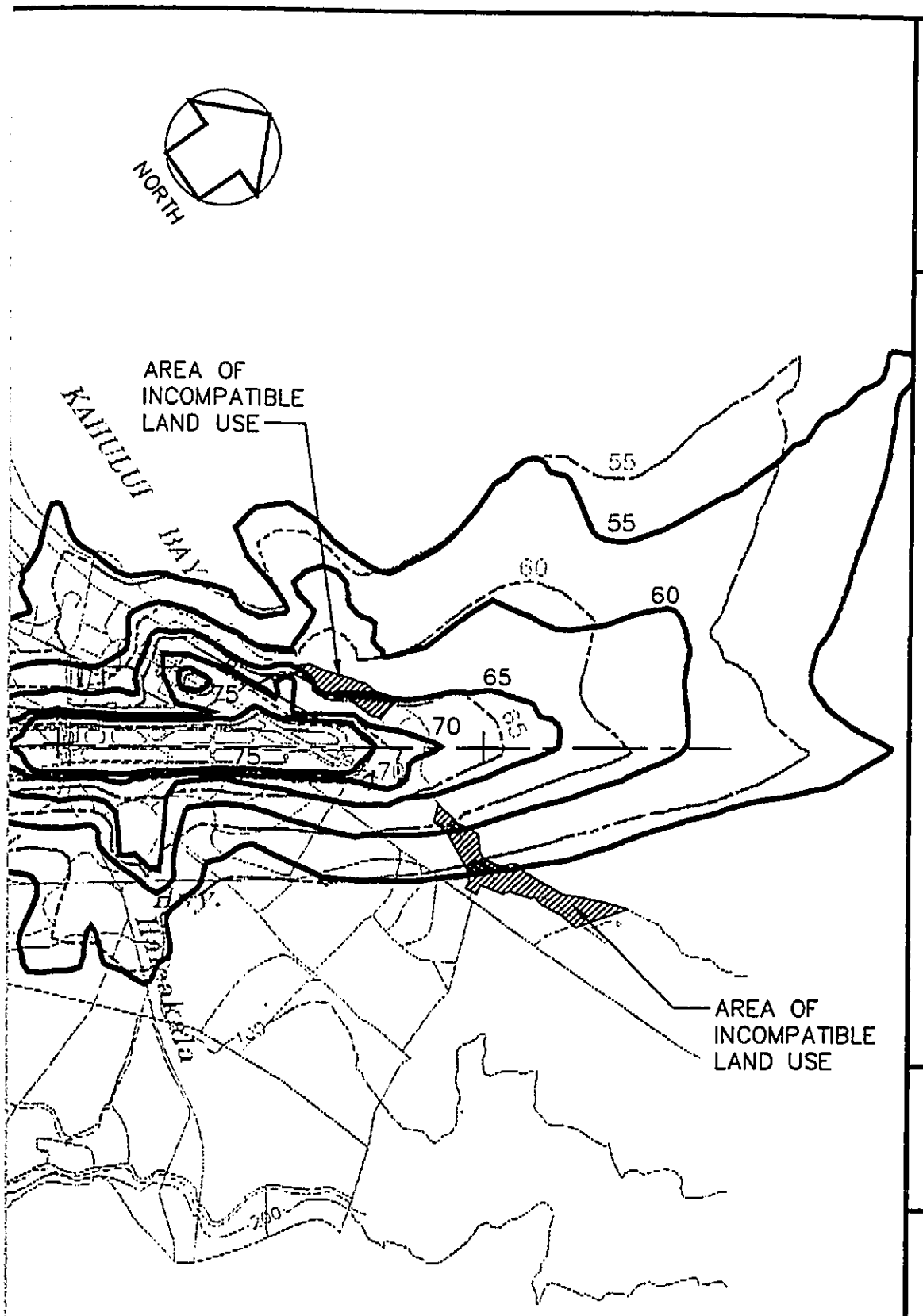

NORTH
Honoapiilani Hwy.
WAILUKU
Kahului Harbor
KAHULUI
Kuihelani Hwy.
RUNWAY 2-20
CENTERLINE
65
60
55
Mokulele Hwy
NDB
VISUAL
WEATHER TWR.
TV-7 TWR.
MAUI DRAG STRIP
200
AREA OF INCOMPATIBLE LAND USE
AREA OF INCOMPA
LAND US
KAHULUI BAY



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LEGEND

60 — 2010 RUNWAY EXTENSION ONLY

60 — NO ACTION

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

2010 NO ACTION NOISE CONTOURS

DATE	FIGURE
MARCH, 1996	4-1

significant impact. A typical measure to reduce the noise impact would be the construction of a noise barrier along Dairy Road. The noise impacts at other noise sensitive receptors would be similar to the Proposed Project.

Table 4-1
COMPARISON OF LEQ (dBA) FOR
NOISE RECEPTOR SITES FOR 2010 PEAK HOUR TRAFFIC

NOISE SENSITIVE AREA - LAND USE AND (SITE NO.)	1994 EXISTING DESIGN DAY		2010 NO-ACTION DESIGN DAY		2010 PROPOSED PROJECT DESIGN DAY		DIFFERENCE PROPOSED VERSUS NO-ACTION	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Spreckelsville - residential (3)	57.0	57.6	57.8	57.7	57.9	57.7	0.1	0.0
Sugar Cane Museum (2)	58.1	58.8	58.3	59.4	58.3	59.3	0.0	-0.1
Kahului - residential								
(1A)	65.8	66.4	70.1	71.2	70.1	71.1	0.0	-0.1
(1B)	65.8	66.4	70.1	71.2	70.1	71.1	0.0	-0.1
(1C)	66.1	66.7	70.4	71.5	69.8	70.9	-0.6	-0.6
(1D)	67.2	67.9	71.6	72.7	67.6	68.6	-4.0	-4.1
(1E)	69.6	70.3	74.0	75.1	67.5	68.4	-6.5	-6.7
(1F)	73.3	74.0	77.7	78.8	72.4	73.0	-5.3	-5.8

Table 4-2
COMPARISON OF LEQ (dBA) FOR
NOISE RECEPTOR SITES FOR 2020 PEAK HOUR TRAFFIC

NOISE SENSITIVE AREA - LAND USE AND (SITE NO.)	1994 EXISTING AVERAGE WEEKDAY		2020 NO-ACTION AVERAGE WEEKDAY		2020 PROPOSED PROJECT AVERAGE WEEKDAY		DIFFERENCE BETWEEN 2020 AVERAGE WEEKDAY	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Spreckelsville - residential (3)	56.5	57.2	58.5	59.0	58.5	59.0	0.0	0.0
Sugar Cane Museum (2)	57.8	58.5	59.9	60.6	59.9	60.6	0.0	0.0
Kahului - residential								
(1A)	65.6	66.2	68.8	69.6	68.8	69.6	0.0	0.0
(1B)	65.6	66.2	68.8	69.6	68.8	69.6	0.0	0.0
(1C)	65.9	66.5	69.1	69.9	68.6	69.3	-0.5	-0.6
(1D)	67.0	67.7	70.3	71.1	66.3	67.0	-4.0	-4.1
(1E)	69.4	70.1	72.6	73.4	67.0	68.2	-5.6	-5.2
(1F)	73.1	73.8	76.4	77.2	72.5	74.0	-3.9	-3.2

4.2.3 LAND USE

The No-Action alternative contemplates no land acquisitions and no land use changes. Therefore, there will be no impact from the No-Action alternative. The land already acquired for the Airport Access Roadway would remain in agriculture. The land for the new Hansen Road would remain in agriculture.

In comparison, the Proposed Project (preferred alternative) would change the land use of approximately 139 acres of Agricultural land to Urban for the access roadway, Hansen Road and navigational and lighting aids. Within Phase 2 of the Master Plan, 490 acres will be acquired for airport use. The proposed parallel runway would convert 550 acres from agricultural to airport use, at such time as it is needed for airport use. If a parallel runway is constructed, these lands would be changed to Urban land use.

4.2.4 GEOLOGY, PHYSIOGRAPHY, SOILS, AGRICULTURAL POTENTIAL AND EARTHQUAKES

There would be no impacts in this category with the No-Action alternative.

4.2.5 SOCIO-ECONOMIC IMPACTS

The forecast increase in passengers and aircraft operations would cause impacts similar to those indicated for the Proposed Project (preferred alternative). The growth analysis presented in Appendix E shows that the number of visitors in the No-Action scenario would be approximately three (3) percent lower in 2010 than the Proposed Project (preferred alternative).

4.2.6 SECONDARY (INDUCED) SOCIO-ECONOMIC IMPACTS

The forecast increase in passengers and aircraft operations for the No-Action scenario is similar to those the Proposed Project (preferred alternative). Thus, the socio-economic impacts of increased aviation demand under the No-Action Alternative would be similar to the impacts of increased aviation demand under the Proposed Project (preferred alternative). However, in the areas of aviation services and construction, there will be impacts related to the No-Action alternative.

The existing limitations on aircraft takeoff weight would continue, as would the existing policy of removing air cargo or passengers/baggage to reduce weight, on direct overseas flights to the West Coast and further destinations. This limitation of aircraft takeoff weight may prevent the growth of certain agricultural businesses which rely on readily available and economical overseas air cargo service.

Failure to provide proposed airfield improvements would result in significant aircraft delays and increased airline operating costs. The SASP 2010 aircraft operations forecast predicts average aircraft

delay of 11 minutes under the No-Action alternative. This demand-driven aircraft delay would cost approximately $50 million (1992 dollars) per year in additional aircraft operational expenses. Using HDOT-AIR's updated forecasts, the estimated average aircraft delay would be seven (7) minutes and would add approximately $30 million per year to aircraft operating costs by the year 2010. These forecast delays would cause inconvenience to passengers and inefficient air service. The increased airline operational costs may result in increased ticket prices or in decreased levels of services to consumers. The long-term effects of not improving the airfield would have a significant impact on air transportation services.

If the No-Action alternative is selected, potential construction jobs associated with the Proposed Project (preferred alternative) would be forfeited. The loss in gross construction revenue alone would be approximately $145 million for Phases 1 and 2 of the Master Plan, and approximately $149 million for Phase 3.

4.2.7 AIR QUALITY, CLIMATE AND METEOROLOGY

The No-Action alternative would result in increased aircraft delays and aircraft queuing, both of which directly increase aircraft emissions. The results of the Air Quality Study in Appendix F, using the EDMS model, shows that the worst-case carbon monoxide 1-hour concentration at the airport boundary is 25.4 milligrams/cubic meters. This concentration exceeds the State Standards and is considered significant. These emissions are about two times higher under the No-Action alternative than under the Proposed Project with only the runway extension, and about three times higher than under the Proposed Project with the parallel runway.

The carbon monoxide levels due to ground vehicle traffic at major intersections would exceed both State and national standards. The emissions levels at these intersections are presented in Table 4-3 and Table 4-4. When compared to the Proposed Project, the "No-Action" Alternative results in much higher emission levels at the major intersections. This is because the new Airport Access Road, which is part of the Proposed Project, will decrease congestion and change the traffic flow near the Airport. The No-Action alternative increases the 1-hour carbon monoxide concentration for the 2010 design day by 11.2 mg/cu^3 for the a.m. peak hour and 8.0 mg/cu^3 at the intersection of Hana Highway/Dairy Road. Similarly, the emission concentration increases for the 2020 "average weekday" by 29.0 mg/cu^3 for the a.m. peak hour and 21.8 mg/cu^3 for the p.m. peak hour at the Hana Highway/Dairy Road intersection.

4.2.8 WATER QUALITY

The No-Action alternative would have no direct impact on water quality. The existing impacts due to surface runoff would not change. The impact would remain a significant cumulative impact.

Table 4-3
ESTIMATED WORST-CASE CARBON MONOXIDE CONCENTRATIONS
AT KEY ROADWAY INTERSECTIONS FOR THE NO-ACTION ALTERNATIVE
(DESIGN DAY)

ROADWAY INTERSECTION	1-HOUR (milligrams/cubic meter)				8-HOUR (milligrams/cubic meter)	
	1994		2010			
	AM	PM	AM	PM	1994	2010
Hana Highway and Dairy Road	42.8	48.8	42.7	56.1	17.1	19.6
Hana Highway and Haleakala Highway	51.6	32.5	42.2	34.6	18.1	14.8
Puunene Avenue and Kuihelani Highway	28.6	23.2	67.9	44.3	10.0	23.8

Table 4-4
ESTIMATED WORST-CASE CARBON MONOXIDE CONCENTRATIONS
AT KEY ROADWAY INTERSECTIONS FOR THE NO-ACTION ALTERNATIVE
(AVERAGE WEEKDAY)

ROADWAY INTERSECTION	1-HOUR (milligrams/cubic meter)				8-HOUR (milligrams/cubic meter)	
	1994		2020			
	AM	PM	AM	PM	1994	2020
Hana Highway and Dairy Road	42.8	48.8	62.1	56.1	17.1	21.7
Hana Highway and Haleakala Highway	51.6	32.5	73.6	44.6	18.1	25.8
Puunene Avenue and Kuihelani Highway	28.6	23.2	48.2	32.1	10.0	12.6

4.2.9 DEPARTMENT OF TRANSPORTATION (DOT) ACT, SECTION 4(F)

There would be no new impacts in this category. The potential impact of the increase in the "introduction rate" of alien species to Maui and its Parks, Sanctuaries and Reserves is considered a

significant cumulative impact. The incremental impact is potentially greater with the No-Action alternative than that associated with the Proposed Project. This is because the Proposed Project will be designed to minimize the potential risk of an increase in the "introduction rate" of alien species through the implementation of the proposed mitigation measures. These mitigation measures are discussed in Sections 3.11.3, 5.1.6 and Appendix U of this EIS. Under the No-Action alternative there will be a forecast increase in the number of aircraft operations, passengers, and air cargo to Maui; however, no mitigation measures will be implemented.

4.2.10 HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

There would be no new impacts in this category.

4.2.11 BIOTIC COMMUNITIES

Under the No-Action alternative, the potential for the introduction of alien species would be similar to that under the Proposed Project, and considered insignificant. The HDOT will work with the Alien Pest Prevention and Control Task Force to implement their action plan. There would be no other impacts to this category. The impact of alien species to Maui is considered a significant cumulative impact, and the incremental impact is potentially greater with the No-Action alternative than that associated with the Proposed Project. This is because the Proposed Project will be designed to minimize the potential risk of an increase in the "introduction rate" of alien species through the implementation of the proposed mitigation measures. These mitigation measures are discussed in Sections 3.11.3, 5.1.6 and Appendix U of this EIS. Under the No-Action alternative these mitigation measures will not be implemented, but there will still be a forecast increase in the number of aircraft operations, passengers, and air cargo to Maui, and a potential incremental increase in the "introduction rate" of aliens species. Therefore, the cumulative impact of alien species to Maui may be more significant under the No-Action alternative than under the Proposed Project.

4.2.12 WETLANDS

There would be no impacts in this category.

4.2.13 HYDROLOGY, FLOODPLAIN MANAGEMENT AND DRAINAGE

There would be no impacts in this category. The existing situation would remain the same.

4.2.14 COASTAL ZONE MANAGEMENT PROGRAM

There would be no impacts in this category.

4.2.15 WILD AND SCENIC RIVERS

There are no wild and scenic rivers near Kahului Airport. Therefore, this category is not applicable.

4.2.16 COASTAL BARRIERS

There would be no impact in this category.

4.2.17 FARMLAND

There would be no impacts in this category for the No-Action alternative. The Proposed Project (preferred alternative) will convert 139 acres of farmland to non-agricultural uses (primarily roadways) during Phases 1 and 2 of the Master Plan.

4.2.18 ENERGY ANALYSIS

The consumption of energy at Kahului will increase as the forecast aviation demand at Kahului increases. If the present usage of 1.8 kwh/passenger remains constant during the planning period, the annual consumption of electricity would increase from 9,388,800 kwh in 1994 to approximately 13 million kwh in 2010. The amount of the increase would be similar to that of the Proposed Project.

This increase of electrical consumption would be insignificant provided the overall usage on Maui does not exceed Maui Electric Company (MECO) generating capacity.

4.2.19 LIGHT EMISSIONS

The light emissions which presently occur at the Airport from existing facilities would be unchanged. There would be an increase in aircraft light emissions related to the forecast increase in aircraft operations, however; the increase would be insignificant and similar to that under the Proposed Project. There will be no intermittent light impacts to residences at the Dairy Road/Airport Access Road intersection.

4.2.20 SOLID WASTE, HAZARDOUS/TOXIC WASTE AND WASTE WASH WATER

Due to the forecast increase in aviation demand, there would be an increase in the amount of solid waste and waste wash water generated at the Airport under the No Action alternative. Solid waste generation would also increase due to increased forecast passenger volumes. Waste wash water quantities will increase as the number of based aircraft and as the need for airline support activities increase.

Hazardous/toxic waste would increase as the aircraft operations and related airport support and airline support increase to meet forecast aviation and passenger demands. As long as the amount of solid

and hazardous waste generated can be accommodated by the County's existing and planned facilities, the impacts would be insignificant. The increase would be similar to the Proposed Project.

4.2.21 VISUAL EFFECTS

There would be no impact in this category.

4.2.22 PUBLIC FACILITIES, INFRASTRUCTURE AND SERVICES AND AIRFIELD SAFETY

4.2.22.1 Surface Transportation System

Under the No-Action alternative, the existing traffic congestion areas within the airport environs would remain or worsen. The Level-of-Service (LOS) of these intersections for the present and forecast future traffic levels are shown in Table 4-5.

Table 4-5
LEVELS OF SERVICE (LOS) AT KEY INTERSECTIONS
FOR 1994 AND NO-ACTION ALTERNATIVE (YEAR 2010)
AUGUST DESIGN DAY

INTERSECTION		TRAFFIC CONTROL DEVICE	1994 EXISTING PEAK HOUR LOS		2010 PEAK HOUR LOS	
N-S STREET	E-W STREET		A.M.	P.M.	A.M.	P.M.
Haleakala Hwy.	Hana Highway	Stop Sign	F	D	F	F
Dairy-Keolani Pl.	Haleakala Hwy.	Signal	D	F	C	E
Dairy Road	Hana Highway	Signal	D	F	E	F
Dairy-Kuihelani	Puunene Ave.	Signal	D	E	E	F
Pulehu Road	Hana Highway	Stop Sign	C	E	F	F
Pulehu Road	Hansen Road	Stop Sign	B	B	A	A
Hansen Road	Hana Highway	Stop Sign	D	F	C	E
Haleakala Hwy.	Hana Highway	Signal	E	C	F	D
Old Stable Rd.	Hana Highway	Stop Sign	E	E	E	E

Generally speaking, the No-Action alternative would result in worse traffic conditions in the airport's environs when compared to the Proposed Project. No-Action impacts at the key intersections include the following:

- Even though Dairy Road will be widened to five lanes, its continued use as the main access route to the Airport West Ramp area would result in estimated traffic volumes in excess of capacity at the Hana Highway and Haleakala Highway intersections.

- The Dairy Road intersection with Puunene Avenue would experience congested conditions similar to those under the Proposed Project.

- Traffic on the Pulehu Road approach to Hana Highway would experience long delays.

- Morning traffic volumes at the Haleakala Highway intersections (Pukalani Junction) with Hana Highway would exceed intersection capacity.

At the four traffic signal-controlled intersections -- Hana Highway-Haleakala Highway, Dairy Road-Hana Highway, Dairy Road-Kuihelani Highway-(Puunene Avenue), and Dairy Road-Keolani Place-Haleakala Highway -- the projected traffic increases would exceed the planned roadway capacities and result in LOS E or F conditions. These traffic impacts would be significant. When compared to the Proposed Project, the traffic impacts under the No-Action alternative are significantly worse at the following intersections: (i) Dairy Road-Keolani Place-Haleakala Highway; (ii) Dairy Road-Hana Highway; and (iii) Haleakala Highway-Hana Highway. All other existing intersection LOSs would be similar to those under the Proposed Project. The stop-sign controlled intersections at Pulehu Road-Hana Highway show a significant impact on the level of service. However, the intersections of Pulehu Road-Hansen Road and Hansen Road-Hana Highway show positive impacts with the No-Action alternative. The 2020 "average day" traffic analysis revealed traffic volume patterns similar to the 2010 "design day" analysis. Table 4-6 presents a comparison of existing, "No-Action" and Proposed Project intersection LOS. For most of these intersections, the No-Action LOS are worse than the Proposed Project LOS.

4.2.22.2 Wastewater Collection, Treatment and Disposal

The No-Action alternative would maintain the existing use of cesspools in some areas of the Airport. There would be an increase in wastewater generated at the airport due to the forecast increase in aviation demand. This increase may be about 3 percent lower than that under the Proposed Project. The increase in wastewater would be insignificant if it does not exceed the capacity of Maui County's existing or planned facilities.

Table 4-6
VOLUME/CAPACITY RATIOS AND LEVELS OF SERVICE
AT KEY INTERSECTIONS FOR 1994, NO-ACTION (2020) AND
PROPOSED ALTERNATIVE (YEAR 2020)
AVERAGE WEEKDAY

INTERSECTION		1994 EXISTING PEAK HOUR LOS		2020 NO-ACTION PEAK HOUR LOS		2020 PROPOSED PROJECT PEAK HOUR LOS	
N-S STREET	E-W STREET	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Haleakala Hwy.	Hana Highway	F	D	F	F	F	F
Dairy-Keolani Pl.	Haleakala Hwy.	D	F	C	D	C	D
Dairy Road	Hana Highway	D	E	F	F	D	E
Dairy-Kuihelani	Puunene Ave.	D	E	E	F	E	F
Airport Access Road	Puunene Ave.	NA	NA	NA	NA	F	F
Pulehu Road	Hana Highway	C	E	F	F	NA	NA
Pulehu Road	Hansen Road	B	B	D	D	C	C
Hansen Road	Hana Highway	D	F	F	F	F	F
Haleakala Hwy.	Hana Highway	E	C	F	E	C	B

4.2.22.3 Water Supply

There would be an increase in water consumption due to the forecasted increase in passengers and aviation operations. The forecasted increase in water consumption would be similar to that expected under the Proposed Project. As with the Proposed Project this impact would be insignificant due to the airport usage. However, the increase in water consumption would be a significant cumulative impact because the County of Maui expects to exceed the sustainable yield of the Iao aquifer.

4.2.22.4 Telecommunications

There would be no impact on the existing phone lines.

4.2.22.5 Police and Fire Services and Public Safety

The impacts would be similar to the Proposed Project.

4.2.22.6 Health Care Facilities

The impacts would be similar to the Proposed Project and would be a significant cumulative impact.

4.2.22.7 Schools

The impacts would be similar to the Proposed Project.

4.2.22.8 Recreational Facilities

There will be no impacts in this category. The improved access to the shoreline due to the extension of Kanaha Beach Park would not be realized.

4.2.22.9 Aviation Safety

The existing non-compliance with recent FAA standards and guidelines would remain. The benefits of the Proposed Projects will not be realized.

4.2.23 CONSTRUCTION IMPACTS

There would be no construction impacts associated with the No-Action alternative.

The construction impacts which are associated with the Proposed Project would not be realized. These impacts include construction jobs, increased pollutants from construction vehicles and construction activities, short-term noise impacts, and use of non-renewable resources.

4.2.24 GROWTH INDUCED AND CUMULATIVE IMPACTS

The existing facilities at Kahului Airport are capable of accommodating the forecast increase of passengers and aircraft operations. If, however, the number of aircraft operations (not passengers) were to increase beyond that is forecast, more substantial aircraft operational delays could be experienced. This could occur if a third interisland air carrier, using large turbojet aircraft (*e.g.* B737 or MD80) as is likely, entered the market in the future. As the interisland market grows in accordance with the passenger forecast, the attractiveness of this market to a third interisland air carrier increases. The entrance of a third carrier into the market would tend to increase the number of aircraft operations for the same passenger levels. This is what happened on each of the two previous occasions when a third interisland air carrier has entered the Hawaiian market. If all three air carriers would remain viable, the congestion on the existing runways would increase at a greater rate under the No-Action alternative and would potentially require runway capacity enhancement measures sooner than forecast.

This may occur with or without the Proposed Project, but would occur more quickly with the No-Action alternative because, more so than the Proposed Project the No-Action alternative encourages growth in the interisland market. This is because the No-Action alternative increases the need for shuttling passengers to and from Honolulu and possibly to and from Kona to meet forecast demand.

The regional and statewide cumulative impacts as described in Section 5.0 of this EIS, namely; alien species, water quality, water supply, and health care facilities will be the same under the No-Action scenario. The impacts are anticipated as a result of the forecast increase in population, tourist and demand on the infrastructure, and would occur with or without the Proposed Project.

4.3 MASTER PLAN ALTERNATIVES

The 1993 Kahului Airport Master Plan (Master Plan) formulated and considered six alternative development concept plans and a Recommended Master Plan. The Recommended Master Plan is the Proposed Project (preferred alternative). The following section describes the six alternative development concept plans and analyzes their environmental impacts. In the analysis it was necessary to compare the impacts of the overall development concept and the impacts of individual development components to determine the aggregate impact of each. This is because all six alternative concept plans and the Proposed Project (preferred alternative) are significantly different from one another.

The first part of this section describes the alternative concepts. It also includes a summary of environmental impacts for those alternatives which meet the purposes and needs of the Project. The second part of the section analyzes the environmental impacts of the individual components of each alternative.

4.3.1 DESCRIPTION OF THE MASTER PLAN ALTERNATIVES

This section provides the description of Master Plan Alternatives 1 through 6 and the overall environmental and operational assessment of each alternative.

4.3.1.1 Facilities Common To All Master Plan Alternatives

Certain development components are included in all six alternative concept plans as well as in the Proposed Project. They are listed below and described in detail in Section 2, entitled Project Description.

- Realignment of Hana Highway
- New Airport Access Road & Interchange
- Post Office Ramp Access Road *
- Air Taxi (Scenic Air Tour) Facility *
- Expansion of the Passenger Terminal Parking *
- Alahao Street and Old Stable Road Connection*

- Ground Transportation Subdivision Expansion *
- Airline GSE Maintenance Facility *
- Kanaha Beach Park Extension
- East Ramp Sewer System
- East Ramp Lease Lots (Commercial lots)
- Acquisition of land
    - East of the Airport, between Hana Highway and the existing Airport Boundary
    - Land needed to realign Hana Highway

* Essentially the same in all alternatives or with minor variation.

4.3.1.2 Alternative 1 (Figure 4-2)

Of the six Master Plan alternatives, this alternative involves the fewest changes to the existing Airport. However, in order to provide sufficient capacity to accommodate the forecast demand, Alternative 1 would require the development of a general reliever airport elsewhere in Central Maui. The improvements unique to this alternative are summarized below.

LAND ACQUISITION. It would be necessary to acquire land needed for the construction of a reliever airport.

AIRFIELD. This alternative retains the current number of runways and existing runway lengths, *i.e.*, Runway 2-20 at 7,000 feet and Runway 5-23 at 4,990 ft. The pavement of Runway 2-20 would be repaired and strengthened to handle the maximum gross weights of aircraft using the runway. The landing and takeoff helipads would be relocated to reduce congestion and improve visibility from the FAA Airport Traffic Control Tower (ATCT).

TERMINAL AREA. As previously noted, general aviation is assumed to be relocated away from Kahului Airport for this alternative. The existing general aviation apron would be strengthened for use as a parking area for transient and military aircraft. The remaining ground-based helicopter facilities such as hangars and other support buildings are retained in their current location and additional lease lots are provided; existing hangars that block the line-of-sight from the FAA ATCT to the apron are relocated to improve tower control over helicopter operations. The existing Air Taxi facilities are demolished and replacement facilities are provided slightly east of the existing building. The same apron space is used. The existing air cargo facilities north of the passenger terminal are retained, and new air cargo facilities are provided near the Post Office site.

AIRPORT SUPPORT. New bulk fuel storage facilities are provided south of the helicopter area on the East Ramp. These facilities would be connected to hydrants on the ramp in front of the main passenger terminal. A new hold cargo facility is located at the south end of the passenger terminal.

CONCLUSION. Alternative 1 does not meet the purposes and needs of the Proposed Project. Its principal deficiency is that it does not extend Runway 2-20 to a length that will support direct departures of overseas flights with fully laden, heavy aircraft. In this alternative, overseas aircraft operational restrictions would be less than existing but restrict long-range departures to overseas destinations. As a result, Kahului would continue to serve its U.S. west coast markets with weight-limited non-stop or one-stop flights. This alternative also relies on the establishment of a general aviation airport elsewhere on the island of Maui (See Section 4.4.3) to reduce the aircraft delays at Kahului Airport in the future.

As this alternative maintains the existing 7,000 foot long runway, the significant environmental impacts are similar to the No-Action Alternative. These significant impacts include: (i) secondary socio-economic - weight restrictions will continue and impact the amount of passengers, baggage and cargo which can be placed on aircraft and limits the range of aircraft departing Kahului Airport; and (ii) air quality – there is a potential that the State Ambient Air Quality standards for Carbon Monoxide in the year 2010 will be exceeded at the airport boundaries due to the increase in aircraft delays.

In addition, the impact of alien species introductions is considered a significant cumulative impact. The incremental impact associated with Alternative 1 is greater than that associated with the mitigated Proposed Project. This is because the Proposed Project will be designed to minimize the potential risk of an increase in the "introduction rate" of alien species through the implementation of the proposed mitigation measures. These mitigation measures are discussed in Sections 3.11.3, 5.1.6 and Appendix U of this EIS.

Other impacts associated with Alternative 1 which would be greater than that associated with the Proposed Project includes: (i) aviation safety – Alternative 1 maintains the need for one-stop flights to Honolulu International Airport and therefore, increases the air-to-ground and ground-to-air interaction for these aircraft; and (ii) growth impacts – there will be a greater potential for interisland aircraft operations growth due to the need for transiting passengers from Kahului Airport to Honolulu International Airport. The traffic analysis performed in Appendix M shows that Alternative 1 will have increased traffic at the intersections of Hana Highway/Hansen Road, Pukalani Junction, and along the section of Hana Highway between the Airport Access Roadway and Hansen Road, when compared with the Proposed Project. Similar to the Proposed Project, the construction of the Airport Access Roadway would have a potential significant impact on the safety on the Hana Highway bike route.

4.3.1.3 Alternative 2 (Figure 4-3)

Alternative 2 involves a modest expansion of the airfield capacity and runway upgrading to accommodate non-stop operations from Kahului to the U.S. West Coast. The improvements included in this alternative are as follows.

LAND ACQUISITION. Acquisition of land on the east side of the Airport to allow for the short parallel runway and associated runway protection zones.

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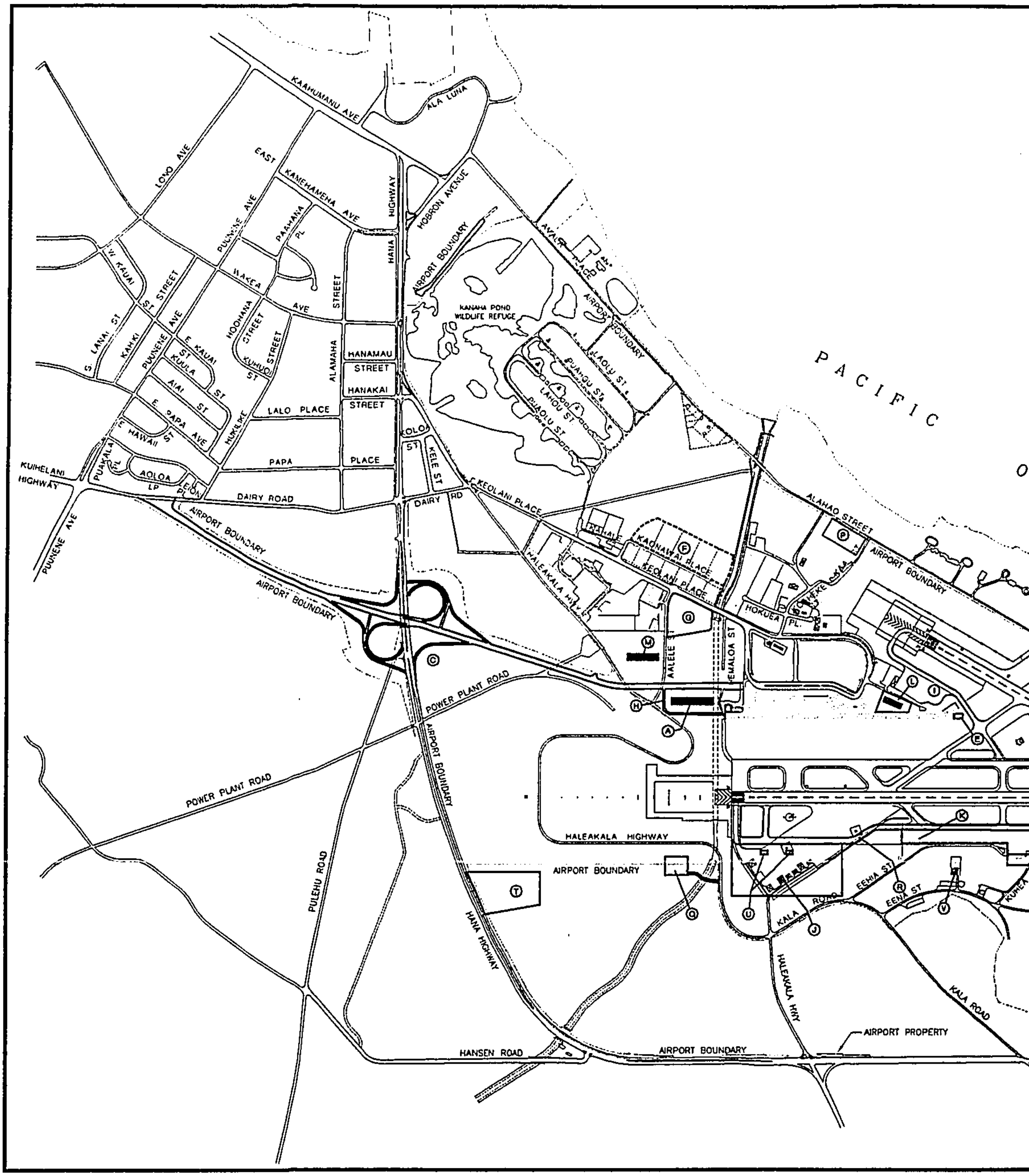
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HOBRON AVENUE
AIRPORT BOUNDARY
KANAHA POND WILDLIFE REFUGE
W. KAUAI ST
STREET
WAKEA AVE
STREET
S. LANAI ST
KAHKI
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KOLO ST
KELE ST
PUAKALA PL
AOLOA LP
PAPA PLACE
KUIHELANI HIGHWAY
DAIRY ROAD
DAIRY RD
KEOLANI PLACE
ALAHAO STREET
PUUNENE AVE
AIRPORT BOUNDARY
AIRPORT BOUNDARY
KAONAWAI PLACE
KEOLANI PLACE
HALEAKALA HWY
HOKUEA PL.
AALELE
KEMALOA ST
POWER PLANT ROAD
POWER PLANT ROAD
AIRPORT BOUNDARY
HALEAKALA HIGHWAY
AIRPORT BOUNDARY
PULEHU ROAD
HANA HIGHWAY
EEHIA ST
EENA ST
KALA ROAD
HALEAKALA HWY
KALA ROAD
AIRPORT PROPERTY
HANSEN ROAD
AIRPORT BOUNDARY

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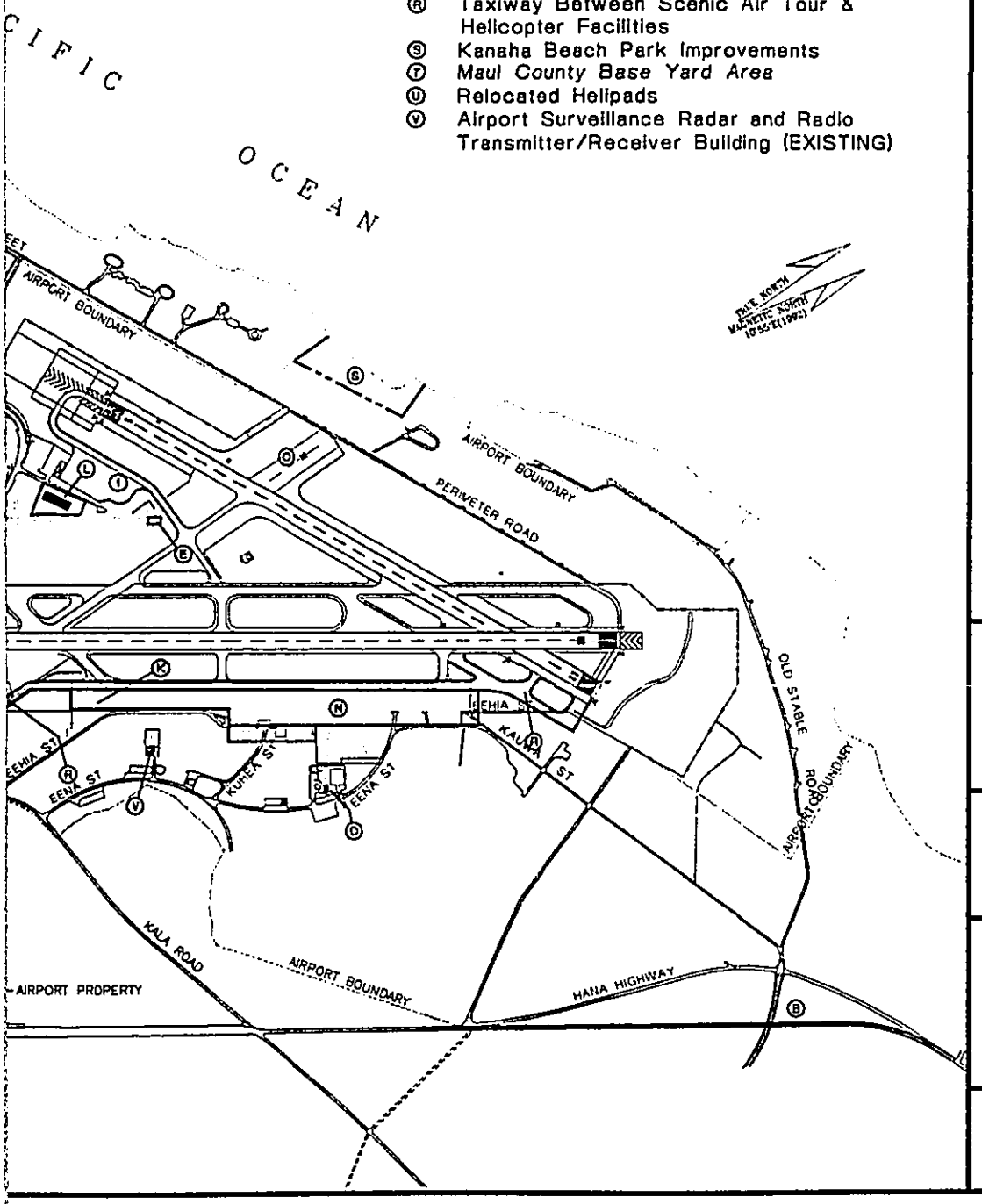
ALTERNATIVE 1

LEGEND

- Ⓐ Reserve Space for Future Passenger Terminal Complex Expansion
- Ⓑ Hana Highway Realignment
- Ⓒ New Airport Access Road
- Ⓓ Control Tower & Weather Facility (EXISTING)
- Ⓔ Airport Rescue and Firefighting Facility
- Ⓕ Expanded Ground Transportation Subdivision
- Ⓖ U.S. Post Office Site
- Ⓗ Post Office Ramp Access Road
- Ⓘ Commuter/Air Taxi Facility
- Ⓙ Helicopter Facility (EXISTING)
- Ⓚ Scenic Air Tour Facility
- Ⓛ General Cargo Facility
- Ⓜ Hold Cargo Facility
- Ⓝ Transient Aircraft Parking Apron
- Ⓞ ARFF Training Facility (EXISTING)
- Ⓟ Flight Kitchen Facility
- Ⓠ Bulk Jet Fuel Storage
- Ⓡ Taxiway Between Scenic Air Tour & Helicopter Facilities
- Ⓢ Kanaha Beach Park Improvements
- Ⓣ *Maui County Base Yard Area*
- Ⓤ Relocated Helipads
- Ⓥ Airport Surveillance Radar and Radio Transmitter/Receiver Building (EXISTING)



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GRAPHIC SCALE IN FEET

SOURCE:
KAHULUI AIRPORT MASTER PLAN

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

ALTERNATIVE 1

DATE	FIGURE
JANUARY, 1997	4-2

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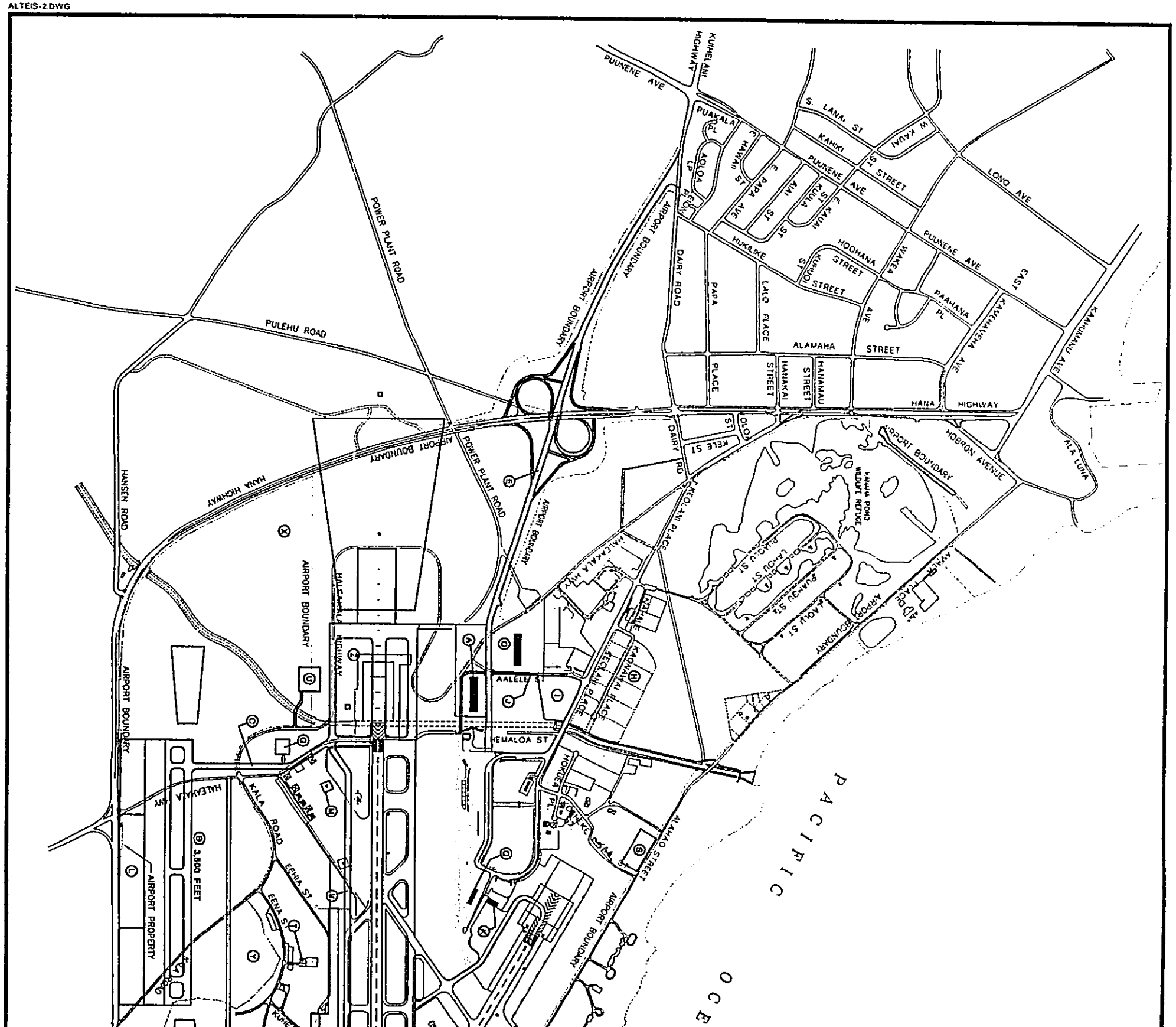
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POWER PLANT ROAD
PULEHU ROAD
AIRPORT BOUNDARY
DAIRY ROAD
PAPA
LALO PLACE
PAAHANA PL
KAHEKILI AVE
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PLACE STREET
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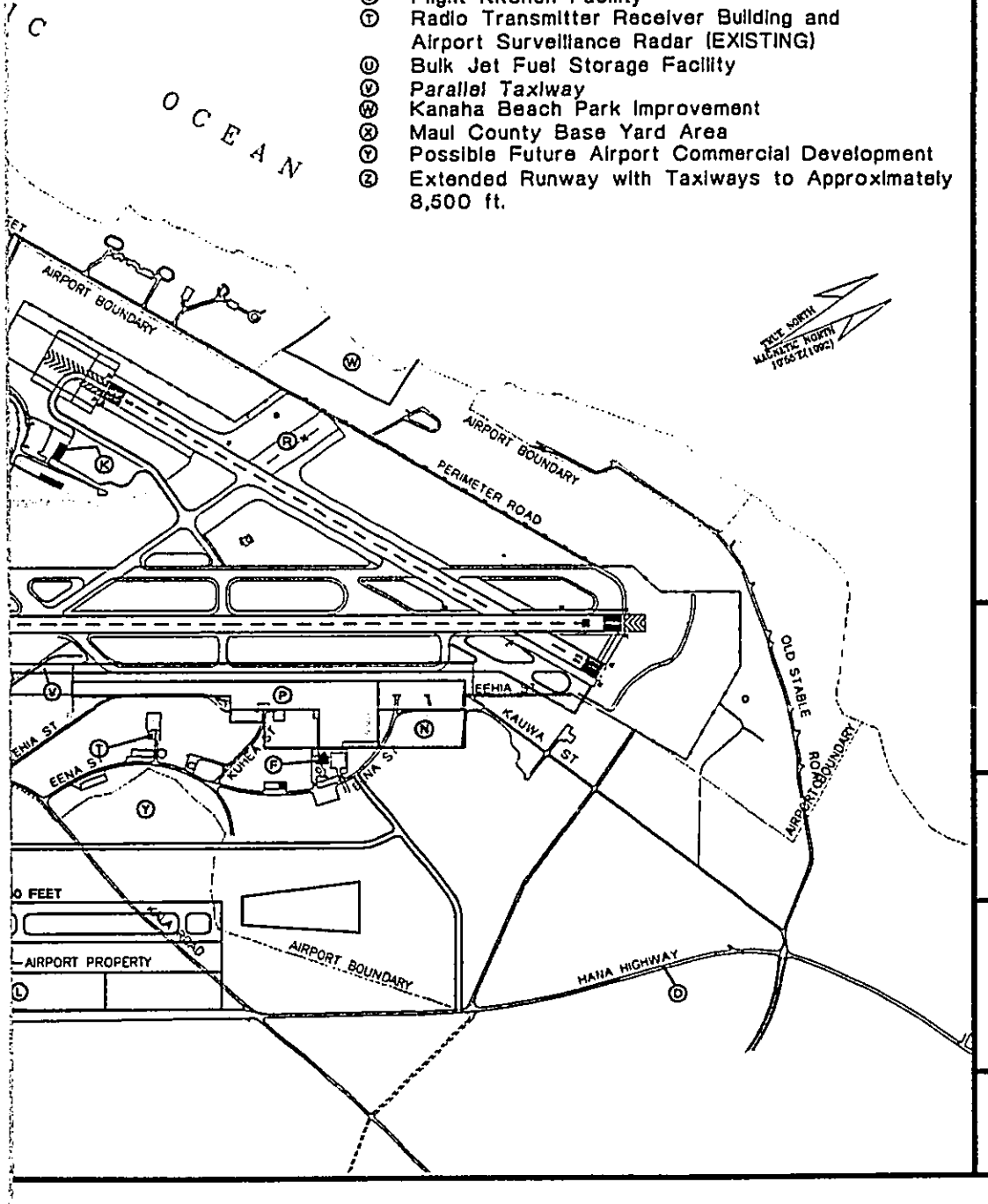
KAMAHAMU AVE
KELE ST
KOLO ST
HOBRON AVENUE
ALA LUNA
KOLOANI PLACE
MAHAMA POND WILDLIFE REFUGE
HALEKAMA HWY
PUAHOU ST
LAHOU ST
HANSEN ROAD
HANA HIGHWAY
AIRPORT BOUNDARY
HALEKAMA HIGHWAY
AALELE ST
HEMALOA ST
KAMAHAM PLACE
HONOAPI PL
KALA ROAD
EENA ST
ALAMAHA STREET
HALEKAMA AVE
AIRPORT PROPERTY
3,600 FEET
PACIFIC OCEAN

ALTERNATIVE 2

LEGEND

- Ⓐ Reserve Space for Future Passenger Terminal Complex Expansion
- Ⓑ New 3,500 ft. Parallel Runway
- Ⓒ New Connecting Taxiways for Parallel Runway
- Ⓓ Hana Highway Realignment
- Ⓔ New Airport Access Road
- Ⓕ Control Tower and Weather Facility (EXISTING)
- Ⓖ Airport Rescue and Firefighting Facility
- Ⓗ Expanded Ground Transportation Subdivision
- Ⓘ U.S. Post Office Site
- Ⓙ Post Office Ramp Access Road
- Ⓚ Commuter/Air Taxi Facility
- Ⓛ General Aviation Facility
- Ⓜ Scenic Air Tour Facility
- Ⓝ General Cargo Facility
- Ⓞ Hold Cargo Facility
- Ⓟ Transient and Military Aircraft Parking Apron
- Ⓠ Airline Ground Equipment Maintenance Facility
- Ⓡ ARFF Training Facility (EXISTING)
- Ⓢ Flight Kitchen Facility
- Ⓣ Radio Transmitter Receiver Building and Airport Surveillance Radar (EXISTING)
- Ⓤ Bulk Jet Fuel Storage Facility
- Ⓥ *Parallel Taxiway*
- Ⓦ Kanaha Beach Park Improvement
- Ⓧ Maui County Base Yard Area
- Ⓨ Possible Future Airport Commercial Development
- Ⓩ Extended Runway with Taxiways to Approximately 8,500 ft.



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STATE OF HAWAII

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SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

ALTERNATIVE 2

DATE	FIGURE
JANUARY, 1997	4-3

AIRFIELD. This alternative involves extending Runway 2-20 by 1,500 feet to the south for a total length of 8,500 feet. The runway pavement would be repaired and strengthened to handle the maximum gross takeoff weights of aircraft using the runway. The Instrument Landing System (glide slope indicator, MALSR, and Middle Marker) on the approach end of Runway 2 are relocated to serve the new runway end.

This alternative involves constructing a 3,500 foot long parallel runway between Hana Highway and the East Ramp. This runway is for general aviation use only; it is too short to allow operations by jet aircraft. The centerline-to-centerline separation is 2,500 feet, enough to allow simultaneous VFR operations on the Runway 2-20 pair. The runway pavement for the new runway is designed to accommodate general aviation aircraft. A new taxiway connects the southern end of the new runway with existing Runway 2 end. The expanded transient and military aircraft apron is relocated to the east ramp at the existing general aviation area.

Over the short-term, landing and takeoff helipads are relocated as in Alternative 1 to reduce congestion and improve tower control. Long-term provisions for helicopters are relocated off-airport and discussed in Section 4.4.3.

TERMINAL AREA. This alternative calls for construction of a new general aviation terminal area between the new parallel runway and Hana Highway. Existing general aviation facilities would be relocated to this area over time, and the existing helicopter facilities and operations would be relocated off-Airport as discussed in Section 4.4.3. The helicopter relocation is to avoid the airspace conflicts that would occur if helicopters were operated between two active runways. Air taxi operations are shifted from their present location to the facilities made vacant by the relocation of the helicopter base. Additional hold cargo facilities are provided at the south end of the passenger terminal. General cargo facilities are provided at the northern end of the East Ramp.

AIRPORT SUPPORT. New bulk fuel storage facilities are provided at the south end of the East Ramp. New roadways are provided to serve the East Ramp facilities, including a new link with Hana Highway north of the parallel runway. This alternative designates an area on the west side of Runway 5-23 for a flight kitchen off of Alahao Street.

CONCLUSION. Alternative 2 does not meet the purposes and needs of the Proposed Project. Its principal deficiency is that the 8,500 foot runway length is not long enough to provide for direct nonstop flights of Class D (DC10 and L-1011) aircraft to all visitor markets, including mid-west and east coast domestic markets, and potential future international destinations. This alternative would permit (with FAA approval) the simultaneous arrivals of only class A, B and C aircraft on the airfield. In comparison, the Proposed Project would allow simultaneous arrivals for all aircraft classes. Thus, this alternative is not as flexible as the Proposed Project.

The environmental impacts of Alternative 2 are similar to those of the Proposed Project (preferred alternative). The impact of alien species introductions is considered a significant cumulative impact, and the incremental impact is greater with this alternative than that associated with the mitigated Proposed Project. This is because the Proposed Project will be designed to minimize the potential risk of an increase in the "introduction rate" of alien species through the implementation of the proposed mitigation measures. These mitigation measures are discussed in Sections 3.11.3, 5.1.6 and Appendix U of this EIS. Similar to the Proposed Project, the construction of the Airport Access Roadway would have a potential significant impact on the safety of the bike route. This alternative does not avoid any of the significant non-cumulative or cumulative impacts identified with respect to the Proposed Project, except for the potential relocation of Spreckelsville residents associated with the 8,500 foot parallel runway of the Proposed Project.

4.3.1.4 Alternative 3 (Figure 4-4)

This alternative is the most similar to the 1988 "Kahului Airport Development Plan." The major components of this alternative are summarized below.

LAND ACQUISITION. Under this alternative, land must be acquired for a full runway protection zone for both ends of the proposed parallel runway. In addition, certain noise sensitive land north of the Airport, (primarily single-family residences at the southwestern corner of East Spreckelsville) must be purchased. Lastly, land on the southern side of Hana Highway is currently within the runway protection zone planned for the extended runway. An avigation easement or fee title over this land would have to be obtained under this alternative.

AIRFIELD. The alternative provides for extending Runway 2-20 from 7,000 feet to approximately 9,500 feet in length. This alternative also includes construction of an 8,500 foot long parallel runway 2,500 feet to the east and construction of new taxiways connecting the two runways. The existing Runway 2-20 is repaired and strengthened to permit operation of maximum gross weight aircraft and the ILS on the approach end of Runway 2 is relocated. Under this alternative, overseas aircraft could conduct economical, non-stop operations to Mid-west destinations such as Chicago and Dallas/Ft. Worth.

The landing and takeoff helipads are relocated in the existing helicopter area to provide a better line-of-sight from the FAA ATCT.

TERMINAL AREA. This alternative includes the following improvements at the terminal area.

- Expanding the general aviation lease lots and T-hangar areas to the north of their present location on the East Ramp.

ALTERNATIVE 3

LEGEND

- (A) Reserve Space for Future Passenger Terminal Complex Expansion
- (B) New 8,500 ft. Parallel Runway
- (C) New Connecting Taxiways for Parallel
- (D) Hana Highway Realignment
- (E) New Airport Access Road
- (F) Control Tower and Weather Facility (E
- (G) Expanded Ground Transportation Subdi
- (H) U.S. Post Office Site
- (I) Post Office Ramp Access Road
- (J) Commuter/Air Taxi Facility
- (K) General Aviation Facility

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LONO AVE
EAST
KAMEHAMEHA AVE
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HOBRON AVENUE
PUUENE AVE
PAAHANA PL
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AVIATOR PLACE
AIRPORT BOUNDARY
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STREET
WAKEA AVE
KANIKI
KAHANA POND WILDLIFE REFUGE
S. LANAI ST
PUUENE AVE
E KAUAI ST
KUULA ST
AIAI ST
E PAPA AVE
E HAWAII ST
HOOHANA STREET
KUHUOI STREET
HUKEKE
ALAWAHA
HANAMAU STREET
HANAKAI STREET
LALO PLACE
PAPA PLACE
KOLOA ST
KELE ST
KUIHELANI HIGHWAY
PUAKALA PL
AOLOA LP
PIION
DAIRY ROAD
DAIRY RD
KEOLANI PLACE
PUUANOU ST
LANOU ST
PUAOLU ST
PACIFIC
ALAHAO STREET
KAONAHAI PLACE
HALEAKALA HWY
HOKUEA PL
AIRPORT BOUNDARY
POWER PLANT ROAD
PULEHU ROAD
HANA HIGHWAY
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KEAMALOA ST
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AIRPORT PROPERTY

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IVE 3

- for Future
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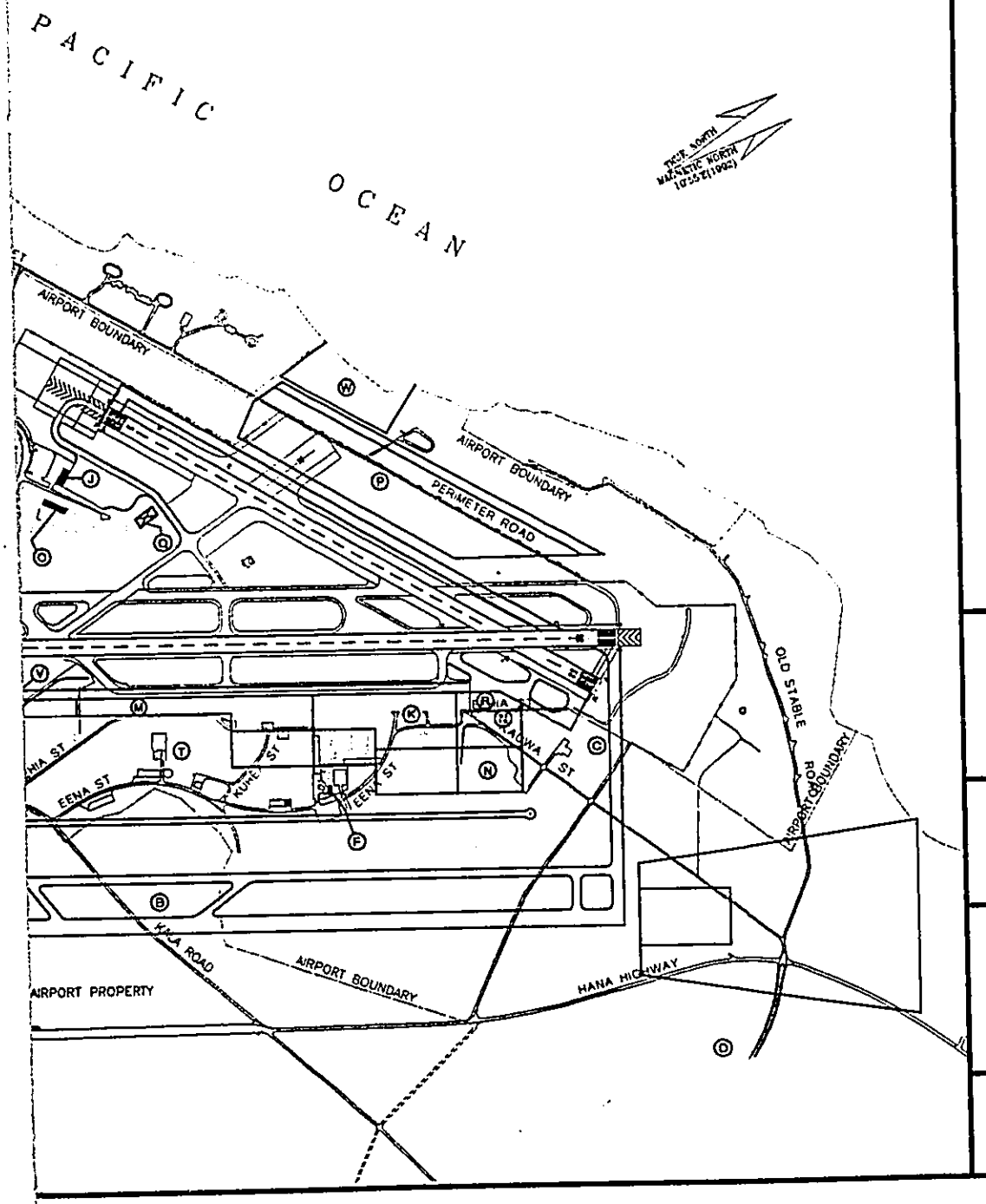
- ess Road
- ind Weather Facility (EXISTING)
- d Transportation Subdivision
- Site
- p Access Road
- axi Facility
- Facility

- Ⓛ Helicopter Facility (EXISTING)
- Ⓜ Scenic Air Tour Facility
- Ⓝ General Cargo Facility
- Ⓞ Hold Cargo Facility
- Ⓟ Transient and Military Aircraft Parking Apron
- Ⓠ Airline Ground Equipment Maintenance Facility
- Ⓡ ARFF Training Facility
- Ⓢ Flight Kitchen Facility
- Ⓣ Radio Transmitter Receiver Building and Airport Surveillance Radar (EXISTING)
- Ⓤ Bulk Jet Fuel Storage Facility
- Ⓥ Taxiway Between Scenic Air Tour and Helicopter Facilities
- Ⓦ Kanaha Beach Park Improvement
- Ⓧ Maui County Base Yard Area
- Ⓨ New Access Road
- Ⓩ Extend Runway 2-20 to Approximately 9,500'



DEPARTMENT OF TRANSPORTATION STATE OF HAWAII

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

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SOURCE:
KAHULUI AIRPORT MASTER PLAN

Edward K. Noda and Associates, inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

ALTERNATIVE 3

DATE	FIGURE
JANUARY, 1997	4-4

- Expanding/reconfiguring the helicopter facilities area at the southern end of the East Ramp.
- Retaining the air taxi-based support activities in their existing location while replacing the existing structure with a slightly larger one just to the east.
- Developing a military and large transient aircraft parking apron on the west side of Runway 5-23.
- Developing new hold cargo facilities near the Post Office site.
- Constructing a general cargo facility at the north end of the East Ramp.
- Constructing a new access/service road between the parallel runways (with a tunnel beneath the southernmost connecting taxiway) to provide access to the facilities located on the eastern side of Runway 2-20.
- Providing a site for a flight kitchen on Alahao Street;

AIRPORT SUPPORT. This alternative includes construction of bulk fuel storage facilities south of the helicopter facilities.

CONCLUSION. Alternative 3 meets the purposes and needs and has similar facilities as the Proposed Project. The major differences between this alternative and the Proposed Project is the placement of the secondary facilities (i.e. facilities other than the runways, airport access roadway and passenger terminals). Therefore, impacts of Alternative 3 are similar to those of the Proposed Project (preferred alternative). The differences in the impacts are related mainly to the placement of the secondary facilities.

Potential significant impacts are expected to occur in the categories of Socio-economic Impacts with the construction of the parallel runway as discussed in Section 3.5, in floodplain and hydrology due to the location chosen for the Flight Kitchen facility, and surface traffic as the helicopter facility remains on the airport at its present location. A traffic impact study was completed in Appendix M. Similar to the Proposed Project, the construction of the Airport Access Roadway would have a potential significant impact on the safety of the bike route. The potential impact on the "introduction rate" of alien species to Maui would be worse with this runway alternative than with the mitigated Proposed Project. This is because the Proposed Project will be designed to minimize the potential risk of an increase in the "introduction rate" of alien species through the implementation of the proposed mitigation measures. This alternative does not avoid any of the significant impacts identified with respect to the Proposed Project.

4.3.1.5 Alternative 4 (Figure 4-5)

Alternative 4 represents a "maximum development" scenario for the planning horizon. The improvements unique to this alternative are summarized below.

LAND ACQUISITION. This alternative entails the acquisition of a small amount of land on the southwestern side of East Spreckelsville to allow for the extended runway's protection zone. Helipads and helicopter facilities are relocated to a new site to be acquired on the east side of Hana Highway near Haleakala Road.

AIRFIELD. This alternative would extend Runway 2-20 from 7,000 feet to approximately 10,500 feet in length, construct a 10,500 foot long parallel runway 2,500 feet to the east, and construct two new taxiways connecting the two runways. This would provide sufficient runway length to allow economical non-stop passenger operations to essentially any destination within the range of existing passenger aircraft (some restrictions would be placed on all cargo aircraft to the most distant destinations). The distances from Kahului Airport to major destinations are presented in Table 4-7.

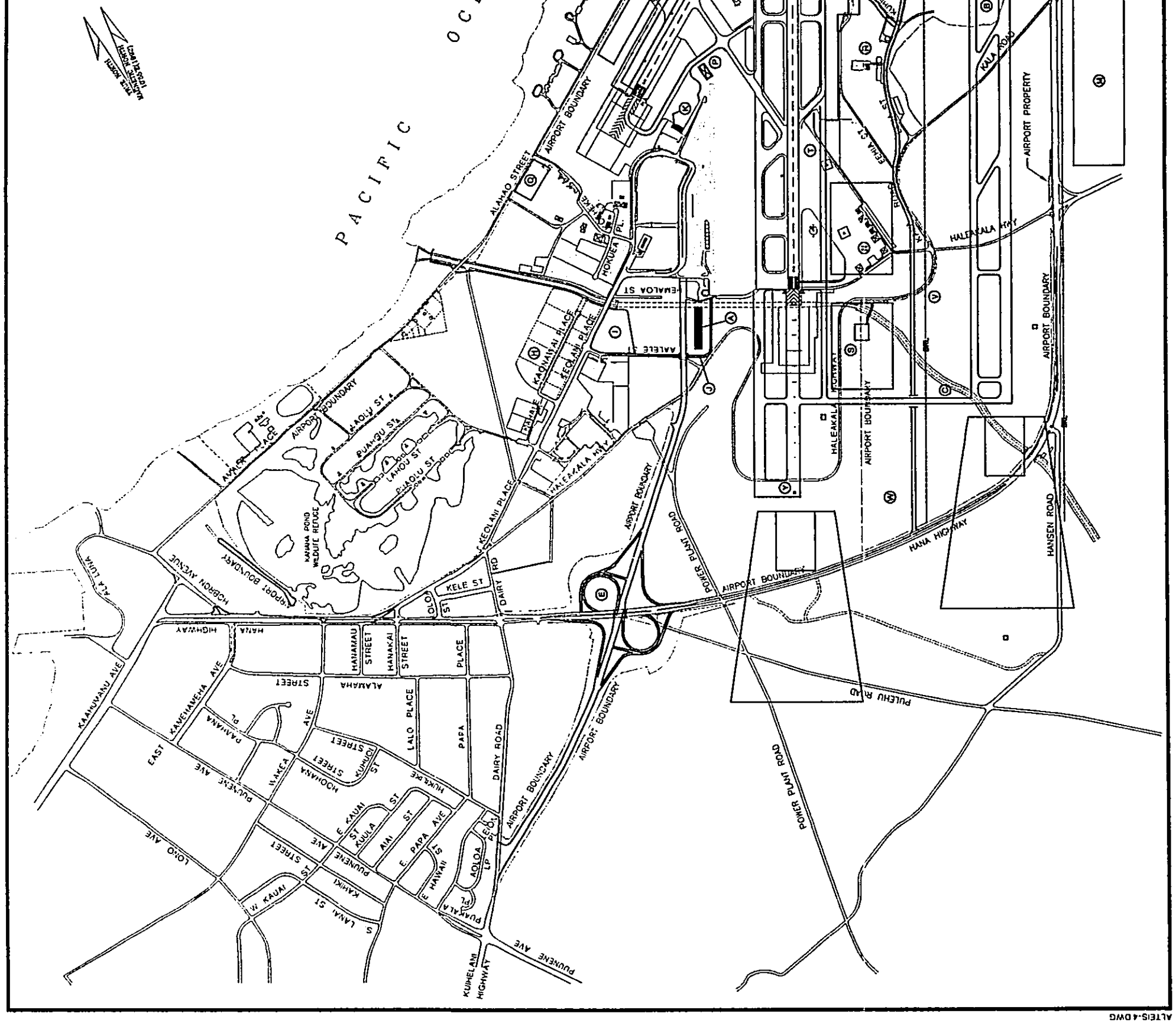
Table 4-7
NONSTOP AIR MILES
FROM KAHULUI AIRPORT

CITY	STATUTE MILES	NAUTICAL MILES
Los Angeles	2,525	2,192
Dallas-Ft. Worth	3,780	3,284
Chicago	4,270	3,703
Atlanta	4,502	3,908
New York	5,000	4,339
Tokyo	4,020	3,466

Source: Official Airline Guides, "Official Airline Guide"

Runways 2-20's pavement would be repaired and strengthened and the ILS on the approach end of Runway 2 would be relocated. Over the near-term, landing and takeoff helipads would be relocated to allow for better line-of-sight from the FAA ATCT. This alternative would relocate the helicopter facilities to the east side of Hana Highway before the parallel runway is constructed.

TERMINAL AREA. This alternative includes the following improvements in the terminal area.

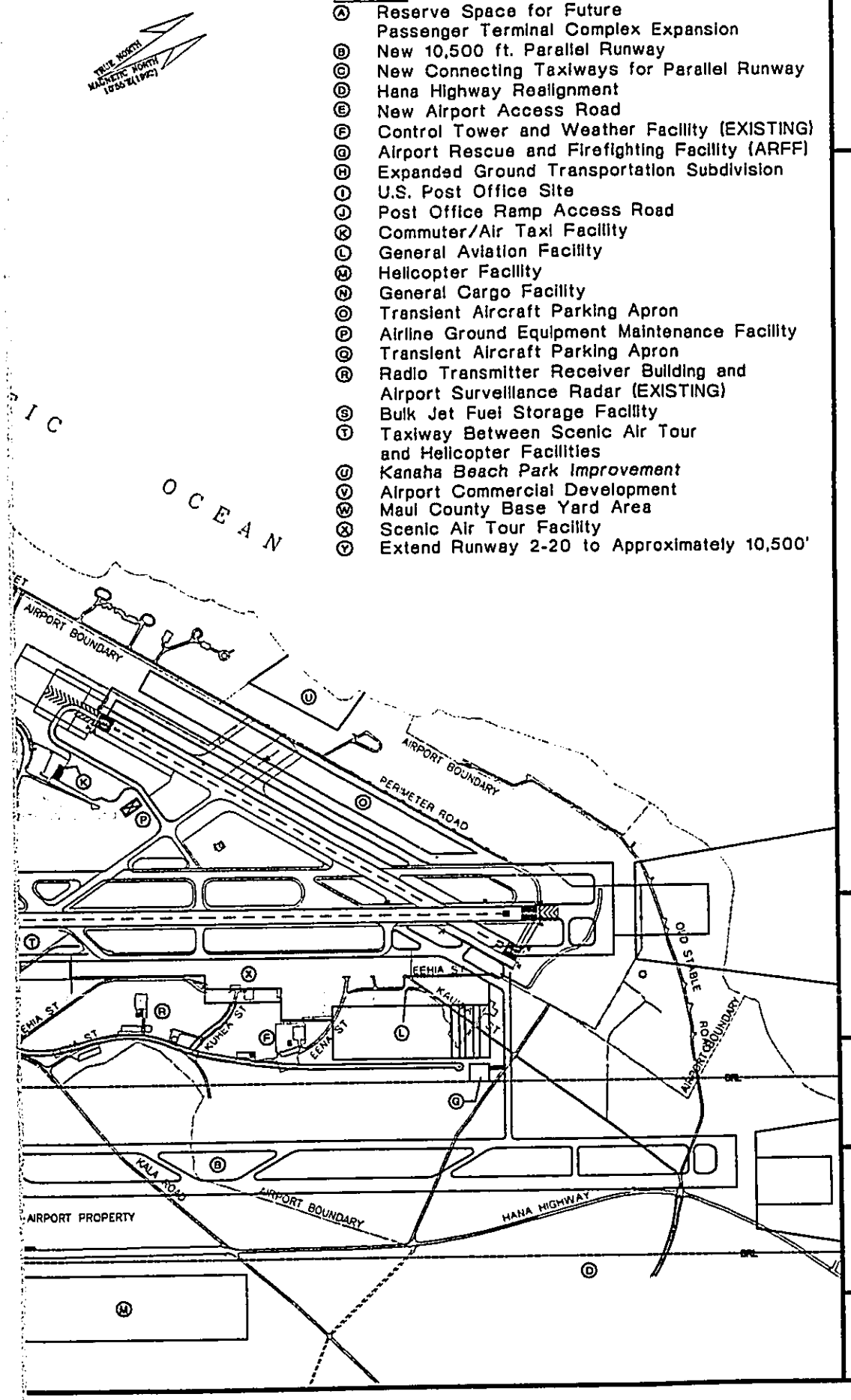

PACIFIC OCEAN
ALAHAO STREET
AIRPORT BOUNDARY
HOKUEA PL.
KEOLANI PLACE
KAOHANAI PLACE
AALELE ST
LAOLU ST
PUAOLU ST
LAHOU ST
KAHANA POND WILDLIFE REFUGE
HALEAKALA HWY
POWER PLANT ROAD
KELE ST
DAIRY RD
HOBRON AVENUE
AIRPORT PROPERTY
HANA HIGHWAY
HANSEN ROAD
KAAHUMANU AVE
KAVEHAMEHA AVE
HANAMAU STREET
HANAKAI STREET
ALAMAHA STREET
LALO PLACE
PAPA PLACE
DAIRY ROAD
PUUNENE AVE
KUIHELANI HIGHWAY
PULEHU RD
LOKO AVE
EAST KAUAI ST
E. KAUAI ST
E. PAPA AVE
AOLOA PL
PUAKALA PL
KAMAKI ST
S. LANAI ST
KUIHELANI HIGHWAY

ALTEIS-4.DWG

ALTERNATIVE 4

LEGEND

- Ⓐ Reserve Space for Future Passenger Terminal Complex Expansion
- Ⓑ New 10,500 ft. Parallel Runway
- Ⓒ New Connecting Taxiways for Parallel Runway
- Ⓓ Hana Highway Realignment
- Ⓔ New Airport Access Road
- Ⓕ Control Tower and Weather Facility (EXISTING)
- Ⓖ Airport Rescue and Firefighting Facility (ARFF)
- Ⓗ Expanded Ground Transportation Subdivision
- Ⓘ U.S. Post Office Site
- Ⓙ Post Office Ramp Access Road
- Ⓚ Commuter/Air Taxi Facility
- Ⓛ General Aviation Facility
- Ⓜ Helicopter Facility
- Ⓝ General Cargo Facility
- Ⓞ Transient Aircraft Parking Apron
- Ⓟ Airline Ground Equipment Maintenance Facility
- Ⓠ Transient Aircraft Parking Apron
- Ⓡ Radio Transmitter Receiver Building and Airport Surveillance Radar (EXISTING)
- Ⓢ Bulk Jet Fuel Storage Facility
- Ⓣ Taxiway Between Scenic Air Tour and Helicopter Facilities
- Ⓤ *Kanaha Beach Park Improvement*
- Ⓥ Airport Commercial Development
- Ⓦ Maui County Base Yard Area
- Ⓧ Scenic Air Tour Facility
- Ⓨ Extend Runway 2-20 to Approximately 10,500'



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SOURCE:
KAHULUI AIRPORT MASTER PLAN

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ALTERNATIVE 4

DATE	FIGURE
JANUARY, 1997	4-5

- Expanding the general aviation lease lots and T-hangar areas to the north of their present location on the East Ramp.

- Retaining the air taxi-based support activities in their existing location while replacing the existing structure with a slightly larger one just to the east.

- Developing a military and large transient aircraft parking apron north of Runway 5-23.

- Developing new hold cargo facilities near the Post Office site.

- Constructing a general cargo facility at the old helicopter facilities.

- Constructing a new access/service road between the parallel runways (with a tunnel beneath the southernmost connecting taxiway) to provide access to the facilities located on the eastern side of Runway 2-20.

- Providing a site for a flight kitchen on Alahao Street;

AIRPORT SUPPORT. This alternative calls for the construction of bulk fuel storage facilities south of the existing helicopter facilities.

CONCLUSION. Alternative 4 meets the purposes and needs of the Proposed Project, but has significant additional environmental impacts due to the length of the runways. These significant impacts derive from extending the runways toward and into the coastal area. In addition, Alternative 4 would increase the airport noise impacts on the West Spreckelsville residential area. Additional significant impacts would be expected in the categories of aircraft noise, land use, socio-economic, water quality, DOT Section 4(f), archaeology, hydrological/floodplain, Coastal Zone Management, visual effects and surface traffic. Similar to the Proposed Project, the construction of the Airport Access Roadway would have a potential significant impact on the safety of the bike route. This alternative does not avoid any of the significant impacts identified with respect to the Proposed Project.

4.3.1.6 Alternative 5 (Figure 4-6)

This alternative is a refinement of Alternative 3 based on input from airport users, governmental agencies, and the general public. The major components of this alternative are summarized below.

LAND ACQUISITION. This alternative requires the acquisition of land for a full runway protection zone for both ends of the proposed parallel runway, as well as additional land to the north that currently contains noise-sensitive uses (single-family residences at the southwestern corner of East

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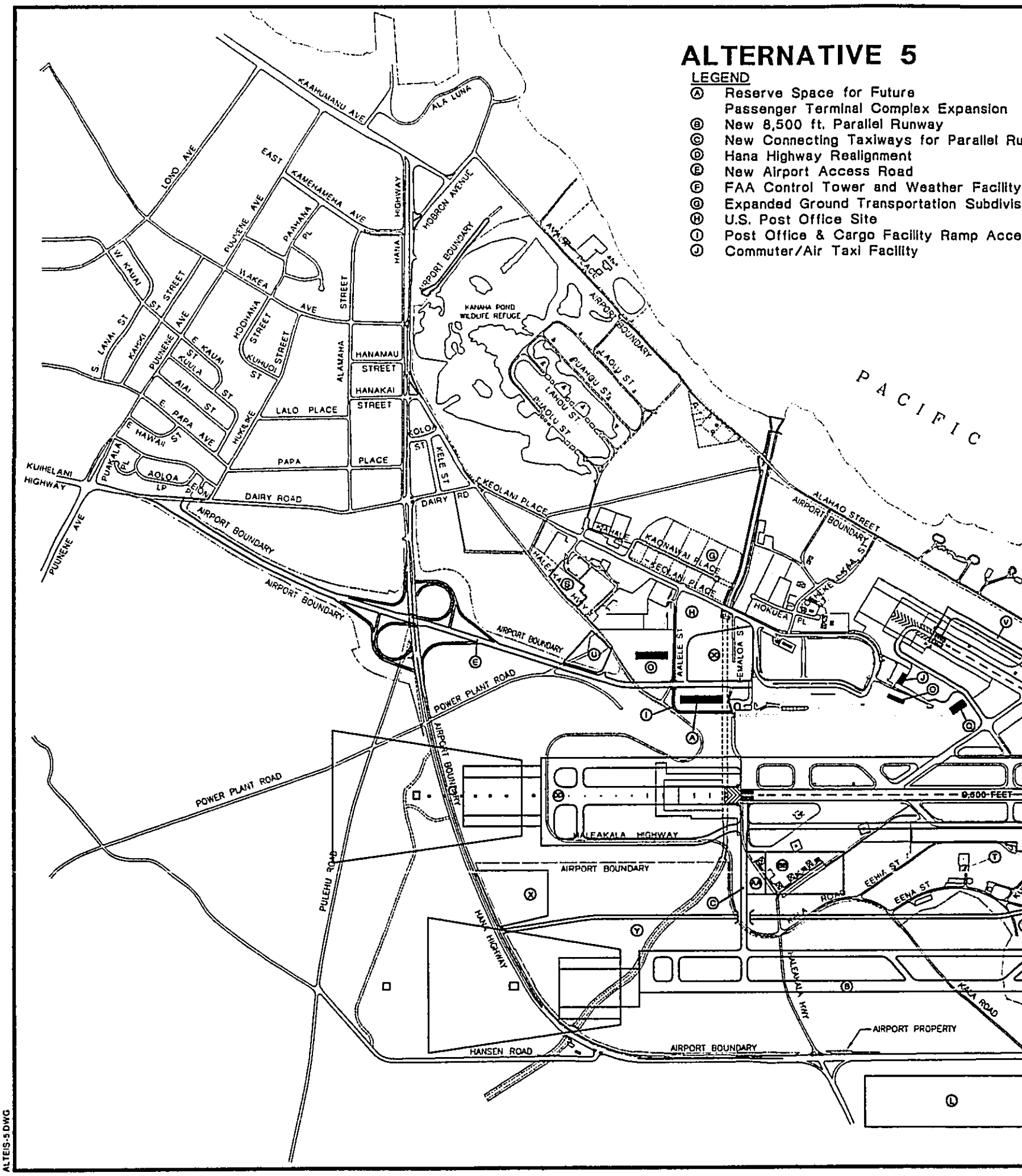
ALTERNATIVE 5

LEGEND

- Ⓐ Reserve Space for Future Passenger Terminal Complex Expansion
- Ⓑ New 8,500 ft. Parallel Runway
- Ⓒ New Connecting Taxiways for Parallel Ru
- Ⓓ Hana Highway Realignment
- Ⓔ New Airport Access Road
- Ⓕ FAA Control Tower and Weather Facility
- Ⓖ Expanded Ground Transportation Subdivis
- Ⓗ U.S. Post Office Site
- Ⓘ Post Office & Cargo Facility Ramp Acce
- Ⓙ Commuter/Air Taxi Facility

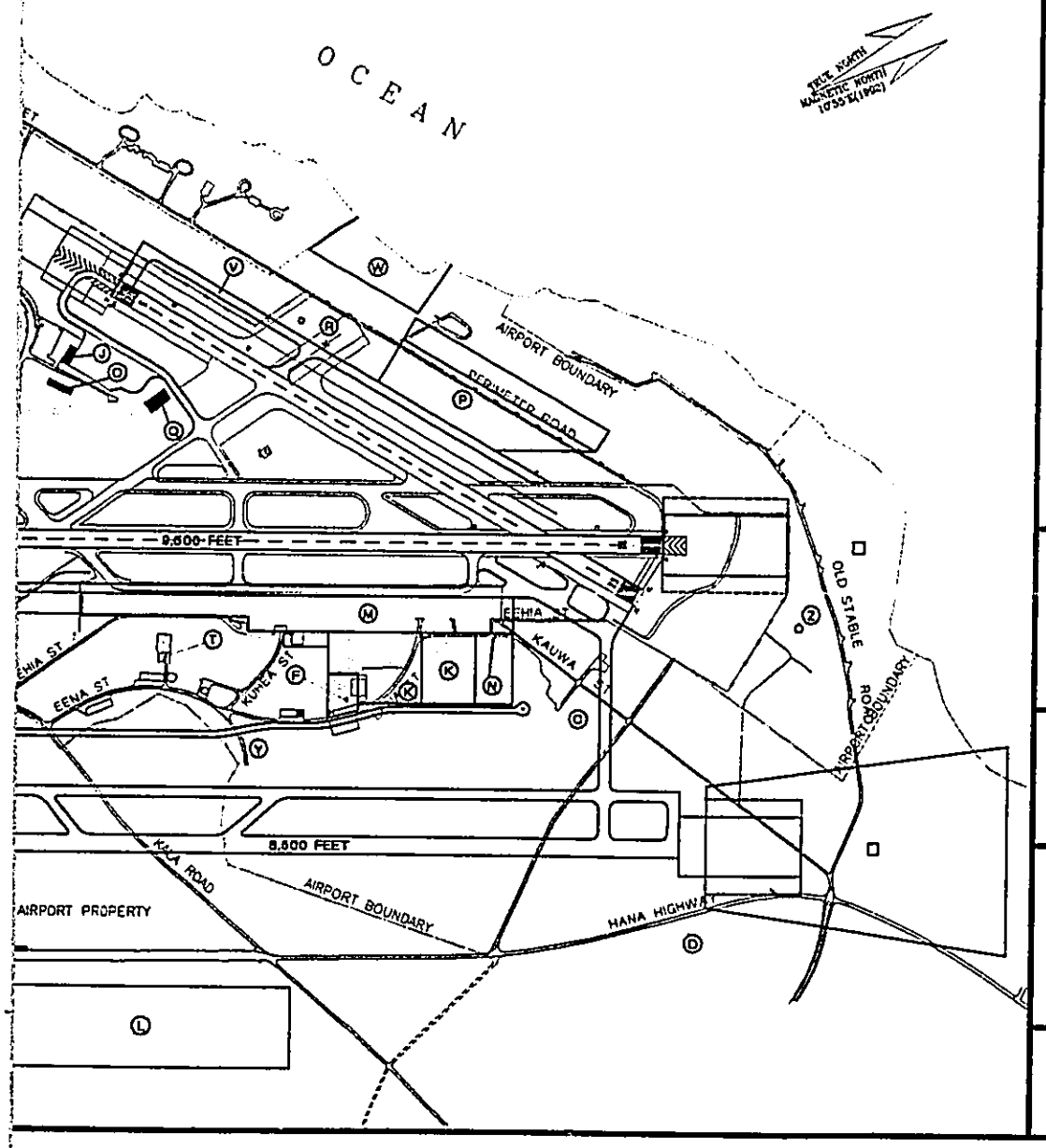


ALTEIS-5.DWG

E 5

- Future
- Complex Expansion
- lel Runway
- kiways for Parallel Runway
- gnment
- ı Road
- and Weather Facility (EXISTING)
- ransportation Subdivision
- e
- o Facility Ramp Access Road
- Facility

- Ⓚ General Aviation Facility
- Ⓛ Alternate Helicopter Facility Location
- Ⓜ Scenic Air Tour Facility
- Ⓝ General Cargo Facility
- Ⓞ Hold Cargo Facility
- Ⓟ Transient and Military Aircraft Parking Apron
- Ⓠ Airline Ground Equipment Maintenance Facility
- Ⓡ ARFF Training Facility (EXISTING)
- Ⓢ Flight Kitchen Facility
- Ⓣ Radio Transmitter Receiver Building and Airport Surveillance Radar (EXISTING)
- Ⓤ Bulk Jet Fuel Storage Facility
- Ⓥ Parallel Taxiway for Runway 5-23
- Ⓦ Kanaha Beach Park Improvement
- Ⓧ Maui County Base Yard Area
- Ⓨ New East Ramp Access Road
- Ⓩ Relocated VORTAC Site
- Ⓐ Aircraft Rescue and Firefighting Facility (ARFF)
- Ⓑ Commercial Aviation & Lease Lots
- Ⓒ Parking Lot
- Ⓓ Extended Runway 2-20 to Approximately 9,500'



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SOURCE:
KAHULUI AIRPORT MASTER PLAN

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ALTERNATIVE 5

DATE	FIGURE
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Spreckelsville). An avigation easement or fee title over land on the southern side of Hana Highway must be obtained, as this land is within the runway protection zone for the extended runway. In addition, land needs to be acquired for the bulk fuel storage facilities and the new heliport as shown in Figure 4-6.

AIRFIELD. The alternative provides for extending Runway 2-20 from 7,000 feet to approximately 9,500 feet in length. This alternative also includes construction of an 8,500 foot long parallel runway 2,500 feet to the east, and construction of new taxiways connecting the two runways. Runway 2-20 is repaired and strengthened to permit operation of maximum gross weight aircraft. In this alternative, overseas aircraft could conduct economic, non-stop operations to distant Mid-west destinations such as Chicago and Dallas/Ft. Worth.

The helipads and helicopter facilities are to be relocated off-Airport, possibly to a location east of Hana Highway.

TERMINAL AREA. This alternative includes the following improvements in the terminal area.

- Expanding the general aviation lease lots and T-hangar areas to the north of their present location on the East Ramp.
- Expanding/reconfiguring the current helicopter facilities area at the southern end of the East Ramp for Commercial Aviation Lease Lots.
- Retaining the air taxi-based support activities in their existing location while replacing the existing structure with a slightly larger one just to the east.
- Developing a military and large transient aircraft parking apron on the north side of Runway 5-23.
- Developing new hold cargo facilities near the Post Office site.
- Constructing a general cargo facility at the northern end of the East Ramp.
- Constructing a new access/service road between the parallel runways (with a tunnel beneath the southernmost connecting taxiway) to provide access to the facilities located on the eastern side of Runway 2-20.
- Prepare the site for a flight kitchen on Keolani Place.

AIRPORT SUPPORT. This alternative includes the construction of bulk fuel storage facilities along the western side of the proposed new Airport Access Road, just south of the new air cargo facilities.

CONCLUSION. Alternative 5 meets the purposes and needs of the Proposed Project and consists of similar facilities. The major differences between this alternative and the Proposed Project is the placement of the secondary facilities. Therefore, impacts of Alternative 5 are similar in impacts to the Proposed Project (preferred alternative) with the exception of the on-airport bulk fuel storage facility.

Potentially significant impacts are expected in the categories socio-economics and surface traffic. The potential impact on the "introduction rate" of alien species to Maui would be worse with this runway alternative than with the mitigated Proposed Project. This is because the Proposed Project will be designed to minimize the potential risk of an increase in the "introduction rate" of alien species through the implementation of the proposed mitigation measures. Similar to the Proposed Project, the construction of the Airport Access Roadway would have a potential significant impact on the safety of the bike route. This alternative does not avoid any of the significant impacts identified with respect to the Proposed Project..

4.3.1.7 Alternative 6 (Figure 4-7)

Alternative 6 was developed specifically to respond to members of the general public and some County Council members who would prefer that Kahului Airport target existing rather than new markets. This alternative was used to explore the implications of closing Runway 5-23 (a possibility that DOT excluded from consideration when the other alternatives were formulated). The major features of this alternative involve the following.

Closing Runway 5-23 makes it possible to site the airline ground equipment maintenance facility, cargo facilities, and flight kitchen facilities within this northward extension of the terminal area. The extent of the northern expansion is limited by the tsunami inundation zone. Closing Runway 5-23 also makes it practical to situate the bulk fuel storage facilities on the west side of the Airport where they are less visible to airport users than are tanks on sites used in the other alternatives.

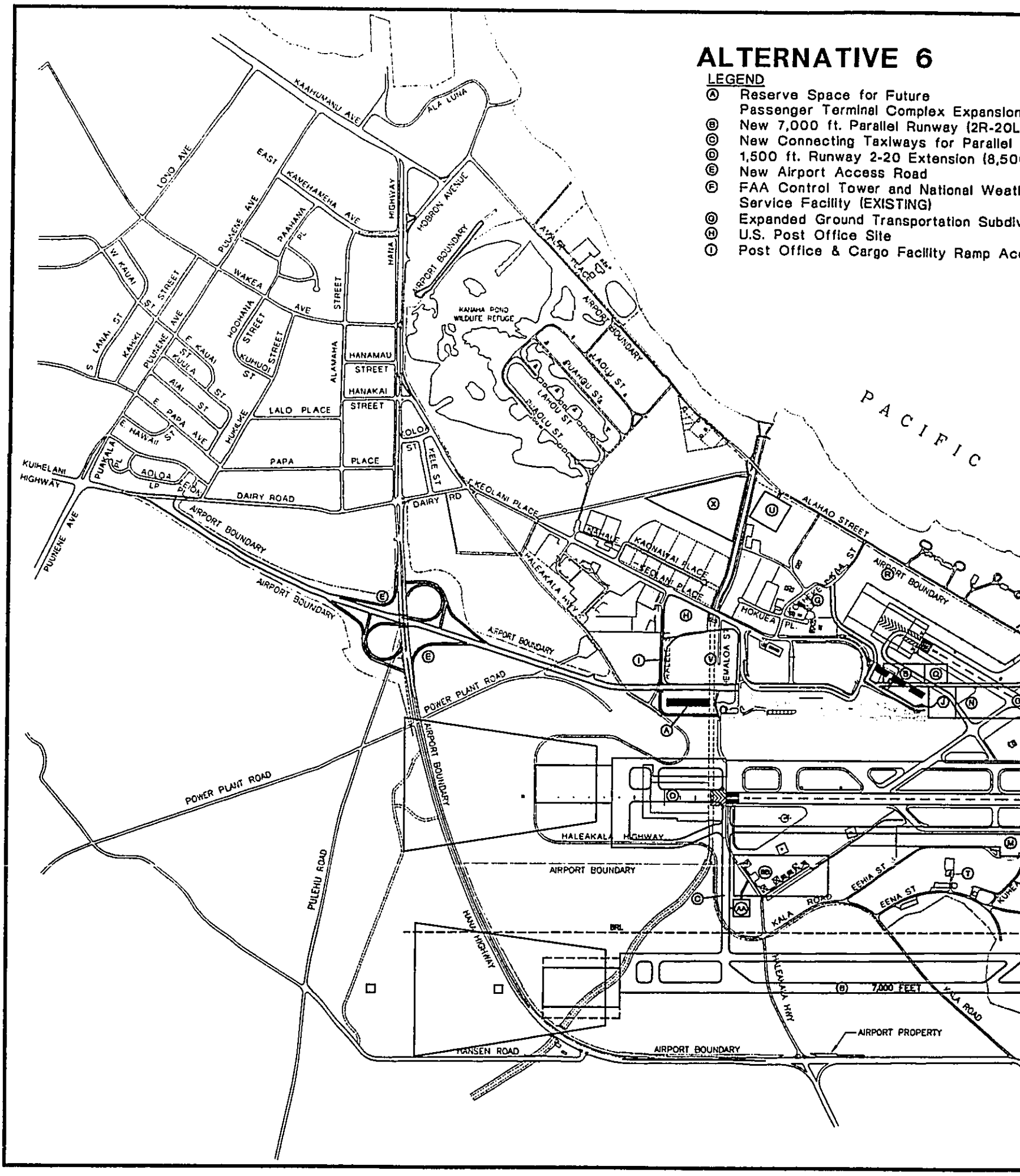
LAND ACQUISITION. Land would have to be acquired for a full runway protection zone for both ends of the proposed parallel runway. This alternative also requires that an avigation easement or fee title be obtained over land on the southern side of Hana Highway, as this land is within the runway protection zone for the extended runway. Additional land would be needed for the relocated heliport.

AIRFIELD. This alternative extends Runway 2-20 by 1,500 feet to a total length of 8,500 feet. The parallel runway is 7,000 feet in length, and Runway 5-23 is closed. The 8,500 foot runway allows unrestricted operations between Maui and the West Coast. The 7,000 foot long parallel runway provides a backup runway for unrestricted interisland operations and load-limited overseas operations to the West Coast.

ALTERNATIVE 6

LEGEND

- Ⓐ Reserve Space for Future Passenger Terminal Complex Expansion
- Ⓑ New 7,000 ft. Parallel Runway (2R-20L
- Ⓒ New Connecting Taxiways for Parallel
- Ⓓ 1,500 ft. Runway 2-20 Extension (8,50
- Ⓔ New Airport Access Road
- Ⓕ FAA Control Tower and National Weath Service Facility (EXISTING)
- Ⓖ Expanded Ground Transportation Subdiv
- Ⓗ U.S. Post Office Site
- Ⓘ Post Office & Cargo Facility Ramp Acc

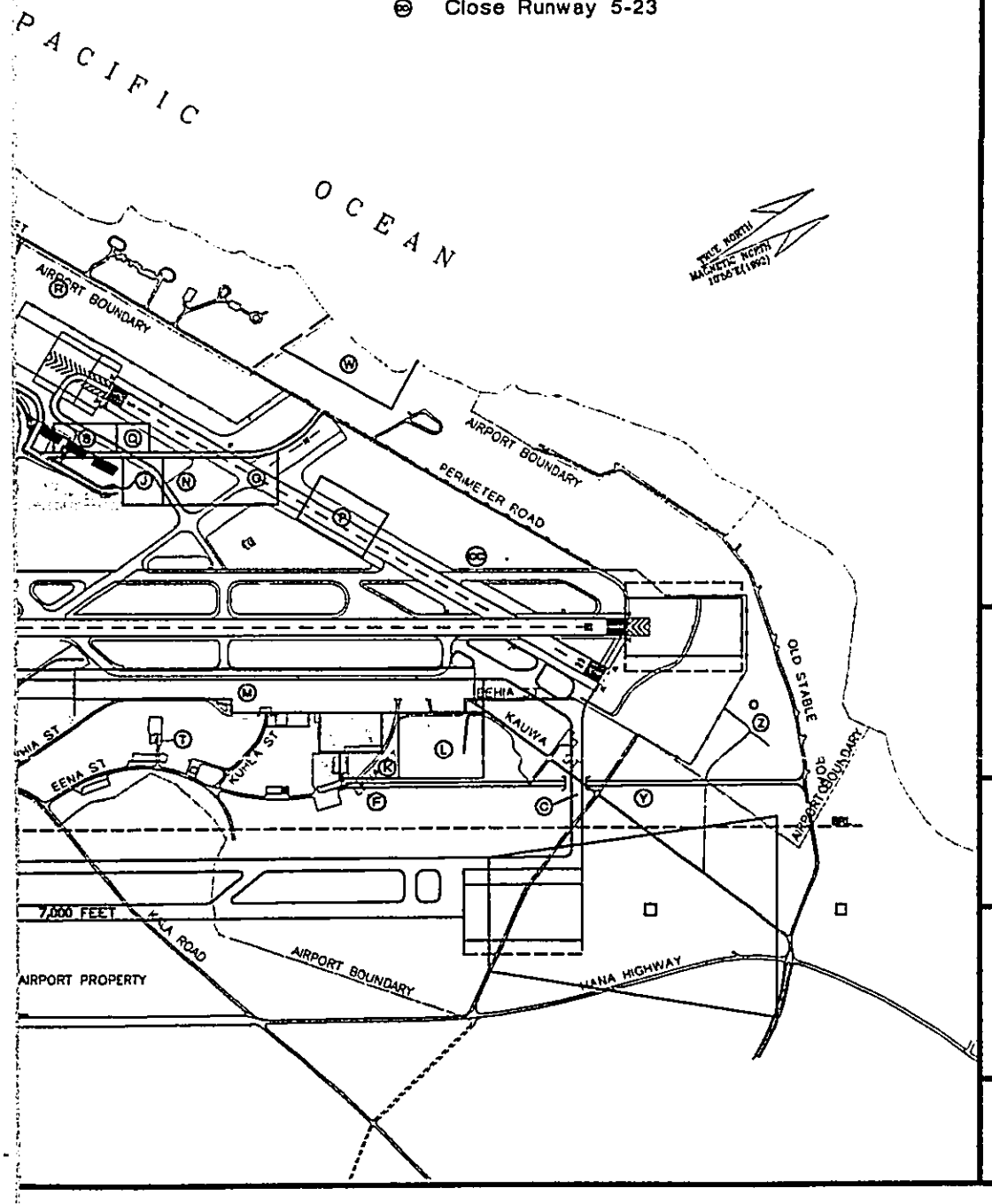


ALTEIS-6.DWG

VE 6

- for Future
- nal Complex Expansion
- arallel Runway (2R-20L)
- Taxiways for Parallel Runway
- 2-20 Extension (8,500 ft. Total)
- ess Road
- ver and National Weather (EXISTING)
- Transportation Subdivision
- Site
- argo Facility Ramp Access Road

- (J) Commuter/Air Taxi Facility
- (K) General Aviation Facility
- (L) Commercial Aviation Lease Lots
- (M) Scenic Air Tour Facility
- (N) General Cargo Facility
- (O) Hold Cargo Facility
- (P) Transient and Parking Apron
- (Q) Airline Ground Equipment Maintenance Facility
- (R) ARFF Training Facility
- (S) Flight Kitchen Facility
- (T) Radio Transmitter Receiver Building and Airport Surveillance Radar (EXISTING)
- (U) Bulk Jet Fuel Storage Facility
- (V) Additional Parking
- (W) Kanaha Beach Park Improvements
- (X) Maui County Area
- (Y) New East Ramp Access Road
- (Z) Relocated VORTAC Site
- (AA) Aircraft Rescue and Firefighting Facility (ARFF)
- (BB) Commercial Aviation & Lease Lots
- (CC) Close Runway 5-23



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SOURCE:
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TERMINAL AREA. Because Runway 5-23 is closed, expansion of the ground transportation subdivision is to the east, toward the western end of Runway 5-23. In addition, facilities for hold and general cargo, equipment maintenance, and a flight kitchen are northeast of the main passenger terminal. A site north of the main terminal is reserved for future expansion of terminal parking. Commercial aviation and lease lots are relocated to the area where helicopter facilities are currently located. This would occur only after new helicopter facilities are provided off the Airport property. Commercial aviation lease lots are also located in the East Ramp area and adjacent to the expanded general aviation facilities. In this alternative, the commuter air taxi facilities are northeast of the main terminal, and the scenic air taxi facilities are relocated near the FAA ATCT between the parallel runway. Transient aircraft parking is located adjacent to the site for hold and general cargo.

AIRPORT SUPPORT. The bulk fuel storage facilities are located at the intersection of the Airport's northern boundary with Kalialinui Gulch.

CONCLUSION. Alternative 6 does not meet the purposes and needs of the Proposed Project because it reduces the Airport's overall capacity, limits the airfield's operational flexibility, and is not cost-effective. It does not provide for an economical airport and does not provide air transportation facilities for existing and forecast aviation demand, as it reduces the capacity of the airfield to one runway. The closure of Runway 5-23 will require that a parallel runway or other capacity enhancement measures be implemented earlier than would be the case under the other alternatives. The closure of the runway would reduce wind coverage for small aircraft to about 92 percent, which is below the FAA's 95 percent coverage requirement. Similar to the Proposed Project, the construction of the Airport Access Roadway would have a potential significant impact on the safety of the bike route.

4.3.2 DESCRIPTION AND IMPACT ANALYSIS OF ALTERNATIVES TO THE INDIVIDUAL COMPONENTS

This section describes and analyzes development actions that are not common to all alternative plans (not included in 4.3.1.1).

4.3.2.1 Runway 2-20

DESCRIPTION. The 1993 Master Plan considered five (5) different runway lengths. The 9,600 foot runway length is the one that is proposed in the Recommended Master Plan and is discussed in the Proposed Project described in Section 2.0. A detailed analysis of aircraft performance for different runway lengths is presented in Appendix N. The other four runway lengths which were considered in the alternatives are as follows:

7,000 feet. This runway length is the existing length of Runway 2-20 and was considered in Alternative 1 (No-Action). At 7,000 feet, the majority of the current overseas fleet mix cannot fly fully loaded to overseas destinations, such as San Francisco, Los Angeles or Dallas-Ft. Worth. Certain

aircraft can presently fly to the U.S. West Coast with a partial load. In addition, this runway length does not allow simultaneous arrivals of large and heavy aircraft on Runway 2-20 and small aircraft on Runway 5-23. This limits the use of capacity enhancement improvements. Presently, only small aircraft are able to land on both runways simultaneously. Significant environmental impacts associated with this runway length are expected in: (i) secondary socio-economic - weight restrictions will continue and impact the amount of passengers, baggage and cargo which can be placed on aircraft and limits the range of aircraft departing Kahului Airport; and (ii) air quality -- there is a potential that the State Ambient Air Quality standards for Carbon Monoxide in the year 2010 will be exceeded at the airport boundaries due to the increase in aircraft delays. The impact of alien species introductions is considered a significant cumulative impact, and the incremental impact is greater with this runway length than that associated with the mitigated Proposed Project. This is because the Proposed Project will be designed to minimize the potential risk of an increase in the "introduction rate" of alien species through the implementation of the proposed mitigation measures. These mitigation measures are discussed in Sections 3.11.3, 5.1.6 and Appendix U of this EIS. Other impacts which would be greater than with the Proposed Projects include: (i) aviation safety -- this Alternative maintains the need for one-stop flights to Honolulu International Airport and increase the air-to-ground and ground-to-air interaction for these aircraft; and (ii) growth impacts -- there will be a greater potential for interisland aircraft operations growth due to the need for transiting passengers from Kahului Airport to Honolulu International Airport.

8,500 feet. This runway length was considered in Alternatives 2 and 6. Runway 2-20 would be lengthened by 1,500 feet to the southwest. The increase in runway length would allow DC10-10 aircraft to fly fully loaded to U.S. West Coast hubs, and partially loaded to Denver. It does not provide for direct flights to all visitor markets, including mid-west and east coast domestic markets and potential future international destinations. This runway length would limit the use of simultaneous arrivals (with FAA approval) to airplanes within classes A, B and C. Therefore, this runway length would increase the capacity of the airfield. However, it provides less operational flexibility and a smaller margin of safety for this type of arrival than does the 9,600 foot runway. The impact of alien species introductions is considered a significant cumulative impact, and the incremental impact is greater with this runway length than that associated with the Proposed Project. This is because the Proposed Project will be designed to minimize the potential risk of an increase in the "introduction rate" of alien species through the implementation of the proposed mitigation measures. These mitigation measures are discussed in Sections 3.11.3, 5.1.6 and Appendix U of this EIS.

9,500/9,600 feet. This runway length was studied in Alternatives 3 and 5. It would extend the existing runway by 2,500 feet to the southwest. This runway length is roughly synonymous to the 9,600 feet runway length in the Proposed Project (preferred alternative). Therefore, for this EIS the 9,500 foot and 9,600 foot runway are treated as equivalent runway lengths. The capabilities of this runway length are discussed in Section 2.0 and its potential environmental effects are discussed in Section 3.0.

10,500 feet. This runway length includes a runway extension of 2,500 feet to the southwest and 1,000 feet to the northeast and was analyzed in Alternative 4. This runway length would allow

fully loaded takeoffs of overseas aircraft to reach New York and more distant airline hubs. The exception would be the DC10-10, which would only be able to carry an 83 percent passenger load to Chicago -- identical to the Proposed Project (preferred alternative). The airfield capacity gains for passenger aircraft for this runway length are nearly identical to that of the 9,600 foot runway length.

SUMMARY. The 7,000 foot runway length does not meet the purpose and needs of the project as it does not allow for greater aircraft payload and does not enhance the flight range for current heavy aircraft operating at Kahului. It also does not provide any additional airfield operational flexibility to enhance the airfield capacity. In addition, for reasons discussed previously, the secondary socio-economic, air quality, aviation safety, growth impacts, and alien species impacts will be worse under this proposed runway length than under the Proposed Project. Therefore, the 7,000 foot runway length will not be considered further.

The 8,500 foot runway does not provide for direct unrestricted flights to all visitor markets that the State wishes to cover including mid-west and east coast domestic, as well as potential future international destinations. It is not long enough to provide the operational flexibility that the 9,600 foot runway length (Proposed Project) does, and will require that the parallel runway be built sooner. Therefore, this runway length does not meet the purposes and needs and will not be considered further. The environmental impacts of this runway length are similar to the Proposed Project (preferred alternative), and does not avoid any significant impacts identified with respect to the Proposed Project. The potential impact on the "introduction rate" of alien species to Maui would be worse with this runway alternative than with the mitigated Proposed Project. This is because the Proposed Project will be designed to minimize the potential risk of an increase in the "introduction rate" of alien species through the implementation of the proposed mitigation measures.

The 9,500/9,600 foot runway length offer the flexibility of aircraft operational range to reach distant mainland hubs with an economical load. In addition, this runway lengths allow the HDOT-AIR, with FAA approval, to use simultaneous arrivals for all aircraft types during appropriate conditions. The use of simultaneous arrivals will increase the capacity of the airfield by allowing aircraft to land on both Runway 5-23 and Runway 2-20 at the same time. Given HDOT-AIR's updated aviation demand forecast (which showed steady but slower growth than that predicted in the SASP study), the simultaneous arrival capability would postpone the need for the parallel runway beyond the 2010 time period. This runway length offer the most flexibility for both aircraft and airfield operations.

The 10,500 foot runway length offers increased range for the overseas aircraft and allows the majority of aircraft to depart Kahului Airport for east coast destinations. This runway length also allows the use of simultaneous operations, identical to that described above for the 9,500/9,600 foot runway length and offers the same flexibility for aircraft and airfield operations..

IMPACT ANALYSIS. The impacts of the 9,500 foot runway are equivalent to that of the Proposed Project (preferred alternative) and are not re-evaluated here. The environmental

implications of lengthening the runway to 10,500 feet, which are different than those under the Proposed Project, are discussed below. All other impacts of this alternative are similar to those of the Proposed Project.

Land Use. The extension of the runway toward the Pacific Ocean (northeast) would not require a change in the State or County land use designation. However, it would change the use of the land from open space and recreational uses to an airport facility.

Water Quality. There may be potential impacts to nearshore water quality with the extension of the runway to the northeast because of its close proximity to the shoreline. The primary impact would result from increased quantities of petroleum residues entering nearshore waters via rainwater runoff. Mitigation measures such as detention basins, oil/water separators and infiltration drains could be used to reduce the significance of this impact.

Historic, Architectural, Archaeological, and Cultural Resources. The extension to the northeast would impact areas in which previous archaeological surveys have found cultural deposits. The potential for impacting other archaeological and historic resources is high. In addition, the extension to the shoreline would impact beach access and may have potential cultural impacts. This is not in keeping with the archaeological/cultural resources preservation goals and objectives of the state. However after mitigation, these impacts may be insignificant. The mitigation measures are the same as for those called for under the Proposed Project and described in Section 3.10.4. These mitigation measures include: (i) monitoring by a professional archaeologist; (ii) taking appropriate steps to minimize the disturbance of the site or loss of data; and (iii) additional surface and subsurface testing and data recovery at significant sites, as appropriate, prior to construction activities. If possible, burials will be avoided. However, if necessary, a burial treatment plan, approved by the Maui County Burial Council, will be instituted.

Hydrology, Floodplain Management and Drainage. The 10,500 foot runway is estimated to increase runway and taxiway pavement by 50 percent over the existing pavement. The increase in drainage would require an increase in the size and costs of drainage improvements to the northeast end of the runway. The increase in drainage improvements to the northeast would be significant due to the limited existing drainage structures in this area, and to the extension of the safety area into the beach dunes and the flood inundation zones. The impacts of this runway alternative on the drainage to the southwest would be identical to those of the Proposed Project (preferred alternative).

Coastal Zone Management Program. The northeast extension of Runway 2-20 would impact the coastal area because the runway and safety area would extend to within 100 to 200 feet of the waterline. Under the State's Coastal Zone Management Program, such an extension and use of the shoreline area for airport rather than recreational or aesthetic purposes would be considered an inconsistent use and therefore considered significant impact.

Visual Effects. The runway extension to the northeast would change the visual characteristics of the coastal area of the airport. An area that is currently open space would be reconfigured to include a runway and associated facilities. This impact is considered significant.

Public Facilities, Infrastructure and Services and Airfield Safety.

Traffic: The extension of the runway to the northeast will close Old Stable Road and cut-off access to West Spreckelsville. This would be a significant impact to the residents of and visitors to that area. Mitigation measures may include building a new access roadway to Alahao Street or a grade separation for the roadway and runway. If a suitable relocated access route is constructed, this impact would be insignificant after mitigation.

Recreation: The runway extension to the northeast would limit the use of the coastal area for recreational uses, as the safety area would come within about 100 to 200 feet of the shoreline. This would be a significant impact given the extent to which residents and visitors to Maui use this beach area.

Airfield Safety: The longer runway length would increase the margin of safety for aircraft using Runway 2-20.

4.3.2.2 Runway 5-23

In Alternatives No. 1 through No. 5, there are no improvements to be made to Runway 5-23. Alternative No. 6 studies the implications of closing Runway 5-23 to gain unrestricted use of the northwestern portion of the airfield for new facilities. This alternative reduces the operational capacity of Kahului Airport. The runway closure would require the construction of the parallel runway during Phase 1 or 2, which is much sooner than scheduled in the Proposed Project (preferred alternative). The parallel runway would replace the airfield capacity which was lost by the closure of Runway 5-23.

As stated above, the closure of Runway 5-23 would degrade airfield operations, is not cost-effective, and would reduce runway operational flexibility for capacity enhancement. The closure of the runway would reduce wind coverage for small aircraft to about 92 percent, which is below the FAA preferred 95 percent coverage. As this does not meet the purposes and need of the project, the closure of Runway 5-23 was not considered further.

Note also that the 1993 Kahului Airport Master Plan dropped from consideration a proposal to extend Runway 5-23 by 500 feet to the southwest, as well as a proposal to extend Runway 5-23 by 1,000 feet to the northeast, because HDOT-AIR desired to avoid impacts to Kanaha Pond Wildlife Sanctuary and the Spreckelsville Community.

4.3.2.3 Parallel Runway

To increase the airfield capacity at Kahului Airport the Master Plan proposed that during Phase 3 of the Master Plan, a parallel runway be constructed 2,500 feet to the east of the existing Runway 2-20. The parallel runway would be Runway 2R-20L and the existing runway would become Runway 2L-20R. The centerline-to-centerline separation of the parallel runways would be 2,500 feet. The various Master Plan alternatives, with the exception of Alternative No. 1, considered a parallel runway. The following is a summary of the runway lengths analyzed:

- 3,500 foot runway. Alternative 2.
- 7,000 foot runway. Alternative 6.
- 8,500 foot runway. Alternative 3 and 5.
- 10,500 foot runway. Alternative 4.

As stated above, the 1993 Master Plan projected the need for a parallel runway near the end of Phase 3. However, with the lower forecasts presented by HDOT-AIR and simultaneous operations on extended Runway 2-20, the parallel runway may not be needed until beyond the 2010 planning horizon. Therefore, this EIS has considered only the *potential significant impacts* associated with the parallel runway project. When the decision to construct the parallel runway is made, another environmental document will assess the impact of this project and related facilities.

The significant impacts of the parallel runway relate primarily to a new access to the East Ramp and the relocation of some facilities. Depending on the length of the parallel runway and which configuration is selected, the helicopter facility may have to be relocated. In addition, the parallel runway project would convert approximately 550 acres of land "Agricultural" to "Urban" land use. With the exception of the 3,500 foot runway length, all other parallel runway alternatives would relocate the residences in the west end of East Spreckelsville.

4.3.2.4 General Aviation

DESCRIPTION. General Aviation facilities were considered in three different locations as follows:

East Ramp. Alternatives 3 through 6 and the Proposed Project.

West of Hana Highway. Alternative 2. Because this alternative is associated with building a parallel runway, its impacts would be fully analyzed in a future environmental document.

Off-Site. Alternative 1.

IMPACT ANALYSIS. The environmental implications of locating General Aviation facilities in the three proposed areas are as follows:

East Ramp. This location is already used for general aviation purposes and the impacts would be similar to those under the Proposed Project.

West of Hana Highway.

Land Use: The construction of the general aviation facilities at this location would require a land use designation change from Agricultural to Urban. This would be considered an insignificant impact.

Agricultural Potential: The change in use of this land would remove that acreage from agricultural potential. Although this land area has been labeled "Prime" agricultural (with irrigation), a very small area (50 acres) is being removed from production. As a result, the impact would be insignificant. However, this impact must be combined with the building of at least a general aviation parallel runway.

Noise: Construction of a general aviation parallel runway on the west side of Hana Highway would alter the aircraft noise patterns of the Airport based on the present Runway 2-20/ 5-23 combination. The noise impact would be less than the Proposed Project.

All other impacts of these alternatives are similar to those of the proposed project.

Off-Site. Requires acquisition of land for airport use and may have aircraft noise and other environmental impacts depending on the off-airport site selected (see 4.4.3).

4.3.2.5 General Cargo Facility

DESCRIPTION. Three alternative locations for the General Cargo Facility were considered:

- East Ramp. Alternatives 2 through 5.
- West Ramp (north). Alternative 1.
- Runway 5-23. Alternative 6.

IMPACT ANALYSIS. The environmental implications of locating the General Cargo Facility (GCF)in the three proposed locations are as follows:

East Ramp. This location is presently used for airport and aircraft support facility use. The impacts, if any, of placing the GCF here would be insignificant.

West Ramp (north). This location is presently used for airport and aircraft support facility use. The impact, if any, of placing the GCF here would be insignificant.

Runway 5-23. Because this area is presently being used for flight operations, there would be no significant environmental impacts associated with locating the GCF at this location. However, it would require the closing of Runway 5-23, which would have significant impacts on airport operations as discussed in Section 4.3.2.2.

4.3.2.6 Hold Cargo Facility

DESCRIPTION. Two different locations were considered for the Hold Cargo Facility (HCF) as follows:

- West Ramp. Alternatives 1 through 5.
- Runway 5-23. Alternative 6.

IMPACT ANALYSIS. The environmental implications of locating the HCF in the proposed locations are as follows:

West Ramp. All the impacts of this alternative are similar to those of the Proposed Project (preferred alternative).

Runway 5-23. This area is presently being used for flight operations and the development of a site for the HCF would not have significant environmental impacts. However, it requires the closing of Runway 5-23, which would have significant impacts on airport operations as discussed in Section 4.3.2.2. All other impacts of these alternatives are similar to those of the Proposed Project.

4.3.2.7 Flight Kitchen

DESCRIPTION. The development of an improved lease lot to accommodate a Flight Kitchen on the Airport. HDOT-AIR will be responsible for the site preparation, and the actual Flight Kitchen would be constructed and operated by others. The alternative sites which were considered include the following two locations:

- South of Alahao Street. Alternatives 1 through 4.
- On the West Ramp. Alternatives 5 and 6.

IMPACT ANALYSIS. The environmental implications of locating the Flight Kitchen in the proposed locations are as follows:

South of Alahao Street. This location places the Flight Kitchen at the boundary of a Flood Inundation Zone. This impact could be significant. Therefore, special design features, such as

a raised foundation, must be incorporated to mitigate flooding potential. This would increase the cost of development at this location. The impact will be insignificant with appropriate mitigation measures.

As a result of forecast increased demand, there would be an increase in the amount of energy and water consumed, and in the amount of solid and liquid waste generated. The impacts would be insignificant if the increase in consumption and waste generation do not cause the capacity of Maui County's facilities to be exceeded. All other impacts of this alternative are similar to those of the Proposed Project.

On the West Ramp. Because this area is currently used for support facility purposes, construction of a Flight Kitchen at this location would have insignificant impacts. There would be an increase in energy consumption, water consumption, and solid and liquid waste generation as a result of forecast increases in demand. The impacts would be insignificant if the increases in consumption and waste generation do not cause the capacity of Maui County's facilities to be exceeded. All other impacts of this alternative are similar to those of the Proposed Project.

4.3.2.8 Helicopter Facilities (Long-Term Relocation)

DESCRIPTION. The relocated long-term helicopter facilities for the Master Plan were considered in three different locations:

- East Ramp. Alternatives 1 and 3.
- East of Hana Highway. Alternatives 4 and 5.
- Off-Site. Alternatives 2 and 6.

IMPACT ANALYSIS. Because the relocated helicopter facilities are associated with the proposed parallel runway, the relocation project would be fully assessed in a future environmental document. The environmental implications of locating the helicopter facilities in the three proposed areas are briefly summarized as follows:

East Ramp. This alternative location would expand the helicopter facilities at their present location. No significant impacts are expected as the development would be in an area currently used for airport purposes.

East of Hana Highway. This location for the helicopter facility requires the acquisition and conversion of approximately 40 acres of "Prime" farmland to airport use. These impacts are considered insignificant given that the facility would be required to meet applicable Federal, State and County environmental protection rules, regulations and standards. Ground vehicle traffic congestion would be worsened at the adjacent intersection of Hana Highway and Haleakala Highway, particularly for the morning peak hour commute. All other impacts of this alternative are similar to those of the Proposed Project.

Off-Site. The impacts of relocating helicopter operations to an off-site location would be similar to those of the Proposed Project (preferred alternative) and are dependent on the off-airport site selected (see Section 4.4.3).

4.3.2.9 Transient And Military Aircraft Apron

DESCRIPTION. Three different locations were considered for the Transient Aircraft/Military Apron:

- East Ramp. Alternatives 1 and 2.
- North of Runway 5-23. Alternatives 3 through 5.
- Runway 5-23. Alternative 6.

IMPACT ANALYSIS. As stated above, long-term projects such as the Transient and Military Aircraft Apron and the parallel runway will be fully assessed in a future environmental document. The following is a brief summary of the environmental implications of locating the Transient and Military Aircraft Apron (the Apron) in the proposed locations:

East Ramp. This area is presently being used for other flight facilities. Therefore, the construction of the Apron at this location would have no significant environmental impacts. All other impacts of this alternative are similar to those of the Proposed Project.

North of Runway 5-23.

Archaeology, Historic and Cultural Resources: This location is identical to that included in the Proposed Project (preferred alternative) and, therefore, the impacts are identical. There may be significant impacts on Archaeological and Cultural features which are in the area. All other impacts of this alternative are similar to those of the Proposed Project. The mitigation measures are similar to those for the Proposed Project and described in Section 3.10.4. These mitigation measures include: (i) monitoring by a professional archaeologist; (ii) taking appropriate steps to minimize the disturbance of the site or loss of data; and (iii) additional surface and subsurface testing and data recovery at significant sites, as appropriate, prior to construction activities. If possible, burials will be avoided. However, if necessary, a burial treatment plan, approved by the Maui County Burial Council, will be instituted.

Wetlands: There would be a significant impact on the wetlands north of the airfield due to the transient apron size and location. The impacts on the wetlands could be mitigated by developing replacement wetlands closer to the shoreline or in the Kanaha Pond Wildlife Sanctuary. If these wetlands are developed to meet COE requirements, the level of significance after mitigation would be insignificant.

Recreational: The construction of the transient apron would also impact the proposed Northshore Greenway Bikepath. The impact on the Bikepath could be mitigated if an alternate route was found. After mitigation, the level of significance after mitigation would be insignificant.

Runway 5-23. This area is presently being used for other flight facilities. Therefore, the construction of the Apron at this location would have no significant environmental impacts. However, the closing of Runway 5-23 would have significant impacts on airport operations as discussed in Section 4.3.2.2. All other impacts of this alternative are similar to those of the Proposed Project.

4.3.2.10 East Ramp Access Road (Spine Road)

DESCRIPTION. The East Ramp Access Road (or Spine Road) alternatives are as follows:

- None. Alternative 1.
- East Ramp to Hana Highway (North side). Alternative 2.
- East Ramp to Hana Highway (South side). Alternatives 3, 4, and 5.
- East Ramp to Old Stable Road. Alternative 6.

The majority of the East Ramp Access Road is associated with Phase 3 of the development, but a small portion of this roadway is scheduled to be built in Phase 2. Therefore, it is being analyzed in this EIS.

IMPACT ANALYSIS. A detailed traffic analysis for these alternatives are provided in Appendix M.

Alternative 2. The use of Kala Road intersection with Hana Highway for access to the East Ramp would result in acceptable service levels during the peak traffic hours. This is based on an upgrading of Kala Road to a standard two-lane cross-section and provision of left-turn storage lanes at the intersection with Hana Highway. The addition of East Ramp traffic volumes along Hana Highway through the Haleakala Highway intersection would result in slightly worse conditions than with the Proposed Project. The elimination of the Spine Road (Proposed Project) and its traffic conflicts with Hansen Road traffic at the shared intersection, would result in a nominal improvement of conditions for Hansen Road traffic exiting onto Hana Highway. The congestion at Hana Highway-Haleakala Highway intersection would be slightly worse under this alternative than under the Proposed Project, but would remain insignificant. In addition, a new access would be needed to Hana Highway from the general aviation facility.

Alternative 3. The additional traffic caused by retaining helicopter operations on the East Ramp would result in worsening traffic problems at the intersections of Hana Highway/Spine Road/Hansen Road (realigned) and the Airport Access Roadway/Dairy Road and Airport Access Road/Puunene Avenue/Kuihelani Highway, when compared to the Proposed Project. This would be a significant impact as these intersections are near capacity and operate at a poor LOS. The mitigation measures would be similar to the Proposed Project.

Alternative 4. At the Pukalani Junction intersection of Hana and Haleakala Highways, the addition of traffic to/from the nearby heliport would increase morning peak hour volumes to near-capacity conditions, and increase vehicle delays. This would be a significant impact and would also require signalization at the heliport access roadway and Haleakala Roadway intersection. The net increase of heliport traffic and West Spreckelsville traffic along Hana Highway would slightly worsen conditions at the intersection with Hansen and Spine roads. This would be a significant increase and would require signalization of the intersection, similar to the Proposed Project. The addition of the West Spreckelsville traffic to the left-turn movement from southbound Airport Access Road onto the eastbound on-ramp to Hana Highway would increase delays during the afternoon peak hour. The impact would be significant and would potentially require signalization of the intersection.

Alternative 5. The heliport facility traffic would worsen conditions at the adjacent intersection of Hana Highway and Haleakala Highway, particularly during the morning peak hour when estimated volumes approach the intersection capacity. The increased traffic volumes at the intersection of Hana Highway and the Hansen Road/Spine Road would worsen delays for the cross streets. The access from the heliport would be at LOS E. These impacts would be significant and would need traffic signals at these intersections.

Alternative 6. The relocation of the East Ramp access to Old Stable Road would result in an increase in traffic between Hana Highway and the airport roadway into the general aviation area. The relocation of the access would also increase the volumes along the segment of Hana Highway from Old Stable Road to the Spine Road-Hana Highway intersection. The impact on traffic on Old Stable Road would be significant. Mitigation measures would possibly include signalization, and turn lanes.

4.3.2.11 Bulk Fuel Storage Facility

DESCRIPTION. Three different locations for the Bulk Fuel Storage Facility were considered:

- South of the East Ramp. Alternatives 1, 2, 3 & 4
- South of the West Ramp. Alternative 5.
- North of Runway 5-23 on Alahao Street. Alternative 6.

IMPACT ANALYSIS. The environmental implications of locating the Bulk Fuel Storage Facility (BFSF) and the associated piping to the aircraft apron in the four proposed areas are as follows:

South of the East Ramp. This alternative location would place the BFSF near Kalialinui gulch which drains into the ocean. The potential adverse impacts such as spillage, leakage and fire hazard would be mitigated by using proper design and complying with the applicable standards, rules

and regulations. The significance of the impacts after mitigation, by proper design, would be insignificant. All other impacts of this alternative are similar to those of the Proposed Project.

South of the West Ramp. This alternative location would place the BFSF near the passenger terminal and would have a potential significant visual impact. The visual impact could be masked and mitigated to a level of insignificance. Adequate separation of the tanks from the terminal should be maintained to minimize any fire hazard potential to the terminal. The potential adverse impacts such as spillage, leakage and fire hazard would be mitigated by using proper design and complying with the applicable standards, rules and regulations. The significance of the impacts after mitigation, by proper design, would be insignificant. All other impacts of this alternative are similar to those of the Proposed Project.

North of Runway 5-23 on Alahao Street. This alternative location would place the BFSF in the flood inundation zone, and would need additional protection against potential flood damage. Such protection could include a raised foundation and containment structures which meet the applicable requirements. The costs for this alternative location could be greater than that for other locations due to the need to meet tsunami inundation protection requirements. Potential adverse impacts such as spillage, leakage and fire hazard would be mitigated by using proper design, and by complying with the applicable standards, rules and regulations. The significance of the impacts after mitigation, by proper design, would be reduced to a level of insignificance. All other impacts of this alternative are similar to those of the Proposed Project.

MITIGATION MEASURES: The following mitigation measures are similar to those provided for in the Proposed Project, and do not reiterate the site specific mitigation measures mentioned above. The on-airport bulk fuel storage facility and associated pipeline to the apron will be designed to prevent potential impacts from spillage and leakage, and from fire hazard. These measures would be accomplished by using proper design, and by complying with the applicable standards, rules and regulations. The impacts after mitigation would be insignificant.

The design of the new on-airport fuel storage facilities and the associated piping to the aircraft apron shall be in compliance with all applicable federal and State codes, rules and regulations to prevent the contamination of soil, runoff and groundwater. These regulations include the State's Waste Water Management Regulations, Uniform Building Code, and National Fire Protection Association, 40 CFR 112, and US DOT Regulations, Title 49, Part 195 - *Transportation of Hazardous Liquids by Pipeline*. The mitigation measures which will be designed for the new fuel storage facility and piping will include: (i) containment berms or walls; (ii) oil/water separation systems; (iii) corrosion resistant coatings; (iv) filters; (v) applicable Spill Protection Containment and Countermeasures; and (vi) leak detection and monitoring. These facilities will be designed, constructed and operated by HFFC. Likewise, the future supply pipeline from the Harbor to the Airport's Fuel Storage Facility will be designed, installed and operated by HFFC. Due to the long-term nature of this facility, the potential impacts or proposed mitigation measures will be addressed in a future environmental analysis and required documentation.

4.3.3 ALTERNATIVE TO THE AIRPORT ACCESS ROADWAY

An alternative to construction of the Airport Access Roadway would be to widen Keolani Place and Dairy Road. Keolani Place and portions of Dairy Road have recently widened, to accommodate existing traffic demands. In addition, the remainder of Dairy Road is planned to be widened to five lanes. However, this widening of Dairy Road will be inadequate to accommodate existing and forecast traffic demand. To accommodate additional roadway widening of both Keolani Place and Dairy Road, would require acquisition of additional right-of-way from commercial and residential areas along these roadways. In addition, major modifications would be needed at the Hana Highway/Dairy Road intersection to accommodate the existing and forecast traffic volumes. Therefore, this alternative was not considered feasible or reasonable and removed from further consideration.

4.4 OTHER RUNWAY ALTERNATIVES

The following alternatives were not presented in the 1993 Kahului Airport Master Plan but have been suggested as alternatives during the scoping process or in the previous 1993 State EIS. The Declared Distance and 9,600 foot Parallel Runway serve as alternatives to the proposed runway lengthening project, while the relocation of helicopter operations was studied as a solution to problems associated with the long-term helicopter facility and existing airspace concerns. The relocation of general aviation activities is an alternative to the Parallel Runway and addresses the airfield capacity issue. The use of the old Puunene Airport (old Maui Airport) as an alternative for night cargo on a permanent or temporary basis during the closure of Runway 2-20 for the strengthening project is considered an alternative noise abatement measure.

4.4.1 DECLARED DISTANCES

A purpose for the runway lengthening project is to provide a greater takeoff range for aircraft presently departing from Kahului Airport, greater aircraft operational capability and airfield operational flexibility. Therefore, the Declared Distance alternative will study the impacts of increasing the takeoff distance with a stopway at existing Runway 2-20, instead of extending the runway to the southwest. FAA Advisory Circular (AC) 150/5300-13 (Section 11, Reference 22) defines stopway as a "rectangular surface beyond the end of a runway prepared or suitable for use in lieu of runway to support an airplane, without causing structural damage to the airplane, during an aborted takeoff." In addition, the takeoff run available (TORA), which is the distance from brake release to lift-off plus safety factors, cannot exceed the runway length. Therefore, if an aircraft needs 9,600 feet for the TORA, the stopway would have to be 2,600 feet long with a safety area. This extension to the north would place part of the stopway and all of the safety area into the Pacific Ocean. In addition, a similar stopway would needed to the south of the runway for takeoffs during the Kona wind conditions.

In addition, the FAA limits the use of declared distances to airports where it is impractical to extend either the runway or the associated safety and protection areas in accordance with the FAA design standards. This is not the case at Kahului Airport, as there is adequate land area for a runway extension to

the southwest. The use of a stopway would not increase the airport operational flexibility at Kahului. Therefore, based on the above, this alternative was deleted from further analysis.

4.4.2 9,600 FOOT PARALLEL RUNWAY

In this alternative, the current Runway 2-20 would not be lengthened and a parallel runway (Runway 2R-20L) would be constructed to a length of 9,600 feet, as shown in Figure 4-8, during the Phase 1 timeframe.

This alternative would increase the capacity of the airfield to meet the forecast aviation demand within the planning period and allow for the takeoff of aircraft to long-haul destinations with economical payloads. The construction of the parallel runway in the short-term would be more costly than extending Runway 2-20. However, it would provide redundancy to the airfield as it would have two runways which could accommodate all of the arriving aircraft and most of the departing aircraft. It would require the relocation of the East Ramp Access Roadway, the helicopter facilities and other support facilities as detailed in Phase 3 of the Proposed Project (preferred alternative). The existing Runway 2-20 would remain at its current length of 7,000 feet.

4.4.2.1 Impact Analysis

AIRCRAFT NOISE. The noise environment on the Airport and in its environs will change due to the use of the parallel runway. As this runway would be the primary takeoff runway, the aircraft generated noise levels would increase for those residences remaining in the East Spreckelsville area. Most of the residences in the west end of East Spreckelsville would need to be relocated due to the parallel runway.

AUTOMOBILE NOISE. There would be no automobile noise impacts since the parallel runway does not affect external automobile traffic conditions.

LAND USE. This alternative would require the acquisition of approximately 630 acres of land east of the existing airport boundary. The land use designation for approximately 550 acres would be changed from "Agriculture" to "Urban." An additional 80 acres north of Old Stable Road would be acquired for the Runway Protection Zone. The zoning of the land within the runway protection zone would change from "Open Space" and "Single Family" (East Spreckelsville) to "Airport." However, since this area would be outside of the safety area, it could be used for beach access and recreational purposes. The change in land use would be significant. Mitigation measures could include relocation assistance in accordance with applicable Federal and State laws, allowing recreational uses in the runway protection zone and land swaps for the agricultural acreage. It is unknown at this time whether the mitigation measures would reduce this impact.

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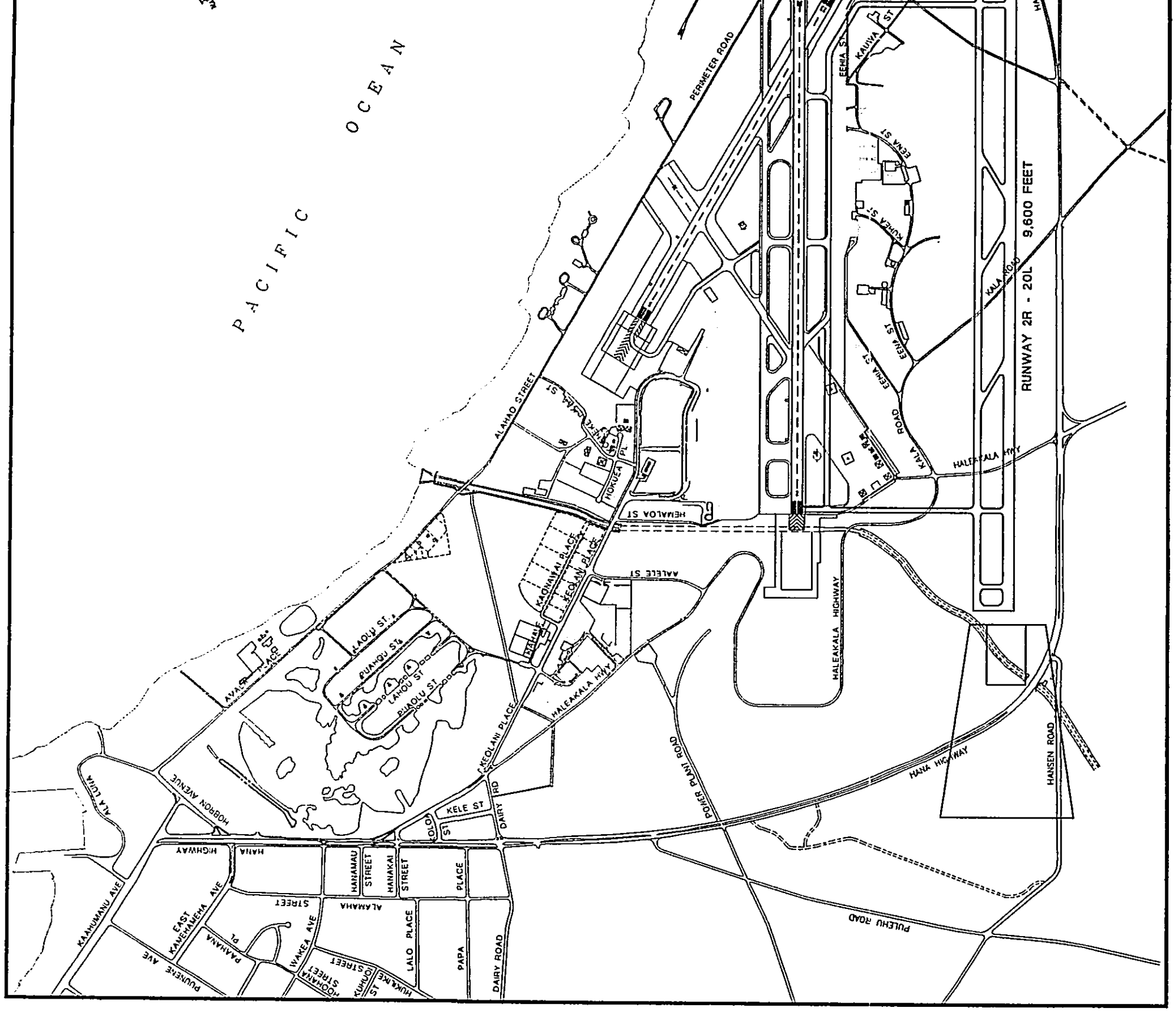

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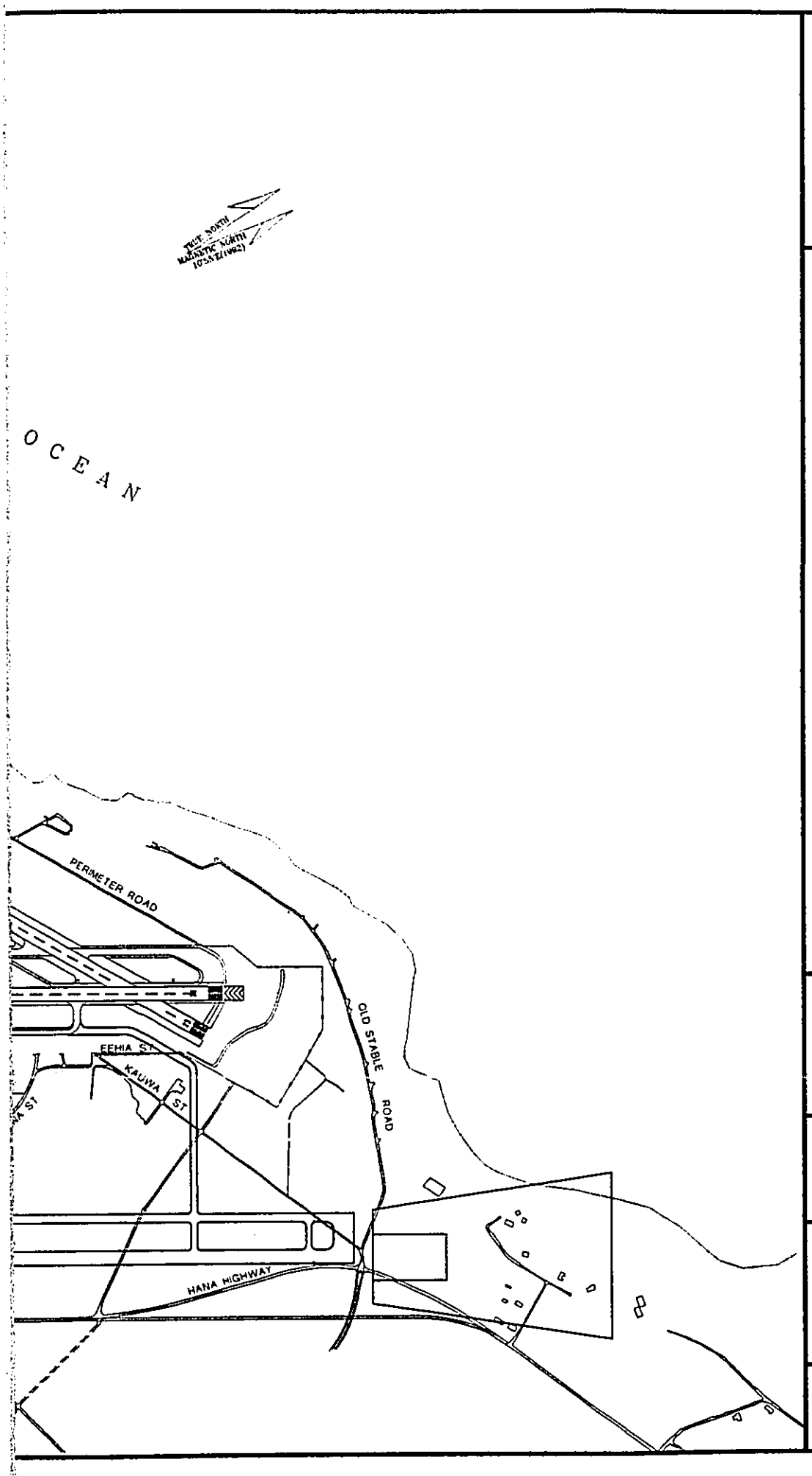

Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

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GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

9,600 FOOT PARALLEL RUNWAY ALTERNATIVE

DATE	FIGURE
JANUARY, 1997	4-8

This alternative would also relocate the helicopter operations to an off-airport location in Phase 1 of the master plan.

GEOLOGY, PHYSIOGRAPHY, SOILS, AGRICULTURAL POTENTIAL AND EARTHQUAKES. There will be insignificant impacts in this category for this alternative.

SOCIAL IMPACTS. The forecast increase in passengers and aircraft operations will cause impacts similar to those stated for the Proposed Project Therefore, the significance would be similar to the Proposed Project.

However, the 9,600 foot parallel runway as shown on Figure 4-8 would require the acquisition and relocation of about a dozen structures in the Spreckelsville community. This would be a significant impact. Mitigation measures would include relocation assistance as required by Federal and State rules and regulations. It is uncertain at this time, if the impact would be reduced to a level of insignificance.

WATER QUALITY. This alternative would require a change in the drainage in this area to accommodate the runway and associated taxiways. This drainage change could impact the offshore water quality. If the drainage improvements prevent runoff from entering the ocean, there would be no impact.

DEPARTMENT OF TRANSPORTATION (DOT) ACT, SECTION 4(F). This alternative would place the coastal area within the Runway Protection Zone and also require the relocation of the Northshore Greenway Bikeway and would be considered a significant impact. A possible mitigation measure would be to relocate the bikeway to an alternative route. Therefore, the impact would be insignificant after mitigation, if a suitable alternative route can be found.

HISTORIC, ARCHITECTURAL, ARCHEOLOGICAL AND CULTURAL RESOURCES. There would be impacts to areas which were old plantation camps. Since no subsurface studies were performed in this area, additional subsurface investigations would be needed prior to construction.

HYDROLOGY, FLOODPLAIN MANAGEMENT AND DRAINAGE. Because of the increased length of the runway, the parallel runway would require increased drainage improvements compared to the Proposed Project. However, the type of drainage improvements would be identical to that of the Proposed Project and would be considered an insignificant impact.

COASTAL ZONE MANAGEMENT (CZM) PROGRAM. A portion of the runway, taxiways, safety area and runway protection zone would extend into the Special Management Area. This use may not be consistent with the CZM program, if it disturbs the coastal processes, limits the recreational activities or shoreline access or change the coastal scenic view. This would be a potential significant impact.

FARMLAND. This alternative would convert 550 acres of "Prime" farmland (when irrigated) to non-agricultural uses and would be considered an insignificant impact.

VISUAL EFFECTS. This alternative would change the visual characteristics of the area from open space to airport use. This change would be significant. Mitigation could include landscaping and planting to mask the airport.

PUBLIC FACILITIES, INFRASTRUCTURE AND SERVICES AND AIRFIELD SAFETY.

Traffic. The new runway and associated facilities would cut-off the existing access (Old Stable Road) to West Spreckelsville. This would be a significant impact on the West Spreckelsville community. However, the access to West Spreckelsville could be relocated outside of the safety area and reduce the impact to a level of insignificance.

As with the Proposed Project (preferred alternative), the East Ramp access would need to be relocated for this runway alternative. Similarly, a spine road to Hana Highway would be the preferred alignment. Also, Hana Highway would need to be realigned as in the Proposed Project.

Infrastructure. Electrical improvements would accompany the development of the parallel runway and would be an insignificant impact.

Airfield Safety. The longer runway and increased capacity of the new runway would enhance the safety of the airfield by reducing congestion and aircraft delays. This would be a positive impact.

Construction Impacts. The impacts would be similar to those of the Proposed Project. However, the construction of the parallel runway would be in Phase 1, not Phase 3 or beyond.

4.4.3 RELOCATION OF HELICOPTERS/GENERAL AVIATION OPERATIONS TO AN OFF-AIRPORT SITE

The feasibility of relocating helicopter operations or general aviation operations to an off-airport site has been considered in the Maui General Aviation Site Selection Study ("site selection study"), which is attached to this EIS as Appendix R. The relocation of the helicopter activities was performed to address existing airspace concerns and to address the long-term helicopter facility location. The relocation of General Aviation would be an alternative to construction of a parallel runway at Kahului Airport to relieve forecast airport capacity issues, and, in essence, would require construction of the runway at another site.

The site selection study concluded that, in the short-term, the helicopter apron should remain at Kahului Airport but be relocated just east of the present helicopter hangars. The size of the interim

helicopter facility was modified to meet the existing demand and to allow construction within the Phase 1 period. In the long-term, when the parallel runway is constructed, the helicopter facilities would be moved off-site to Puunene Airfield. On the basis of the study, it was determined that general aviation operations should remain at Kahului Airport and that a parallel runway should be constructed to accommodate anticipated increases in demand.

In its analysis, the study initially researched former airfield/airport sites, previously studied sites and new sites. The sites are shown on Figure 4-9 and the preferred site is shown on Figure 4-10. The site selection study identified and evaluated ten airport/heliport site alternatives which potentially could reduce capacity and airspace concerns at Kahului Airport. These alternatives consist of various combinations of heliports, utility airports and transport airports. They are as follows:

- Alternative 1A, relocation of Kahului helicopter facilities to the east.
- Alternative 1B, new limited service heliport at an unspecified west Maui location and/or Puunene site.
- Alternative 2, new heliport at the south end of the former Puunene site.
- Alternative 3, new heliport located on the east side of the Puunene site.
- Alternative 4, utility airport/heliport at the Puunene site.
- Alternative 4A, new utility airport at the Puunene site.
- Alternative 5, new utility airport/heliport north of Kihei.
- Alternative 6, new utility airport/heliport east of Kahului Airport.
- Alternative 7, new heliport and new utility airport in separate locations at the Puunene site.
- Alternative 8, new transport airport/heliport at the Puunene site. (see Section 4.4.4)

Note that seven of the ten alternatives contemplate some use of the former Puunene airfield site (TMK 3-8-08:1). This is by design. According to the 1991 Court-ordered stipulation, which imposes certain special requirements on this EIS, the site selection study was to evaluate the potential reactivation of the Puunene site on a permanent basis for general aviation activity. The Puunene alternatives analyzed in the site selection study are intended to satisfy this requirement of the Court Order.

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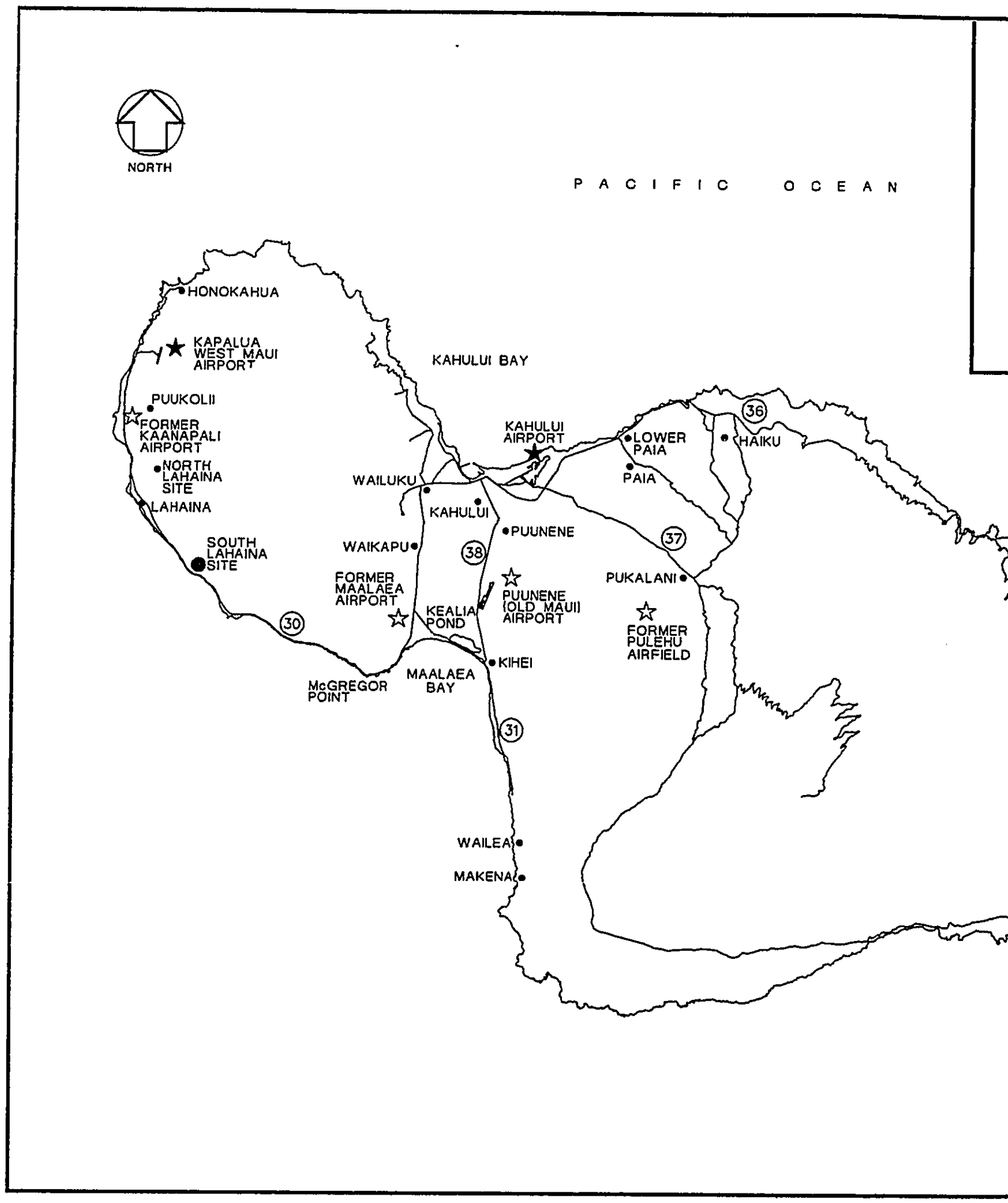
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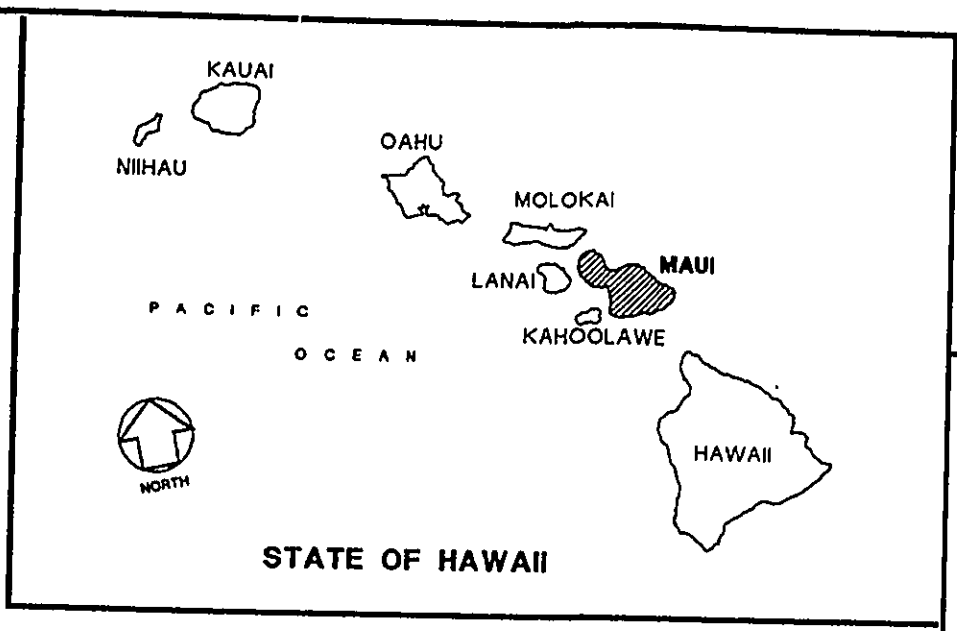
MAALAEA
AIRPORT
KEALIA
POND
PUUNENE
(OLD MAUI)
AIRPORT
PUKALANI
FORMER
PULEHU
AIRFIELD
30
KIHEI
McGREGOR
POINT
MAALAEA
BAY
31
WAILEA
MAKENA



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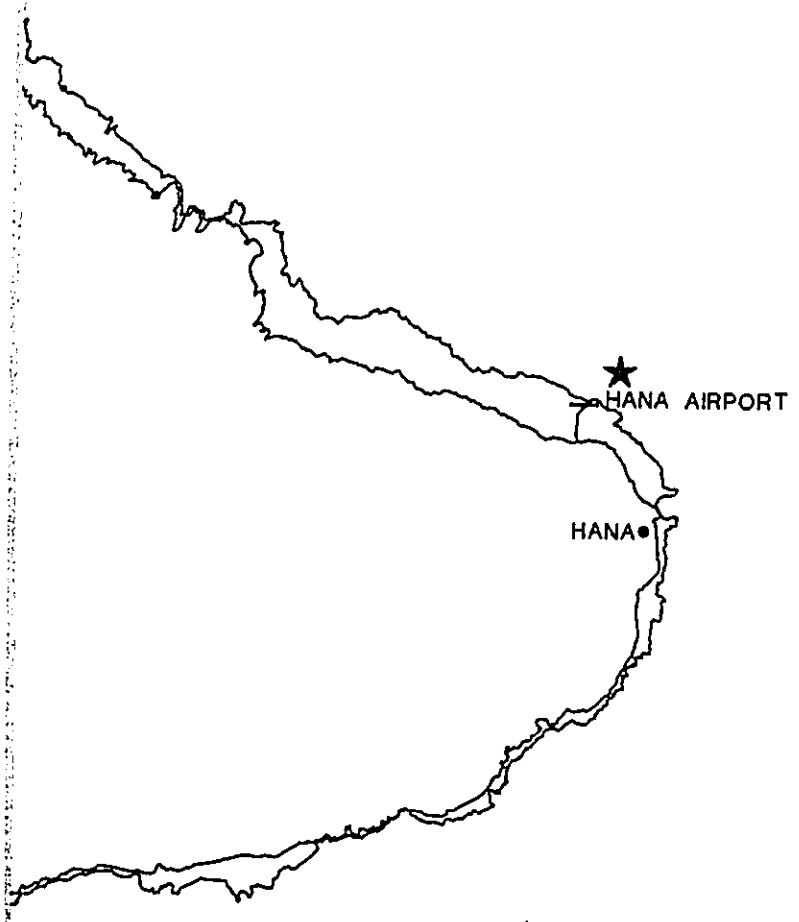


Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

LEGEND

- ★ EXISTING AIRPORT
- ☆ FORMER AIRPORT LOCATION
- ● PREVIOUSLY–STUDIED SITE
- (30) STATE HIGHWAY

0 1 2 3 4 5 6
GRAPHIC SCALE IN MILES

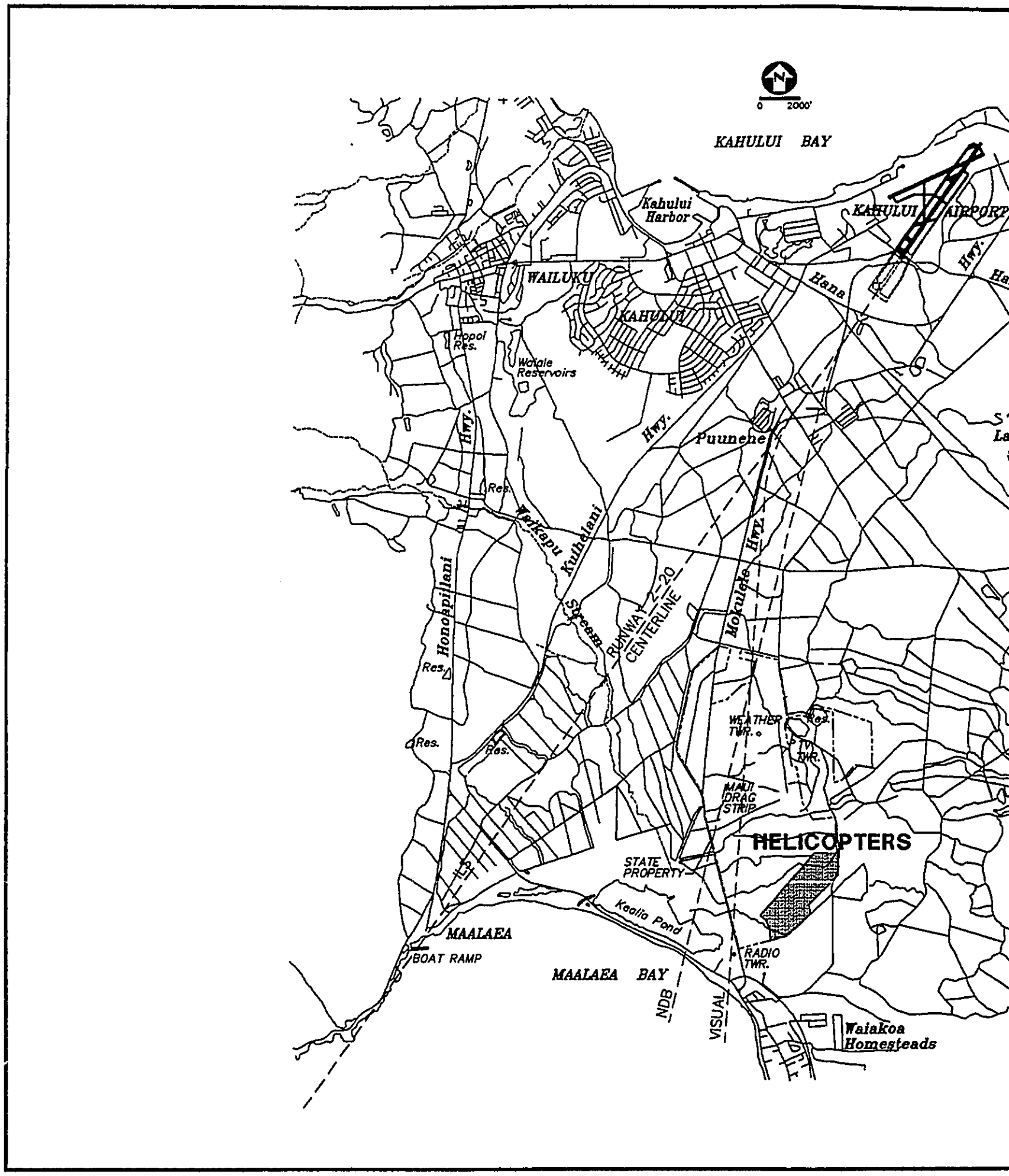
SOURCE :
MAUI GENERAL AVIATION SITE SELECTION STUDY

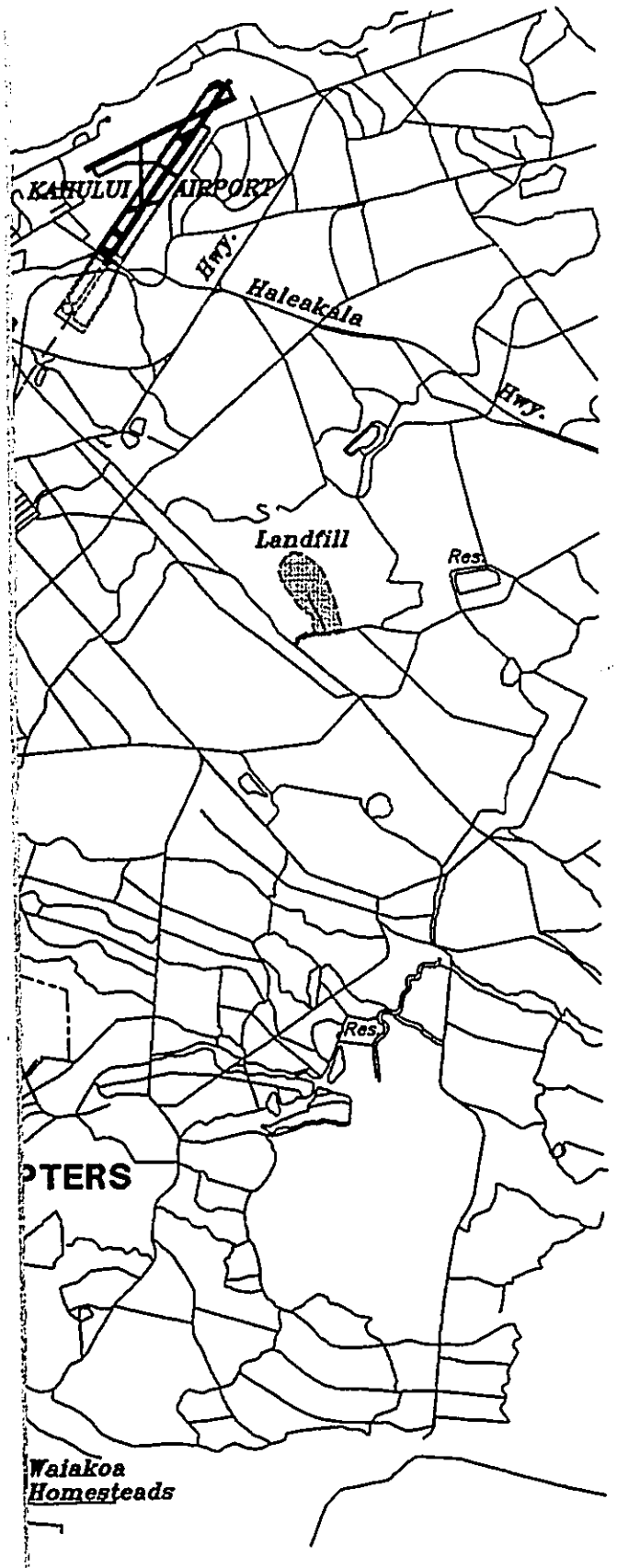
Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

ALTERNATE SITES STUDIED FOR RELOCATION OF HELICOPTERS AND GENERAL AVIATION

DATE	FIGURE
MARCH, 1996	4-9


N
0 2000'
KAHULUI BAY
Kahului Harbor
KAHULUI AIRPORT
Hwy.
Hana
WAILUKU
KAHULUI
Poppol Res.
Waiale Reservoirs
Hwy.
Puunene
Res.
Waikapu
Kuihelani Hwy.
Honoapiilani Hwy.
Stream
RUNWAY 2-20 CENTERLINE
Mokulele
Res.
Res.
WEATHER TWR.
Res.
TWR.
MALI DRAG STRIP
HELICOPTERS
STATE PROPERTY
Kealia Pond
MAALAEA
BOAT RAMP
MAALAEA BAY
RADIO TWR.
NDB
VISUAL
Waiakoa Homesteads



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

0 1 2 3 4
GRAPHIC SCALE IN MILES

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

SELECTED SITE FOR HELICOPTERS

DATE	FIGURE
MARCH, 1996	4-10

After identifying the ten alternatives, the site selection study developed six "site evaluation" criteria, which were then applied to the alternatives for purposes assessing their respective feasibility and comparative merits.

The first criterion relates to the physical constraints at the site, *e.g.*, whether a particular site possess the required facilities, whether the infrastructure provides enough capacity, whether there is additional land to allow for expansion, and whether the topography imposes limitations on flight activities. The second criterion addresses air service considerations such as proximity to air passenger demand, attractiveness to tenant business, and air service restrictions. Criterion three relates to aeronautical considerations such as airspace constraints, meteorological impacts (wind), and flight path obstructions. Criterion four addresses the environmental and land use impacts of each alternative. Criterion five relates to the costs associated with developing each alternative site as a general aviation/helicopter facility. And criterion six relates to the effect that each alternative site would have on the capacity problems forecast at Kahului Airport.

4.4.3.1 Impact Analysis

Each of the airport/heliport alternatives was evaluated according to the six criteria developed for the site selection study and discussed above. What follows below is a summary of that analysis.

THE PUUNENE ALTERNATIVES (1B, 2, 3, 4, 4A, 7). The former Maui Airport at Puunene (Puunene Airport) was the site of Maui's commercial passenger service airport from approximately 1938 to 1952, except for the period from 1941 to 1948. After Puunene closed in 1952, the site was essentially abandoned and facilities began to deteriorate. Today, 1,200 acres of the original 1,875 acre site are under agricultural (sugar cane) production. The primary airport buildings have been demolished or are not in usable condition. The only airfield pavement that visibly remains (most of the original pavement is covered with dirt) is a portion of one runway that is operated as a drag strip and a portion of an apron area used as a short runway for a crop-dusting business. No portion of the original airfield pavement would be suitable for fixed-wing aircraft operations (including small, general aviation aircraft) on a regular basis. In essence, then, the Puunene Airport no longer exists, except as a *former airport site*. As a result, there are no facilities at the Puunene site which, without major rehabilitation, can be reactivated for temporary use as suggested by the 1991 Court-order. The six Puunene utility/heliport alternatives evaluated in the site selection study all require the development of new facilities at the site. The time and cost of such projects would effectively prohibit the use of Puunene as a temporary airfield during construction of the runway improvements at Kahului Airport. Nevertheless, the former Puunene Airport was selected as a candidate site for relocated general aviation and helicopter activities because: (i) it was previously used as an airfield; (ii) its terrain is relatively flat and therefore conducive to aircraft operations; (iii) it sits entirely on land already owned by the State of Hawaii; and (iv) it can be accessed via existing roadways.

Alternative 1B. The first Puunene alternative, Alternative 1B, consists of developing a new limited-service heliport at an unspecified West Maui and/or Puunene site. Under this

alternative, new landing areas could be established at either or both sites as necessitated by demand and other market-driven forces. A limited-service heliport would be used only to enplane and deplane helicopter tour passengers. Unlike a full-service heliport, it would not have facilities to maintain helicopters or keep them overnight. In this concept, a small passenger terminal would be developed which would be shared by all tour operators using this facility. According to the site selection study, the cost of Alternative 1B does not justify its development, since it duplicates existing facilities and would provide only limited relief for Kahului Airport. Moreover, a new limited service heliport in the west Maui coastal area would not likely be supported by the surrounding communities, as seen in discussions on helicopter operations at the Kapalua (Kapalua-West Maui) Airport. This alternative may have potential significant adverse impact at certain roadway intersections.

Alternative 2. Alternative 2 would construct a new heliport along the southeast border of state owned property at the former Puunene Airport site. Because this alternative does not involve fixed-wing aircraft and therefore does not trigger the air space problems associated with some of the other options (see discussion below), it is considered viable and worthy of additional review as a long-term solution to the helicopter relocation problem. Note also that the FAA has tentatively stated that helicopter activities *within the former Puunene site would not conflict with fixed-wing approaches to Kahului Airport.* The potential significantly adverse impacts would be in the categories of vegetation and wildlife, energy, roadways, water quality, and public services.

Alternative 3. Alternative 3 would place the new heliport on the east side of the former Puunene Airport and would provide many of the same advantages provided by Alternative 2. This alternative would have less of an impact on the development in the Kihei area, but would be 0.6 miles closer to the approach to Runway 2-20 at Kahului Airport. Like Alternative 2, Alternative 3 does not involve the concerns attendant to fixed-wing aviation activities and therefore qualifies as a potential long-term solution for satisfying helicopter demand. The potential significantly adverse impacts would be in the categories of vegetation and wildlife, energy, roadways, water quality, and public services.

Alternative 4. Alternative 4 consists of a new utility airport combined with a new heliport at the former Puunene Airfield. The airport portion would be located at the center of the former airfield site to obtain the maximum separation from the Kahului Airport flight tracks while at the same time minimizing impacts on the developed areas at Kihei. The problems with Alternative 4 fall into two categories: physical site constraints and aeronautical constraints. As to the first, Alternative 4 would require the relocation of a radio and television tower, and would also necessitate that a bridge be constructed over Kolaloa Gulch, which bisects the primary runway. As to the second, Alternative 4's fixed-wing activities would create major flight path conflicts with Kahului Airport. Specifically, commercial jet aircraft on approach to Runway 2 at Kahului Airport overfly the Puunene Airport site at an altitude that would allow only 800 feet of vertical separation with the traffic pattern altitude of a new airport. The FAA has indicated that fixed-wing use of an airport at Puunene would be approved with an Air Traffic Control Tower. As a result of these physical site and aeronautical restrictions, Alternative 4 was determined to be unacceptable.

This alternative would have potentially significant adverse impacts on the categories of vegetation and wildlife, historical, energy, roadways, water quality and public services.

Alternative 4A. Alternative 4A is a variation of Alternative 4 and involves the development of a utility airport at the former Puunene Airfield but without the new heliport. Under this alternative, all helicopter activities would remain at Kahului Airport. However, because this alternative creates airspace conflicts similar to those created by Alternative 4, and does not relieve the airspace conflicts with helicopters at Kahului Airport, it was dropped from further consideration. This alternative would have potentially significant adverse impacts on the categories of vegetation and wildlife, historical, energy, roadways, water quality and public services.

Alternative 7. Alternative 7 contemplates a new heliport and new utility airport at separate locations within the former Puunene Airport site. The heliport would be located on the east side of Mokulele Highway on state-owned property at the north end of the site. The utility airport would be located at the southern end of the site, mostly on state property. Land would need to be obtained from private parties for portions of the runway protection zones. Although this alternative is better located than Alternatives 4, 4A and 8 with respect to Kahului Airport traffic, the flight patterns of the new site would overfly developed areas of Kihei, creating the potential for noise impacts to sensitive receptors. In addition, Alternative 7 would still require that the existing privately-owned television and radio tower be relocated, and that Kolaloa Gulch be bridged. The bridge project, among others, would involve sensitive environmental issues. For these reasons, and because the new airport would still be subject to an FAA airspace study, Alternative 7 was rejected as a viable option. This alternative would have potentially significant adverse impacts on the categories of vegetation and wildlife, energy, roadways, water quality and public services.

OTHER RELOCATION ALTERNATIVES (ALTERNATIVES 1A, 5 AND 6). In addition to the six utility/heliport "Puunene Alternatives," the site selection study also evaluated three general aviation/helicopter alternatives located at sites *other* than Puunene. These are Alternatives 1A, 5 and 6.

Alternative 1A. Under Alternative 1A, the helicopter facilities at Kahului Airport would be relocated to the east on property adjacent to the Airport (por. TMK 3-8-01:6). This property would have to be acquired for the relocated facilities. However, once acquired, this property would become part of the Airport. Thus, this option does not constitute a new site. A variation of this alternative would be to relocate the helicopter facilities to existing airport property immediately east of the present heliport. This alternative would have the advantage of not requiring the expansion of airport property, and helicopter activity there would have greater visibility by the air traffic control tower. This option is also attractive to the current tenants, as they could remain at their current sites. Because of its numerous operational and site advantages, Alternative 1A was recommended for additional review and consideration as a short-term solution to the helicopter facilities problem. No potentially significant adverse impacts are identified.

Alternative 5. Alternative 5 calls for a new utility airport/heliport at the 600 foot elevation north of the Kihei area. The runway would be located between Keahuaiwi and Kolaloa Gulches and would intersect Waiakoa Road. The south threshold of the Alternative 5 runway would be approximately 3.9 miles from extended Runway 2-20 at Kahului Airport. Compared to the Puunene sites, the Alternative 5 site has the advantage of being further away from the flight paths at Kahului Airport. In addition, aircraft noise and overflights at the site would not impact developed area. However, the site is not served well by the existing road system. A new paved access road of approximately three miles would be necessary to connect the site with State Highway 31 in the Kihei area. Also, all property for the airport at this site is privately owned and would have to be purchased by the state. Another disadvantage of this alternative is that it would cost approximately $46 million to implement, making it the second-most expensive alternative analyzed in the site selection study.[2] Although Alternative 5 is a viable option from an operational and physical point of view, it will require significant construction activities to develop the necessary facilities. The costs and environmental impacts associated with such construction activities make the alternative less attractive. This alternative would have potentially significant adverse impacts on the categories of vegetation and wildlife, energy, roadways, water quality and public services.

Alternative 6. Alternative 6 consists of a new utility airport/heliport located east of the Kahului-Wailuku area immediately south of Haleakala Highway. Measured laterally, the operative runway at this site would be 3.3 miles from the Runway 2-20 centerline at Kahului Airport. The site has the advantages of good accessibility from a major highway and close proximity to the Kahului-Wailuku area. Moreover, the aircraft noise and overflights at the site would not impact developed areas. However, all land for this site is privately owned and would have to be acquired by the state. Like Alternative 5, Alternative 6 is expensive, with projected costs of $43.28 million. And, again, the construction of the required facilities will create environmental impacts which currently do not exist at this site. For these reasons, Alternative 6 was not selected as a viable option. This alternative would have potentially significant adverse impacts on the categories of vegetation and wildlife, energy, roadways, water quality and public services.

SUMMARY OF OFF-AIRPORT RELOCATION ANALYSIS. With regard to helicopter operations, it was determined that they should remain at Kahului until or if and when, the parallel runway is constructed, at which time they should be relocated to a new site at the former Puunene Airfield. Moreover, the helicopter facility ultimately planned for Puunene should provide full rather than limited helicopter service. Due to the long range nature of this project, future environmental analysis and appropriate environmental documents will be prepared.

With regard to general aviation, it was determined that such activities should remain at Kahului indefinitely, and that a parallel runway be constructed to alleviate any capacity shortfalls. The airspace conflicts associated with reactivating the Puunene site for fixed-wing operations are significant and would be allowed by the FAA under certain conditions, including the installation of an Air Traffic Control

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[2] Alternative 8 was the most expensive alternative, with projected implementation costs of approximately $55 million.

Tower. The non-Puunene general aviation site alternatives eliminate the air space conflicts but would require land purchases from private parties, and would create both construction-related and operations-related impacts on the environment. In addition, these alternatives would be expensive to implement. For a full discussion of the relative merits and impacts of each of the ten alternatives assessed in this EIS, please consult the site selection study at Appendix R.

4.4.4 RELOCATION OF NIGHT CARGO FLIGHTS TO PUUNENE ON A TEMPORARY OR PERMANENT BASIS.

The site selection study also analyzed the use of the Puunene area as an alternative to removing night cargo flights from Kahului Airport on a permanent or temporary basis. This alternative studied was Alternative 8, new transport airport/heliport at the Puunene site, and presented in Appendix R. The 1991 Court-order requires that the EIS investigate the feasibility of "night cargo operation[s]" at Puunene. The analysis of Alternative 8 satisfies this requirement.

4.4.4.1 Impact Analysis

As stated above, the 1,200 acres of the original 1,875 acre site are under sugar cane production. The primary airport buildings have been demolished or are not in usable condition. Therefore, no portion of the original airfield pavement would be suitable for fixed-wing aircraft operations, especially large turbo-jet aircraft, on a regular basis. As a result, there are no facilities at the Puunene site which, without major rehabilitation, can be reactivated for temporary use as suggested by the 1991 Court-order. A new airfield would need to be developed and the design and construction time and cost of such projects would effectively prohibit the use of Puunene as a temporary airfield during construction of the runway improvements at Kahului Airport.

The development of a new transport category airport and a full-service heliport at the Puunene site, would accommodate turbine-powered corporate aircraft and air cargo flights with aircraft as large as the B-737. The site selection study determined that because cargo operators fly both day and night, it was not economically feasible or efficient to develop cargo handling facilities for *nighttime* departures only. Thus, the study assumed that the airport site under Alternative 8 would be used for both day and nighttime cargo activity. A related issue is that transferring cargo activity to the new airport would be inefficient for carriers which operate both passenger and cargo service, because cargo is shipped on passenger flights as well as all-cargo flights. Like the other fixed-wing site alternatives for Puunene (Alternatives 4, 4A and, to a lesser extent 7), Alternative 8 creates significant airspace conflicts with the aircraft approaching Runway 2 at Kahului Airport. This alternative also suffers from the same physical site constraints, *i.e.*, need to relocate TV and radio tower, need to bridge Kolaloa Gulch. In addition, the facilities contemplated under Alternative 8 would be expensive to develop (approximately $55 million) and duplicates existing facilities at Kahului. Because of its high cost and its physical and aeronautical constraints, and because it would not serve Maui's air cargo needs efficiently or cost effectively, Alternative 8 was rejected

and dropped from further consideration. The FAA has determined that the transport operations would not be compatible with the Kahului Airport operations.

Potential significant impacts would occur in the categories of aircraft noise, vegetation and wildlife, historical, energy, surface transportation, water quality, and public services. These impacts include the incompatible land use with Maui County's and DLNR's plans for Puunene, impacts on farmland, and displacement of the Maui Drag Strip and associated facilities (a DOT Section 4(f) impact). For a full discussion of the relative merits, impacts and mitigation measures are described in the site selection study (Appendix R).

4.5 ALTERNATIVE RUNWAY CONSTRUCTION PHASING

An alternative to the Proposed Project was to phase construction of the runway extension in such a way that a 1,500 foot extension would be initially constructed to lengthen the runway to 8,500 feet. In the future, a 1,100 foot runway extension would be constructed to increase the length to 9,600 feet. This alternative was not pursued as the initial 8,500 foot runway does not allow the current aircraft flying overseas (DC10-10 and L-1011) to reach airline hubs in the mid-west and beyond. One of the main objectives of the Proposed Project is to develop -- in Phase 1 of the Master Plan -- an airfield which would allow for long-haul aircraft operations. This option will add additional costs (several million dollars) to the project, as it would cause an additional relocation of the runway lights and landing aids, as well additional mobilization and demobilization costs. Therefore, this alternative does not meet the purposes and needs of the Proposed Project, would not be as cost effective as the Proposed Project (preferred alternative), and was not considered further. The environmental impacts of this alternative are identical to the Proposed Project.

4.6 INTERSECTION ALTERNATIVES FOR HANA HIGHWAY - AIRPORT ACCESS ROADWAY

Two alternatives were studied for the intersection of Hana Highway and the Airport Access Roadway. These are presented in detail in Appendix P. The first assumed an at-grade intersection, the second a diamond configured interchange. Both alternatives offer increased congestion and queuing and lower levels-of-service than does the Proposed Project. However, the Airport Access Road does have a positive effect on ground traffic in the Airport vicinity.

Other intersection/interchange alternatives which were screened but ultimately rejected during the initial technical feasibility evaluation are as follows. The initial technical feasibility evaluation is presented in Appendix P.

- Single-Loop Partial Cloverleaf was not proposed for further study since it represents only a minimal cost differential when compared to the Two-Loop Partial Cloverleaf, and requires a traffic signal on Airport Access Road.

- The Single Point Diamond Interchange was not advanced for detailed study due to its higher construction cost relative to limited operational advantages over the Conventional Diamond. The Single Point Diamond would also introduce a non-standard type interchange as the first interchange to be constructed on Maui.

- The Full Cloverleaf was not selected for further study since a very large additional cost may be needed to acquire property in the southwest quadrant, relative to the comparatively low volumes that would use this ramp. This configuration would likely result in weaving problems for westbound traffic volumes.

- The Semi-Directional Interchange was not selected for further study due to its very high cost.

The at-grade intersection and conventional diamond interchange were studied further and the impacts are similar to the Proposed Project in the following impact categories:

- Airport and Aircraft Noise
- Construction Noise
- Geology, Physiography, Soils, Agricultural Potential and Earthquakes
- Socio-Economic Impacts
- Secondary (induced) Socio-Economic Impacts
- Water Quality
- Department of Transportation (DOT) Act, Section 4(f)
- Historic, Architectural, Archaeological and Cultural Resources
- Biotic Communities
- Wetlands
- Coastal Zone Management Program
- Wild and Scenic Rivers
- Coastal Barriers
- Farmland
- Energy Analysis
- Light Emissions
- Solid Waste, Hazardous/Toxic Waste and Waste Wash Water
- Visual Effects
- Public Facilities, Infrastructure and Services and Aviation Safety

The following is an impact analysis for the other impact categories for the two alternatives.

4.6.1 AT-GRADE INTERSECTION

The at-grade intersection at Hana-Highway and the Airport Access Roadway would operate at a Level-of-Service (LOS) of F in the morning peak hour and LOS F in the afternoon peak hour in the year

2020. This assumes that Hana Highway remains with two through-lanes in each direction, separate right turn lanes on each approach, two left-turn lanes for turns from westbound Hana Highway, and one left turn lane for east Hana Highway.

4.6.1.1 Ground Vehicle Noise

The ground vehicle noise at the intersection would be similar to the Proposed Project and would be insignificant as there are no noise sensitive receptors in this area.

4.6.1.2 Land Use

The impacts would be the same as for the Proposed Project.

4.6.1.3 Air Quality, Climate and Meteorology

There would be no impacts in the areas of climate and meteorology. The at-grade intersection would increase the amount of vehicle emissions due to increased congestion. The carbon monoxide levels due to ground vehicle traffic at major intersections would be less than the carbon monoxide levels under the "No-action" alternative at these same intersections. The at-grade intersection would have much higher emissions than would the partial cloverleaf in the Proposed Project, and would exceed both State and national standards. The estimated 1-hour carbon monoxide emission levels for the at-grade intersection would be 43.7 mg/m^3 for the morning peak hour and 32.8 mg/m^3 for the afternoon peak hour. The corresponding emission levels for the clover leaf ramps in the Proposed Project are substantially less, at less than 10 mg/m^3 for both morning and afternoon peak hours. Likewise, the estimated worst-case 8-hour carbon monoxide concentrations are substantially less with the Proposed Project.

4.6.1.4 Hydrology, Floodplain Management and Drainage

Although the infrastructure configuration would change due to the different roadway layout, the impacts would be similar to the Proposed Project and are insignificant.

4.6.1.5 Visual Effects

Compared to the cloverleaf of the Proposed Project, the at-grade intersection would have less of a visual impact. The impact would be insignificant.

4.6.2 AT-GRADE INTERSECTION WITH TRAVEL DEMAND MANAGEMENT MEASURES

Another alternative considered, was the use of Travel Demand Management (TDM) measures, in conjunction with the at-grade intersection. TDM measures are used to reduce vehicle travel

during the peak traffic hours and include: (i) ride-sharing (carpools, vanpools); (ii) public transportation; (iii) and staggered or flex-time work hours. These TDM measures were evaluated in Appendix P. The evaluation concluded that TDM measures already exist at Kahului Airport due to the characteristics inherent to Airport operations. An estimated 25 to 30 percent of the air passengers presently arrive/depart in high occupancy vehicles (tour vans, charter buses, taxis). Air operations and air passenger activity are evenly distributed throughout the day and evening hours, with a peak occurring around midday. Employee work shifts are likely to already exhibit considerable use of staggered work hours given the multi-shift operations and the need for employees to staff airport operations throughout the day and evening hours. It is unlikely that increased TDM measures would reduce the peak hour travel through the Hana Highway-Airport Access Roadway intersection to effectively increase the LOS. Therefore, this alternative is not considered a reasonable or viable alternative.

4.6.3 DIAMOND INTERCHANGE

Under the 2020 "average day" scenario, a diamond interchange at the intersection at Hana-Highway and the Airport Access Roadway would operate at a Level-of-Service (LOS) of B in the morning and afternoon peak hours for both ramps. The benefit/cost ratio for the diamond interchange was 1.70 as compared to the Proposed Project benefit/cost ratio of 1.42. However, beyond the first 10 years, the partial cloverleaf as recommended in the Proposed Project provides increasingly higher benefits, and beyond the 30 year time frame should widen its benefit/cost ratio advantage over the diamond interchange.

4.6.3.1 Land Use

The diamond interchange may require additional land from A&B Hawaii, in the southwest quadrant of the intersection. The amount of land needed will depend on the design of the interchange and would be no more than a 40 foot strip of land. Other land use impacts would be similar to that of the Proposed Project. The impact to land use would be insignificant, provided there are no developments on the additional land area required for this interchange.

4.6.3.2 Air Quality, Climate and Meteorology

There would be no impacts in the areas of climate and meteorology. The carbon monoxide levels due to ground vehicle traffic at major intersections would be less than the carbon monoxide levels under the "No-action" alternative at these same intersections. The diamond interchange would have lower emissions than the at-grade intersection, but would have much higher emissions than the partial cloverleaf in the Proposed Project. The carbon monoxide emissions would exceed both State and national standards. The diamond interchange intersection would increase the amount of vehicle emissions due to queuing at the two signaled intersections on the Airport Access Road. The emissions levels are approximately five times greater than those of the Proposed Project and are presented in Table 4-8.

Table 4-8
COMPARISON OF ESTIMATED WORST-CASE
CARBON MONOXIDE CONCENTRATIONS FOR THE INTERCHANGE
(AVERAGE WEEKDAY)

INTERCHANGE RAMP	1-HOUR (milligrams/cubic meter)				8-HOUR (milligrams/cubic meter)	
	DIAMOND		PARTIAL CLOVER-LEAF		DIAMOND	PARTIAL CLOVER-LEAF
	AM	PM	AM	PM		
Eastbound Ramp	25.4	26.7	5.1	4.8	9.3	1.8
Westbound Ramp	29.4	18.2	3.5	3.9	10.3	1.4

4.6.3.3 Hydrology, Floodplain Management and Drainage

Although the infrastructure configuration would change due to the different roadway layout, the impacts would be similar to those of the Proposed Project and are insignificant.

4.6.3.4 Visual Effects

Compared to the cloverleaf of the Proposed Project, the diamond interchange would have similar visual impacts and is considered to be insignificant.

4.7 OTHER TRANSPORTATION MODES

The only practical mode of interisland transportation in Hawaii, other than by air, is by ocean surface vessel. This alternative cannot feasiblely provide the quality and quantity of service required by residents and visitors to the state. Other than barge and container freight service and passenger cruise ships operating on weekly schedules, all attempts at ocean transport have thus far ended in failure. This mode of transportation is neither presently available nor considered to be developable as a viable alternative transportation mode for interisland and trans-Pacific destinations.

4.8 SUMMARY OF IMPACTS

Table 4-9 summarizes the significance of the potential impacts for those alternatives which meet most of the purpose and needs of the project. Impacts whose significance levels under the various alternatives are

similar (almost identical) to those under the Proposed Project are shown as "--." Note that the impact of an alternative may have the same significance level as that of the Proposed Project, but the impact itself may be different. In addition, the level of significance indicated is that prior to mitigation. The legend at the bottom of the table defines the abbreviations used in denoting levels of significance. The alternatives which do not meet most of the purpose and needs for the project are not included in the summary. The rejected alternatives include Master Plan Alternatives 1, 2 and 6, Declared Distances, relocation of general aviation or night cargo activities to an off-airport site, alternate runway construction phasing, widening of Dairy Road/Keolani Place, and other transportation modes. The impact analysis for the relocation of helicopters to an off-airport site will be performed in a future environmental document, as this project is in the long-range planning process and also dependent on the construction of a parallel runway.

4.9 ENVIRONMENTALLY PREFERABLE ALTERNATIVE

Through the analyses described in Section 3.0 and this section, the Proposed Project (preferred alternative) has been determined to be the "Environmentally" (natural, social and economical) Preferable Alternative. HDOT-AIR recognizes that the "No-Action" alternative may result in less short-term effects on the natural environments of the immediate project area and Maui County in general. However, the analyses performed clearly indicate that the positive long-term effects of the Proposed Project (preferred alternative) outweigh the negative long-term effects of the "No-Action" alternative. Similarly, each of the various 1993 Master Plan alternatives, runway length and configuration alternatives, as well as the various alternative facilities locations investigated, offer varying degrees of potential positive and negative environmental effects in the short- and long-term. However, the Proposed Project (preferred alternative) allows the efficient and effective integration of all airport facilities and operations such that the result is a cost effective and environmentally compatible project.

TABLE 4-9
SUMMARY OF POTENTIAL IMPACTS OF ALTERNATIVES ANALYZED
(NON-CUMULATIVE)

ALTERNATIVE	ENVIRONMENTAL ISSUE AREA/LEVEL OF SIGNIFICANCE*																				
	Noise	Land Use	Geol/Physiog/Soils/ Ag. Potential	Socio-economics	Secondary Socio-economic Effects	Air Quality	Water Quality	DOT Sec. 4(f)	Historic/Archaeology	Biotic Communities	Wetlands	Hydro/Floodplain Management	CZM Program	Wild/Scenic Rivers	Coastal Barriers	Farmland	Energy Analysis	Light Emissions	Solid/Liquid Wastes	Visual Effects	Public Facilities	Traffic
PROPOSED PROJECT	I/S	I/S	I	I/S	I	P/S	I	I/P	I/S	I	I	I	I	N/A	I	I	I	I	I	I	I	S/P
NO-ACTION	I/S	N	N	I	S	S	N	N	N	I	N	N	N	–	N	N	–	–	I	N	I	S
MASTER PLAN ALTERNATIVES																						
Alternative 1	–	I	I	I	S	S	I	I	I	I	I	S	–	–	–	I	–	–	–	–	–	S/P
Alternative 2	–	–	I	I	I	P/S	I	I	I	I	I	S	–	–	–	I	–	–	–	–	–	S/P
Alternative 3	–	I	–	I/S	I	–	I	N	–	–	–	S	–	–	–	–	–	–	–	–	–	S/P
Alternative 4	S	S	I	I/S	I	–	S	S	S	–	–	S	S	–	–	I	–	–	–	S	–	S/P
Alternative 5	–	I/S	I	I/S	I	–	I	N	–	–	–	–	–	–	–	I	–	–	–	S	–	S/P
OTHER RUNWAY ALT.																						
9,600 Foot Parallel	S	S	I	S	I	P	I	S	S	I	–	I	S	–	–	I	S	I	I	S	–	S/P
HANA HWY/ACCESS																						
At-grade Intersection	I	–	–	–	–	S	–	–	–	–	–	I	–	–	–	–	–	–	–	I	–	S
Diamond Interchange	I	I	–	–	–	S	–	–	–	–	–	I	–	–	–	–	–	–	–	I	–	I

* Level of Significance: P = Positive; S = Significant Negative; I = Insignificant; N = None; – = The impact is the same (identical) as Proposed Project
** NOTE: that although the level of significance of the impact may be the same as the Proposed Project, the impact itself may be different.

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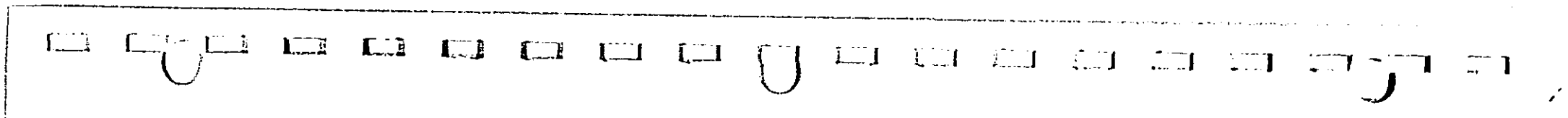

SECTION 5.0
CUMULATIVE IMPACTS

The State of Hawaii environmental review process requires that an EIS discuss the potential cumulative environmental impacts of the proposed action and other related projects. In addition, NEPA requires that an EIS discuss the cumulative effects that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of which agency or person is undertaking the project. The discussion below describes the cumulative impacts of the Proposed Project (preferred alternative) when combined with regional and statewide issues, and the impacts of the following actions or projects:

- Triangle Square Factory Stores;
- Kahului Industrial Park (Maui Business Park), Phases Ia, Ib, II, III, IV;
- Kmart and Costco;
- Redevelopment of Kahului Shopping Center;
- Maui Northshore Greenway Bikeway;
- Aircraft Rescue and Fire Fighting (ARFF) Station;
- ARFF Training Facility;
- Acquisition of Land for the Airport Access Roadway;
- Relocation of the VORTAC;
- U.S. Postal Service Facility; and
- International Flights

5.1 IMPACT ANALYSIS AND MITIGATION

This section will discuss the significant cumulative impacts of the proposed airport projects with those of regional and statewide issues and other known planned improvements and their respective mitigation measures, if applicable. The impacts were analyzed using the affected environment, impact categories and significance criteria stated in Section 3. The Proposed Project creates no cumulative impacts for the following impact categories:

- Noise
- Geology, Physiography, Soils, Agricultural Potential and Earthquakes
- Socio-Economic Impacts
- Secondary (Induced) Socio-Economic Impacts
- Air Quality, Climate and Meteorology
- Department of Transportation (DOT) Act, Section 4(f)
- Historic, Architectural, Archaeological and Cultural Resources
- Biotic Communities (except for alien species)
- Wetlands
- Coastal Zone Management Program
- Coastal Barriers
- Wild and Scenic Rivers
- Light Emissions

The following is a project-by-project analysis of those impact categories for which there are airport-related cumulative impacts. The commercial development of the Triangle Square Factory Stores, Kmart and Costco and the Redevelopment of Kahului Shopping Center have been grouped together because these projects are in the same general vicinity and their cumulative impacts are similar. Similarly, the ARFF Station, ARFF Training Facility, the land acquisition for the Airport Access Roadway, the relocation of the VORTAC and the new U.S. Postal Facility are grouped together.

5.1.1 TRIANGLE SQUARE FACTORY STORES, KMART AND COSTCO AND THE REDEVELOPMENT OF KAHULUI SHOPPING CENTER

5.1.1.1 Land Use

IMPACT ANALYSIS. The Airport Access Road is a key factor in the traffic situation in the Dairy Road area, as it is being relied upon to reduce traffic congestion at the intersections which involve Keolani Place, Haleakala Highway, Hana Highway and Dairy Road. This new road has an impact on the County of Maui's planning decisions for the following developments: (i) Kahului Industrial Park, which is now known as the Maui Business Park, Phases Ia, Ib, II, III, IV; (ii) Triangle Square Factory Stores; (iii) Kmart and Costco; and (iv) Redevelopment of Kahului Shopping Center. If the Airport Access Road is not constructed, the traffic mitigation measures associated with the development of this area would be adversely affected. The Kahului Shopping Center Redevelopment, Kmart and Costco have been completed. The Triangle Square Factory Stores is presently under development. The Maui Business Park, Phase Ia has been developed, Phase Ib is scheduled to be developed in 1999, with Phases II, III, and IV to be developed after 2005. The land uses changes for the Kahului Shopping Center Redevelopment, Kmart, Costco and the Triangle Square Factory Store developments are completed. Because of the Maui Business Park and the airport improvements, the area around the airport will change from an "Agricultural" to an "Urban" setting. The change in land use is considered an insignificant impact.

MITIGATION MEASURES. Since the Airport Access Road provides beneficial reductions in traffic congestion, mitigation measures for this project component are not necessary.

5.1.1.2 Energy Analysis

IMPACT ANALYSIS. Cumulative energy consumption would be an insignificant impact as long as demand does not exceed the capacity of Maui Electric Company. The forecasts indicate that there will be adequate resources to meet island-wide demand during the planning period.

MITIGATION MEASURES. No mitigation is required at this time.

5.1.1.3 Solid Waste, Hazardous/Toxic Waste And Waste Wash Water

IMPACT ANALYSIS. The generation of solid waste, and hazardous/toxic waste would be an insignificant impact given that the cumulative demand is not expected to exceed the capacity of Maui County's disposal system. There would be no cumulative impacts on waste wash water.

MITIGATION MEASURES. No mitigation is required at this time.

5.1.1.4 Public Facilities, Infrastructure And Services And Airfield Safety

IMPACT ANALYSIS. The use of Public Facilities and infrastructure would be an insignificant impact given that the cumulative demand for facilities and infra-structure is not expected to exceed the capacity of Maui's infrastructure. The exception is that the water capacity in the Airport's environs will be exceeded as the general growth on Maui increases, with or without the Proposed Project.

MITIGATION MEASURES. The increase in water demand is largely a factor of overall growth on Maui and is not related to the Proposed Project. However, there are specific elements of the Proposed Project that will reduce the use of potable water at the airport, namely: (i) the use of nonpotable water for landscape irrigation; and (ii) the proposed water system improvements will replace older water lines which may be leaking. Although, the Proposed Project will reduce the Airport's share of the overall demand, these measures will not eliminate the water shortage.

5.1.1.5 Traffic

IMPACT ANALYSIS. The forecast increase in passengers, the forecast growth of Maui's population, and the development or redevelopment of the land areas in the airport vicinity will create future traffic congestion along Keolani Place, Hana Highway, Dairy Road and Puunene Avenue. The construction of the Airport Access Road in the Proposed Project (preferred alterative) significantly reduces the traffic congestion on most of the affected intersections. However, the traffic analysis shows an unacceptable level-of-service at the Kuihelani Avenue and Puunene Avenue intersection, whether or not the

Airport Access Road is constructed. The traffic analysis performed for this EIS has included these developments (Triangle Square, Kmart, Costco, and the Kahului Shopping Center) and forecast population growth in the background traffic levels.

MITIGATION MEASURES. As the Airport Access Road and other traffic improvements are expected to significantly reduce the traffic congestion around the entrance into Kahului Town, no mitigation measures are necessary. However, at the intersection of Kuihelani and Puunene Avenue, additional mitigation measures are needed. These could include the widening of the north and south bound lanes to three (3) lanes for about 1,000 feet. This mitigation measure would be the responsibility of the State of Hawaii, Department of Transportation. This mitigation measure would improve the intersection Level-of-Service (LOS) to C during the morning peak hour and LOS D during the afternoon peak hour. A detailed discussion of the mitigation measures is presented in Section 3.22.8.6.

LEVEL OF SIGNIFICANCE AFTER MITIGATION. The mitigation measures would reduce the impacts to an insignificant level.

5.1.2 MAUI BUSINESS PARK, PHASES IA, IB, II, III, IV

5.1.2.1 Land Use

IMPACT ANALYSIS. The Maui Business Park – along with the Triangle Square Factory Stores, Kmart and Costco, and Redevelopment of Kahului Shopping Center -- will increase traffic congestion in the airport area. The Airport Access Road is being relied on to reduce traffic congestion at the intersections which involve Keolani Place, Haleakala Highway, Hana Highway and Dairy Road. If the Airport Access Road is not constructed, the traffic mitigation measures associated with the development of this area would be adversely affected. The Maui Business Park, Phase Ia has been developed, Phase Ib is scheduled to be developed in 1999, with Phases II, III, and IV to be developed after 2005. The Phase Ia and Ib land use changes have been completed. A&B Hawaii, Inc. has obtained the zoning and an incremental land use approval for Phase II. The land uses changes for Phases III and IV of the Maui Business Park have not been obtained. With the Maui Business Park and the airport improvements, the area around the Airport will change from an "Agricultural" to an "Urban" setting. The change in land use is considered an insignificant impact.

MITIGATION MEASURES. Since the Airport Access Road provides beneficial reduction in traffic congestion, mitigation measures for this project component are not necessary.

5.1.2.2 Hydrology, Floodplain Management And Drainage

IMPACT ANALYSIS. Both the Airport Access Road and the development of sugar cane crop land for the Maui Business Park will have an impact on the drainage of the land area southwest of the Airport and west of Hana Highway. Although the Airport Access Road itself has been

designed to minimize impacts, the addition of the Maui Business Park development by A & B Properties, will cause a significant change in the drainage pattern in this area.

MITIGATION MEASURES. As stated in Section 3.12.4, HDOT-AIR has mitigated the impacts of the Airport Access Road by allowing runoff to pass beneath the road through a series of inlets and culverts.

Based on the existing drainage scheme for the Airport Access Road, A & B Properties has developed a Drainage Master Plan for Phase I of their development. In addition, the State of Hawaii, Department of Land and Natural Resources (DLNR) is proposing a Kahului Flood Control Project for this area. In order to build Phase II of the Industrial Park, A & B Properties must develop a drainage plan for Phase II in accordance with the DLNR Flood Control Project. HDOT-AIR will be cooperating with DLNR during implementation of the Flood Control Project as it applies to the Airport Access Road. At this time, the drainage proposed for Phase Ia of the A & B development would have the runoff draining into the A & B concrete ditch. The drainage from Phase Ib would be handled by retention basins on A & B property. The Drainage Master Plan may provide some revisions to the Airport Access Road drainage system and will be coordinated, as necessary, with DLNR and A & B properties. A possible alternative relates to the use and widening of the confluence of the A & B Ditch and Kalialinui Drainage Channel.

In addition, all new facilities will be designed to meet federal and state flood zone and coastal high hazard rules and regulations to minimize potential damage from flooding or tsunamis.

LEVEL OF SIGNIFICANCE AFTER MITIGATION. There should be insignificant effects to the drainage and floodplain from the proposed airport improvements and Phase I of the A & B Properties development. The effects for Phase II of A & B Properties development will depend on the outcome of the DLNR Kahului Flood Control Project and cannot be known at this time.

5.1.2.3 Farmland

IMPACT ANALYSIS. The proposed Airport Access Road and relocated navigational and light aids will withdraw from production approximately 139 acres of sugar cane cropland by the year 2010. The amount of lost farmland will increase to approximately 700 acres if the parallel runway (Runway 2R-20L) is constructed. As stated earlier, the 700 acres makes up about two (2) percent of A&B Hawaii, Inc. agricultural lands. In addition, the Maui Business Park will remove approximately 340 acres of sugar cane crop land. The cumulative impact of removing these 1,040 acres of agricultural land from active production will not be significant because sugar growers have other land on Maui available. It should be noted that the area (about 500 acres) slated for Phase 3 development will remain in agricultural production, until such time the need for additional aviation facilities are warranted.

MITIGATION MEASURES. The State and County of Maui are encouraging diversified agriculture activities in other areas of the island. These measures will help offset the loss of sugar cane production in the airport area, and throughout the State.

5.1.2.4 Energy Analysis

IMPACT ANALYSIS. The consumption of energy, in total, would be an insignificant impact given that it does not exceed the capacity of Maui Electric Company.

MITIGATION MEASURES. No mitigation is required at this time.

5.1.2.5 Solid Waste, Hazardous/Toxic Waste And Waste Wash Water

IMPACT ANALYSIS. The cumulative generation of solid waste, and hazardous/toxic waste would be an insignificant impact given that it does not exceed the capacity of Maui County's disposal system. There also would be no cumulative impacts on waste wash water.

MITIGATION MEASURES. No mitigation is required at this time.

5.1.2.6 Visual Effects

IMPACT ANALYSIS. There will be a change in the visual character of the area with the development of the airport improvements and planned Maui Business Park. These developments will change the landscape from an agricultural setting to an urban setting. This impact is considered insignificant.

MITIGATION MEASURES. No mitigation is required at this time. However, landscaping to meet the State and County rules and regulations would lessen the impact.

5.1.2.7 Public Facilities, Infrastructure And Services And Airfield Safety

IMPACT ANALYSIS. As stated in Section 3.0, the use of Public Facilities and infrastructure would be an insignificant impact given that cumulative demand is not expected to exceed the capacity of Maui's infrastructure. The exception is with the forecast increase of water demand which will exceed the sustainable yield of the Iao aquifer. As stated in Section 3.0, this is a significant cumulative impact but not one created by the Proposed Project.

MITIGATION MEASURES. Although the increase in demand is not related to the Proposed Project, the Airport has proposed, as part of the Proposed Project, the use of nonpotable water for landscape irrigation. This will reduce its share of the overall demand. In addition, the proposed water system improvements includes the replacement of older water lines, which should contribute to a reduction of water use on the Airport.

LEVEL OF SIGNIFICANCE AFTER MITIGATION. Because the forecast shortfall in potable water from the Iao aquifer is largely a factor of projected growth on Maui, the Airport's efforts at water conservation, however successful, will not by themselves, eliminate the water shortage. The impact on all users of the Iao aquifer will remain significant.

5.1.2.8 Traffic

IMPACT ANALYSIS. The forecast increase in passengers, the forecast growth of Maui's population, and the development or redevelopment of the land areas in the airport vicinity will create future traffic congestion along Keolani Place, Hana Highway, Dairy Road and Puunene Avenue. The construction of the Airport Access Road in the Proposed Project (preferred alterative) significantly reduces the traffic congestion on most of the affected intersections. However, the traffic analysis shows an unacceptable level-of-service at the Kuihelani Avenue and Puunene Avenue intersection, whether or not the Airport Access Road is constructed. The traffic analysis performed for this EIS has included these developments in the background traffic levels.

MITIGATION MEASURES. As the Airport Access Road and other traffic improvements are expected to reduce significantly the traffic congestion around the entrance into Kahului Town, no mitigation measures are necessary. However, at the Kuihelani and Puunene Avenue intersection, additional mitigation measures are needed. This could involve the widening of the north and south bound lanes to three (3) lanes for about 1,000 feet. This mitigation measure would be the responsibility of the State of Hawaii, Department of Transportation. The mitigation measure would improve the intersection Level-of-Service (LOS) to C during the morning peak hour and LOS D during the afternoon peak hour. A detailed discussion of the mitigation measures is presented in Section 3.22.8.6.

LEVEL OF SIGNIFICANCE AFTER MITIGATION. The mitigation measures would reduce the impacts to an insignificant level.

5.1.3 MAUI NORTHSHORE GREENWAY BIKEWAY

The Maui Northshore Greenway Bikeway, being developed by Maui County, is a specialized project that will cause few impacts to the environment. In fact, the Bikeway is not expected to affect the following impact categories: Land Use; Hydrology, Floodplain Management and Drainage; Farmland; Energy Analysis; Solid Waste, Hazardous/Toxic Waste and Waste Wash Water; Visual Effects; Public Facilities, Infrastructure and Services and Airfield Safety; and Traffic. The Bikeway is only expected to have beneficial effects to the recreational facilities.

5.1.3.1 Recreational Facilities

IMPACT ANALYSIS. The development of the Kanaha Beach Park extension and the Northshore Greenway Bikeway will increase the accessibility of the public to those coastal areas north

of the Airport. The increased access potential and large beach area would have a significant positive effect on recreational opportunities for residents and tourists. These improvements have been planned to allow better use of the beach and shoreline facilities.

MITIGATION MEASURES. The Kanaha Beach Park and Bikeway improvements have been planned to improve the access to recreational facilities in the airport area. Additional mitigation measures for these projects are not necessary. These projects will be designed to avoid impacting any wetlands in the area.

5.1.4 AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF) STATION, ARFF TRAINING FACILITY, ACQUISITION OF LAND FOR THE AIRPORT ACCESS ROADWAY, RELOCATION OF THE VORTAC, AND U.S. POSTAL SERVICE FACILITY

The environmental impacts of the ARFF Station, ARFF Training Facility, the land acquisition for the Airport Access Roadway, and the Relocation of the VORTAC have been covered in separate environmental documents. At this time, the construction of the ARFF Station has been completed the ARFF Training Facility is under construction, the land acquisition for the Airport Access Roadway has been completed, and the relocation of the VORTAC has been completed. Upon review of the previous environmental documentation, there will be no significant cumulative impacts.

At present, the U.S. Postal Service has plans to place a temporary structure on the Airport at the area designated for their use. This facility and the Proposed Project are not expected to cause any significant cumulative impacts. The U.S. Postal Service will comply with appropriate Federal rules and regulations.

5.1.5 REGIONAL IMPACTS

The Airport's Proposed Project will not cause significant direct impacts on water quality, water supply and health care. However, when assessed on a regional or island-wide level, the impacts in these categories are potentially significant. Their impact analysis and applicable mitigation measures are described below.

5.1.5.1 Water Quality

IMPACT ANALYSIS. As presented in Section 3.8, the geometric means for the nearshore samples collected specifically for this EIS exceed the respective water quality criteria for turbidity, nitrate + nitrite, ammonium and total nitrogen. The mean level for total phosphorus is below the WQS criterion. These results are similar to the previous 1981, 1990 and 1993 data, and are fairly typical for nearshore waters around Hawaiian waters. In other words, most nearshore waters in the Hawaiian islands, including Maui, exhibit excessive levels of certain water quality parameters (*e.g.*, turbidity, ammonium). The high concentrations of these parameters are due to surface run-off. The analysis performed for this EIS

confirms that the Airport's contribution to the surface run-off into Kalialinui Gulch and resultant water pollutant levels is, by itself, very small. However, the total run-off into Kalialinui Gulch, created by *all* activities in the study area including natural processes, would constitute a significant *cumulative* impact.

ON-AIRPORT MITIGATION MEASURES. As stated in Section 3.8.4, the HDOT-AIR will implement certain mitigation measures to minimize impacts during construction of the new facilities. These measures include using best management practices consistent with State Department of Health rules and regulations and the State's non-point source pollution management program. Following construction, ramp areas will be provided with runoff water impoundment areas, and new facilities will be connected to the drainage catchment system. As necessary, oil/water separators will be installed to minimize the runoff of petroleum products. Equipment wash areas will be equipped with waste wash water collection facilities, and the new fueling facilities will be bermed and underlain by impermeable membranes to prevent soil, runoff and groundwater contamination.

To further minimize the effects resulting from grading and construction activities, applicable Federal, State and County rules and regulations will be implemented. The following is a brief discussion of these measures:

- State and County erosion and sediment control measures, including the use of sediment retention basins, will be employed during construction to minimize storm water runoff. Following construction, berms and landscaping will assist in reducing runoff flows and will direct flows to drainage channels. As applicable, the appropriate State and County permits will be obtained and Best Management Practices will be developed prior to construction activities.

- New facilities will be designed and constructed to meet federal and state flood zone requirements and coastal high hazard rules and regulations to minimize potential damage from flooding or tsunamis.

- As further described in Section 3.12.4, HDOT-AIR has mitigated the impacts on the floodplain for the Airport Access Road by allowing runoff to pass beneath the road through a series of inlets and culverts.

  Based on the existing drainage scheme for the Airport Access Road, A & B Properties has developed a Drainage Master Plan for Phase I of their development. In addition, the State of Hawaii, Department of Land and Natural Resources (DLNR), is proposing a Kahului Flood Control Project for this area. In order to build Phase II of the Industrial Park, A & B Properties must develop a drainage plan for Phase II in accordance with the DLNR Flood Control Project. HDOT-AIR will be cooperating with DLNR

during implementation of the Flood Control Project as it applies to the Airport Access Road. At this time, the drainage proposed for Phase Ia of the A & B development would have the runoff draining into the A & B concrete ditch. The drainage from Phase Ib would be handled by retention basins on A & B property. The Drainage Master Plan may provide some revisions to the Airport Access Road drainage system and will be coordinated, as necessary, with DLNR and A & B properties. A possible alternative relates to the use and widening of the confluence of the A & B Ditch and Kalialinui Drainage Channel.

LEVEL OF SIGNIFICANCE AFTER MITIGATION. Because the mitigation measures only pertain to Airport facilities, and the amount of runoff is small in comparison to the total flow, the cumulative impact on the nearshore waters would remain significant.

5.1.5.2 Water Supply

IMPACT ANALYSIS. As stated in Section 3.22.1, the Iao aquifer has an estimated sustainable yield of 20.1 million gallons per day (mgd). Recently, the State Commission on Water Resource Management warned the Maui Board of Water Supply that the water demand has exceeded the sustainable yield. The County's Department of Water Supply (DWS) has estimated that the Iao aquifer has sustainable yield of 20.1 mgd. DWS has also estimated that the future average demand for all uses will be 30.5 mgd. As the existing and forecast future demand for all uses exceeds the estimated aquifer yield, the County has initiated the development of other water sources in East Maui. Although the amount of use from Airport facilities is small, the exceedance of the aquifer's sustainable yield is a significant cumulative impact for the region.

MITIGATION MEASURES. The water supply shortage expected by the year 2010 is a function of the projected increase in growth on the island. HDOT-AIR has included in the Proposed Project a non-potable water system for irrigation to reduce the amount of potable water consumption at the Airport. In addition, an integral part of the proposed airport improvements includes the expansion and rehabilitation of the existing airport water supply system. This work will alleviate much of the present leakage that is occurring from the older distribution lines. The potential use of non-potable water for landscape irrigation, use of plant species that are salt tolerant and drought-resistant, recycling rental car wash water and replacing deteriorating water lines will assist in reducing airport water consumption. The potential areas that would be served initially by the non-potable water system is the West Ramp facilities along Keolani Place, including the parking areas, frontal roads and the commuter facilities. In addition, landscaping for the new Airport Access Roadway and the Kanaha Beach Park Expansion could be served by non-potable water.

LEVEL OF SIGNIFICANCE AFTER MITIGATION. Because the forecast shortfall in potable water from the Iao aquifer is largely a factor of projected growth on Maui, the Airport's

efforts at water conservation, however successful, will not by themselves, eliminate the water shortage. The cumulative impact on all users of the Iao aquifer will remain significant.

5.1.5.3 Health Facilities

IMPACT ANALYSIS. Maui Memorial Hospital, as with other state and private health care providers, is subject to insufficient funding, shortages of acute care beds and difficulties in hiring staff. The shortage of acute care beds is critical, with occupancy generally over 90 percent. Visitors to Maui use approximately 5 to 10 percent of the total beds at the hospital. The 1990 *Strategic Plan for Maui Memorial Hospital and Hana Medical Center* noted that planning issues related to the Rapid Deployment System for Emergencies were of importance to the proposed airport improvements. Several doctors and hospital staff have indicated that the hospital would have difficulty handling a major aircraft accident.

For reasons unrelated to the Airport and airport operations, health care facilities on Maui are presently hampered in the efficient delivery of medical services. These deficiencies require correction to accommodate natural increases in population and visitors. The proposed airport improvements in and of themselves are not expected to affect or be affected by existing or planned health care services and facilities. However, deficient health care facilities will remain a significant cumulative impact for the island.

MITIGATION MEASURES. The proposed airport improvements are not expected to affect health care facilities or services on the island. Therefore, mitigation measures are not warranted.

LEVEL OF SIGNIFICANCE AFTER MITIGATION. Because the forecast shortfall in is a island-wide impact, the impact will remain cumulatively significant.

5.1.6 STATEWIDE IMPACTS

5.1.6.1 Alien Species

IMPACT ANALYSIS. As described in Section 3.11.3, the introduction of harmful alien species to the State of Hawaii has been a problem for over a century, and has recently become a major public issue throughout the state. Currently, it is estimated that each year, approximately 20 to 30 new alien insects make their way to Hawaii through various pathways and become established. Annually, about three (3) of these species turn out to be economic pests. At present, no one can predict which alien species might be introduced to Maui or the State due to the Proposed Project, or what impacts these alien species may have.

Harmful alien species are those organisms, plants, predators and insects which thwart the shipment of local produce to other overseas markets; damage native forests, streams and watersheds; compete with and cause the extinctions of native flora and fauna; and carry diseases that affect native species, agricultural crops, livestock and humans (Section 11, Reference 21).

As in the past, HDOT-AIR will support the DOA and the USDA in developing and implementing a program of increased inspection of incoming baggage. The USDA inspects all international aircraft and passengers, with the exception of the pre-cleared Canadian flights. International inspection by USDA is funded from an international arrivals inspection fee of $1.45 per passenger. This fee is paid by the passenger, collected by the airline as part of the ticket cost, and then paid by the airline to USDA. There is also an inspection fee of $53 per aircraft paid by the airline for USDA to inspect the plane and the cargo. Because it is separately funded, obtaining personnel for USDA inspection of international arrivals is not difficult; in fact, it is mandated by federal law. This should not be confused with USDA pre-clearance inspection for domestic (US) flights which is paid out of the federal government's general fund. In addition to USDA fees, the international arrivals fees for Customs is $5.00, and for Immigration and Naturalization Service (INS) is $5.00. These are collected the same way as USDA's fees, by the airlines. All tolled international passengers each pay $11.45 in arrival fees. If scheduled international flights begin at Kahului Airport, HDOT-AIR must provide adequate facilities for the Federal Inspection Services, including USDA and INS to conduct their inspections.

Currently, at least 20 state, federal, and private organizations are active in the prevention and control of alien pest and spend over $50 million each year to address this problem. Recently, over 80 state, federal, businesses, private and non-profit groups have collaborated in the Alien Species Action Plan (ASAP) Working Group to produce a strategy to strengthen Hawaii's protection against this pest invasion. The Working Group has prepared recommendations which are presented below and in Appendix Q. As stated in Section 3.11.3, the Coordinating Group on Alien Pest Species (CGAPS) was created from the ASAP program and a public information brochure has been published on the alien species issue (See Appendix U). As part of the EIS and as requested by the U.S. Department of Interior, Fish and Wildlife Service, a biological assessment was completed on the potential incremental increase on the "introduction rate" of alien species that may occur as an indirect effect of the Proposed Project. The biological assessment is summarized below and in Section 3.11.3, and the biological assessment is presented in Appendix U. A "no jeopardy" biological opinion was issued on July 23, 1997 by the USFWS on the Proposed Project and is also presented in Appendix U.

The action area for the biological assessment included the Airport and the remainder of Maui. Approximately, 53 percent of Maui is devoted to agriculture (the majority of agriculture being non-native plants and animals), and the remaining 47 percent consists of disturbed as well as intact native Hawaiian ecosystems. For example, there are reported to be over 8,000 species of alien plants currently in Hawaii that have arrived as purposeful or inadvertent introductions. The introduction of harmful alien species into the State has been a problem since the first migration of Polynesians to Hawaii, and has increased due to increased air and ship travel and urbanization of the world, State, and Maui.

A part of the Department of Interior's concerns was the potential increased risk to Haleakala National Park, related to the introduction rate of alien species. The National Park Service views the proposed airport improvements (especially the runway extension) as a project which could potentially incrementally increase the "introduction rate" of alien species. According to the NPS, this incremental

increase in the "introduction rate" may increase the risk to the native species and ecosystems that form a integral part of Haleakala National Park, as well as other parks, sanctuaries and reserves on Maui. The impact on the Haleakala National Park is discussed in Section 3.9. The National Biological Services has stated in a letter (National Biological Service, Lloyd Loope, Ph.D. to National Park Service, April 12, 1996):

> *"... that this EIS process is the first formal opportunity the U.S. Department of the Interior has had to address the problem. I realize that it is not entirely the responsibility of the federal and state Departments of Transportation to remedy this problem, but I am confident that it is their responsibility to bring the problem to light in the EIS and to make good faith efforts, in cooperation with other responsible agencies (all participants in the Alien Species Action Plan), to mitigate."*

As forecast in the State Airport System Plan (SASP) and the recent updated forecasts, there will be an increase in passengers and cargo to Maui with or without the Proposed Project. As a result, the potential for the introduction of alien flora or fauna species (pests) to Maui (or increasing the rate of introduction) may also increase. As stated above, the introduction of alien species is an existing problem, and will continue to be a problem in the future with or without the Proposed Project. Moreover, alien flora or fauna species may be introduced through other ports of entry in the State, not just through Kahului Airport. Thus, the problem is considered to be a significant cumulative statewide issue.

MITIGATION MEASURES. As stated in Section 3.11, the HDOT-AIR will continue to work with various Government agencies to deter the introduction of alien species (especially pests) through its airports. The mitigation measures proposed in the biological assessment and biological opinion were developed in connection with the Proposed Project and are intended to supplement mitigation measures set forth in the Draft EIS. It is recognized in the studies, that the FAA and HDOT-AIR have a limited role in the control or interdiction of alien species. Therefore, the proposed mitigation measures are in support of the Federal and State agencies that have the responsibility for the inspection for alien species at the Airport. The two primary agencies are the HDOA, which is responsible for inspection of alien species on domestic arrivals, and USDA which is responsible for inspection of alien species on international flights.

The conclusion of the "no jeopardy" biological opinion is that the following mitigation measures should be taken at Kahului Airport to reduce the "introduction rate" of any alien species due to the Proposed Project to the extent possible, and to also mitigate the present rate of alien species arriving on overseas flights. As recognized in the biological assessment, these mitigation measures have been developed to intercept the whole spectrum of potential alien pests, as specific alien species that may impact listed and candidate species were not identified. Therefore, these mitigation measures will apply equally toward alien species that may impact native species, native ecosystems, agriculture and humans and will be in effect by the completion of Phase 1 of the Proposed Project..

PRE-ENTRY

- *Pre-entry Traveler Education about Alien Species.* The HDOT-AIR will support the CGAPS in their educational role of informing the traveling public of the dangers of alien species, particularly in promoting an Alien Species Video acceptable for in-flight viewing.

- *Notification of New Routes to Maui.* The HDOT-AIR, as a member of CGAPS, will keep CGAPS informed of any new proposed domestic or international routes to Maui. CGAPS members include the Hawaii Department of Agriculture, the U.S. Department of Agriculture, and the Fish and Wildlife Service.

- *Treatment of Cargo Holds.* The HDOT-AIR, will develop a voluntary program for all airlines serving Kahului Airport using a non-chemical best practical pesticide/pest prevention treatment program for aircraft cargo spaces.

PORT-OF-ENTRY

- *Traveler Education Regarding Alien Species Risks, Quarantine Restrictions, and Penalties.* The HDOT-AIR shall support efforts by CGAPS and others to adequately and effectively inform arriving passengers of the dangers posed by alien species, the nature of quarantine restrictions, and the penalties for violations. Current CGAPS plans are for this education program to be self-supporting, therefore, funding commitment is not required.

- *Training of Airline and Airport Personnel in Alien Species Recognition and Response.* A voluntary education program will be planned and implemented by HDOT-AIR that will train airport employees, baggage handlers, airline cabin personnel, and others. This program will educate these personnel to recognize and report smuggled animals and plants/fruit, stowaway snakes and insects, and new alien species on airport grounds. HDOT-AIR will coordinate the planning of this program with HDOA, USDA and CGAPS.

- *Arrival Inspection Facilities.* The HDOT -AIR will support HDOA domestic arrival inspection by installing a data link between arrival gates and baggage claim, installing one X-ray machine to test the feasibility of inspecting arriving baggage, installing a paging system at baggage claim, and supplying office space, kennels and inter-terminal golf carts as necessary. HDOT-AIR will furnish the infrastructure and support to adequately meet USDA inspection needs for international arrivals.

- *Additional Agriculture Arrival Inspectors.* The HDOT-AIR will fund one additional inspection dog and three additional agriculture inspector positions, one of which will act as a handler for the dog, bringing the total to eleven inspectors and two dogs. In light of the proposed measures in the project, and with these additional inspectors, HDOA has

determined that it will be able to adequately inspect incoming domestic air traffic associated with the project.

- *New Air Cargo Building.* The HDOT-AIR will design and construct a new air cargo building to meet existing and forecast demands, to include an industrial air curtain barrier to prevent escape of any insects during inspection of air cargo containers; offices and facilities for U.S. Customs, USDA and HDOA; lab space, freezer and sterilization/incineration facilities; space for X-ray equipment; and computer equipment and facilities for the HDOA alien species database system.

- *Quality Control Program.* The HDOT-AIR will design and fund, on an ongoing basis, a comprehensive program to monitor the efficacy of the alien species interdiction system at Kahului Airport. The program shall be designed in consultation with HDOA, USDA, and CGAPS, and shall be developed and operated by a consultant or agent under the control and management of HDOT-AIR. The program will provide yearly reports to all concerned agencies. These reports shall include summaries of all alien species interceptions from all airport-based operations, their origin and mode of arrival, to the extent possible, and estimates of the efficiency of the inspection system for various taxonomic groups of concern. HDOA will take the lead in developing these estimates which should be based in part on tests of the system (*e.g.*, attempted smuggling, random sampling of passenger effects and cargo, complete inspections of aircraft). The yearly reports shall also include recommendations to improve efficiency of the inspection system and the quality control program itself. The program will be integrated with the existing USDA Quality Control system for international arrivals.

EARLY DETECTION/RESPONSE AND OTHER MEASURES

- *Security Committee.* The HDOT-AIR will encourage the Kahului Airport Security Committee to include alien species control as an element under its purview

- Brown Tree Snake: The HDOT-AIR will review the Brown Tree Snake Control Plan (Aquatic Nuisance Species Task Force 1996) to determine its applicability to all airports within the State.

- *Alien Arthropod Detection and Response.* The HDOT-AIR will, on an ongoing basis, contract with a consultant in entomological pest identification to assist Animal Damage Control in conducting semi-annual monitoring of the airport environs to detect early establishment of new alien insects, particularly social hymenoptera (ants and wasps) and biting diptera (midges, flies and mosquitoes). Results will be communicated to the HDOA and the Quality Control Program HDOT-AIR will assist HDOA and USDA with

manpower, resources and funds in the eradication of any detected population within the Kahului Airport boundary.

LEVEL OF SIGNIFICANCE AFTER MITIGATION. The impact of alien species is a statewide problem and will not be fully resolved in this EIS. The issue will continue to be significant problem with or without the Proposed Project, as alien species will continue to be introduced through other pathways, such as purposeful introductions, mail, and other ports-of-entry. Due to the statewide nature of the alien species problem, the responsibilities of inspection, quarantine, enforcement, identification, eradication, and authority for the interception of alien species, is a responsibility of many agencies within the Federal and State governments. These agencies, including the USDA, USFWS, NPS, HDOA, and DLNR, have expertise with alien species and have been involved in the ASAP, CGAPS and the biological assessment studies. The responsibilities of these agencies are included in the studies reprinted in Appendix Q and U.

5.1.7 INTERNATIONAL OPERATIONS

Direct international round-trip flights and permanent Federal Inspection Service (FIS) facilities may have an impact on the growth-inducing effects of the project. However, the future expansion of domestic or international service could occur with or without the Proposed Project and is beyond the control of the FAA and HDOT. Rather, it will be a result of many factors which contribute to an airline's decision to provide service to an area including, but not limited to the following: (i) availability of hotel accommodations; (ii) general economic conditions; and (iii) the marketing scenarios. The growth inducing impacts are summarized in Section 6.0 and Section 8.2. An analysis of the potential environmental impacts of international flights is discussed in Section 8.2, including the environmental impacts of a International Facility (interim and permanent) on the Airport. Permanent FIS (international) facilities are not proposed at the Airport at this time because the forecasts do not indicate that this type of facility is required to accommodate projected international flight operations until at least the year 2010, with or without the proposed runway extension project. A detailed analysis of the socio-economic and growth impacts are presented in Appendix E (Socio-economic Impact Assessment). In addition, direct international flights to Maui has led to a concern about the introduction of alien species into Maui's ecosystem and is also addressed in Section 8.2.

SECTION 6.0
GROWTH INDUCING IMPACTS

The potential for the Proposed Project (preferred alternative) to induce growth and consequently affect the physical and social infrastructure of Maui has been studied in the *Socio-Economic Impact Assessment Report* (SIAR) contained in Appendix E. This comprehensive study focuses on impacts caused principally by growth in the visitor industry attributable to lengthened runways and international arrival facilities. It was determined that these two facilities, more than any other proposed improvements at the Airport, would have the greatest potential to induce growth. A lengthened runway is included in the Proposed Project and is examined accordingly. The potential growth-inducing impacts of the parallel runway were analyzed to the extent practical and feasible at this time. However, prior to the construction of the parallel runway additional environmental analysis will be completed in order to determine what, if any, further environmental documentation is required. No permanent Federal Inspection Services (FIS) facilities are proposed at Kahului Airport at this time. To the extent possible, impacts associated with FIS facilities are discussed in Section 8.2 and the growth inducing impacts are discussed in this Section. As to the Project's induced *socio-economic* impacts, these are discussed in Section 3.0.

There is a common misconception that infrastructure in and of itself promotes growth. Actually, infrastructure *facilitates* growth but does not *induce* it. New airport infrastructure, such as that proposed in the 1993 Kahului Airport Master Plan (Proposed Project), will allow the Airport to operate more efficiently under existing and forecast growth conditions but would not necessarily be the cause of growth. The SIAR investigates those infrastructure elements, namely runway extensions and international arrival facilities, which are suspected of being growth-inducing. This study, and others done for this EIS (*e.g.*, the aviation studies in Appendix N), examine similar situations at other airports for cause and effect relationships.

Within the State of Hawaii, there are several examples where new facilities have generated little or no growth. Hilo International Airport is illustrative of this situation. Hawaii has also experienced situations where growth occurred despite the fact that the *existing* facilities could not efficiently accommodate the traffic. Kahului Airport itself was placed in this position in the 1980s when tourism grew rapidly and the existing passenger terminal was not able to accommodate that demand properly, thus resulting in passenger inconvenience.

6.1 LENGTHENED RUNWAY

A lengthened runway could potentially induce growth at Kahului Airport, because such a runway would allow for direct overseas flights from Maui to domestic and international destinations presently beyond the range of aircraft operating from the existing 7,000 foot long runway. A longer and strengthened runway would allow existing and future aircraft to carry more air cargo and a greater number of passengers, and thereby operate more efficiently. The specifics of these considerations with regard to various runway length

alternatives, present and future aircraft serving Kahului, and domestic and international cities potentially served by Kahului Airport are discussed in Section 4.0 and Appendix N.

As stated in Section 3.0, the SIAR concluded that there would be insignificant or no growth impacts due to the lengthening of the runway. However, the study performed a sensitivity analysis on this conclusion by asking the hypothetical question: "*If a growth-inducing impact does occur after all, what is the maximal likely effect on Maui's tourism and residential growth by 2010?*" For the purposes of this analysis, two different growth scenarios were analyzed:

- Removal of Constraints: Without the runway extension and nonstop flights some of the forecast growth might actually be constrained; and

- Added Demand: The runway extension and nonstop flights may somehow generate even more visitor demand than is being forecast.

To assure a reasonably comprehensive assessment and discussion of potential socio-economic effects, including "growth-inducing" effects of the proposed airport *improvements*, the cumulative impacts of those improvements have also been analyzed. The purpose of this analysis has been to provide an appropriate context for decision-making about the proposed airport improvements, not to decide if potential changes are "good" or "bad." This analysis is more concerned with assessing airport impacts than with assessing the desirability of cumulative growth that could happen independently of the proposed improvements.

As with any future impact assessment, the predictions contained in the SIAR are based on the most reasonable estimate of what could happen given available evidence. In some cases, the impact assessment presents a "most probable" future within reasonable bounds. In others, because of uncontrollable external factors, only possible future outcomes (some probable, some not) can be determined. In these cases, sensitivity analyses of the likely effects of the Airport improvements are conducted to give a sense of the magnitude of the Project's most likely potential impact.

The analysis assumed the following:

- That there are potential visitors who will not come to Maui due to the lack of nonstop flights and associated inconvenience.

- That a hypothetical mechanism, such as a sustained new marketing campaign in the affected market areas that will now be served with nonstop air service, would entice more visitors to Maui.

- Another hypothetical mechanism, such as the availability of nonstop flights, could induce a small percentage of repeat and /or Maui-only visitors to spend an extra night on Maui.

6.2 INTERNATIONAL ARRIVAL FACILITIES

International arrival facilities at Kahului Airport would process visitors from foreign countries who arrive on direct non-pre-cleared flights. At present, direct flights from Canada arrive at Kahului with pre-cleared passengers, and direct charter flights from other foreign countries are processed on a case-by-case (reservation only) basis as described in Section 8.0. However, the majority of international visitors to Hawaii are processed in Federal Inspection Service Facilities located at Honolulu and must subsequently travel to Maui via interisland carriers. The provision of international arrival facilities at Kahului (internationalization), with a resultant convenience for passengers, could conceivably result in an increase of foreign visitors to Maui. Because no permanent FIS facilities are proposed at this time and because forecasts indicate that these facilities will not be necessary until the year 2010 or beyond, environmental analysis regarding this permanent facility would necessarily be speculative at this time. To the extent possible, the impacts of a permanent international facilities are discussed in Section 8.2. However, for limited international flight operations, an interim international facility will be needed. The impacts of this interim facility is analyzed and discussed in Section 8.2. For impacts related to alien species, please refer to Sections 3.11.3, 5.0 and 8.2.

6.3 PARALLEL RUNWAY

The 1993 Airport Master Plan also proposes construction of a new 8,500 foot long runway located parallel to and east of Runway 2-20. The principal purpose of the runway would be to increase the capacity of the airfield and reduce aircraft delays. This would affect the airport's capacity to serve both overseas and interisland flights but would not, by itself, induce growth. Moreover, construction of the runway is not scheduled until the final phase of airport development and its effects would not be felt until after the year 2016. Prior to construction, other environmental analyses will be performed to determine whether further environmental documents are required. For these reasons, the SIAR did not consider the proposed parallel runway as a major factor in its analysis.

6.4 STUDY CONSIDERATIONS

The SIAR addressed the concerns of some Maui residents who felt that the rapid growth of tourism on the island during the late 1980's brought too much congestion and possibly social problems to Maui. These residents feared that additional improvements at the Airport could indirectly result in more of the same. The study employed tourism experts as well as consultants familiar with the socio-economic problems of Hawaii to determine whether the proposed new airport improvements would induce more visitors to come to Maui and if so, what the effects would be on such factors as local employment and income, population and housing, nearby residents and businesses, and public facilities. The study also assessed the Project's possible effects on agricultural growth.

6.5 STUDY CONCLUSIONS

The SIAR (Appendix E) tested the passenger forecasts included in the *Update of Hawaii Aviation Demand Forecasts*, 1994, for reasonableness. The SIAR concluded that the forecasts were somewhat aggressive, but were not "out of the realm of possibility when compared to historical performance," and do provide a reasonable vision of year 2010 visitor activity. The study stated that although the Pacific Rim has enjoyed large growth, Hawaii has not shared in the air route expansion, and in fact has found itself being overflown between vital city pairs.

Another evaluation performed in the SIAR was the comparison of the 1994 passenger forecasts with the recent Maui County Planning Department study and the Land *Use Constrained Maui County Forecasts*. The aviation forecasts for 2010 were similar if not lower than those presented in the two Maui County reports.

In addition, the study found no evidence of tourism growth impacts in an unregulated market. Furthermore, upon consideration of tourism market factors affecting travel decisions, a 30 minute connecting flight is trivial in comparison to the major determinants in the originating market and competing markets ("push" and "pull" factors). This analysis is presented in detail in Appendix E with a description of the "push" and "pull" factors.

Conclusions about possible growth-inducing impacts of the Proposed Project improvements which were reached by the SIAR (Appendix E), as delineated in its Executive Summary, are as follows:

6.5.1 WITH RESPECT TO RUNWAY EXTENSION WITHOUT INTERNATIONALIZATION

6.5.1.1 Most Probable Growth Impacts

The SIAR concluded that the Master Plan runway extensions, without internationalization, probably will have little or no long-term growth-inducing impacts. (Further growth is expected to happen on Maui, but not *because* of airport improvements.) The conclusion was based on the preponderance of evidence available to the experts who prepared the study. "Internationalization" means allowing an unlimited number of international flights to be processed at Kahului Airport, (e.g. more flights, more often, to and from more foreign airports). This would require a permanent international facility which would require additional environmental analysis and documentation.

There are, however, a few caveats to this "no impact" conclusion: First, if the tourism experts are correct, then a lengthened runway might mitigate tourism downturns in *some particular years*, but not continuously. Second, both tourism and aviation are subject to sudden major structural changes, and although most potential changes now foreseeable would slow rather than speed tourism growth, it is possible to speculate about some scenarios which could theoretically interact with longer runways to

produce more growth. Finally, in future years beyond 2010, the additional capacity afforded by a longer runway (and a possible second runway) could someday facilitate more growth - *if* there is market demand and *if* local government approves more resort units."

However, for the foreseeable future, tourism growth on Maui will be determined primarily by market demand, and all indications suggest that domestic flights to Hawaii are a response to - and not a generator of - market demand for leisure travel.

6.5.1.2 Maximal Growth Impacts

Although the "no significant growth impact" conclusion was reached in the first phase, the second phase of the analysis looked at hypothetical questions for determining a "maximal growth impact." There were two parts to this analysis. The first part assumed that people who wanted to come to Maui would in no way be discouraged (or "constrained") such as by the need to stopover or switch planes, and was called the "Unconstrained No-Action Future." As alluded to above, there are two hypothetical mechanisms by which the proposed improvements, specifically the extension of Runway 2-20, might add to visitor demand beyond that projected.

The maximal sensitivity analysis for the "Unconstrained No-Action Future" shows an insignificant increase of an estimated 3 to 4 percent in the 2010 visitor count due to the 9,600 foot long runway over the No-Action scenario. In addition, the Proposed Project may insignificantly increase the resident population by 4,000 people.

- Nonstop flights could help trigger a sustained new marketing campaign in affected market areas to some extent by the airlines and to some extent by local government and/or Maui's visitor industry;

- The availability of nonstop flights could induce a certain percentage of repeat and/or "Maui-only" visitors to spend an extra night on Maui that would otherwise have been spent on Oahu, partly because of a needed plane change at Honolulu.

Based on the analyses conducted and discussions with airline and tourism marketing experts, the following reasonable assumptions were made regarding the **maximal likely added demand** that nonstop flights could attract for various markets:

- For the Rocky Mountain and Mid-West areas, a 10 percent increase for situations allowing unrestricted full loads, and 5 percent for restricted loads, may occur;

- For the West Coast a nominal 2 percent increase may occur;

- For the East Coast, a 5 percent increase may occur; and

- For westbound traffic, there would be a 0 percent increase.

The second part of the analysis assumed a "Constrained No-Action Future." That is, without the airport improvement actions, some people are discouraged from coming to Maui, and therefore, the growth on Maui is "constrained" due to the lack of non-stop flights from Maui. The purpose of the "Constrained No-Action Future" is to provide a worst case or "extreme" baseline to illustrate the maximum possible growth-inducing effects of the Project. The study identified two hypothetical "constraints" that the airport improvements could remove:

- There may be an existing pent-up demand for Maui tourism that is deterred by the need to change planes at Honolulu; and

- In the future, inconveniences or delays associated with the lack of nonstop flights could carry more weight in discouraging repeat, Maui-only business, because of increasing numbers of competitive, hassle-free destinations.

According to the SIAR, both hypotheses are suspect. However, if credence is given to the second hypothesis, the maximum impact, in relation to the Constrained Future baseline, would be about 10 percent. In other words, *if* existing facilities had a maximal effect in limiting growth in passenger counts, future passenger traffic with the project would be *significantly* larger (10 percent) than future passenger traffic without the project. Still, the future traffic with the project would be nearly the same as projected under the Unconstrained Future scenario, and appreciably less than that projected in earlier forecasts used for government planning (*i.e.* SASP).

Similar analyses for potential induced population and housing growth and agricultural growth were also conducted specifically for this EIS and are contained in Appendix E. In essence, the basic finding was that the proposed airport improvements will likely have little if any effect on population, housing or agricultural growth. Similarly, the proposed airport improvements are unlikely to add to or detract from the various potential socio-cultural consequences of growth that will occur with or without the proposed improvements.

6.5.1.3 Impacts Of Growth On Socio-Cultural Issues

The SIAR summarizes various social changes on Maui over the past several decades which may be attributed to growth. The "changes" fall into three categories: demographic, socio-political, and those related to social problem indicators. Rapid growth has clearly resulted in substantial immigration, primarily from Mainland Caucasians, which has affected political and social relationships on the island. The relationship of growth to social problem indicators is somewhat less certain, since some of these (*e.g.*, crime rates) held steady or actually declined during even the 'hyper-growth' period of the late 1980's. Also, some

problems appear more serious on islands without any recent growth. However, Maui island has generally exhibited somewhat higher social problem rates than the state as a whole in recent decades.

If rapid growth continues due to development of permitted resort units, the demographic and socio-political changes will continue, and Maui will probably continue to have higher social problem rates than the state as a whole (even though some problems may be getting better over time). However, because it is unlikely that the airport improvements will *cause* growth, it is similarly unlikely that they will be responsible for any further socio-cultural changes.

The simple *proposal* for an extended runway (not the project itself) has generated significant "social impact" in terms of public controversy. The runway extension has apparently become a symbol of undesirable growth for many people, and a symbol of public support for ailing industries (tourism and construction) for other people. The runway has served a socio-political function in terms of crystallizing public debate over growth issues; however, the SIAR concluded that the runway itself is largely irrelevant to that debate.

6.5.1.4 Impacts Of Growth On "Immediate Areas"

Perhaps the most important effects due to actions at the Airport (rather than to islandwide growth impacts) would be felt in Spreckelsville. Land acquisition for an 8,500-foot parallel runway would displace some homeowners from East Spreckelsville. The alternative of opening a through-road, which is discussed in Section 8.0, would result in changes in the neighborhood of West Spreckelsville.

Improvements at the Airport would provide work for construction workers for many years. The proposed improvements would have very small effects on aviation jobs, and hence on the population and housing demand associated with operations. (Some alternatives include relocation of helicopter and/or general aviation operations. These obviously involve a change in the location of many aviation jobs on Maui, but little absolute change in the number of airport-related jobs.)

Construction of the Airport Access Road will lessen traffic congestion, helping customers reach commercial areas being built near the Airport. Businesses located along the route now taken by tourists to and from the airport may find it difficult to find another site so accessible to customers yet so inexpensive to lease. (However, their current low rents may well be due to the fact that the location will only be easily accessible for tourists for a short time.)

6.5.1.5 Impacts Of Growth On Public Facilities

Between now and 2010, considerable expansion of public services and facilities will be needed on Maui to accommodate expected growth. Very little of that growth will be due to the proposed airport improvements. Hence islandwide demand for public services will be little affected, or not affected at all, by the airport improvements.

Improvements to Kahului Airport land at Kanaha Beach Park will allow more parking at the popular beach. Construction of the airport access road will improve traffic and the delivery of public services (notably police and fire) to the airport and it's surroundings.

6.5.1.6 Impacts Of Growth On Agricultural Cargo

Maui's pineapple plantation and diversified agriculture both depend on air cargo for export of their most valuable products. Planned improvements to cargo areas will remedy existing problems in storing and moving freight at the Airport. New cargo facilities for both all-cargo and belly cargo aircraft have been planned to meet existing and forecast demand, and to ensure that economical and timely air cargo service is available to Maui's residents and businesses. These will benefit a wide range of shippers including small or door-to-door export businesses, and the fresh pineapple industry (Maui's major agricultural product exported by air). Fresh pineapple is shipped by air due to the need for timely arrival at the overseas market place, and to ensure freshness. The amount of fresh pineapple which can be shipped, is further constrained by the fact that only limited cargo space is available in the belly holds of passenger flights. However, since passengers, baggage, and mail are all given priority by carriers, the air cargo will be bumped or left behind to allow the aircraft to meet the existing takeoff weight restrictions at Kahului Airport. A very preliminary estimate in Appendix E suggests that from 900 to 2,600 tons (per year) of additional cargo might be shipped from Kahului if the runway is extended - an amount adequate to meet Maui Land and Pineapple Co.'s current estimated needs. According to testimony received during the Public Hearing, Maui Land and Pineapple Co. estimates that as much as 40,000 pounds of fresh pineapple a week is not loaded onto departing aircraft due to the current runway limitations on aircraft weight. However, if demand for both agricultural and non-agricultural cargo space both continued to grow, there is no assurance that agricultural cargo would receive priority. Thus the runway extensions would permit but not guarantee direct flights, and the direct flights in turn would permit but not guarantee substantial additional agricultural cargo space.

6.5.2 WITH RESPECT TO INTERNATIONALIZATION[1]

6.5.2.1 Impacts Of Internationalization On Growth

Internationalization, arriving and departing international flights, could occur only with runway lengths of at least 8,500 feet, since shorter runway lengths could not accommodate most current large-bodied long-haul aircraft departing to Japan (the only country generating enough foreign visitors to Maui to warrant attention in this analysis)[2].

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[1] The potential growth-inducing impacts of "internationalization" are analyzed in Appendix E. The term "internationalization" refers to regular scheduling of flights from and to foreign countries, with federal inspection of international arrivals at Kalului Airport. It involves more flights, more often, to and from more foreign destinations, and would require a adequately sized permanent international facility.

[2] The 747 series aircraft is able to depart from Kahului Airport to Tokyo with a full load of passengers and baggage, but with a significant cargo penalty, from a 7,000 foot runway (see Appendix N).

Based on the preponderance of available evidence, the SIAR concluded that any *near term* growth in international tourism on Maui would not be large. Japanese tourism still represents a fairly small, if growing, part of Maui's visitor industry, and virtually all industry experts who were interviewed for the report concluded that initial consequences would be limited to a few flights a week, and these might just be serving the current market. Based on the 1993 (actual) statistics, the Japanese market makes up about 13.4 percent (317,870 visitors) of the visitor arrivals to Maui County, with the other eastbound passengers, from different origination points, consisting of 7.4 percent of the total visitors arrivals. Canadian visitor arrivals were 5.8 percent of total visitor arrivals in 1993.

Beyond that, the SIAR determined that actual impacts are virtually unknowable at this point in time, although there is a greater potential for growth-inducing impacts from the introduction of international nonstop flights than from domestic flights.

Still the future is cloudy with regard to international flights for a number of reasons. First and foremost, bilateral international political approvals are required for any new international routes, and many other American cities would probably contest additional routes to Hawaii. In addition, other international political and economic factors could affect monetary exchange rates, which are very important determinants of international tourism. Currently, Japan Airlines has a bilateral agreement to fly one-stop service through Honolulu to Kahului Airport at a frequency of seven flights per week. The one-stop service can be implemented at any time by Japan Airlines, without the Proposed Project. Likewise, other air carriers could operate direct arrivals and one-stop takeoffs, similar to that of domestic air carriers, if they chose to, without the Proposed Project. An airline's decision to expand its service to Kahului Airport is primarily dependent upon factors unrelated to the Proposed Project, such as market demand and the ability to negotiate a bilateral agreement.

Internationalization, that is, allowing unlimited international flights to be processed at Kahului Airport, would require the staffing of customs and immigration and naturalization services by the federal government, and an adequately sized permanent international facility. A permanent international facility is not proposed as part of the Proposed Project, as the likelihood of this occurring (unlimited international flights) appears, at this time, to be rather small. The updated forecasts indicate that that permanent international facilities will not be necessary until sometime after the year 2010. However, should it occur within the planning and analysis timeframe for this EIS, and *should additional hotel permits be granted* by local authorities, then the following likely quantifiable cumulative effects as analyzed in the maximal (sensitivity) analysis, as compared to the No-Action alternative, may result:

- Visitor arrivals could increase by about 11 percent over the "Unconstrained No-Action Future" baseline and about 21 percent over the "Constrained No-Action Future" baseline. The visitor count with the Proposed Project for both the "Unconstrained and Constrained No-Action Futures" are less than predicted in the SASP forecasts by 3 percent;

- The average visitor census could increase about 8 percent over the "Unconstrained No-Action Future" scenario and 19 percent over the "Constrained No-Action Future" scenario;

- The number of occupied visitor units would increase 8 percent over the "Unconstrained No-Action Future" scenario and 19 percent over the" Constrained No-Action Future" scenario;

- The number of civilian jobs would increase 9 percent under the "Unconstrained No-Action Future" scenario and 18 percent under the "Constrained No-Action Future" scenario;

- The resident population would increase 9 percent over the "Unconstrained No-Action Future" scenario and 18 percent over the "Constrained No-Action Future" scenario; and

- The number of housing units would increase 9 percent over the "Unconstrained No-Action Future" scenario and 18 percent over the "Constrained No-Action Future" scenario.

In addition to the above, it is estimated that the increase in resident population resulting from internationalization would generate a corresponding increase in the demand for public services, such as police and fire protection. To accommodate the potential increase in visitors estimated in the SIAR, additional hotel permits could be needed. Growth then would depend on the local authorities' decision to permit expansion of resort facilities on Maui.

6.5.2.2 Impacts Of Internationalization On Socio-Cultural Issues

A variety of speculative social impact scenarios can be developed in regard to effects of increased Japanese tourism. However, the impacts of Japanese tourism (as distinct from tourism in general) have not been systematically studied in Hawaii, so it is difficult to comment on their validity. It may be noted that in Waikiki, where Japanese expenditures have sometimes outweighed U.S. expenditures, local government and industry leaders have set the precedent of rejecting abundant Japanese-language signage, which might have further contributed to resident sense of alienation of the island's principal resort area.

However, the SIAR's sensitivity analyses suggest that, even with assumed changes occurring anyway and even with maximal potential effects of international flights, the Japanese share of Maui's average daily visitor census in 2010 would be only about 15% (twice the 1993 percentage). This level of presence is "unlikely to generate socio-political or cultural crises."

6.5.2.3 Impact Of Internationalization On "Immediate Areas"

Above and beyond impacts anticipated with the proposed improvements, internationalization would have little impact at the Airport and its surrounding areas. Notable impacts are:

- "Construction of international facilities would involve about 90 person-years of direct jobs (in addition to the much larger number of person-years associated with construction of Master Plan improvements):

- When and if direct flights to international destinations are regularly scheduled, some 50 permanent jobs could be created in Federal Inspection Services: and

- The impact of internationalization plus airport improvements on airport operations jobs (including new federal jobs) is estimated as reaching a maximum of about 280 jobs (up to 14% more direct operations than in the No-Action Future)."

6.5.2.4 Impacts Of Internationalization On Public Facilities

Demand for public facilities grows along with population, rather than from any characteristics of international visitors or flights. To the extent that internationalization would affect resident or visitor populations, then it would equally lead to increased need for public services (the one exception is that an existing but unfilled police position for drug control would likely be staffed if international flights are regularly scheduled).

Since the sensitivity analysis showed significant increases in resident and visitor populations with internationalization, it is reasonable to expect demand for services to increase appreciably. Moreover, the maximal population estimates derived from the sensitivity analyses are about 15% higher than those used for 2010 in a recent projection of Maui's public facilities needs (R.M. Towill Corporation, 1992). Adapting multipliers from that study, it appears that needs for all public services (with the possible exception of fire services) could be much higher than anticipated in that study. (The R.M. Towill analysis assumed that no new land use permits for resorts would be granted. To realize the maximal impact associated with internationalization, then, Maui County officials would need to decide to grant additional permits for hotels. Hence, the maximal potential impact estimated here is an impact of both international arrivals and hotel permits).

6.5.2.5 Impacts Of Internationalization On Agricultural Cargo

In time, internationalization could lead to the development of a new market for Maui's agricultural products. While this tendency would allow some growth in agricultural production, it's most likely impact will be to help stabilize demand for Maui products.

6.5.3 SIGNIFICANCE CRITERIA AND ANALYSIS

The following criteria, drawn from the SIAR, were used to assess whether the Proposed Project would have significant growth-inducing impacts:

- A change in the number of direct jobs at the Airport during the planning period of 5 percent or more, compared to the "No-Action" alternative;
- A change in State, County or island estimated total employment of 5 percent or more;
- A change in State, County or island population and housing demand of 5 percent or more;
- A change in visitor arrivals of at least 5 percent.
- A change in demand for public facilities that makes it impossible to deliver services at accepted standard levels; and

If any of the above are unaffected by the proposed improvements, or are positively affected by the proposed improvements, there would be insignificant, or beneficial effects.

The SIAR prepared for this EIS concluded that the proposed airport improvements would involve little or no impact on economic and demographic growth on Maui. The sensitivity analysis conducted to estimate *maximal* impacts yielded the following quantified potentially significant findings:

- If Kahului Airport's current facilities would not effectively limit air travel by 2010 -- *i.e.*, the "Unconstrained Future" -- then increases in the average visitor count and occupied visitor units could be considered significant by the strict standards (> 5 percent) used in the SIAR prepared for this EIS.
- In the "Constrained Future" sensitivity analysis, visitor arrivals, visitor census, occupied units, civilian jobs, resident population and housing units on Maui Island were all significant for alternatives involving 9,500-foot or longer runways.

- Direct construction jobs would be a significant addition to the island construction jobcount.

- While no significant impact on the absolute number of aviation jobs was found, the number of airport jobs off-site would change significantly with those alternatives in which helicopter and/or general aviation were relocated to another site.

- All alternatives involved improvements in cargo handling facilities that could benefit Maui's agriculture. With runway extension and unrestricted direct flights to overseas destinations, Kahului Airport could handle significantly more air cargo, including agricultural exports.

It must be noted, however, that the sensitivity analyses which generated these significance findings assumed conditions - some quite improbable - that were designed to produce *maximal* impact readings. In addition, new hotel and visitor accommodations must be built for these *maximal* impacts to occur.

Few of the growth impacts assessed in the SIAR are significant. Of the significant impacts, some, such as increased exports, are clearly beneficial. Others -- increased visitor census and job counts for example -- are viewed by most either as beneficial or as harmful only if they occur extremely rapidly. No rapid changes are anticipated in this report.

6.5.4 MITIGATION MEASURES

Given that the fundamental and overarching conclusion of the SIAR is that the Proposed Project will not have significant growth-inducing effects, no mitigation measures are required or proposed at this time.

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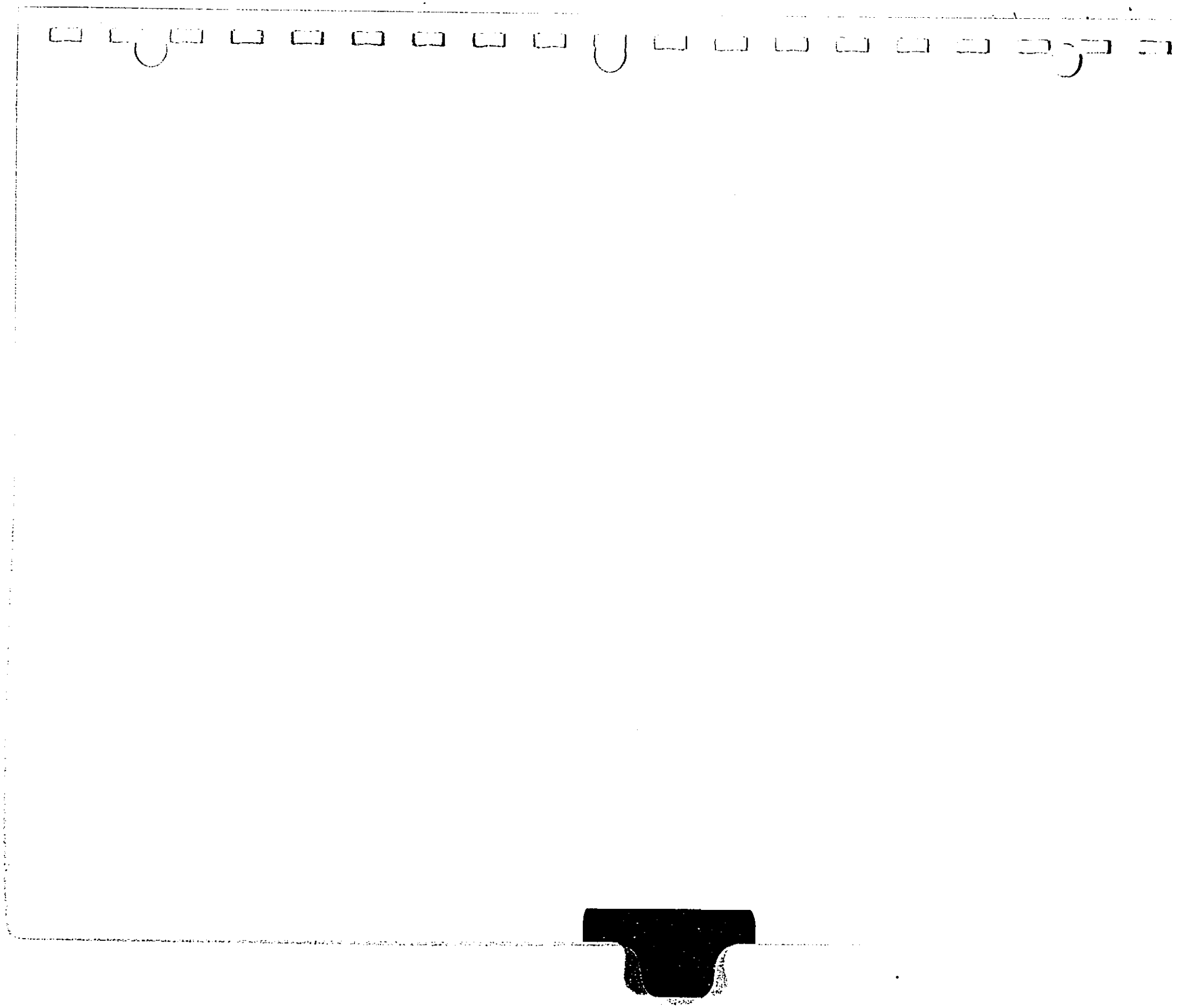

SECTION 7.0
OTHER NEPA AND HEPA SECTIONS

7.1 RELATIONSHIP BETWEEN SHORT-TERM USES AND MAINTENANCE OF LONG-TERM PRODUCTIVITY

Analyses of the Proposed Project site have found the existing Kahului Airport property to possess physical assets uniquely amenable to airport development. These assets include: (i) the existing runway, taxiway and apron systems; (ii) passenger terminal facilities; (iii) rental car facilities; and (iv) other airport-related services and facilities. Additionally, the site has relatively flat terrain and has been used for aviation-related activities for many years. The environmental impact studies performed (see Section 3.0) have indicated that the Proposed Project is compatible with and, in some cases, will benefit the existing natural environment. Specific measures employed to mitigate potential adverse environmental impacts, as discussed throughout Section 3.0, will be implemented in the design, construction and operations phases of the proposed airport improvements.

Although the Proposed Project will cause short-term impacts to some resources -- including construction related impacts, noise, air quality, labor and traffic congestion -- these impacts will not have negative long-term consequences. The principal long-term benefits of the proposed airport improvements include the continued productive use of the property with greater efficiencies than those presently experienced, and the provision of additional airport facilities to serve the residents of and visitors to Maui. The Proposed Project will increase economic opportunities for various socio-economic levels, and provide additional community services and activities. The proposed airport development, as envisioned by HDOT-AIR, is a logical extension of the existing airport facilities and services, and will be designed to last for decades. Open spaces surrounding the Airport and vistas to the ocean and mountains would be retained for the long-term benefit of residents and visitors.

As noted in the discussion of Alternatives to the proposed airport improvements (Section 4.0), one short-term alternative would be to retain the airport "as is" (*i.e.*, the No-Action alternative). This would result in less than optimum use of the airport facilities and would cause inefficient and costly operations. In addition, many of the environmental benefits of the Proposed Project would not be realized. As the proposed airport improvements and amenities are developed, short-term socioeconomic benefits to the community will result, in the form of increased economic opportunities, increased job opportunities and increased tax revenues. Direct, full-time employment opportunities and temporary construction employment will be generated by the project; and these employment opportunities will have benefits that ripple through the regional and island economy. Similarly, indirect and induced employment will be generated in those industries and services that cater to the construction, service, manufacturing and agricultural related businesses serving the Airport. Revenues from concessions, landing fees, excise and personal taxes are expected to offset any expenses associated with the expansion of public services to meet the requirements of the proposed airport improvements and indirect population growth.

7.2 SIGNIFICANT UNAVOIDABLE IMPACTS

As indicated in the environmental issue area discussions in Section 3.0, the proposed airport improvements are expected to result in very few unavoidable adverse impacts. However, the full impacts of the long-range projects in Phase 3, namely the parallel runway, relocation of helicopters off-airport, the fuel supply pipeline from Kahului Harbor to the bulk fuel tanks, and transient apron, may not be known and cannot be properly assessed at this time. Prior to the construction of these long-range projects additional environmental analysis will be completed in order to determine what, if any, further environmental documentation is required.

During construction of roadway improvements there will be delays in traffic movements and some airport operations may be minimally affected by runway, taxiway and apron construction activities. All of these effects will be short-term and the resultant improvements will significantly improve existing conditions. In addition to the above, some local businesses may experience decreases in business levels due to the proposed roadway improvements diverting present traffic patterns and drop-in customers. However, existing and planned commercial and retail space is adequate to accommodate potential business relocations that may be necessary to maintain and increase business activity.

Given the forecast population and traffic demands, there will be significant impacts with or without the Proposed Project in the categories of air quality, ground vehicle traffic noise, and traffic congestion. In addition, significant cumulative impacts include the introduction of alien (pests) species, water supply, nearshore water quality, and health care.

Significant adverse impacts are expected from the Proposed Project for air quality. However, these impacts are much less severe than those expected under the No-Action alternative. With the construction of the runway extension only, the concentration of carbon monoxide will exceed the State of Hawaii 1-hour standard at certain points on the Airport boundary. This impact would be substantially worse under the "No-action" alternative. In addition, the air emissions from automobile traffic will be reduced at certain intersections due to the Proposed Project. However, emission rates at some intersections will exceed both Federal and State Standards. The mitigation measures are discussed in Section 3.7.4.

Ground vehicle noise along Dairy Road, between the Airport Access Road and Puunene Avenue, is expected to exceed the FHWA criteria and is considered a potential significant adverse impact. This will be a function of the increase in traffic in this area, with or without the Proposed Project. Although the Proposed Project will lessen the noise impact along Dairy Road, noise levels in this area still will be above the FHWA criteria. The mitigation measures are discussed in Section 3.2.2.4.

There may be significant adverse impacts related to certain Phase 2 and Phase 3 projects which overlay buried archaeological and cultural resources. The subsurface excavation for these projects may disturb buried archaeological and cultural resources. The proposed mitigation measures, as discussed in Section 3.10.4, will reduce the impact to an insignificant levels. A Programmatic Agreement has been

prepared by the FAA in coordination with the Hawaii State Historic Preservation Officer, and in consultation with the Advisory Council on Historic Preservation, HDOT, Maui/Lanai Islands Burial Council, Office of Hawaiian Affairs and Hui Malama Na Kupuna O Hawaii Nei. The Programmatic Agreement ensures that the FAA and HDOT-AIR will implement the appropriate studies and if necessary, mitigation measures on the eligible historic sites. In addition, the HDOT-AIR has resized the transient apron and established a Preservation Plan for Site 1798. Both the Programmatic Agreement and the Preservation Plan for Site 1798 are presented in Appendix T.

There will be significant adverse impacts at certain roadway intersections, with the Proposed Project as background traffic increases. At certain intersections, the Proposed Project alleviates congestion when compared to the No-Action Alternative. Two of the intersections created by the Proposed Project will have poor level-of-service. In addition, the proposed Airport Access Roadway Interchange will impact the safety of the bike route along Hana Highway. The mitigation measures are discussed in Section 3.22.8.6.

The nearshore water quality presently exceeds state open coastal water quality standards and is expected to continue to exceed these standards, with or without the Proposed Project. Mitigation measures to minimize adverse impacts are included in Section 5.1.4.1. The forecast water demand for the Kahului area as a whole is expected to exceed the capacity of the freshwater aquifer. Mitigation measures to reduce the Airport's water demand is presented in Section 5.1.4.2. Similarly, the health care facilities on Maui are presently over-burdened for reasons unrelated to the airport and airport operations. The introduction of alien species through the statewide ports has been a problem over more than a century. Mitigation measures for alien species are presented in Section 5.1.5.1. These deficiencies or impacts require correction to accommodate natural increases in population and visitors. Project-related increases in visitors or resident population are not anticipated.

7.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The development of the proposed airport improvements and resultant construction of the various facilities and amenities will result in the irreversible and irretrievable commitment of certain natural and fiscal resources. Major resource commitments include: (i) the land on which the various improvements will be located: (ii) money; (iii) construction materials; (iv) manpower; (v) increased fuel consumption; (vi) water; (vii) energy; and (viii) the use of agricultural land for airport purposes. The impacts of using these resources should be weighed against the expected positive socioeconomic benefits to be derived from the proposed improvements, and against the consequences of taking no action or adopting another less beneficial use of the property.

A significant portion of the property would remain as open space, albeit for aviation-related uses. In addition, the proposed improvements include significant additions to public beach park areas and the provision for lease lots for new airport-related business activities.

The commitment of resources required to accomplish the proposed improvements includes building materials and labor, both of which are generally non-renewable and irretrievable. Construction of and resultant travel to/from the Proposed Project by residents and visitors would require the consumption of petroleum products and petroleum based electrical generation. In addition, the potential increase in aircraft operations may result in increased fuel consumption. This, too, represents an irretrievable commitment of resources.

The Airport as improved is expected to require fewer government supplied services and facilities than the Airport without the proposed improvements would require. The project will add to the cultural and recreational facilities available to the residents of and visitors to Maui area in general. Similarly, the project would add to the tax revenues of the county and state.

7.4 EFFECTS FOUND NOT TO BE SIGNIFICANT

In general, the effects of the proposed improvements on all environmental issue areas will be insignificant following implementation of the proposed mitigation measures. The following areas have been analyzed for environmental impacts and were found to have insignificant impacts prior to mitigation:

- Aircraft Noise (*without the Parallel Runway*)
- Construction Noise
- Land Use (*without the Parallel Runway*)
- Geology, Physiography, Soils, Agricultural Potential and Earthquakes
- Socio-Economic (*without the Parallel Runway*)
- Secondary (Induced) Socio-Economic
- Air Quality (except for State standards and at roadway intersections)
- Climate and Meteorology
- Water Quality (except for significant cumulative impact only)
- Department of Transportation (DOT) Act, Section 4(f)
- Biotic Communities (except for alien species, which is a significant cumulative impact)
- Wetlands
- Hydrology, Floodplain Management and Drainage
- Coastal Zone Management Program
- Wild and Scenic Rivers
- Coastal Barriers
- Farmland
- Energy Analysis
- Light Emissions
- Solid Waste, Hazardous/Toxic Waste and Waste Wash Water
- Visual Effects

- Public Facilities, Infrastructure, Services, and Airfield Safety (except for significant adverse impacts on traffic congestion at certain roadway intersections; and the safety on the Hana Highway bike route. In addition, the impacts on water supply and health care are considered significant cumulative impacts;)

There may be some significant impacts due to the Phase 3 projects. Because these projects are beyond the year 2009 time frame, the full impacts of the larger projects in Phase 3, namely the parallel runway, relocation of helicopters off-airport, the fuel supply pipeline from Kahului Harbor to the bulk fuel tanks, and transient apron, are not fully known and therefore cannot be properly assessed at this time. Therefore, this EIS discusses the potential significant impacts of the long-range (Phase 3) Proposed Projects to the extent feasible. However, prior to the construction of these long-range projects additional environmental analysis will be completed in order to determine what, if any, further environmental documentation is required.

7.5 OFFSETTING CONSIDERATIONS OF GOVERNMENTAL POLICIES

By the very existence of a complex system of land use policies, plans, goals, objectives and controls at both the state and county levels of government, development proposals requiring land reclassification are often faced with inherent contradictions and conflicts within the land use regulatory system. Similarly, airport construction projects invariably cause short-term degradation of ambient ecological conditions. The proposed airport improvements must be reconciled against those privately and publicly planned elements that may appear to conflict with the proposed improvements. As indicated in Section 7.6 below, the proposed improvements are generally consistent with: (i) the applicable Hawaii State Plan and various Functional Plans; (ii) the County General Plan; and (iii) the Wailuku-Kahului Community Plan goals, policies and standards relating to the future growth in the airport area. The proposed improvements will result in more efficient airport operations. Public access to and along the shoreline and Kanaha Beach Park, along with expanded use facilities, will be provided, and significant historical/archaeological sites will be preserved. Based on the analyses conducted for this EIS, following construction of the proposed improvements, ambient water quality conditions will be unaffected and ecological/habitat conditions would be as favorable to marine organisms as existing conditions. Due to anticipated growth on the island, existing traffic congestion and air pollution will worsen over the next twenty-five (25) years, with or without the Proposed Project. However, the degradation of these conditions will be much less severe under the Proposed Project than under the No-Action alternative.

7.6 CONFORMANCE WITH STATE AND COUNTY PLANS, GOALS AND POLICIES

The following narrative discusses the relationship of the Proposed Project (preferred alternative) with existing state and county plans, goals and policies.

7.6.1 HAWAII STATE PLAN

The Hawaii State Plan[1] (Chapter 226, Hawaii Revised Statutes) represents a process which integrates the plans, policies and projects of all state agencies. The following is a discussion of major themes, goals, objectives and policies of the Hawaii State Plan. Each item is followed by a statement describing the effect of the proposed Kahului Airport Master Plan.

7.6.1.1 Overall Theme

The Hawaii State Plan is based on and promotes three major principles or values which guide the society. They are as follows:

Individual and Family Self-Sufficiency. The State Plan supports the right of individual independence so long that self-interest does not adversely affect the general welfare.

Comment:[2] *The Proposed Project (preferred alternative) supports this theme by enhancing the opportunities for individual travel and economic self-sufficiency.*

Social and Economic Mobility. The State Plan supports the efforts of individuals to seek out their own levels of social and economic fulfillment.

Comment: The Proposed Project (preferred alternative) increases the opportunities for travel and for commercial import and export to Maui.

Community or Social Well-Being. The State Plan supports the social, economic and environmental well-being of our communities.

Comment: The Proposed Project (preferred alternative) supports the increase in economic opportunities on Maui, and supports social well-being through provision and creation of jobs and stability. Environmentally, the Proposed Project does not significantly alter the existing conditions which adversely affect the noise environment of the Spreckelsville area, and the Proposed Project adds to the public recreation opportunities along the shoreline. Moreover, the Proposed Project mitigates anticipated air quality and traffic impacts.

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[1] State of Hawaii, Office of State Planning, The Hawaii State Plan, Chapter 226, Hawaii Revised Statutes, 1991, p.2.

[2] Each comment addresses the effect of the proposed Kahului Airport Master Plan upon the State Plan item immediately preceding the comment.

7.6.1.2 State Goals

The State Plan is intended to achieve three major goals of the State of Hawaii. These are listed below.

Economy. A strong economy with stability, diversity and sufficient growth-potential to fulfill the needs and expectations of Hawaii's people.

Comment: The Proposed Project (preferred alternative) contributes to this goal by providing an adequate transportation mode to meet the import and export needs of Maui to the year 2010.

Physical Environment. A physical environment which is beautiful, clean, quiet and has stable natural systems, and which enhances the mental and physical well-being of the people.

Comment: The Proposed Project (preferred alternative) contributes to this goal by adding to the recreational opportunities and access at adjacent beaches and public parks. The plan continues HDOT-AIR's long-term management of Kanaha Pond and the wildlife within airport property.

Family and Community. The provision of physical, social and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.

Comment: The Proposed Project (preferred alternative) contributes to this goal by providing, through the year 2010, enhanced air transport vital to Maui's economy.

7.6.1.3 Objectives And Policies

The following is a narrative which summarizes and discusses the effects of the Proposed Project (preferred alternative) on the objectives and policies of the Hawaii State Plan. Note, however, that only those policies affected by the Proposed Project are discussed.

Population. The policy of the Hawaii State Plan is to manage population growth and to provide increased opportunity for the people to pursue their physical, social and economic aspirations.

- The plan encourages increases in economic activities and employment opportunities consistent with community needs and desires.
- The plan promotes increased opportunities for the people to pursue their social-economic aspirations.

- The plan will guide the development of land and water resources in a coordinated manner to provide the desired levels of growth.

Comment: The Proposed Project (without parallel runway) is supported by the County of Maui. As such it reflects that island's needs and desires. The Proposed Project provides increased economic opportunities by meeting the projected air transportation needs of Maui to the year 2010. Testimony given by Maui County during the scoping process, supported the Runway 2-20 extension and strengthening, but did not support the parallel runway.

Economy - In General. The policy of the Hawaii State Plan is to improve the living standards of Hawaii's people by increasing employment income and job choice through a steadily growing and diversified economic base not overly dependent on a few industries.

- The plan includes expansion of Hawaii's national and international marketing to increase economic opportunities outside the state.

- The plan includes promotion of Hawaii as an attractive market for environmentally sound activities; for new or expanded business investments; for expansion of existing markets.

- The plan requires that the basic needs of Hawaii's people be maintained in the event of disruptions in overseas transportation.

- The plan strives to achieve a level of construction activity responsive to and consistent with state growth objectives.

Comment: The Proposed Project (preferred alternative) contributes to this goal by provision of adequate air transportation facilities which can be used to fulfill the needs of diverse economic sectors.

Economy - Agriculture. The plan provides for continued viability of sugar and pineapple industries, as well as for growth and diversification of agriculture. It promotes marketing and distribution within Hawaii and to other national and international markets. It promotes the expansion of flowers, tropical fruits and plants and other agriculture products.

Comment: The Proposed Project (preferred alternative) meets these objectives and policies by providing transportation capacity through the year 2010, and beyond, so that alternative products can be shipped to other markets.

Economy - Visitor Sector. Provide for the visitor industry as a component of the state's steadily growing economy. Encourage cooperation between government and private sectors in

developing and maintaining a well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.

Comment: The Proposed Project (preferred alternative) will provide air transportation facilities to service the projected growth of travelers through Kahului Airport to the year 2010, and beyond.

Economy - Federal Expenditures. Generally, encourage the sustained flow of federal expenditures in Hawaii which generates long-term government civilian employment.

Comment: The Proposed Project (preferred alternative) meets FAA and FHWA guidelines and regulations to achieve a balance of federal monetary cost-sharing for construction of airport and roadway projects.

Economy - Potential Growth Activities. Develop and expand Hawaii's economic base through policies which attract international programs, promote international trade and finance, and attract federal programs.

Comment: The Proposed Project (preferred alternative) provides the air transport infrastructure to meet this policy if the state and county choose to implement it.

Economy - Information Industry. Position Hawaii as a leader in informational business and service in the Pacific Rim.

Comment: Insofar as transportation supports this policy objective, the Proposed Project (preferred alternative) will improve the efficiency of aircraft and ground traffic operations.

Physical Environment - Land-Based, Shoreline, and Marine Resources. The Hawaii State Plan requires prudent use of natural resources and effective protection of unique and fragile environmental resources.

Comment: The Proposed Project (preferred alternative) provides protection for Kanaha Pond within the airport boundaries, and improves public access to the shoreline.

Physical Environment - Scenic, Natural Beauty and Historic Resources. The Hawaii State Plan requires enhancement of scenic assets, natural beauty and multi-cultural/historical resources through policies including preservation, enhancement, protection and design.

Comment: The Proposed Project (preferred alternative) includes a review of archaeological and historic data within its proposed boundaries, including preservation and protection

where necessary. The existing scenic features of the Project area will remain unchanged except for the views along limited sections of Hana Highway which will be altered by the proposed Highway overpass connecting Dairy Road with the Airport.

Physical Environment - Land, Air, and Water Quality. The Hawaii State Plan calls for the maintenance and pursuit of improved quality in land, air and water resources. The plan is to be achieved through policies which include: (i) the maintenance of aural and air quality levels to enhance health; (ii) reduction of life and property damage from flooding and tsunamis; and (iii) encouragement of urban development in close proximity to existing services and facilities.

Comment: The Proposed Project (preferred alternative) does not significantly worsen the aural quality of the existing environment of the Airport, except for the parallel runway component, which at this point in time is speculative and may not be developed. The Airport is constructed above flood elevations and provides for drainage away from Kanaha Pond. The Proposed Project, without the parallel runway, makes use of existing urban facilities (the Airport) by building upon these without expanding to new sites.

Facility Systems - In General. The Hawaii State Plan requires that transportation systems: (i) support statewide social, economic and physical objectives and that they be in consonance with state and county plans; (ii) encourage flexible designs for changing public demands and priorities; and (iii) ensure that they can be supported within resource capacities and at reasonable user-costs. The Plan also requires that alternative financing programs be sought for each transportation project.

Comment: The Proposed Project (preferred alternative) was prepared to meet the statewide objectives and is consonant with state and county plans. The Proposed Project is a response to changing public demands (growth of air traffic) and it maintains reasonable user-costs (air travel and freight costs). The Proposed Project is based on federal cost-sharing and private sector user fees.

Facility Systems - Solid and Liquid Wastes. The Hawaii State Plan requires that public health standards be met, including provision of adequate sewerage facilities.

Comment: The Proposed Project (preferred alternative) provides waste disposal facilities meeting all state and federal standards.

Facility Systems - Water. The Hawaii State Plan requires that adequate water be provided for needs within resource capabilities, and that this be done through measures including water conservation programs.

Comment: Water consumption facilities in the Proposed Project (preferred alternative) include water saving features.

Facility Systems - Transportation. The Hawaii State Plan requires a statewide transportation system consistent with planned growth objectives. The system is to be coordinated with county, federal, and private activities. There should be a reasonable distribution of financial responsibilities between the parties. There should be improved access to shipping, docking and storage facilities. The system should accommodate the present and future development needs of communities. The capacities of airport and support systems are to be increased to support transhipment and storage. The facilities should be sensitive to the quality of Hawaii's natural environment. Energy efficiency is to be encouraged.

Comment: The Proposed Project (preferred alternative) has been designed to achieve these objectives and policies and generally meets them. The airline industry is developing more efficient planes and engines. The proposed improvements would allow more efficient use of the aircraft presently serving Kahului Airport, by increasing their cargo and passenger capacities. Noise continues to be a community issue in the Spreckelsville area, a problem which has worsened with the construction and development of new homes in the noise-affected areas. The Noise Compatibility Program includes measures to mitigate these impacts.

Facility Systems - Energy/Telecommunications. Provide dependable, efficient and economical energy and telecommunication systems which increase energy self-sufficiency.

Comment: These objectives and policies are not directly applicable to the Proposed Project (preferred alternative). However, reduced aircraft delays and non-stop service promotes energy efficient use of aircraft.

Socio-Cultural Advancement - Housing. Provide for more reasonably priced homes in suitable environments; and provide the orderly development of residential areas sensitive to community needs.

Comment: These objectives and policies are not primarily applicable to the Proposed Project (preferred alternative).

Socio-Cultural Advancement - Health. Provide for basic public health needs, and for sanitary and environmentally healthful conditions.

Comment: These objectives and policies are not primarily applicable to the Proposed Project (preferred alternative).

Socio-Cultural Advancement - Education. Provide a variety of educational opportunities to benefit individuals and the community.

Comment: These objectives and policies are not primarily applicable to the Proposed Project (preferred alternative).

Socio-Cultural Advancement - Social Services. Provide for social and culture programs that facilitate a minimum standard of living, aid new residents and the elderly, prevent abuse and promote family planning.

Comment: These objectives and policies are not primarily applicable to the Proposed Project (preferred alternative).

Socio-Cultural Advancement - Leisure. Provide adequate resources to accommodate diverse cultural, artistic, and recreational needs.

Comment: The Proposed Project (preferred alternative) contributes to these objectives and policies by including art and cultural features in the design of the airport facility and in providing improved opportunities for transportation to and from Maui.

Socio-Cultural Advancement - Individual Rights and Personal Well-Being. Protect individual rights and enable individuals to fulfill their socio-economic needs and aspirations.

Comment: The Proposed Project (preferred alternative) contributes to these objectives and policies by providing an economic basis for individual development and personal well-being.

Socio-Cultural Advancement - Public Safety. Assure public safety and protection of life and property; achieve optimum emergency readiness.

Comment: The Proposed Project (preferred alternative) directly benefits these objectives and policies by providing and maintaining the emergency means of transportation to and from Maui, especially in the event of major damage to Kahului Harbor from a tsunami or other catastrophic event.

Socio-Cultural Advancement - Government. Provide efficient and responsive government with fiscal integrity.

Comment: The Proposed Project (preferred alternative) meets these objectives and policies by providing the basic infrastructure of air transportation in fulfillment of state and county objectives and the laws of the federal government.

7.6.1.4 State Functional Plans

The following narrative discusses key state functional plans, prepared under the auspices of the Hawaii State Plan, by various state departments. Only those functional plans with strong links to the proposed projects at Kahului Airport are discussed here.

Transportation. The functional plan acknowledges the goals, objectives and policies of the State Plan and notes that overseas carriers fly directly into Kahului airport but, because of the short runway, are unable to takeoff fully loaded.[3] Wide-bodied jet aircraft from the U.S. have been operating out of Kahului Airport since January 1983 and must refuel at Honolulu International Airport before returning to the U.S. A minimum required runway length to correct this situation is 8,500 feet for planes to reach the West Coast, and 11,000 feet to extend the range beyond the Midwest to the East Coast. Runway extension projects are being addressed in the airport master plan, environmental impact statement and public meetings.[4]

The Transportation Functional Plan includes specific implementing actions to address the above problems. The implementing actions conform to the Hawaii State Plan objectives and policies. Implementing actions include: (i) a new access road to the Airport; (ii) the widening of Hana Highway; (iii) the proposed extension of Runway 2-20; and (iv) the new air cargo terminal.

Comment: The Proposed Project (preferred alternative) and the functional plan were prepared simultaneously. As a result, most major elements of the Proposed Project are included in the functional plan; however, the parallel runway was included in the Proposed Project after completion of the functional plan.

Tourism. The Tourism Functional Plan envisions "slower but steady growth within the visitor industry while building up other and new sectors of the economy."[5] The Plan notes anti-growth feelings on Maui which were identified in a 1988 tourism impact study. Such feelings are thought to reflect "strain from the rapid population growth of the 1980's and perceived negative side effects of tourism (e.g., cost of housing, traffic, cost of food and clothing, and crime)."[6]

In summary, the Plan focuses on the need to balance economic, social and environmental issues so that the economy can continue to thrive, the social needs of the people can be met, and a pleasing and healthy environment can be preserved. The optimum growth rate of tourism should contribute to this balance. In the past, the series M-K projections have been the basis for estimating growth rates. However, other measures should be considered. This is because the M-K projections are market-based, and do not necessarily represent a desired outcome as chosen by the communities.

Comment: The Proposed Project (preferred alternative) proposes air transportation infrastructure improvements to accommodate existing demand and the rate of growth selected by the County and the responsible State agencies. Terminal facilities recently constructed at

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[3] Transportation Functional Plan, 1991, p. II-4.

[4] Transportation Functional Plan, 1991, p. II-7.

[5] Tourism Functional Plan, 1991, p. 6.

[6] Tourism Functional Plan, 1991, p. 8.

Kahului may reflect the market-based projections, but the proposed extension of Runway 2-20 and other improvements are intended to facilitate the use of the large aircraft, and to position Maui to be a cost-effective and competitive visitor destination. Maui County has the primary responsibility for growth control in the form of land use planning and zoning in urban areas.

Where possible, the Proposed Project is sensitive to the environment. The plan has incorporated art and cultural displays within the passenger terminal, Kanaha Pond is preserved and maintained, and beach and public access will be improved. In addition, the Proposed Project will mitigate anticipated increases in air emissions and traffic congestion. That is, air emissions and traffic congestion will be worse if the Proposed Project is not implemented.

Agriculture. The purpose of the Agriculture Functional Plan is to increase the level of agricultural development (the organization of production and distribution of commodities to supply the demand within a market territory) in the State.[7] To achieve this, air transportation improvements are needed to deliver the agriculture supplies and commodities to their respective markets in a timely manner. Improvements include transportation scheduling and additional covered transfer areas and cargo handling facilities at airports.[8] The Plan also supports the continued growth of pineapple and sugarcane.

Comment: The Proposed Project (preferred alternative) includes improvements to meet the transhipment needs of agriculture and will better support air shipment of fresh pineapple product through improved freight facilities.

Full implementation of the Proposed Project will result in the conversion of prime agriculture land from sugar cane to airport use. However, the sugar cane industry is currently diminishing in Hawaii, and alternative land is available for sugar cane cultivation, especially areas of the former Wailuku Sugar Plantation which can be serviced by available irrigation water from West Maui surface sources, thus reducing demand on East Maui's heavily burdened surface sources. Currently, A&B Hawaii, Inc. has been or will be converting their agricultural lands in the Airport's vicinity to be irrigated by recycling of their Mill water. "Mill water" refers to the water used by A&B Hawaii in their sugar cane mill operations. This will reduce the impact on Maui's water supply. A&B Hawaii, Inc. has concurred that the 139 acres for the Phase 1 projects will not have a significant impact on their operations. However, A&B Hawaii has requested to continue farming the Phase 2 and 3 lands until such time as the land is needed for aviation use. The continued farming of these lands is also the intent of the HDOT-AIR until aviation demand precludes this option. When these lands are converted to airport use, A&B Hawaii, Inc. will be better able to determine the impact of the removal of those Phase 2 and Phase 3 lands from agricultural production.

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[7] Agriculture Functional Plan, 1991, p. II-2.

[8] Agriculture Functional Plan, 1991, p. II-13.

Conservation Lands. The Conservation Lands Functional Plan has a major theme of insuring that pristine lands are preserved, and that development occur on formerly developed lands.

Comment: The Proposed Project (preferred alternative) maintains and preserves the Kanaha Pond wetland and wildlife sanctuary. Components in the Proposed Project (drainage, land management) direct urban development impacts away from the Pond. The Proposed Project provides additional public access to the shoreline and there are no direct airport impacts which adversely affect the recreational use of the shoreline.[9] Development in the Proposed Project takes place on existing airport lands and some areas of existing agricultural lands which are not pristine.

Historic Preservation. The Historic Preservation Functional Plan emphasizes the need for preservation of history (including maintenance, repair and conservation of resources) and the need for development to be sensitive to existing cultural environments.[10]

Comment: The Proposed Project (preferred alternative) includes a report on the archaeology and history of the existing and proposed airport areas. The report documents the evolution of the Airport from a U.S. Naval facility during World War II to the commercial facility of today. The Proposed Project's expansions are into areas now intensely cultivated by heavy machinery used in the production of sugar cane. Significant archaeological disturbance is not anticipated for the short-term projects. However, certain Phase 2 and Phase 3 projects may disturb buried archaeological and cultural resources depending on the amount of subsurface excavation necessary. Steps to mitigate possible disturbance of these resources, including the retention of an on-call archaeologist, are included as components of the Proposed Project and in the Programmatic Agreement (Appendix T).

Energy. The Energy Functional Plan has a mission to reduce the dependence on fossil fuels and to attain increased energy self-sufficiency.[11] Recent legislation adds, "Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency."[12]

Comment: The Proposed Project (preferred alternative) contributes to the overall statewide reduction of dependence on fossil fuels through the extension of Runway 2-20. This extension would permit direct flights between the continental U.S. and Maui, thus avoiding the intermediate fueling stopover at Honolulu now required of Maui wide-bodied jet departures. In addition, an energy conservation program is in effect at the Airport.

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[9] Recreation is a permitted use in the aircraft noise areas affecting the shoreline.

[10] Historic Preservation Functional Plan, 1991, p. 9.

[11] State Energy Functional Plan, 1991, p. 6.

[12] H.B. No. 2631, H.D. 2, S.D. 1, Seventeenth Legislature, 1994, p. 4.

Recreation. The Recreation Functional Plan's objective is to provide a balanced program of acquiring, developing, conserving, using and managing Hawaii's recreation resources.[13] A component of the Recreation Functional Plan is the Wetlands Resources Plan Addendum (March 1988) which describes wetlands to be protected, including Kanaha Pond at Kahului Airport.

Comment: The Proposed Project (preferred alternative) adds to the recreational resources along the shoreline by providing additional public access to beach parks. The Proposed Project continues the actions of maintaining Kanaha Pond and protecting that wetland from further degradation.

7.6.2 COASTAL ZONE MANAGEMENT ACT (CHAPTER 205-A, HRS)

The objectives of the Hawaii Coastal Zone Management (CZM) Program, as set forth in Chapter 205A (HRS), include the protection and maintenance of valuable coastal resources. The Proposed Projects conforms to applicable Chapter 205A (HRS) CZM objectives.

Hawaii's CZM Act requires that projects in the coastal zone, termed the Special Management Area (SMA) for regulatory purposes, be consistent with the objectives of the CZM Act. This applies to State and Federal projects. Federal projects must go through a special review process with the Office of State Planning for this purpose. The review must occur at least 90 days prior to the date the agency proposes to take action, and the State must agree or disagree within 45 days of the agency's submittal for consistency declaration. The State may request a time extension (up of 15 days) from the federal agency requesting the consistency review. If the State determines that a proposed project is not consistent with the coastal program, either party may request a Secretarial Mediation (See 15 CFR 930.43).

State agencies must apply to the affected County for a Special Management Area permit for projects in that County's SMA. Determinations by the County are subject to review by the Office of State Planning. In the case of the Kahului Airport Master Plan, the County has determined that certain Master Plan components are within the SMA and that an SMA permit is required for them to proceed.

The Maui County Council has stated that an SMA permit is required for many of the proposed airport projects.[14] As described in the Maui County Council's letter these include:

1. *Extension of Runway 2-20 to the north* [*sic.* actually, the proposed lengthening is to the south of the existing runway];
2. *Strengthening of Runway 2-20;*
3. *New Airport Access Road on the northern side of Hana Highway;*

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[13] State Recreation Functional Plan, Technical Reference Document, December 1990, p. Iii.

[14] County of Maui, County Council, Letter to John D. Waihee, Governor, November 22, 1991 (reproduced in the Appendix to the EIS for the Kahului Airport Master Plan Update by HDOT-AIR, July 1992).

4. *Improvements to the terminal area complex;*
5. *Taxiways serving the parallel runway;*
6. *Some developments between Runway 2-20 and the parallel runway;*
7. *Improvements to the north of Runway 5-23;*
8. *Kanaha Beach Park improvements;*
9. *ARFF training facilities.* [obtained February 9, 1996]

Additionally, the following facilities may also fall within the SMA requirement: (i) the large transient aircraft parking apron; and (ii) improvements adjacent to Keolani Place (ground transportation subdivision, site for a flight kitchen; and (iii) the bulk jet fuel storage facility and fuel line).

The following are the State CZM objectives and a response statement which summarizes the primary feature or component of the Proposed Project in relation to CZM objectives. Phases 1 and 2 of the Proposed Project were found to be consistent to the maximum extent practical with Hawaii's CZM program. A consistency determination on Phase 3 cannot be made at this time. Once additional environmental analysis and documentation are completed in connection with Phase 3, a consistency determination will be made (Refer to Section 3.15 and Section 11.0, Reference 36). The Proposed Project meets these objectives as discussed below.

1. Provide coastal recreational opportunities accessible to the public.

   Comment: The Proposed Project provides additional access to and along the coastline, and provides additional parking for Kanaha Beach Park, a public recreation area on the shoreline.

2. Protect, preserve and where desirable, restore those natural and man-made historic and prehistoric resources in the CZM area that are significant in Hawaiian and American history and culture.

   Comment: The Proposed Project has included extensive archaeological and historic research which is reported in the Section 3.10 and Appendices H and T.

3. Protect, preserve and where desirable, restore or improve the quality of coastal scenic and open space resources.

   Comment: The Proposed Project process has incorporated the results of the Maui County Coastal Scenic Views study.

4. Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

Comment: The Proposed Project does not directly impact the shoreline and beach systems due to its location inland of the backshore area. The Kanaha Beach Park extension will not impact the shoreline.

5. Provide public or private facilities and improvements important to the State's economy in suitable locations.

Comment: The Proposed Project provides improvements to the Airport, which is a vital component of Maui's and the State's economy.

6. Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.

Comment: The Proposed Project generally is outside of the tsunami zone and the effects of stream flooding or subsidence. The facilities in the tsunami and flood zones will be designed to meet the requirements of that area. The Proposed Project will not cause erosion.

7. Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Comment: The Proposed Project has included an extensive public involvement process, and has responded to public input with plan changes, such as the withdrawal of several lease lots (near Kanaha Pond) from commercial use in the interest of wetland protection.

In addition to being subject to the CZM requirements, the area around the Kahului-Wailuku Wastewater Treatment facility is subject to the Coastal Resources Barrier Act. The purpose of this federal legislation is to protect coastal barriers which prevent shoreline erosion and which are significant natural geologic features. The act prohibits the expenditure of federal funds to modify beaches, reefs or coastal barriers under most circumstances. There are no proposed facilities affected by this designation nor are there any impacts which affect the designated area.

The County of Maui has identified coastal scenic resources in a recent report (Section 11.0, Reference 25). Significant views in the Airport's vicinity include: (i) the West Maui Mountains seen from the intersection of Hana Highway and Puunene Road; Kanaha Pond from Hana Highway; (ii) Haleakala and West Maui Mountains from Hana Highway; (iii) a line of trees from Hana Highway looking north; (iv) and views of the West Maui Mountains and Haleakala from Hana Highway near Spreckelsville. The Study, page 4-4, describes the airport as follows:

The expansive Kahului Airport lies makai (seaward) of the highway; the large aircraft and striking red roofs of the terminal area stand in marked contrast to the surrounding agricultural land.

The Study lists the Airport area as a noteworthy view of an important open space and includes Kanaha Pond as a distinctive view of a site of natural beauty (p. 4-5). This Study encourages the use of green belts and open space buffers (p. 6-8) .....*between sectors of non-similar land use*. These can help achieve visual transition zones and may .... *provide supplementary recreational lands and park facilities and can serve as drainage ways*.

7.6.3 GENERAL PLAN (MAUI COUNTY ORDINANCE 2039, 30 SEPTEMBER, 1991)

The general plan is a "broad policy document establishing in a comprehensive manner a set of guidelines which portray the overall direction of the County's future. It serves as a basis for an implementation program to effectuate desired changes and improvements in the social, economic, and environmental atmosphere of the County."[15]

Comment: The Proposed Project supports the General Plan in its social and economic goals.

The General Plan has five themes, which are as follows:

Protect Maui County's Agricultural Land and Rural Identity. "Amendments to the General Plan will preserve agricultural lands for the continuing pursuit of both land intensive and labor intensive agricultural pursuits. This action will also achieve preservation of an open space resource."

Comment: The Proposed Project should improve the economic outlook of diversified agriculture by providing the infrastructure capacity for air cargo flights. Sugar cane lands will be removed from cultivation with implementation of the new airport access road interchange and the parallel runway, but the loss of these lands is not expected to have an adverse impact on sugar production. The Airport is generally an open space feature which does not block long distance views from key locations; however, the landscape will change from sugar cane scenes to Airport scenes on the ocean side of the Hana Highway.

Prepare A Directed and Managed Growth Plan. "Amendments to the General Plan will preserve a desired quality of life where areas of urban settlement must be managed and directed within a framework that consistently and concurrently balances growth demands against human services need and physical infrastructure supply."

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[15] County of Maui, General Plan, 1990 Update, p. 19.

Comment: The Proposed Project serves as part of the infrastructure in Maui County in conformance with this theme.

Protect Maui County's Shoreline and Limit Visitor Industry Growth. "Amendments to the General Plan will discourage further urban development of the shoreline."

Comment: The Proposed Project serves to protect the shoreline in the area from urban development because of its noise and operational overlays on the landscape. Airport use is generally compatible with recreational use of the shoreline. The Proposed Project provides some shoreline recreation improvements to Kanaha Beach Park.

Maintain a Viable Economy that Offers Diverse Employment Opportunities for Residents. "Amendments to the General Plan recognize the need to maintain a healthy economy and broaden our economic base so that we are not so dependent on tourism."

Comment: The Proposed Project assists in providing the airport infrastructure to conform to this theme.

Provide for Needed Resident Housing. "Amendments to the General Plan address the development of resident housing as a major social need in our community."

Comment: The Proposed Project does not add to housing stock. The construction of the parallel runway (which will be fully assessed in a future environmental document, if applicable) will potentially have an impact on existing housing stock in East Spreckelsville due to noise, aircraft overflights and possible relocation.

The General Plan has objectives and policies for 7 major areas. The following is a summary of the objectives found in each of the 7 major plan areas.

Population, Land Use, The Environment and Cultural Resources.

Population.

"To plan the growth of resident and visitor population through a directed and managed growth plan so as to avoid social, economic and environmental disruptions."

Comment: The Proposed Project does not directly control population growth, which is a function of land use planning and local government policies.

Land Use.

"To preserve for present and future generations existing geographic, cultural and traditional community lifestyles by limiting and managing growth through environmentally sensitive and effective use of land in accordance with the individual character of the various communities and regions of the County."

Comment: The existing aircraft operations have direct noise effects on Spreckelsville. However, the Proposed Project does not increase the noise or overflight impacts. All Maui communities are affected by this infrastructure. The Airport is the landowner responsible for Kanaha Pond and the Proposed Project includes measures to protect it. The Proposed Project includes measures to improve recreational use of the shoreline.

"To use the land within the County for the social and economic benefit of all the County's residents."

Comment: The Proposed Project provides these benefits.

"To preserve lands that are well suited for agricultural pursuits."

Comment: The Proposed Project will remove some sugar cane land from production. However, as stated above, the loss of these sugar cane fields is not expected to significantly impact sugar production. The full impacts due to the parallel runway are not known at this time. Further environmental analysis will be completed prior to construction.

Environment.

"To preserve for present and future generations the opportunity to know and experience the arts, culture and history of Maui County."

Comment: The Airport dedicates space and funding for the display of cultural and artistic exhibits.

"To use the county's land-based physical and ocean-related coastal resources in a manner consistent with sound environmental planning practices."

Comment: Airport use is consistent with recreational use of the ocean and shoreline.

Cultural Resources.

"To preserve for present and future generations the opportunity to know and experience the arts, culture and history of Maui County."

Comment: The Airport dedicates space and funding for cultural and artistic exhibits.

Economic Activity, Visitor Industry and Agriculture.

General. "To provide an economic climate which will encourage controlled expansion and diversification of the County's economic base."

Comment: The Proposed Project enhances the air transportation infrastructure and related business opportunities.

"To provide a balance between visitor industry employment and non-visitor employment for a broader range of employment choices for the County's residents."

Comment: The Airport serves as a key infrastructure component of the visitor industry. It provides direct employment benefits, and it can help develop in non-visitor businesses and associated employment.

"Utilize an equitable growth management program which will guide the economic well-being of the community."

Comment: Because the Proposed Project tends to follow rather than lead or direct growth, it is integral to overall county growth management via the planning process.

Visitor Industry.

"To encourage exceptional and continuing quality in the development of visitor industry facilities."

Comment: The Proposed Project enhances the quality of visitor facilities in the form of improved airport infrastructure.

"To control the development of visitor facilities so that it does not infringe upon the traditional social, economic and environmental values of our community."

Comment: The Proposed Project is neutral in this area, which tends to be a product and result of county planning processes.

"To ensure that visitor industry facilities shall not disrupt agricultural and social pursuits and will not be allowed to negatively impact the County's natural and cultural resources."

Comment: The Proposed Project will reduce sugar cane acreage, but it will provide opportunities for diversified agriculture through increased cargo capacity.

"To develop a visitor industry which will enhance the social and economic lifestyles of Maui County's residents."

Comment: The Proposed Project, through its improved facilities, contributes to this objective.

Agriculture.

"To foster growth and diversification of agriculture and aquaculture throughout Maui County."

Comment: The Proposed Project will support this objective through its increased cargo capacity. Loss of sugar cane land can be mitigated through use of land now fallow.

"To maximize the use and yield of productive agricultural land throughout the County."

Comment: The Proposed Project will support this objective through its increased cargo capacity. Loss of sugar cane land can be mitigated through use of land now fallow.

Housing and Urban Design, Transportation, Water, Liquid and Solid Waste, Energy, Public Utilities and Facilities.

Housing.

"To provide a choice of attractive, sanitary and affordable homes for all our residents."

Comment: The Proposed Project has no impact in this area.

"Provide affordable housing to be fulfilled by a broad cross-section of housing types."

Comment: The Proposed Project has no impact in this area, except in Spreckelsville if relocation is necessary due to construction of the parallel runway during Phase 3 of the Project.

Urban Design.

"To see that all developments are well designed and are in harmony with their surroundings."

Comment: The Proposed Project is well designed, includes art and culture exhibits, maintains most view planes, and is generally in harmony with the surroundings.

"To encourage developments which reflect the character and the culture of Maui County's people."

Comment: The Airport includes art and culture exhibits which reflect the culture of the community.

Transportation.

"To support an advanced and environmentally sensitive transportation system which will enable people and goods to move safely, efficiently and economically."

Comment: The Proposed Project contributes to this objective.

"To develop a program for anticipating and enlarging the local street and highway systems in a timely response to planned growth."

Comment: The Proposed Project includes the Airport Access Road and interchange improvements which contribute to this objective.

"To develop a Maui County transportation system linked to land use planning that is less dependent on the automobile as its primary mode of moving people."

Comment: The Proposed Project has a significant impact on land transportation in the immediate area of the Airport.

Water.

"To provide an adequate supply of potable and irrigation water to meet the needs of Maui County's residents."

Comment: The Proposed Project has no impact in this area. However, the HDOT is planning the use of non-potable water for irrigation purposes.

"To make more efficient use of our ground, surface and recycled water resources."

Comment: The Proposed Project has no impact in this area. However, the HDOT is planning the use of non-potable water for irrigation purposes.

Liquid and Solid Waste.

"To provide efficient, safe and environmentally sound systems for the disposal and reuse of liquid and solid wastes."

Comment: The Proposed Project has no significant impact in this area.

Energy.

"To make Maui County more self-sufficient in its need for non-renewable energy and more efficient in its use of energy."

Comment: The Proposed Project has no impact in this area. The Proposed Project will allow more efficient use of aircraft and reduce aircraft delays. This in turn would be more energy efficient than the No-Action Alternative.

Public Utilities and Facilities.

"To anticipate and provide public utilities which will meet community needs in a timely manner."

Comment: The Proposed Project contributes to this objective.

"To improve the quality and availability of public facilities throughout Maui County."

Comment: The Proposed Project contributes to this objective.

Social Infrastructure - Access to Human Services, Recreation and Open Space, Health and Family, Education and Public Safety.

Access to Human Services.

"To coordinate through the Maui County Department of Human Concerns the establishment of quick and reliable access to human services."

Comment: The Proposed Project has no impact in this area.

Recreation and Open Space.

"To provide high-quality recreational facilities to meet the present and future needs of our residents of all ages and physical ability."

Comment: The Proposed Project contributes to this objective through the Kanaha Beach Park improvements.

"To provide a wide range of recreational, cultural and traditional opportunities for all our people."

Comment: The Airport and the Proposed Project contribute to this objective by providing air transportation facilities in support of these activities, and in its support of cultural and art exhibits.

Health and Family.

"To meet the health needs of all residents and visitors."

Comment: The Proposed Project has no impact in this area.

"To focus on the quality of family life including the young, the elderly, and the handicapped as the basic building block of community well-being."

Comment: The Proposed Project has no impact in this area.

Education.

"To provide Maui residents with continually improving quality educational opportunities which can help them better understand themselves and their surroundings and help them realize their ambitions."

Comment: The Proposed Project has no impact in this area.

Public Safety.

"To create an atmosphere which will convey a sense of security for all residents and visitors and aid in the protection of life and property."

Comment: The Proposed Project and the Airport provide a secure area for residents and visitors.

Special Programs.

"To create a community in which the needs of all segments of the population will be recognized and met."

Comment: The Proposed Project is a public facility, open to all segments of the community and the population.

Government.

"Improve the delivery of services by government agencies to all community plan areas".

Comment: The Proposed Project contributes to this objective.

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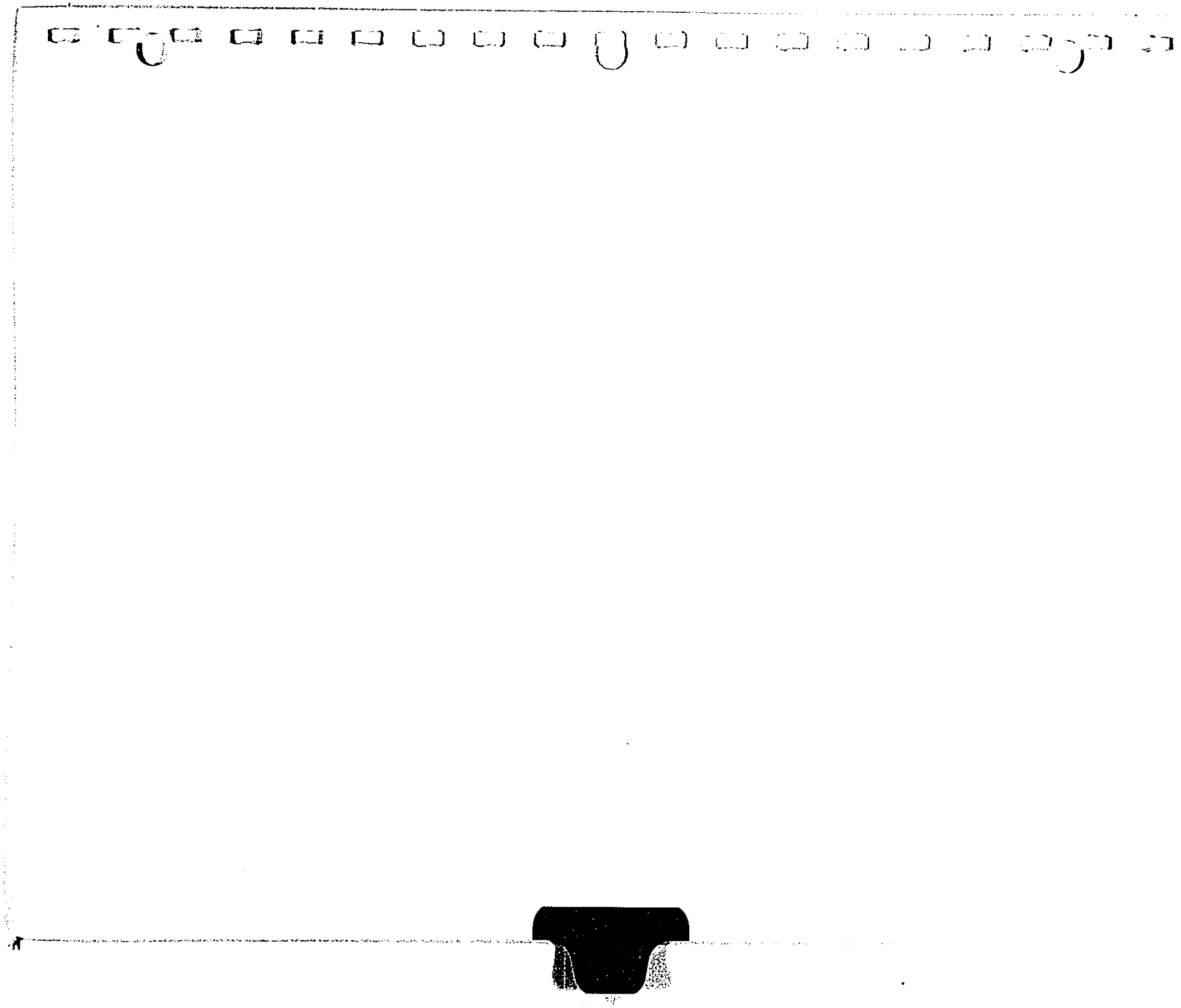


SECTION 8.0
OTHER RELATED ISSUES

On March 12, 1991, the Circuit Court of the Second Circuit, State of Hawaii, issued an order requiring that certain types of impacts unique to the Kahului Airport improvement project be investigated in this joint EIS ("the Court Order"). These issues are not actually part of the Proposed Project but are related to the airport and its environs. This Section discusses items 8 and 12 of the Court Order which are not covered in detail elsewhere in this EIS.

Item 8 of the Court Order provides as follows: *DOT shall investigate in the EIS realigning, widening and improving Alahao Street and extending it to the northeast to Hana Highway as a road which shall be open for public use providing through traffic along the coastal side of Kahului Airport.*

An investigation of the realignment, widening and improvement of Alahao Street and its extension to the northeast to Old Stable Road and thence to Hana Highway was performed by the 1993 Kahului Airport Master Plan, as described in Subsection 4.11.1.3 of that document. During the Master Planning process, a wide variety of parties submitted comments to this proposal and it was recommended that the roadway connection be restricted to use by pedestrians and bicycles except during emergencies. The potential impacts of this action are discussed in Section 8.1.

Item 12 of the Court Order provides as follows: *Until the subject of international flight operations is fully analyzed in the EIS to be prepared by DOT, the DOT shall not allow regularly scheduled international flights to land or take-off at the Kahului Airport and no facilities, including customs facilities, necessary for international flights, shall be constructed either on a temporary or permanent basis . . . .*

The issue of potential international flight operations has been discussed and analyzed in the EIS to the extent the forecasts predict an increase in international flights within the time frame analyzed. Currently, international flight operations can and do occur on a limited basis and are accommodated with the present airport facilities. The HDOT and FAA have little, if any, ability to control these international flight operations. Permanent FIS (international) facilities are not proposed at the Airport at this time because the forecasts do not indicate that this type of facility is required to accommodate projected international flight operations until at least the year 2010, with or without the proposed runway extension project. Interim FIS facilities may be needed prior to the year 2010, in order to accommodate bilateral agreement(s) for international flights to Maui. However, as there is no definite commitment or formal request for initiation of these flights pursuant to bilateral agreement(s), the actual date for the initiation of service is speculative at best and may or may not occur prior to 2010. It is anticipated that the short-term international flight operations would most likely be one-stop international flights, and could be performed on a limited basis without lengthening the runway or increasing the pavement strength at the airport (i.e., without the Proposed

Project). Therefore, the Proposed Project will not result in the operation of international flights that would not otherwise occur.

The analysis provided in Section 8.2 discusses, to the extent practical and reasonable, the potential impacts of international flight operations at Kahului Airport through charter or scheduled operations. However, a permanent FIS facility is not proposed at this time. In compliance with the court order, the potential environmental impacts of a permanent FIS facility are analyzed and discussed to the extent possible. If and when a permanent FIS facility is proposed, an independent or supplemental EIS will be completed to discuss and analyze the potential environmental impacts. In order to provide as much information as possible, to the extent any of the impacts associated with possible permanent FIS facilities and international flight operations in general, can be discussed at this time, Section 8.2 provides such a discussion. This discussion, however, is necessarily limited and somewhat speculative because no permanent FIS facility has been proposed at this time and the forecasts indicated that these facilities will not be needed until sometime beyond the year 2010. In addition, except for the JAL current bilateral and the existing pre-cleared Canada flights, there are no formal requests by other foreign carriers to initiate flights to Kahului at this time. As limited international flight operations could occur prior to 2010 with or without the Proposed Project, interim FIS facilities may be needed. The environmental impacts of the interim FIS facilities for limited international flights are discussed in Section 8.2.

A number of commentators appear to assume that the Proposed Project (preferred alternative) implicates or assures that permanent FIS facilities will be provided at Kahului Airport. In fact, the Proposed Project does not include permanent FIS facilities as a component, and the HDOT and FAA do not contend that the EIS would be adequate environmental documentation under HEPA or NEPA for such a facility. In addition, implementation of the Proposed Project is independent from and has utility separate from permanent international facilities. Permanent international facilities may or may not be needed in the future, independent from the Proposed Project.

8.1 ANALYSIS OF PUBLIC USE OF THE ALAHAO STREET/OLD STABLE ROADWAY CONNECTION

The Proposed Project includes the construction of a roadway connection from Alahao Street to Old Stable Road which would be used for emergency access, especially during times of heavy rains and flooding. The original alignment connected the new roadway in the Kanaha Beach Park improvements (included in the 1993 Master Plan) to Old Stable Road in Spreckelsville. However, the alignment was relocated to match the existing gravel roadway which is located north of the Airport's perimeter fence. This road would be used for emergencies only and also, parallels part of the Northshore Greenway Bikeway Project.

The Court-order requires that the EIS analyze the impacts of using the Alahao Street and Old Stable Road Connection as a public thoroughfare for all vehicles. The impacts identified through this analysis are described below:

8.1.1 Traffic Impacts

The volume of vehicular traffic would increase, not only due to direct access to the coastal areas, but also due to access to lower Kahului and Kahului Harbor. It is expected that truck traffic now using Hana Highway would be diverted onto this new roadway connection. A detailed analysis of the traffic impacts due to this alternative is provided in Appendix M. The new roadway would reduce the Hana Highway peak hour traffic by 3 to 6 percent below the Proposed Project. This amount of traffic would be accommodated on the new Alahao St./Old Stable Roadway connection and would typically represent a traffic volume increase of about 50 to 100 percent.

These new traffic volumes are within the capacity of a two-lane roadway. However, the diverted traffic would lower the intersection to LOS F during the peak hours (either am or pm) for the intersections of the following roadways: (i) Old Stable Road/Hana Highway; (ii) Kaahumanu Avenue/Hana Highway; and (iii) Hobron Street/Hana Highway. Currently, the LOS at these intersections is E, E (am) and F (pm), and F, respectively. This degradation of service levels constitutes a significant impact. Appropriate mitigation measures should be implemented.

In addition, the new roadway would increase the potential conflicts between bicyclists along the Northshore Greenway Bikeway and vehicles on the new roadway. These impacts are considered significant and appropriate mitigation measures should be implemented.

The new roadway would facilitate access to the Kanaha Beach area. In addition, the new roadway would reduce the number of beachgoers using the Airport Roadway and Ka'a Street to access the beach area. If Old Stable Road is closed for the parallel runway in the future, the new road would be the only access to West Spreckelsville.

8.1.2 Noise Impacts

Construction of the Alahao Street extension will create the potential for significant increases in vehicular traffic traveling along the shoreline between Kanaha Beach Park and Spreckelsville unless this extension is restricted to pedestrians and bicyclists. This would lead to increased traffic and related noise.

8.1.3 Social Impacts

There will be significant impacts to East Spreckelsville as the neighborhood character would definitely change. The social impacts of creating a thoroughfare along Alahao Street is analyzed in Appendix E.

8.1.4 Recreational Uses

The new roadway would need to be designed to accommodate the existing Northshore Greenway Bikeway, currently being planned by the County of Maui. The new road would increase shoreline and beach access.

8.1.5 Summary

Because of the potential negative impacts of using Alahao Street and Old Stable Road Connection as a public thoroughfare for all vehicles, the roadway connection under the Proposed Project will be restricted to use by pedestrians and bicycles, and open to other vehicles only in the case of emergencies.

8.2 ANALYSIS OF INTERNATIONAL FLIGHT OPERATIONS

8.2.1 EXISTING CONDITIONS

At present, Kahului Airport is designated by the U.S. Customs Service as a *landing rights* airport. A landing rights airport is an airport where incoming international flights must obtain prior permission to land and must furnish advance notice of arrival to U.S. Customs. In addition, The International Civil Aviation Organization (ICAO) identifies Kahului Airport as an alternate international airport. Kahului Airport is available for use by private and general aviation international flights, as well as commercial international charter flights.

Maui is a popular destination for international passengers who travel on regularly scheduled air carrier flights to Hawaii. The majority of international visitors are currently inspected in the Federal Inspection Service (FIS) facilities at Honolulu International Airport (HIA). These visitors then board regularly scheduled domestic interisland flights to Maui. A smaller number of international visitors are pre-cleared in their country of origin and fly directly to Maui. Once pre-cleared, international passengers can be processed at the destination airport in the same manner as domestic passengers.

International service is different from domestic service in that airlines must receive government approval, through the U.S. State Department and U.S. Department of Transportation, to fly a given international route before the flights can begin. International air service routes are generally negotiated and awarded pursuant to treaties between the U.S. and foreign governments. In addition, the route may sometimes be provided on the basis of comity and reciprocity in the absence of an agreement, and some foreign air carrier operations to U.S. airports may be authorized by exemption under the so-called Cities Program in limited situations. The terms of any bilateral agreements vary greatly from country to country, and new agreements are negotiated with countries on an ongoing basis.

Under the Open Sky Policy (U.S. International Transport Statement, April 1995) a foreign government could negotiate with the United States Government for an Open Sky Agreement. This agreement

would allow a foreign air carrier to request, through the U.S. Department of Commerce, permission to land at specific airport(s) within a U.S. Custom Port, provided that the airport has the infrastructure to accommodate these flights and passenger demand. The U.S. Department of Commerce must also receive assurances from the community surrounding the airport that the community supports the foreign air carrier's entry into the airport. There are no current or foreseeable requests with the U.S. Department of Commerce for air service into Kahului requiring an Open Sky Agreement.

If a treaty exists providing for international service, the routes provided may be granted by the U.S. Department of Transportation pursuant to formal application for any carrier, foreign or domestic, the latter designated by its government to serve a particular airport. Depending on the treaty, the application process to serve a particular market may be fairly routine or costly and complicated. It may be accomplished through a show-cause non-hearing procedures, or it may involve an extensive carrier selection hearing procedure, particularly in the case of multiple applications for a limited designation market providing for only one or a limited number of U.S. carriers.

From time to time, informal contacts or inquires are made by international air carriers concerning potential service to Kahului, Maui. Both U.S. DOT and HDOT-AIR representatives maintain monitoring of and liaison with industry associations, U.S. and foreign air carriers, and matters of interest to Hawaii, to keep advised with respect to air transport developments of both general and specific concerns.

Current bilateral agreements between the United States and Japan allows Japan Airlines (JAL) to provide one-stop service from Tokyo to Kahului with a stopover in Honolulu. This is based on a 1989 Memorandum of Understanding (bilateral agreement) between the governments of Japan and the United States. The bilateral states, that Japan Airlines is permitted to serve Maui on a one-stop basis via any point in the United States that the designated air carrier is authorized to serve (such as Honolulu International Airport), provided that the new points selected for such one-stop service are not receiving single-plane service to Japan by a United States airline. Frequencies to Maui may not exceed seven flights per week. Up to this point, JAL has elected not to fly to Kahului, choosing instead to terminate its flights at Honolulu and switching Maui-bound passengers onto interisland flights. Recently, however, JAL has expressed its intention to access its right to make one-stop, direct flights to Kahului Airport. However, without the definite commitment from JAL, the actual date for the initiation of one-stop service is speculative at best and may or may not occur prior to 2010. This could be performed on a limited basis without lengthening the runway or increasing the pavement strength at the airport. However, interim international arrival facilities within the existing terminal building will need to be installed. The decision to initiate one-stop service to Maui is a business decision that is made by JAL and is beyond the control of the State of Hawaii Department of Transportation and the Federal Aviation Administration. This business decision on the part of JAL is a result of many factors such as, but not limited to the following: (i) general economic conditions; and (ii) marketing scenarios. Furthermore, the one-stop flights from Japan proposed by JAL can and would occur regardless of the Proposed Project.

In recent years, Hawaii has seen a dramatic fall-off of international flights because international air carriers such as Singapore Air, Malaysian Air and Cathy Pacific over-fly Hawaii from Asia to the U.S. mainland. These airlines all have bilateral agreements and landing rights to Honolulu, but due to economic and strategic considerations these airlines have chosen to end service to Hawaii. Therefore, it is not possible to fly direct to Hawaii, from long-haul gateway cities in Southeast Asia, due to a perceived lack of regional demand.

Currently, pre-cleared international flights from Canada are landing at Kahului Airport as regularly scheduled flights and are departing directly to Canada (Vancouver) without weight restrictions on the existing runway. These pre-cleared Canadian flights started in 1992 as chartered flights, with regularly scheduled flights beginning in 1996. Other pre-cleared flights from Canada or elsewhere maybe scheduled in the future regardless of whether more facility improvements are made at the Airport. Because these flights are pre-cleared and because Kahului is a publicly owned and financed airport, the Hawaii Department of Transportation (HDOT) cannot discriminate against any aircraft that wishes to use the Airport. Over the years, Kahului Airport has received federal funds which mandates compliance with federal conditions imposed on the use of these funds. As part of the federal aid, HDOT "will comply with all federal laws, regulations, executive orders, policies, guidelines and requirements as they relate to the application, acceptance and use of Federal funds ...." (Part V, Assurances, Airport Sponsors, October 1, 1990).

8.2.2 ACTIONS REQUIRED FOR APPROVAL OF REGULARLY SCHEDULED INTERNATIONAL FLIGHTS

As a pre-condition for serving regularly scheduled international flights that are not pre-cleared, Kahului Airport must obtain two major federal approvals requiring the action of a number of U.S. government agencies:

(1) Approval of Scheduled International Service, requiring the:

- Preparation of Traffic Volume Estimates.
- Meetings with the District Director of U.S. Customs.
- Consideration and approval of the District Director.
- Referral to the Regional Commissioner and Customs Headquarters.

(2) Approval for the Construction of Facilities, requiring the:

- Preparation of Expanded Facilities Preliminary Plan.
- Consideration of Facilities Preliminary Plan and Consultation with the Federal Inspection Services (FIS).
- Funding of Facilities Construction.
- Approval of the Final Facility Plan.

Prior to the construction of permanent international facilities, a new or supplemental environmental impact statement will be completed to discuss and analyze the potential environmental impacts.

8.2.3 TRAFFIC VOLUME ESTIMATES

Traffic volume estimates for regularly scheduled international flights at Kahului Airport have been made on the assumption that service would begin in the year 2010. Updated aviation demand forecasts for the Hawaii statewide airport system were prepared in 1994 (Section 11, Reference 6). These forecasts estimate that there would be a total of 511,000 (arriving plus departing) direct international passengers in the first year of service.

For airport facility forecasting purposes, international passengers as shown in the forecasts are a subset of the total international passengers using the Airport. The forecast international passenger figures are primarily used to determine the facility requirements for FIS facility and processing analysis. Those international passengers which do not use FIS (e.g. those pre-cleared at the originating airport or processed at another international airport) are shown as domestic passengers.

These forecasts also estimate that the total number of passengers in 2010 would be 7,988,000, of which 2,041,000 are overseas passengers, 511,000 are international passengers and 5,436,000 are interisland passengers. Direct international flights would therefore account for 6.4% of the total number of passengers passing through the airport in 2010. The forecasts assumed that most of the direct international flights would originate and terminate in Japan.

An independent analysis with respect to growth-induced impacts of direct international flights was completed for this EIS. The complete results of the analysis are presented in Section 6.0 and Appendix E of this report. This analysis was based on a maximum impact scenario. Even under this scenario, if direct international flights were to begin at this time, the initial frequency of flights would only be two or three flights per week. These flights would primarily transport passengers who presently use the interisland airlines to reach Maui; the number of previously "uncaptured" international visitors would be small. The growth inducing impacts are summarized later in this section.

8.2.4 AIRPORT FACILITY REQUIREMENTS

In order to serve regularly scheduled international flights, Kahului Airport would have to be provided with appropriate FIS facilities. The size and configuration of these facilities would be determined by forecast passenger levels in the future, and as part of the previously described approval and construction process. However, two feasibility studies have been performed that give an indication of what facilities may be required. The "International Flights Facilities Requirements Study" (Section 11, Reference 23) was performed in 1989 in conjunction with the Kahului Airport Development Plan; and the "Feasibility Study on Providing Facilities to Support International Flight Operations at Kahului Airport" (Section 11, Reference 24) was performed in 1990.

These studies conclude that suitable facilities would require a (minimum) three and one-half (3.5) year design/construction period, running from project approval to facility operation, and involve the expenditure of between $10 and $15 million 1990 dollars. The FIS agencies require a one year lead time notification-of-intent to give them adequate time to recruit and train personnel.

Conceptually, the international arrival facility would be an addition to the new passenger terminal, either as an integral part of the terminal or dedicated building, and have between 50,000 and 60,000 sq. ft. of floorspace for FIS processing activities.

In addition to FIS facilities, Kahului Airport would ultimately need a runway of sufficient length to permit economical direct flight operations by international air carrier aircraft. Requirements for lengthened and strengthened runways are discussed in detail in Section 4.0 and Appendix N of this EIS. The present 7,000 ft. length of Runway 2-20 is adequate for landing large jet aircraft but not for long range, non-stop, fully loaded take-offs. Therefore, direct international flights can operate at Kahului Airport without a lengthened runway if air carriers choose to stop at Honolulu (HIA) to refuel for the return flight. Furthermore, based on the technical analysis in Appendix N, an international air carrier operating B747 series aircraft into Kahului, should be able to fly directly to Tokyo with almost full loads of passenger and baggage, but with a substantial cargo penalty with the existing runway and without the Proposed Project, on a limited basis. Unlike domestic air carriers that use DC10 and L1011 aircraft for their overseas flights, JAL uses a mix of B747 aircraft in their fleet servicing Hawaii. Therefore, JAL could initiate service at this time, either on a direct non-stop or one-stop basis, without the Proposed Project. The runway analysis for various large aircraft is presented in Appendix N.

It should be noted, that the existing terminal facility can be modified to serve as an interim facility, given that the international flight demand is low. Modifications for an interim FIS facility would include: (i) removable partitions; (ii) booths; and (iii) related equipment used to reconfigure Holdroom F for Immigration and Naturalization Service (INS) inspection. In addition, the area under Holdroom E would be modified to allow for Customs and USDA-APHIS inspection counters and baggage pickup. This would include the use of static baggage racks and removable inspection counters. These facilities could possibly accommodate up to one flight every four hours or two staggered flights per day. Even this interim facility would require approval of scheduled international service, and approval and construction of facilities.

8.2.5 POTENTIAL IMPACTS OF DIRECT INTERNATIONAL SERVICE

The potential impacts of direct international service to Kahului Airport are discussed in this section, to the extent possible. The impacts identified are characterized as "potential" and "preliminary" because no permanent FIS facility is planned at this time and many other external factors not related to the Airport may affect the potential impacts and their significance. The impact categories and significance analysis will be based on those established and previously described in Section 3.0.

The requirement for FIS facilities has substantial independent utility from the runway extension. Even without the FIS facilities the runway extension will provide the overseas aircraft to fly fully loaded to west coast, mid-west and east coast airline destinations. In addition, the implementation of the runway extension does not foreclose the opportunity to consider alternatives to permanent international facilities, and does not irretrievably commit Federal or State funds to the those facilities.

The environmental impacts of any new permanent FIS facility would need to be addressed in an environmental analysis as required under Chapter 343, HRS and NEPA, at the time it is proposed. Currently, the 1993 Master Plan makes no provision for an FIS facility. Earlier planning studies which have been superseded by the 1993 Master Plan have considered FIS facilities at Kahului as previously noted.

8.2.5.1 Noise Impacts

No significant impact is expected. Noise impacts related to direct international flights are discussed in Appendix C. The analysis shows that the noise contours are essentially the same with international flights when compared to the Proposed Project without international flights, due to the: (i) small percentage of international operations relative to the total airport operations; (ii) flights occurring during the daytime hours; and (iii) use of stage 3 aircraft. The analysis was based on the following assumptions:

- At present, the majority of international passenger flights arriving and departing at Honolulu International Airport do so between 7:00 a.m. and 10:00 a.m. (Except the Canadian flights which arrive at approximately 10:00 p.m. and depart at approximately 11:00 p.m. depending on daylight savings time.)

- Estimates of the frequency of flight range from a few flights per week with present pre-cleared international passenger volumes to Maui (Appendix E)*, to a maximum of three (3) international flights per day by 2010.

- Use of Stage 3 aircraft. Currently, all pre-cleared flights are Stage 3 aircraft. It is expected that the international flights into Kahului will use Stage 3 aircraft, as the current international flights into HIA are using Stage 3 aircraft

There are no significant impacts expected due to the construction of a permanent FIS facility, however, there will be some short-term noise impacts during construction. There will be no noise impacts expected due to the construction of the interim FIS facility because this type of temporary facility will be within the existing terminal.

8.2.5.2 Land Use Impacts

No significant impacts are expected, because there will be no increase in aircraft noise, and no new land areas will need to be acquired to support the necessary permanent (FIS) international facilities. The interim FIS facility will not require any land use changes or land acquisition as it will be in the existing airport terminal building.

8.2.5.3 Geology, Physiography, Soils, Agricultural Potential And Earthquake Impacts

New permanent FIS facilities at the airport may have significant impacts as it will increase the potential for damage by an earthquake. These impacts would be mitigated by following the applicable design and building codes during the design and construction of a new international facilities. The interim FIS facility would have no impact because no new structures/facilities would be constructed.

8.2.5.4 Socio-Economic Impacts

As discussed in Appendix E, there is a potential for growth with the introduction of direct round trip international flight operations. If this growth is realized, which would require more tourist accommodations to be constructed, some social impacts would result. At this time the level of significance of these impacts, positive and negative, is unknown because many unpredictable factors external to airport operations are involved, including the building of more tourist accommodations. The growth-induced social impacts are summarized under the growth inducement analysis in Section 8.2.5.23, Section 6.0 and Appendix E. The construction of international facilities would be dependent on the need for such a facility to accommodate aviation demand forecasts. HDOT-AIR has no plans to construct such facilities unless and/or until the demand or forecast demand warrants such action. The Proposed Project, including the runway extension, has independent utility from any FIS facility.

The impact of the permanent FIS facilities, itself, are not expected to result in significant socio-economic impacts. The permanent FIS facility would require the staffing of customs and immigration and naturalization services by the Federal government. The socio-economic analysis addressed the issue of internationalization, and the analysis is summarized in Section 8.2.5.23 and presented in detail in Appendix E. The conclusion for the growth inducing impacts of internationalization was that there was a potential "maximal" impact of 11 to 21 percent depending on the initial hypothesis used.

The impact of the interim facility will be insignificant. However, it would require staffing of customs and immigration and naturalization services by the Federal government. As stated in Appendix E, the near-term impacts for limited international flights will be insignificant.

8.2.5.5 Secondary (Induced) Socio-Economic Impacts

As discussed in Appendix E, there is a potential for growth with the introduction of direct round trip international flight operations. If this growth is realized, which would require more tourist accommodations to be constructed, there would be some socio-economic and economic impacts. At this time the precise level of significance of these impacts, positive and negative, is unknown as many external factors are involved. The growth-induced socio-economic and economic impacts are summarized in Section 8.2.5.23, Section 6.0 and under the growth induced impact analysis in Appendix E. The construction of international facilities would be dependent on the need for such a facility to accommodate aviation demand forecasts. HDOT-AIR has no plans to construct such facilities (either permanent or interim) unless the demand or forecast demand warrants such action.

The construction of interim facilities would have insignificant impacts on induced (secondary) socio economic impacts as it will be located in the present terminal, and can only accommodate a limited number of international aircraft during the day. As stated in Appendix E, the short-term international flights will not have any growth inducing impacts.

8.2.5.6 Air Quality, Climate And Meteorology Impacts

Based on the analysis performed for the Proposed Project, the FIS facility is not expected to result in any significant impacts on climate, meteorology and air quality.

8.2.5.7 Water Quality Impacts

No significant impact is expected as the permanent FIS facility will not be constructed near a body of water or expected to cause significant changes to the stormwater runoff at the Airport. The interim facility would have no impact as it is within the existing terminal building.

8.2.5.8 Department Of Transportation (DOT) Act, Section 4(f) Impacts

The construction of any FIS facility would be on the airport proper and will not impact lands covered under the DOT Act, Section 4(f). The interim facility would have no impact. The impact of the introduction rate of alien species is discussed in Sections 8.2.5.10 and 8.2.5.23.

8.2.5.9 Historic, Architectural, Archeological And Cultural Resources Impacts

The construction of a new international facility will likely be on lands which have been previously disturbed and is not expected to impact any historical, architectural, archaeological or cultural features. The interim facility would have no impact.

8.2.5.10 Biotic Communities Impacts

The construction of new facilities will probably be on previously disturbed lands and is not expected to have any impact on biotic communities, including endangered species. The interim facility would have no impact on biotic communities due to construction.

Direct international flights to Maui has led to a concern about the introduction of alien species into Maui's ecosystem. The protection of Maui's environment against alien pests that could be introduced by the arrival of direct overseas flights hinges on measures of control taken by state and federal agricultural inspection services. The island of Oahu has been faced with this problem for many years due to the arrival of direct overseas flights at HIA. Maui has actually been exposed in a secondary fashion because numerous overseas visitors proceed directly to Maui after FIS processing at HIA, and pre-cleared Canadian visitors and overseas aircraft land at Kahului. Failure to detect pests on their persons or in their possessions could lead to infestation on Maui even under present conditions.

International inspection by USDA is funded from an international arrivals inspection fee of $1.45 per passenger. This fee is paid by the passenger, collected by the airline as part of the ticket cost, and then paid by the airline to USDA. There is also an inspection fee of $53 per aircraft paid by the airline for USDA to inspect the plane and the cargo. Because it is separately funded, obtaining personnel for international USDA inspection is not difficult, in fact it is mandated by federal law. This should not be confused with USDA pre-clearance inspection for domestic US flights which is paid out of the federal government's general fund. In addition to USDA fees, the international arrivals fees for Customs is $5.00, and for INS $5.00. These are collected the same way as USDA's fees by the airlines. All tolled international passengers each pay $11.45 in arrival fees.

Given that Maui has a more sensitive agricultural environment than Oahu because of it's emphasis on flowers and tropical fruits, it will be necessary to provide Kahului Airport with modern inspection facilities and for the inspection services to operate with effective procedures to enforce stringent standards. The 2010 forecasts assume two direct international flights per day at Kahului, and even if this doubles in the long term, thorough inspection of that relatively small number of aircraft and passengers should not be difficult. In fact, having agricultural inspection facilities and procedures at Kahului Airport that are tailored to Maui's specific needs may be more effective in excluding alien pests than those at HIA.

An alien species task force has studied this problem in depth and has implemented several of its recommendations, one being the formation of the Coordinated Group on Alien Pest Species. In addition, the FAA has produced a biological assessment to analyze the impact of the Proposed Project on the introduction rate of alien species to Maui. This issue is addressed further in Sections 3.11.3, 5.0, and 8.2.5.23. The recommendations of ASAP and other information on the alien species, including the biological assessment are presented in Appendices Q and U. A "no jeopardy" biological opinion was issued on July 23, 1997 by the USFWS on the Proposed Project and is also presented in Appendix U. The USDA is the responsible agency for the inspection of international arrivals to Hawaii and has stated that it has

adequate resources to perform their duties. However, HDOT must provide USDA adequate space and facilities at Kahului when scheduled international arrivals begin at Kahului Airport, regardless of the Proposed Project.

8.2.5.11 Wetlands Impacts

If a new or interim FIS facilities is built at Kahului Airport, it will be located in the existing terminal area and, therefore, no impacts to wetlands are expected.

8.2.5.12 Hydrology, Floodplain Management And Drainage Impacts

The location of new or interim FIS facilities will be in the existing terminal area. No significant impacts are expected.

8.2.5.13 Coastal Zone Management Program Impacts

The location of permanent FIS facility will be in the existing terminal area, and therefore, no significant impacts are expected. The location of the interim FIS facility will be in the existing terminal building and no impacts are expected. However, it is expected that the HDOT-AIR will be required by Maui County to apply for an SMA permit for the construction of permanent FIS facilities, as the airport is within the SMA boundary.

8.2.5.14 Wild And Scenic Rivers Impacts

There are no wild and scenic rivers near Kahului Airport, therefore this category is not applicable.

8.2.5.15 Coastal Barriers

There will be no impacts by either the permanent or interim FIS facility on the Coastal Barriers.

8.2.5.16 Farmland Impacts

It is expected that the location of a permanent or interim FIS facilities would be within existing terminal area, and therefore no impact to farmland is expected.

8.2.5.17 Energy Impacts

New permanent FIS facilities will increase energy usage at the airport. The significance of this impact will not be known until the FIS facility is planned and reviewed by the HDOT and

MECO. The interim facility will be located in the existing terminal and will have an insignificant impact on energy use.

8.2.5.18 Light Emissions Impacts

The design and construction of new permanent FIS facilities is expected to produce similar types of light emissions which presently exist at the Airport. Therefore, it is expected that the impact of these lights would be similar as present. The interim facility would not require changes to the lighting at the airport terminal facilities and no impacts are expected.

8.2.5.19 Solid Waste, Hazardous/Toxic Waste And Waste Wash Water Impacts

No significant impacts are expected from the permanent or interim FIS facility. The disposal, treatment and management of these waste products will be in accordance to all applicable Federal, State and County rules and regulations. As necessary, facilities will be constructed to dispose of wastes from international flights, such as an on-site autoclave.

8.2.5.20 Visual Impacts

The design and construction of new permanent FIS facilities is expected to utilize similar architecture that presently exist at the Airport's terminal area. Therefore, no significant impacts are expected. The interim facility would be located in the existing terminal and there will be no significant visual impacts.

8.2.5.21 Public Facilities, Infrastructure And Services And Airfield Safety Impacts

As discussed in Appendix E, there is some potential for growth with the introduction of unlimited direct round trip international flight operations. It is expected that the growth *without new land use permits for hotels or tourist accommodations*, would have no significant impact on public facilities, infrastructure and services, as demand for public facilities grows along with resident population. However, if new land uses for resorts are granted, there is a potential for a growth of international visitors and, therefore, growth in resident population. It is anticipated that with more regularly scheduled international flights, the existing but unfilled police position for drug control would likely be staffed.

Direct international flights would follow all applicable aircraft operational regulations and therefore, no negative impacts are expected in the area of airfield safety.

Appendix M presents an analysis on the impacts of direct international flights on the roadway system. Due to the possible change in arrival and departure times of direct

international flights the peak hour morning traffic could increase by about 13 percent and the afternoon peak hour could increase by about 7 percent above the Proposed Project. The added traffic volumes would generally have an insignificant impact to the intersection capacity being utilized at the forecast volumes. However, at those intersections which are deficient under the Proposed Project, the increase in peak hour traffic would worsen the situation. The traffic increases would have the largest impacts at the following intersections: Airport Access Road/Kuihelani Ave/Puunene Ave., and Airport Access Road/Dairy Road. The proposed mitigation measures in the Proposed Plan (Section 3.0) would be sufficient to accommodate the increase in traffic.

The permanent or interim facilities will have insignificant impacts on public services, aviation safety or surface transportation.

8.2.5.22 Construction Impacts

Short-term construction impacts for the permanent FIS facility include the following:

- The creation of about 90 person-years of construction employment
- Increase air borne emissions due to construction activities. No significant impacts are expected. Mitigation of these impacts will follow the applicable Federal, State and County rules and regulations.

The interim facility would have insignificant impacts because minimal construction would be required.

8.2.5.23 Growth Induced And Cumulative Impacts

Concern has been expressed by some members of the community that the initiation of direct international service at Kahului Airport would result in a large increase in foreign visitors to Maui, placing undue burdens on island infrastructure and other resources, as well as inundating its natural attractions with visitors and causing secondary socio-economic impacts. As noted, passenger traffic volume estimates indicate that 6.4% of the total passenger volume in the year 2010 would initially come from direct international flights. However, this is not necessarily a measure of the increase in visitors that would be engendered by direct service. Several studies of the growth-inducing aspects of the proposed improvements at Kahului Airport have been prepared for this EIS and are discussed in Section 6.

As stated in Appendix E, in 1993 there were 317,870 Japanese visitors to Maui which is approximately 14 percent of the total Maui visitors. In general, the SIAR concluded that few, if any, new foreign visitors would be attracted by direct air service to Maui in the short term. This

conclusion was based on the facts that: (i) Japanese tourist still represent a fairly small part of Maui's visitor industry; and (ii) the initial consequences of international flights would be limited to a few flights a week, and these flight may only serve the current level of Japanese visitors to Maui.

In the long term, an increase of between 8% and 10% of all visitors both international and domestic is forecast, indicating that direct international service would probably have a relatively small impact on tourism growth. However, this level of potential increase in the visitor population could only be achieved if local government issues additional permits for resort unit development. In addition, the analysis stated that the tourist demand is far more a function of expected on-site experiences at resorts than of expected travel experiences.

In general, in order to analyze growth due to direct international flight operations, broad based assumptions about the future size of Maui's visitor plant, long range private industry policy, long range government policy, future international relations, future air route negotiations and other intangible factors must be made. For example, if it is assumed that Maui County establishes a cap on the number of visitor units permitted on the island, direct international flights would probably have no significant effect on the number of units developed. They may increase occupancy rates moderately due to the convenience of direct flights and the visitor mix may change to include more international visitors. However, since the number of visitor units will not change once the cap is reached, infrastructure and traffic impacts caused by more international visitors should be insignificant. The socio-economic effects of a visitor mix with more international visitors depends on where the visitors come from, which, in turn, depends on long range private industry and government policies as well as future international relations. The general socio-economic impacts of growth are discussed in Section 3 and Appendix E. However, since the 1993 Master Plan does not propose to add **permanent international arrival facilities** at Kahului Airport, this issue will be addressed in a future environmental document prepared for that purpose.

It should be noted that the amount of service to Kahului is primarily dependent upon factors unrelated to the Proposed Project. Generally, the future expansion of domestic or international service is beyond the control of the FAA and HDOT. Rather, it will be a result of many factors which contribute to an airline's decision to provide service to an area including, but not limited to the following: (i) availability of hotel accommodations; (ii) general economic conditions; and (iii) the marketing scenarios.

As presented in Section 5.0, the cumulative issues of water quality, water supply, health care and alien species would remain a significant cumulative impact, with or without the Proposed Project and International Operations. As stated in Section 5.1.4.1, the use of erosion control measures, sediment control measures, and Best Management Practices would minimize the runoff into the nearshore water areas. As stated in Section 5.1.4.2, to reduce the demand on the potable water supply, the HDOT is planning the use of non-potable water for irrigation, the use of drought-resistant and salt-tolerant landscaping, recycling rental car wash water, and replacement of deteriorating water lines.

The USDA is the responsible agency for the inspection of international arrivals to Hawaii and has stated that it has adequate resources to perform their duties. However, HDOT must provide USDA adequate space and facilities at Kahului when scheduled international arrivals begin at Kahului Airport, regardless of the Proposed Project.

The mitigation measures proposed in the biological assessment and biological opinion were developed in connection with the Proposed Project and are intended to supplement mitigation measures set forth in the Draft EIS. It is recognized in the studies, that the FAA and HDOT-AIR have a limited role in the control or interdiction of alien species. Therefore, the proposed mitigation measures are in support of the Federal and State agencies that have the responsibility for the inspection for alien species at the Airport. The two primary agencies are the HDOA, which is responsible for inspection of alien species on domestic arrivals; and USDA which is responsible for inspection of alien species on international flights.

The conclusion of the "no jeopardy" biological opinion is that the following mitigation measures should be taken at Kahului Airport to reduce the "introduction rate" of any alien species due to the Proposed Project to the extent possible, and to also mitigate the present rate of alien species arriving on overseas flights. As recognized in the biological assessment, these mitigation measures have been developed to intercept the whole spectrum of potential alien pests, as specific alien species that may impact listed and candidate species were not identified. Therefore, these mitigation measures will apply equally toward alien species that may impact native species, native ecosystems, agriculture and humans and will be in effect by the completion of Phase 1 of the Proposed Project.

PRE-ENTRY

- *Pre-entry Traveler Education about Alien Species.* The HDOT-AIR will support the CGAPS in their educational role of informing the traveling public of the dangers of alien species, particularly in promoting an alien species video acceptable for in-flight viewing.

- *Notification of New Routes to Maui.* The HDOT-AIR, as a member of CGAPS, will keep CGAPS informed of any new proposed domestic or international routes to Maui. CGAPS members include the Hawaii Department of Agriculture, the U.S. Department of Agriculture, and the Fish and Wildlife Service.

- *Treatment of Cargo Holds.* The HDOT-AIR, will develop a voluntary program for all airlines serving Kahului Airport using a non-chemical best practical pesticide/pest prevention treatment program for aircraft cargo spaces.

PORT-OF-ENTRY

- *Traveler Education Regarding Alien Species Risks, Quarantine Restrictions, and Penalties.* The HDOT-AIR shall support efforts by CGAPS and others to adequately and effectively inform arriving passengers of the dangers posed by alien species, the nature of quarantine restrictions, and the penalties for violations. Current CGAPS plans are for this education program to be self-supporting, therefore, funding commitment is not required.

- *Training of Airline and Airport Personnel in Alien Species Recognition and Response.* A voluntary education program will be planned and implemented by HDOT-AIR that will train airport employees, baggage handlers, airline cabin personnel, and others. This program will educate these personnel to recognize and report smuggled animals and plants/fruit, stowaway snakes and insects, and new alien species on airport grounds. HDOT-AIR will coordinate the planning of this program with HDOA, USDA and CGAPS.

- *Arrival Inspection Facilities.* The HDOT-AIR will support HDOA domestic arrival inspection by installing a data link between arrival gates and baggage claim, installing one X-ray machine to test the feasibility of inspecting arriving baggage, installing a paging system at baggage claim, and supplying office space, kennels and inter-terminal golf carts as necessary. HDOT-AIR will furnish the infrastructure and support to adequately meet USDA inspection needs for international arrivals.

- *Additional Agriculture Arrival Inspectors.* The HDOT-AIR will fund one additional inspection dog and three additional agriculture inspector positions, one of which will act as a handler for the dog, bringing the total to eleven inspectors and two dogs. In light of the proposed measures in the project, and with these additional inspectors, HDOA has determined that it will be able to adequately inspect incoming domestic air traffic associated with the project.

- *New Air Cargo Building.* The HDOT-AIR will design and construct a new air cargo building to meet existing and forecast demands, to include an industrial air curtain barrier to prevent escape of any insects during inspection of air cargo containers;

offices and facilities for U.S. Customs, USDA and HDOA; lab space, freezer and sterilization/incineration facilities; space for X-ray equipment; and computer equipment and facilities for the HDOA alien species database system.

- *Quality Control Program.* The HDOT-AIR will design and fund, on an ongoing basis, a comprehensive program to monitor the efficacy of the alien species interdiction system at Kahului Airport. The program shall be designed in consultation with HDOA, USDA, and CGAPS, and shall be developed and operated by a consultant or agent under the control and management of HDOT-AIR. The program will provide yearly reports to all concerned agencies. These reports shall include summaries of all alien species interceptions from all airport-based operations, their origin and mode of arrival, to the extent possible, and estimates of the efficiency of the inspection system for various taxonomic groups of concern. HDOA will take the lead in developing these estimates which should be based in part on tests of the system (*e.g.*, attempted smuggling, random sampling of passenger effects and cargo, complete inspections of aircraft). The yearly reports shall also include recommendations to improve efficiency of the inspection system and the quality control program itself. The program will be integrated with the existing USDA Quality Control system for international arrivals.

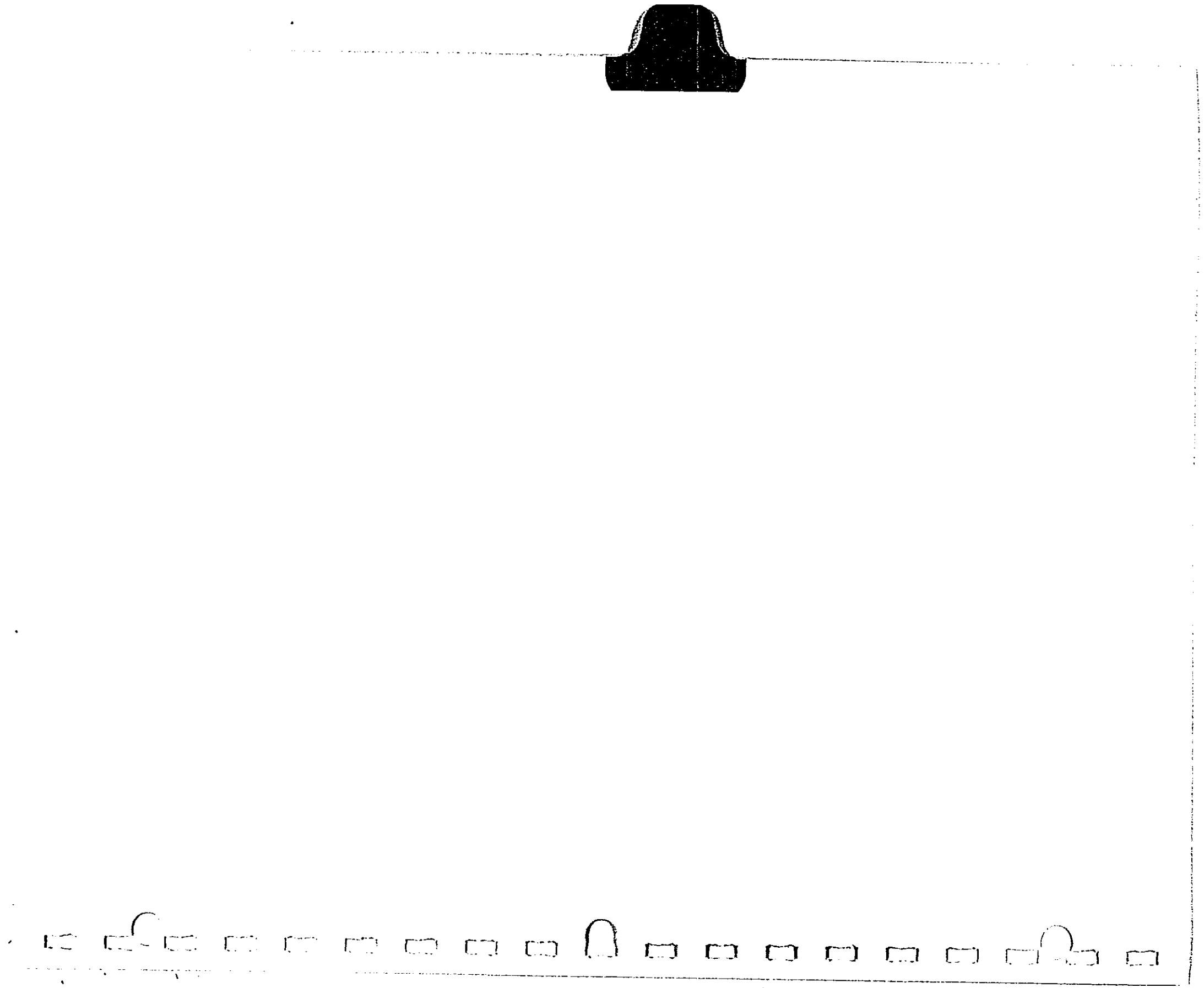
EARLY DETECTION/RESPONSE AND OTHER MEASURES

- *Security Committee.* The HDOT-AIR will encourage the Kahului Airport Security Committee to include alien species control as an element under its purview

- Brown Tree Snake: The HDOT-AIR will review the Brown Tree Snake Control Plan (Aquatic Nuisance Species Task Force 1996) to determine its applicability to all airports within the State.

- *Alien Arthropod Detection and Response.* The HDOT-AIR will, on an ongoing basis, contract with a consultant in entomological pest identification to assist Animal Damage Control in conducting semi-annual monitoring of the airport environs to detect early establishment of new alien insects, particularly social hymenoptera (ants and wasps) and biting diptera (midges, flies and mosquitoes).

Results will be communicated to the HDOA and the Quality Control Program. HDOT-AIR will assist HDOA and USDA with manpower, resources and funds in the eradication of any detected population within the Kahului Airport boundary.



SECTION 9.0
LIST OF PREPARERS

It is recognized that no one individual can be an expert in all of the environmental analyses presented in this EIS. Consequently, an interdisciplinary team, consisting of technicians and experts in various topics, was required to prepare and complete this study. The prime consultant was Edward K. Noda and Associates, Inc. In accordance with FAA Order 5050.4a, *Airport Environmental Handbook*, a written statement was submitted by the applicant's prime consultant disclosing that they have no financial or other interests in the execution or the outcome of the proposed development at the Airport. As required by FAA Order 5050.4a, paragraph 87, the names and qualifications of the principal persons contributing information are identified. Unless specifically indicated, preparers and contributors participated in both the Draft EIS and Final EIS. All decisions that were made regarding the content and scope of this EIS were made by the FAA and HDOT-AIR.

9.1 UNITED STATES, DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Listed below are the employees of the Federal Aviation Administration (FAA) who are responsible for the preparation of the Draft EIS (DEIS) and Final EIS (FEIS). The responsibility for these documents is with the FAA employees from the Honolulu Airports District Office in Honolulu, Hawaii and the Western-Pacific Airports Division in Hawthrone, California. Included below are the identities and backgrounds of the principal preparers.

Mr. David Welhouse, Airport Planner, Honolulu Airports District Office
Education: B.S., University of Wisconsin, Milwaukee, Structural Engineering

Twenty-one years experience in airport planning, engineering, and environmental compliance. Recent projects include: Kalaupapa EIS for Runway Realignment; Fitiula, American Samoa for new airport; and Keahole, Hawaii, Environmental Assessment for runway extension. Principal FAA planner responsible for FAA contributions to all parts of the EIS.

Mr. Howard Yoshioka, P.E., Manager, Honolulu Airports District Office
Education: B.S., University of Hawaii, 1967, Civil Engineering
M.S., University of California at Berkeley, Transportation Engineering

Twenty-two years of experience in airport construction and planning including eleven years in airport environmental and noise compatibility planning. Recent projects include Phoenix EIS for Third Runway, San Diego EIS for Immediate Action Program, and Mather AFB Air Quality General Conformity Finding.

Mr. Charles B. Lieber, Regional Airport Planner, Airports Division
Education: B.S., University of Southern Colorado, 1969, Architecture

Twenty-seven years engineering experience with twenty years experience in airport/airfield planning, design, construction and maintenance. Specialties include noise, airspace and environmental compliance.

Federal Highways Administration

Listed below is the person from the Federal Highway Administration who was responsible for the review of the Draft EIS to meet FHWA requirements for the use of ISTEA funding.

Mr. Glenn Yasui, P.E.
Education: B.S. Civil Engineer, University of Hawaii
Master of Public Administration, University of Southern California

Thirty-two years of experience as a transportation engineer. Responsible for review of the entire EIS document.

9.2 STATE OF HAWAII, DEPARTMENT OF TRANSPORTATION, AIRPORTS DIVISION

Listed below are the employees of the State of Hawaii, Department of Transportation, Airports Division who are responsible for the preparation of this EIS. Their identities and backgrounds of the principal preparers are listed below.

Mr. Ben Schlapak, P.E., Head Planning Engineer
Education: B.S., Norwich University, 1959, Mechanical Engineering
B.S., Texas A & M, 1964, Civil Engineering
M.S., Texas A & M, 1965, Engineering

Thirty-five years of engineering experience and sixteen years of experience in environmental impact analysis and mitigation.

Mr. Steve Takashima, Senior Planner
Education: B.A., University of Hawaii, 1971, Business Statistics and Economics
M.B.A., University of Hawaii, 1975, Business Administration

Seventeen years of experience in transportation planning, forecasting and analysis, as Hawaii DOT transit manager, and airport environmental and noise compatibility planning. Recent projects include; the Barbers Point Master Plan and Noise Compatibility Program, Kahului

Airport Environmental Impact Statement, Haleiwa By-Pass Road, Castle Interchange, H-2 and H-3 Interstates, Waimea By-Pass Road and Waiawa Interchange.

Ms. Lynn Becones, Planner
Education: B.A., University of Hawaii, 1973, Anthropology

Four years of airport and environmental planning experience at Kahului Airport, Kauai Heliport and Dillingham Airfield.

Ms. Lynette Kawaoka, Planner
Education: B.S., University of Hawaii, 1979, Fashion Merchandising

Three years of airport planning experience at Honolulu International Airport, Molokai Airport and Lihue Airport.

9.3 PRIME CONSULTANT

As state above, Edward K. Noda and Associates, Inc. (EKNA) was the prime consultant for assisting both the FAA and HDOT-AIR in preparation of the DEIS and FEIS. The project team included EKNA and subconsultants to provide expertise in different areas of study. Listed below are the identities and backgrounds of the EKNA principal preparers.

Mr. James G. Dittmar, Principal-in-Charge
Education: B. A. University of Southern California, 1963, Zoology
Graduate Studies: Oceanography and Business UCLA, Long Beach State and University of Hawaii.

Thirty years of experience in transportation and infrastructure development projects, including environmental programs such as the Honolulu International Airport-Reef Runway, Environmental Impact Statement, and the Kalaupapa Airport, Roadways and Wharf Improvements, Environmental Impact Statement.

Mr. Brian T. Ishii, P.E., Project Manager
Education: B. S. University of Hawaii, 1978, Civil Engineering,
M.S. University of Hawaii, 1982, Ocean Engineering

Fifteen years of engineering experience with twelve years of experience in master planning and environmental planning of airports and related topics. Recent projects include master plans and environmental studies for Honolulu International Airport, Kalaupapa Airport and Dillingham Airfield.

Mr. Gordon A. Chapman, Environmental Planner
Education: B.S., University of Southern California, 1969, Zoology-Economics

Twenty-three years of experience in the development of Environmental Assessments and Environmental Impact Statements in the Pacific Basin including; Honolulu International Airport, Guam International Air Terminal, Saipan International Airport, Palau, Yap and Truk International Airport.

Mr. William R. Buevens, Airport Planner
Education: B.S., University of Texas, 1948, Civil Engineering
M.A., University of Hawaii, 1970, Political Science

Twenty-five of experience in airport and airfield planning in the Pacific Basin, Southeast Asia and Middle East.

Ms. Elaine E. Tamaye, Coastal Engineer
Education: B.S., University of Hawaii, 1974, General Engineering
M.S., University of Hawaii, 1977, Ocean Engineering

Eighteen years of experience in coastal engineering studies and the development of coastal design criteria, including hurricane and tsunamis flooding studies.

Dayton E. Fraim, Environmental Specialist
Education: B.S., University of Hawaii, 1973, Geology & Geophysics

Twenty years of experience in construction, geotechnical engineering, ground water hydrology, and environmental work. Specialties include the development and implementation of environmental regulatory programs.

9.4 TECHNICAL ANALYSIS

The EKNA project team included subconsultants to provide expertise in different areas of study for the preparation of the EIS. Listed below are the identities, specialties and backgrounds of these subconsultants.

Air Quality and Meteorology Analysis

B. D. Neal & Associates

Nineteen years of experience in air quality and applied meteorology studies for government and private industry. Specializes in the preparation of air quality studies for environmental impact statements and for air pollution permit applications.

Archaeology, Historical and Cultural Resources Studies

International Archaeological Research Institute, Inc. (IARII)

Established in 1984, IARII has completed ninety-two projects in Hawaii, and three prior archaeological surveys at Kahului Airport.

Aviation Studies

P & D Aviation

Forty years of experience in developing airfield master plans, design of airfield and terminals, and environmental impact statements. Assisted in the 1982 Kahului Master Plan.

Fauna Studies

Phillip L. Bruner

A wildlife biologist since 1966, Mr. Bruner has conducted wildlife studies throughout the Pacific Basin, including Polynesia and Micronesia. He has conducted wildlife surveys at Kahului Airport since 1990.

Flora and Wetlands Studies

Botanical Consultants

Twenty-nine years of experience in botanical and wetland surveys in Hawaiian Islands, Mariana Islands, and West Carolinas.

Ground Transportation Studies

Wilbur Smith Associates

Over thirty-eight years of experience in airport groundside transportation planning, including groundside planning for Honolulu International Airport.

Infrastructure and Surveying Analysis

R. T. Tanaka Engineers, Inc.

A consulting engineering firm established in 1977 with services in civil engineering, land surveying and project management.

Land Use Study

Eugene P. Dashiell, AICP, Planning Services

Twenty-five years of experience in land use planning in Hawaii.

Noise Studies

Mestre Greve Associates

Over seventeen years of experience in airport noise studies, noise control, acoustical engineering and impact analysis.

Quality Control and Assurance

Gatzke, Dillon, & Ballance

More than twenty years of experience in complex and controversial civil litigation involving airport environmental impact statements and aircraft noise programs.

Social and Economic Analysis

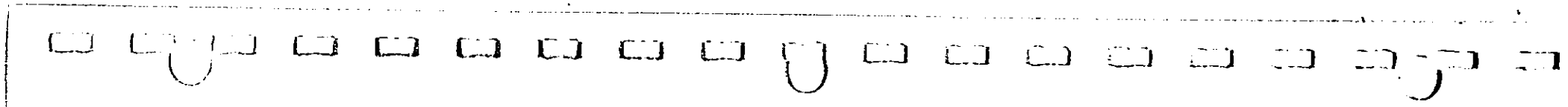
Community Resources, Inc.

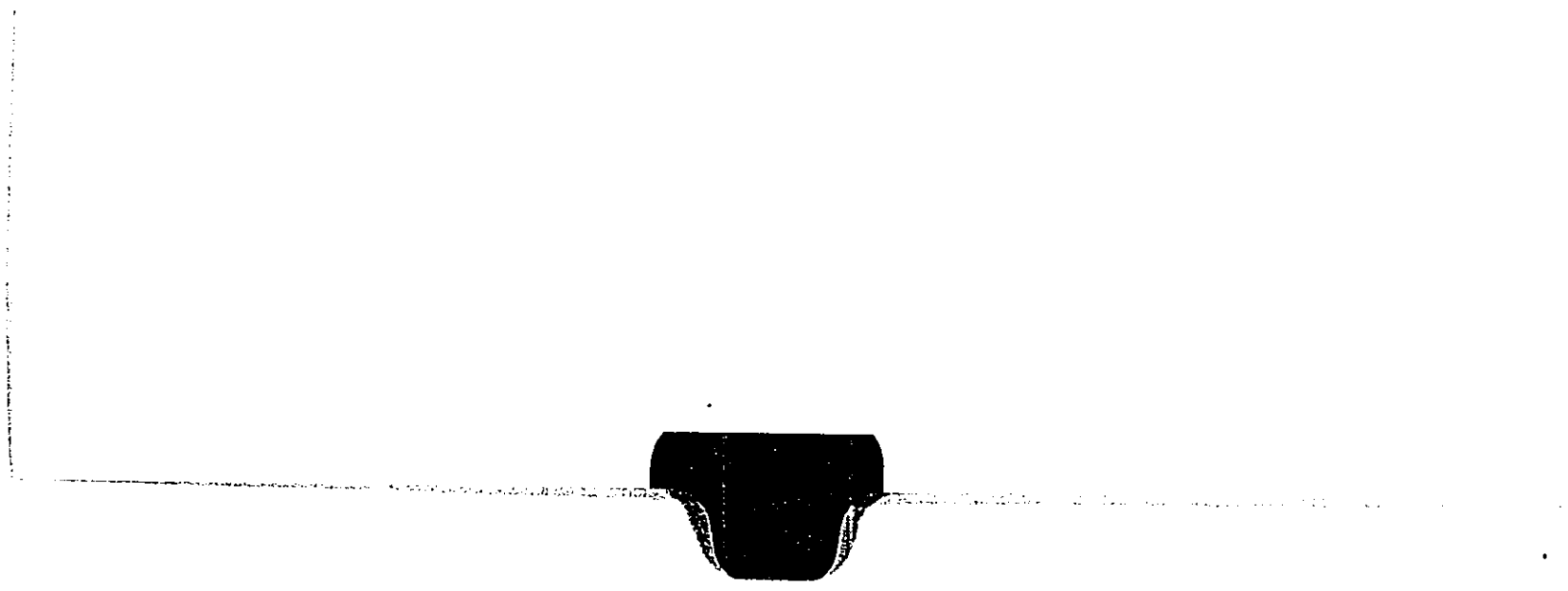
Over sixteen years of experience in performing studies and impact analysis of development projects in Hawaii.

Water Quality Analysis

Oceanic Institute

Over thirty years of experience in water quality and marine biological studies. Conducted water quality studies in the near-shore environment at Kahului Airport since 1982.





SECTION 10.0
AGENCIES, ORGANIZATIONS AND PERSONS CONSULTED

This sections presents a list of agencies, organizations and persons consulted during the project. As part of the FHWA, NEPA/404 Memorandum of Understanding, meetings were held with the U.S. Army Corps of Engineers, U.S. Department of Commerce, National Marine Fisheries Service, and the U.S. Department of the Interior, Fish and Wildlife Service. In addition, the following organizations and agencies were consulted: The Nature Conservancy of Hawaii; State of Hawaii, Department of Agriculture; U.S. Department of Agriculture, Animal Damage Control; HDOT, Highways Division; HDOT, Statewide Transportation Planning Office; State of Hawaii, Department of Land and Natural Resources, Forestry and Wildlife Division; County of Maui, Department of Public Works; Pueo Coalition; and A & B Hawaii. The air and water quality compliance letter from the Governor of the State of Hawaii is presented in Exhibit 10-1. The State Coastal Zone Consistency determination letter is presented in Exhibit 10-2.

Section 10.2 list the agencies, organizations and persons who received the notice of the Scoping Meetings for the proposed project, which were held on May 18, 1994. In addition, they were notified that a HRS 343 OEQC Preparation Notice and an Environmental Assessment/Determination was being prepared. A copy of the letter is presented in Exhibit 10-3.

Section 10.2 lists the agencies, organizations and persons which received a copy of the HRS 343 EIS Preparation Notice and the Environmental Assessment/Determination for the proposed project.

Section 10.3 is a list of agencies, organizations and persons which requested to be Consulted Parties under HRS 343.

Section 10.4 lists the agencies, organizations, and persons who received a notification of availability for the Draft EIS. This notification letter is shown in Exhibit 10-4 and includes an announcement for the Public Hearing for the Draft EIS. The FAA and HDOT-AIR, extended the comment deadline for the Draft EIS from May 23, 1996 to June 22, 1996 as requested by the public. The FAA news release and the OEQC Bulletin, dated June 8, 1996 notifying the public of the comment deadline extension are reprinted in Appendix V.

Section 10.5 lists the agencies, organizations, and persons who received a copy of the Draft EIS. Section 10.6 lists the agencies, organizations, and persons that have provided comments on the Draft EIS. Those marked with the single asterisk (*) were not substantiative, while those comments which are substantiative have double asterisks (**). The public hearing testimony, and comments to the Draft EIS and the corresponding response letters are presented in Appendix V. A list of the persons testifying at the public hearing is presented in Section 10.7.

EXECUTIVE CHAMBERS
HONOLULU

AIR-EP
96.470

BENJAMIN J. CAYETANO
GOVERNOR

January 21, 1997

Mr. Howard Yoshioka
Airports District Office Manager
Federal Aviation Administration
Western-Pacific Region
P. O. Box 50244
Honolulu, Hawaii ; 96850

Dear Mr. Yoshioka:

I am informed that we must comply with the Airport and Airway Improvement Act, as amended by the Airport and Airways Safety Expansion Act of 1987. This is to certify that with respect to the Kahului Airport Improvements, as stated in the Kahului Airport Environmental Impact Statement on the Master Plan to the year 2010, there is reasonable assurance the State of Hawaii will locate, design, construct and operate the airport in compliance with all applicable air and water quality standards.

Attached are portions from the Draft Environmental Impact Statement that explains how the State will comply with the air and water quality standards.

With warmest personal regards,

Aloha,

Benjamin J. Cayetano

BENJAMIN J. CAYETANO

Attachment: Draft Environmental Impact Statement

bc: Hon. Kazu Hayashida
AIR-EP

BRS:nf

EXHIBIT 10-1 AIR AND WATER QUALITY COMPLIANCE LETTER

JUL 3 1997

BENJAMIN J. CAYETANO
GOVERNOR
SELJI F. NAYA
DIRECTOR
BRADLEY J. MOSSMAN
DEPUTY DIRECTOR
RICK EGGED
DIRECTOR, OFFICE OF PLANNING

DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING
235 South Beretania Street, 6th Flr., Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Tel.: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-6734

July 2, 1997

Mr. Howard S. Yoshioka
Manager
Airports District Office
Federal Aviation Administration
Box 50244
Honolulu, Hawaii 96850-0001

Attention: Mr. David Welhouse

Dear Mr. Yoshioka:

Subject: Hawaii Coastal Zone Management (CZM) Program Federal Consistency for the Kahului Airport Improvements

The proposal by the Federal Aviation Administration and the State of Hawaii Department of Transportation to construct improvements to the Kahului Airport has been reviewed for consistency with Hawaii's CZM Program. It is our understanding that the Kahului Airport improvements, including extending and strengthening the primary Runway 2-20, constructing airfield facilities, and providing additional recreational facilities at Kanaha Beach Park, will be developed in three phases between the present and year 2016. According to the March 1996 EIS, the full impacts of the larger projects in Phase 3--the parallel runway and associated storm water drainage system, relocation of helicopters off-airport, the fuel supply pipeline from Kahului Harbor to the bulk fuel tanks, and transient apron--cannot be properly assessed at this time because these projects are beyond the year 2006 time frame. Therefore, our CZM consistency review of Phase 3 is being deferred until the additional environmental analysis and documentation are completed. We concur with your CZM assessment and finding that the proposal for Phases 1 and 2 is consistent to the maximum extent practicable based on the following conditions.

1. Historic, Archaeological and Cultural Resources. The mitigation measures proposed in the EIS Section 3.10.4, for historic, archaeological and cultural resources shall be implemented.

2. Offshore Water Quality. All construction and operational activities shall be in compliance with State water quality standards and requirements of the Department of Health. The water quality mitigation measures proposed in the EIS shall be implemented and include the following: sediment retention basins to minimize storm water runoff during construction (p. 3-34); following construction, berms and landscaping will be installed to reduce runoff flows (p. 3-35); equipment wash areas will be equipped with wastewater collection and treatment facilities (p. 3-77); erosion

EXHIBIT 10-2a CZM CONSISTENCY DETERMINATION LETTER (page 1)

control and sediment retention basins will be used to minimize sediment flow into Kaliialinui Gulch, the main outlet to the ocean (p. 3-77); new runways, taxiways and ramp areas will be provided with runoff water impoundment areas and new facilities will be connected to the drainage catchment system and oil-water separators will be installed to minimize the runoff of petroleum products (p. 3-78).

3. Fuel Spill and Contamination. Mitigation measures for the new Fuel Storage Facility and piping will include: containment berms or walls; oil-water separation systems; corrosion resistant coatings; filters; applicable spill protection containment and countermeasures; leak detection and monitoring; and underlying impermeable membranes to prevent soil and groundwater contamination (pp. 3-77 & 3-78).

4. Endangered Species. The proposed runway extension will be graded to minimize storm water ponding which attracts the endangered Hawaiian Stilt to feed. If ponding occurs due to the proposed project or the airfield becomes an attraction to the Hawaiian Stilt, appropriate programs to minimize the attraction shall be implemented (p. 3-97). In addition, new lighting will follow the Department of Land and Natural Resources' guidelines for the Newell's Shearwater which are applicable to minimize the potential for bird strike incidents of the Dark-Rumped Petrel, a pelagic endangered seabird which nests at Haleakala National Park and may overfly Kahului Airport and may be disturbed or disoriented by bright lights while flying at night (p. 3-98).

CZM consistency approval is not an endorsement of the project nor does it convey approval with any other regulations administered by any State or County agency. Thank you for your cooperation in complying with Hawaii's CZM Program. If you have any questions, please call John Nakagawa of our CZM Program at 587-2878.

Sincerely,

MaryLou Kobayashi for

Rick Egged
Director
Office of Planning

cc: U.S. Army Corps of Engineers, Operations Branch
U.S. National Marine Fisheries Service, Pacific Area Office
U.S. Fish and Wildlife Service, Pacific Islands Ecoregion
Department of Health, Clean Water Branch
Department of Land & Natural Resources,
Planning & Technical Services Branch
Historic Preservation Division
Division of Forestry & Wildlife
Department of Transportation, Airports Division
Planning Department, County of Maui

EXHIBIT 10-26 CZM CONSISTENCY DETERMINATION LETTER (page 2)

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1898

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KANANI HOLT
GLENN M. OKIMOTO
JOYCE T. OMIYE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.084

April 18, 1994

To: Interested Parties

From: Owen Miyamoto, Airports Administrator
Department of Transportation

Subject: PUBLIC SCOPING MEETING FOR THE KAHULUI AIRPORT
ENVIRONMENTAL IMPACT STATEMENT
STATE PROJECT NO. AM1011-07

The Federal Aviation Administration, in cooperation with the Airports Division, have scheduled two (2) Public Scoping Meetings for the Kahului Airport Environmental Impact Statement.

Public Scoping Meetings

Time: 10:00 a.m. and 7:00 p.m.
Date: Wednesday, May 18, 1994
Location: Kahului Airport (Gates 35-40)

If you would like to have a copy of the OEQC Preparation Notice/Environmental Assessment, please write to the address shown below.

Mr. Owen Miyamoto
Airports Administator
Airports Division
Honolulu International Airport
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1898

EXHIBIT 10-3. NOTIFICATION LETTER

BENJAMIN J. CAYETANO
GOVERNOR

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1880

IN REPLY REFER TO:
AIR-EN
96.149

April 10, 1996

Dear Interested Party:

Subject: Notice of Availability
Joint Draft Environmental Impact Statement
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

This letter is to inform you that the Draft Environmental Impact Statement (EIS) for the Kahului Airport Master Plan is available for public review and comment. The Draft EIS is available at the State Public Libraries, as shown on the attached list, and at the Kahului Airport Manager's Office. The Airport Manager's Office is located at Kahului Airport's Passenger Terminal, ground level, and is open from Monday through Friday, from 7:45 a.m. to 4:30 p.m.

The Draft EIS consists of 5 (five) volumes. Volume I contains the main body of the Draft EIS, and Volumes II through V are the detailed technical appendices. If you would like a personal copy of the Draft EIS, please send a written request to the address shown below. Please note in your request if you would like to receive only Volume I or the entire Draft EIS.

The deadline for comments is May 23, 1996 and should be sent to the address shown below.

Jerry M. Matsuda
Deputy Director
Department of Transportation
Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880

A Public Hearing on this Draft EIS will be held on May 8, 1996 at 7:00 p.m., at the Kahului Airport Terminal, Gate 39. If you have any questions, please contact Mr. Ben Schlapak at (808) 838-8821.

Sincerely,

JERRY M. MATSUDA
Deputy Director

Attachment

ST:fd

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

EXHIBIT 10-4 NOTICE OF AVAILABILITY OF DRAFT EIS

10.1 LIST OF AGENCIES/PERSONS RECEIVING SCOPING MEETING NOTICE

Advisory Council on Historic Preservation, Golden, Colorado
Mr. Cliff N. Ahue, Na Hoaloha O Lele
Air Traffic Manager, USDOT, FAA, Kahului Air Traffic Control Tower
Aloha Activity Center, Whalers Village
Aloha Airlines, Kahului Airport
Alu Like
AMFAC Properties Investment Corporation
American Airlines, Kahului Airport
American Association of University Women, Maui Chapter
American Federation of Labor/Congress of Industrial Organization
American Flyers Club, Inc., Kahului, Maui
American Institute of Architects, Maui Chapter
American Red Cross
The Honorable James Apana, Councilperson, Maui County Council
Mr. Alan Arakawa
Ms. Kelly Ardor, S. Maui Times
The Honorable Stephanie Aveiro, Director, Department of Human Concerns

Reverend David J. Baar
The Honorable Rosalyn Baker, House of Representatives
Ms. Elaine Baker, Main Solid Waste
Dr. James A. Bendon, M.D., Maui Radiology Consultants
Mr. Wally Birk, North Shore Coalition
Mr. Frank Blackwell, Executive Director, Maui Visitors Bureau
Mr. Brian & Polly Boelter
Mr. John Bose, II, Haiku Community Association
The Honorable Lynn Britton, Councilperson, Maui County Council
Ms. Leilani Bronson
Ms. Lesley Ann Bruce

Ms. Carrie Camacho, President, The Industrial Traffic Association of Hawaii
Mr. Douglas B. Cameron
Mr. Harold T. Campbell, Department of Transportation, Harbors Division
Mr. William H. Campbell, Vice President, A&B Properties, Inc.
Mr. William H. Campbell, Century Aviation
Ms. Faith Caplan, Dames & Moore
Mr. Len Cappe, Maui Boardsailing Association
Mr. Terry Carlone, A&B Properties, Inc., Honolulu
Central Maui Hawaiian Civic Club

Chairperson, Governor's Agriculture Coordinating Committee
Chairperson, Maui Group of the Hawaii Chapter of the Sierra Club
Mr. Dave Chenoweth
Ms. Patricia Chevalier, Helicopter Consultants of Maui
Chief of Police, County of Maui
Civil Air Patrol, Maui Composite Squadron
Civil Defense Agency, County of Maui
Mr. Jim Cockett, Sheraton Maui
Mr. Bill Coelho
Mr. Len & Wendy Cowper, American Pacific Air, Inc.
Ms. Marilyn Crock, Kihei School PTA
The Honorable Linda Crockett Lingle, Mayor, County of Maui
Mr. Bruce Curtis, Maui Marriott

Mr. Kelvin Dang, Community Affairs Consultants
Mr. Mike Davis, Governor's Liaison
Apollonia M. Day, Ka Lahui Maui
Delta Airlines, Kahului Airport
District Chief, USDI, Geological Survey, Water Resources Division
Ms. Paula Dunaway

Mr. Mark Erskine, Maui Marriott
Ms. Mary Evanson
Executive Director, Maui Chamber of Commerce

Mr. Paul I. Fagan, III
Ms. Lucy Feinberg
Ms. Blossom Feiteira, Ka Lahui Hawaii
The Honorable Lehua Fernandes-Salling, State Senate
Ms. Renee-May Kehaulani Filimoe'atu, McLaughlin Travel Service, Inc.
Fire Chief, County of Maui
Captain Tim Flournoy, Airline Pilots Association
Mr. Carl Freedman
Friends of the Library
Ms. Lila Fujimoto, Star-Bulletin
V. Lee Fuqua

GTE Hawaiian Telephone
Mr. Ron Gammie, Maalaea Community
Dr. Renate Gassmann-Duvall, Chair, Kanaha Pond Advisory Committee
Mr. Richard Guerdon, Lahaina Intermediate School PTA

Mr. Steven Grimm, Maui Marriott
Ms. Mary K. Groode, Golden Flower Foundation

Mr. Richard Haake, Managing Director, County of Maui
Haiku Area Community Action Council
Ms. Dana Naone Hall
Mr. Isaac Davis Hall
Ms. Lisa Hamilton
Hana Improvements Association
Hana Public & School Library
Dr. Marion L. Hanlon, President, Haiku Community Association
Hawaii Audubon Society, Honolulu
Hawaii Government Employees Association, Maui Division - Local 152
Hawaii Helicopter Operators Association, Honolulu
Hawaii Society of Professional Engineers, Maui Chapter
Hawaii State Teachers Association, Wailuku, Maui
Hawaiian Airlines, Kahului Airport
Mr. Wayne N. Hedani, Maui Chamber of Commerce
David J. Heeney, M.D.
HI High Tech Development Company, Mililani
Hui Alanui O Makena
The Honorable Goro Hokama, Chairman, Maui County Council
Ms. Sarah Howard
Arleigh B. Hughes, Ph.D., Maui Community College, Division of Science & Mathematics
ILWU, Local 142, Maui County Division
International Brotherhood of Electrical Workers, Local 1260, c/o Maui Electric
International Tourism Research
Mr. Garner H. Irey, Jr., A&B Properties, Inc.

Ms. Susan Jenson
Mr. Johnny Johnson, Maui Marriott

Kaahumanu Merchants Association
Kaanapali Beach Operators Association
Mr. George M. Kaimiola
Mr. Hideo Kawahara, A&B Properties
The Honorable Patrick S. Kawano, Councilperson, Maui County Council
Keanae-Wailua Nui Community Association
Mr. Bob & Lynnde Kiger, Kruz, Inc.
Kihei Community Association

Kihei Public Library
Celeste N. King, Ph.D.
Kiwanis Club of Maui
Knights of Columbus
Mr. Henry Koja
Ms. Ellen Kraftsow
Kula Kai Community Association
Ms. Susan A. Kusunoki, Pacific Resources, Inc., State Government Activities Manager
Mr. Robert Kwok, HC&S Company

Mr. Richard Joseph Lafond, Jr., Executive Director, Maui Tomorrow
Lahaina Shopping Center Businessmen Association
Mr. Chris Laletin, Maui Marriott
Mr. James Lawrence, President, Kahului Town Association
The Honorable Alice Lee, Councilperson, Maui County Council
Mr. Arnold L. Lum, Esq., Sierra Club Legal Defense Fund, Inc., Honolulu
Mr. Terry A. Lynch

Mr. Clint Makekau
Mr. Dominic Marino, Maui Contractors Association
Maui Air Traffic Association
Maui Automobile Retail & Gasoline Dealers Association
Maui Board of Realtors
Maui Business and Professional Womens Club
Maui County Farm Bureau
Maui Economic Opportunity
Maui Electric Co., Ltd.
Maui Farmers Coop Exchange
Maui Home Economic Association
Maui Hotel Association
Maui Kokua Services, Inc.
Maui Mall Merchants Association
Maui Memorial Hospital Auxiliary
Maui Nurses Association
Maui Planters Association
Maui Portuguese Chamber of Commerce
Maui Postmasters Association
Maui Retired Teachers Association
Maui Vegetable Growers Coop
Maui Whalewatchers
Maui Womens Club

Mr. Richard D. Mayer
Mr. Alex McBarnet, Jr., Kula Elementary School PTA
The Honorable Rick Medina, Councilperson, Maui County Council
Mr. Glenn Miller, Westin Maui
Mr. Brian Miskae, Director, Department of Planning, County of Maui
Ms. Jody R. Mitchell
The Honorable Manuel Moniz, Councilperson, Maui County Council
Mr. Claude Moreau
The Honorable Tom Morrow, Vice Chairman, Maui County Council
Dr. Steven Moser, Maui County Medical Society

The Honorable Robert Nakasone, House of Representatives

Mr. Henry Oliva, Deputy Director, Dept. of Housing & Human Concerns
The Honorable Paul T. Oshiro, House of Representatives
Mr. Paul Otani
Outdoor Circle, Honolulu

Paia Business Association
Paia Community Association
Mr. Jeffrey B. Parker, Tropical Orchid Farm
Paukakalo Community Association
Mr. Albert Perez, Maui Tomorrow
Ms. Jocelyn Perreira, Maui County Council of Community Associations
Mr. John M. Perry
Ms. Sherry Pollock
Professional Secretaries International, No Ka Oi Chapter
Mr. Tony Ramil, President, Maui District PTSA
Mr. Craig Rasmussen
The Honorable Rick Reed, State Senate
Ms. Carolyn Richardson
Mr. Joel E. Richmann, Esq., Attorney at Law
Mr. Hans Riecke, Maui Chapter, AIA
Mr. Mark Roberts
Ms. Rachel Roberts
Ms. Sheryl Roberts
Mr. Frederick W. Rohlfing
Rotary Club of Maui

Mr. Clifford Saito
Mr. Burt Sakata

Mr. Alfred G. Santos, Paia Business Association
Mr. R. K. Sasaki, President, A&B Properties, Inc., Honolulu
Mr. Leland Schulenburg, President, Sugar Cove Board of Directors
Mr. Glenn & Diane Shepherd
Ms. Shirley Shepherd
Ms. Grace Shibano, A&B, Inc. Community Relations
Mr. Robert O. Siarot, State Highway
Sierra Club, Honolulu
Mr. Mike Singlehurst, Maui Chamber
Mr. William D. Smith
The Honorable Joseph M. Souki, House of Representatives
Staff CINCPAC, Camp H. M. Smith, Honolulu
Mr. Hugh Starr, Paia Business Association
State of Hawaii Organization of Police Officers
State Land Use Commission, DBED&T, Honolulu

The Honorable Joseph Tanaka, State Senate
Mr. Ed Tanji, Honolulu Advertiser
Mr. John Thatcher, Executive Director, Airlines Committee of Hawaii
Mr. Jack Thompson, President, Spreckelsville Community Association
Ms. Kathleen Toner, Maui Plastic, Inc.
Ms. Sandi J. Topp
Mr. John Torres
Mr. Robert C. Turnauckas, Maui Marriott

United Airlines, Kahului Airport
United Public Workers, AFSCME Local 646
U. S. Army Corps of Engineers, Environmental Resources Section, Fort Shafter
U. S. Customs, Kahului Airport
Mr. M. K. Vicens, Vice President, A&B Properties, Inc.
Mr. Bob Vogele, Hana Community Association
Mr. David Voss

Wai-Kahu Business and Professional Womens Club
Wailuku Business Community Association
Mr. Ronald L. Walker, Department of Land and Natural Resources
Mr. R. L. Warzecha, HC&S Company
Ms. Sharon Weiner, Stryker Weiner Associates, Inc., Honolulu
Ms. Elaine S. Wender
West Maui Cultural Council
West Maui Taxpayers Association

Mr. Gregory Westcott
Ms. Masako Westcott
Mr. Mike White, Kaanapali Beach Hotel
Mr. James Williamson

Vida Rose Yap

10.2 LIST OF AGENCIES/PERSONS RECEIVING PREPARATION NOTICE

Department of Accounting and General Services
Department of Agriculture
Department of Business, Economic Development and Tourism
Department of Business, Economic Development and Tourism, State Energy Office
Department of Defense
Department of Education
Department of Hawaiian Home Lands
Department of Health
Department of Health, Environmental Management Division
Department of Land and Natural Resources
Department of Land and Natural Resources, State Historic Preservation Division
Department of Transportation
Office of Hawaiian Affairs
Office of State Planning

University of Hawaii, Environmental Center
University of Hawaii, Water Resources Research Center

Environmental Protection Agency, Pacific Islands Contact Office
U. S. Army Corps of Engineers, Pacific Ocean Division
U. S. Department of Agriculture, Soil Conservation Service
U. S. Department of the Interior, Fish and Wildlife Services
U. S. Department of the Interior, National Park Service
U. S. Department of Transportation, Federal Aviation Administration

County of Maui, Department of Parks and Recreation
County of Maui, Department of Public Works
County of Maui, Department of Water Supply
County of Maui, Economic Development Agency
County of Maui, Planning Department

American Lung Association

Ms. Elaine Baker, Maui Solid Waste Division
Dr. James Bendon, M.D., Maui Memorial Hospital
Ms. Lynn Britton, Council Member, County of Maui
Ms. Leilani Bronson
Mr. Roger Dubin, Maui-Pueo Coalition
Editor, Sun Press
Mr. Wayne Hedani, President, Maui Chamber of Commerce
Mr. Goro Hokama, Council Chair, County of Maui
Mr. Hideo Kawahara, A&B Properties, Inc.
Mr. Robert Kwok, Vice President, Hawaiian Commercial and Sugar Company
Mr. Henry Oliva, Deputy Director, County of Maui, Dept. of Housing & Human Concern
Mr. Stephen J. Pitt, Maui Air Traffic Association, Inc.
Mr. R. K. Sasaki, President, A&B Properties, Inc., Honolulu
Mr. & Mrs. Glenn Shepherd
Mr. William D. Smith
Ms. Esther Ueda, Executive Office, State Land Use Commission
Mr. M. K. Vicens, Vice President, A&B Properties, Inc.

10.3 LIST OF AGENCIES/PERSONS WHICH ARE CONSULTING PARTIES (per HRS 343)

James A. Bendon, M.D., Maui Radiology Consultants
Mary Evanson
Dana Naone Hall
Isaac Davis Hall, Attorney at Law
Lisa Hamilton
Hawaii Sierra Club Conservation Committee, Maui
Hui Alanui o Makena
Richard J. Lafond, Jr., Executive Director, Maui Tomorrow
Terry A. Lynch
Maui Air Traffic Association
Jody R. Mitchell
Steven M. Moser, M.D., F.A.C.P.
Jeffery B. Parker, Tropical Orchid Farm
John M. Perry
William D. Smith
Jack Thompson, Spreckelsville Community Association
Elaine S. Wender
Gregory Westcott
Masako Westcott
Vida Rose Yap

10.4 LIST OF AGENCIES/PERSONS RECEIVING NOTICE OF AVAILABILITY OF THE DRAFT EIS

Advisory Council on Historic Preservation
Airline Pilots Association, Captain Tim Flournoy
Aloha Activity Center
Aloha Airlines, Kahului Airport
Alu Like
AMFAC Properties Investment Corporation
American Airlines, Kahului Airport
American Association of University Women, Maui Chapter
American Federation of Labor/Congress of Industrial Organization
American Flyers Club, Inc.
American Institute of Architects, Maui Chapter
American Red Cross
Mr. Alan Arakawa
AIA, Maui Chapter, Mr. Hans Riecke

Reverend David J. Baar
Mr. Brian & Polly Boelter
Ms. Lesley Ann Bruce

Mr. Douglas B. Cameron
Central Maui Hawaiian Civic Club
Century Aviation, Mr. William Campbell
Mr. Dave Chenoweth
Civil Air Patrol, Maui Composite Squadron
CINCPAC, Staff
Mr. Bill Coelho
Community Affairs Consultants, Mr. Kevin Dang
County of Maui, Chief of Police
County of Maui, Civil Defense Agency
County of Maui, Department of Human Concerns, Ms. Stephanie Aveiro, Director

Dames & Moore, Ms. Faith Caplan
Delta Airlines, Kahului Airport
Ms. Paula Dunaway

Mr. Paul I. Fagan, III
Ms. Lucy Feinberg

Ms. Renee-May Kehaulani Filimoe'atu
Mr. Carl Freedman
Friends of the Library
V. Lee Fuqua

GTE Hawaiian Telephone
Golden Flower Foundation, Ms. Mary K. Groode
Governor's Agriculture Coordinating Committee, Chairperson

Haiku Area Community Action Council
Haiku Community Association, Dr. Marion L. Hanlon, President
Hana Improvements Association
HC&S Company, Mr. R. L. Warzecha
Hawaii Government Employees Association, Maui Division - Local 152
Hawaii Helicopter Operators Association
Hawaii Society of Professional Engineers, Maui Chapter
Hawaii State Teachers Association
Hawaiian Airlines, Kahului Airport

David J. Heeney, M.D.
Helicopter Consultants of Maui, Ms. Patricia Chevalier
High Technology Development Corporation
Ms. Sarah Howard
Arleigh B. Hughes, Ph.D.

The Industrial Traffic Association of Hawaii, Ms. Carrie Camacho, President
ILWU, Local 142, Maui County Division
International Brotherhood of Electrical Workers, Local 1260
International Tourism Research

Ms. Susan Jenson

Ka Lahui Maui, Apollonia M. Day
Ka Lahui Hawaii, Ms. Blossom Feiteira
Kaahumanu Merchants Association
Kaanapali Beach Hotel
Kaanapali Beach Operators Association
Kahului Town Association, Mr. James Lawrence, President
Mr. George M. Kaimiola
Keanae-Wailua Nui Community Association
Kihei Community Association

Kihei School PTA, Ms. Marilyn Crock
Celeste N. King, Ph.D.
Kiwanis Club of Maui
Knights of Columbus
Mr. Henry Koja
Ms. Ellen Kraftsow
Kruz, Inc., Mr. Bob & Lynnde Kiger
Kula Elementary School PTA, Mr. Alex McBarnet, Jr.
Kula Kai Community Association

Lahaina Intermediate School PTA, Mr. Richard Gordon
Lahaina Shopping Center Businessmen Association

Maalaea Community, Mr. Ron Gammie
Mr. Clint Makekau (Returned - No Forwarding Address)
Maui Automobile Retail & Gasoline Dealers Association
Maui Board of Realtors
Maui Boardsailing Association, Mr. Len Cappe
Maui Business and Professional Womens Club
Maui Contractors Association, Mr. Dominic Marino
Maui County Council of Community Associations, Ms. Jocelyn Perreira
Maui County Farm Bureau
Maui District PTSA, Mr. Tony Ramil, President
Maui Economic Opportunity
Maui Electric Co., Ltd.
Maui Farmers Coop Exchange
Maui Home Economic Association (Returned - No Forwarding Address)
Maui Hotel Association
Maui Kokua Services, Inc.
Maui Mall Merchants Association
Maui Marriott, Mr. Bruce Curtis
Maui Marriott, Mr. Mark Erskine
Maui Marriott, Mr. Steven Grimm
Maui Marriott, Mr. Johnny Johnson
Maui Marriott, Mr. Chris Laletin
Maui Marriott, Mr. Robert C. Turnauckas
Maui Memorial Hospital Auxiliary, Maui Memorial Hospital
Maui Nurses Association
Maui Planters Association
Maui Plastic, Inc., Ms. Kathleen Toner
Maui Portuguese Chamber of Commerce

Maui Postmasters Association
Maui Retired Teachers Association
Maui Vegetable Growers Coop
Maui Whalewatchers
Maui Womens Club
Mr. Richard D. Mayer
Mr. Claude Moreau

Na Hoaloha O Lele, Mr. Clifford N. Ahue
North Shore Coalition, Mr. Wally Birk

Outdoor Circle

Pacific Resources, Inc., State Government Activities Manager, Ms. Susan A. Kusunoki
Paia Business Association
Paia Business Association, Mr. Alfred G. Santos
Paia Business Association, Mr. Hugh Starr
Paia Community Association
Paukakalo Community Association
Ms. Sherry Pollock
Professional Secretaries International, No Ka Oi Chapter

Mr. Craig Rasmussen
Ms. Carolyn Richardson
Mr. Joel E. Richmann, Esq.
Mr. Mark Roberts
Ms. Rachel Roberts
Ms. Sheryl Roberts
Mr. Frederick W. Rohlfing
Rotary Club of Maui

Mr. Clifford Saito
Mr. Burt Sakata
S. Maui Times, Ms. Kelly Ardor
Ms. Shirley Shepherd
Sheraton Maui, Mr. Jim Cockett
Sierra Club
Sierra Club Legal Defense Fund, Inc., Mr. Arnold L. Lum, Esq.
State of Hawaii Organization of Police Officers
Stryker Weiner Associates, Inc,, Ms. Sharon Weiner
Sugar Cove Board of Directors, Sugar Cove Homeowners Association, Mr. Leland Schulenburg,

President

Ms. Sandi J. Topp
Mr. John Torres

United Airlines, Kahului Airport
United Public Workers, AFSCME Local 646
U. S. Department of the Interior, Geological Survey, Water Resources Division, District Chief

Mr. David Voss

Wai-Kahu Business and Professional Womens Club
Wailuku Business Community Association
West Maui Cultural Council
West Maui Taxpayers Association
Westin Maui, Mr. Glenn Miller
Mr. James Williamson

10.5 LIST OF AGENCIES/PERSONS RECEIVING DRAFT EIS

Airlines Committee of Hawaii, John Thatcher, Executive Director
A&B Properties, Inc., Mr. H. Kawahara, Manager
A&B Properties, Inc., Mr. Robert K. Sasaki, President
A&B Properties, Inc., Mr. M. K. Vicens, Vice President
Senator Daniel K. Akaka
Ms. Yolanda Ululani Alonzo (returned by USPS)
American Lung Association
American Pacific Air, Inc., Mr. Len Cowper

Senator Rosalyn Baker, State Senate
Mr. Kenneth J. Barr
BHP, Hawaii, Government Affairs
Ms. Leilani Bronson

Mr. William A. Camps
Conservation Law Project, Nicole Walthall
Council on Environmental Quality, General Council
County of Maui, Board of Water Supply
County of Maui, County Council, Council Chair Alice L. Lee
County of Maui, County Council, Council Vice-Chair Patrick S. Kawano
County of Maui, County Council, Councilmember James Apana

County of Maui, County Council, Councilmember Alan Arakawa
County of Maui, County Council, Councilmember Sol P. Kaho'ohalahala
County of Maui, County Council, Councilmember Robert Monden
County of Maui, County Council, Councilmember Tom Morrow
County of Maui, County Council, Councilmember Dennis Nakamura
County of Maui, County Council, Councilmember Wayne Nishiki
County of Maui, Department of the Corporation Counsel
County of Maui, Department of Housing and Human Services
County of Maui, Department of Parks and Recreation
County of Maui, Department of Planning
County of Maui, Department of Public Works
County of Maui, Department of Water Supply, Mr. David Craddick, Director
County of Maui, Economic Development Agency
County of Maui, Fire Chief
County of Maui, Mayor Linda Crockett Lingle
County of Maui, Managing Director
County of Maui, Police Department, Chief Howard H. Tagomori
County of Maui, Solid Waste Division, Ms. Elaine Baker

Directorate of Public Works, Environmental Department
John P. Douglas, M.D.
Dowling Company, Inc.

The Estate of James Campbell Asset Manager, Maui, Mr. Donald N. Reaser
Ms. Mary Evanson

Federal Emergency Management Agency, Region IX, Nicholas B. Nikas, Division Chief,
Natural & Technical Hazards Senator
Lehua Fernandes-Sallings, State Senate

Ms. Virginia Gardner (returned)
Governor's Liaison
Ms. Carolann G. Guy

Ms. Dana Naone Hall
Mr. Isaac Davis Hall, Attorney at Law
Ms. Lisa Hamilton
Hana Public & School Library
Hawaii Audubon Society, Dr. Renate Gassmann-Duvall, Maui Representative
Hawaii Chapter of the Sierra Club, Maui Group, Chairperson
Hawaii Commercial & Sugar Company, Mr. Robert Kwok, Vice President

Hawaii Helicopters, Mr. Donald P. Ballard, President
Hawaii Management Alliance Association, Insurance Services, Mr. James W. Smith, CLU, CIC
Hawaii State Archives
Hawaii State Library
HC&S, Randall Moore
Hilo Regional Library
Jason Holstine
Honolulu Advertiser, Editor
Honolulu Star Bulletin, City Editor
Hui Alanui O Makena

Senator Daniel K. Inouye

Ms. Abby Janis
Mr. Harvey Janis
Ms. Lois Janis

Kahului Library
Kaimuki Regional Library
Kanaha Pond Advisory Committee, Dr. Renate Gassmann-Duvall, Chair
Kaneohe Regional Library (closed for renovation)
Kauai Regional Library
Mr. William Kehoe
Kihei Public Library

Lahaina Library
Lanai Community School Library
Mr. Terry A. Lynch

Makawao Library
Maui Air Traffic Association
Maui Air Traffic Association, Inc., Mr. Stephen J. Pitt
Maui Boardsailing Association, Len Cappe
Maui Chamber of Commerce, Ms. Laurie Borling
Maui Community College Library
Maui County Farm Bureau, Mr. Kenneth Okamura, President
Maui Electric Co., Inc.
Maui Hotel Association, Ms. Terry Vencl, Executive Director
Maui News, Editor
The Maui Pueo Coalition, Mr. Jimmy Rust, Chairman
Maui Radiology Consultants, James A. Bendon, M.D.

Maui Tomorrow, Mr. Richard Joseph Lafond, Jr., Executive Director
Maui Visitors Bureau, Frank Blackwell, Executive Director
Richard Mayer
Congresswoman Patsy Mink
Ms. Jody R. Mitchell
Molokai Library
Steven M. Moser, M.D., F.A.C.P., Internal Medicine and Nephrology

Mr. Vernon M. Oato
Paul Oshiro, State House of Representatives

Pearl City Regional Library
Mr. John M. Perry

Frederick W. Rohlfing, Esq.

Sierra Club Legal Defense Fund, Paul H. Achitoff
Glenn & Diane Shepherd
Mr. William D. Smith
Joseph Souki, State House of Representative
Spreckelsville Community Association, Mr. Jack Thompson, President
State of Hawaii, Department of Accounting and General Services*
State of Hawaii, Department of Agriculture
State of Hawaii, Department of Business, Economic Development and Tourism
State of Hawaii, Department of Business, Economic Development and Tourism, Energy Resources and Technology Division
State of Hawaii, Department of Business, Economic Development and Tourism Library
State of Hawaii, Department of Defense
State of Hawaii, Department of Education
State of Hawaii, Department of Hawaiian Home Lands
State of Hawaii, Department of Land and Natural Resources
State of Hawaii, Department of Land and Natural Resources, Maui
State of Hawaii, Department of Land and Natural Resources, State Historic Preservation Division
State of Hawaii, Department of Land and Natural Resources, State Historic Preservation Division, Maui Office
State of Hawaii, Department of Land and Natural Resources, State Historic Preservation Division, Maui Island Burial Council
State of Hawaii, Department of Health
State of Hawaii, Department of Health, Environmental Management Division
State of Hawaii, Department of Transportation
State of Hawaii, DOT-Airports Division, Maui Airport District Manager

State of Hawaii, Land Use Commission, Ms. Esther Ueda, Executive Officer
State of Hawaii, Legislative Reference Bureau
State of Hawaii, Office of Environmental Quality Control
State of Hawaii, Office of Hawaiian Affairs
Sun Press, Editor

Joseph Tanaka, State Senate
Phillip Thomas
Tropical Orchid Farm, Mr. Jeffrey B. Parker
Pat Tummons

United Airlines, Kahului Airport, Mr. Scott Poomaihealani
U. S. Army Corps of Engineers, Pacific Ocean Division
U. S. Army Support Command, Environmental Management Office, Directorate of Facilities Engineer
U. S. Coast Guard, 14th Coast Guard District, Commander
U. S. Customs Service, District Director of Customs, Port Director-Maui, Mr. Lyons Naone, III
U. S. Department of Agriculture, Soil Conservation Service
U. S. Department of Commerce, National Marine Fisheries Service
U. S. Department of Commerce, NOAA, Office of Ecology and Conservation, Director
U. S. Department of Energy, Division of NEPA Affairs
U. S. Department of Housing and Urban Development, Region IX, Environmental Clearance Office, Regional Administrator
U. S. Department of the Interior, Assistant Secretary - Program Policy, Director, Environmental Project Review
U. S. Department of the Interior, Fish and Wildlife Service
U. S. Department of the Interior, Fish and Wildlife Services, Pacific Islands Administrator
U. S. Department of the Interior, Geological Survey, District Chief
U. S. Department of the Interior, Office of the Assistant Secretary, Deputy for Environment and Safety
U. S. Department of the Interior, National Park Service
U. S. Department of Interior, National Park Service, Haleakala National Park, Mr. Donald W. Reeser
U. S. Department of Transportation, Federal Aviation Administration
U. S. Department of Transportation, Federal Aviation Administration, Community and Environmental Needs Division
U.S. Department of the Treasury, Customs Service, District Director
U. S. Environmental Protection Agency, Pacific Islands Contact Office
U. S. EPA, Region IX, David Tomsovic, Office of Federal Activities, E-3
U. S. Environmental Protection Agency, Region IX, Regional Administrator
U. S. Naval Base Pearl Harbor, Base Civil Engineer, Commander

University of Hawaii, Water Resources Research Center
University of Hawaii, Environmental Center
University of Hawaii, Hamilton Library, Hawaiian Collection

Valley Farm, Mr. Gregory Westcott

Wailuku Regional Library (closed forwarded to Kahului Library)
Ms. Elaine S. Wender
West Maui Taxpayers Association, Ms. Gina Aranki
Ms. Masako Westcott
Michael White, State House of Representatives

Vida Rose Yap

10.6 AGENCIES/PERSONS COMMENTING ON DRAFT EIS

A & B Hawaii, Inc., Ms. Meredith J. Ching**
Sandra Albers**
American Lung Association, Mr. Peter G. Flachsbart, Ph.D.**
American Pacific Air, Inc., Mr. Len Cowper**
Jim Anderson**
Larry Anderson**
Marion & Karen Ardoin**
Roland Asakura**

Bren Bailey, et al.**
Barbara Baillie**
Dawn Balog**
Charles Bigelow**
Pat Bily**
Bishop Museum, Francis G. Howarth**
Lillian Blum**
Mr. & Mrs. W. Bolond**
Barbara Brandt-Fernandez**
P. J. (Jean) Bruce**
Buck Buchanan**

Dean A. Calistro**
Angie Callahan**
Angie Callahan's 1996 Seventh Grade Class, Ilima Intermediate School**
Tom Cannon**

Evelyn Char**
Dave Chenoweth**
Elizabeth Chenoweth**
Joyce Chong**
Lauri Christine**
Citizens Against Noise, Barry Stokes**
Conservation Law Project, Nicole Walthall**
Brianna Corbett**
T. Countermar**
County of Maui, County Council, Councilmember Sol P. Kaho'ohalahala**
County of Maui, Department of Parks and Recreation*
County of Maui, Mayor Linda Crockett Lingle**
County of Maui, Public Works and Waste Management**
Andrea Cronrod**

Darci D'Anna**
James L. Davenport*
B. DeBrabandere**
Dorothy Deimel**
Lucienne de Naie**
Misha Dieguez**
Val Dieguez**
Herbert and JoAnn Dixon**

Luisa Edralin** and Wyh Aubrey, Lynnette Y. Tanaka, Katie Ellison, Yolanda Akay, A. Kim, Judith Tsutsui, Julie Tsutsui, E. Medina, E. Goya, M. Soares, N. Zotten

Steven Emery**
Margaret Enomoto**
The Estate of James Campbell Asset Manager, Maui, Mr. Donald N. Reaser**
Ms. Mary Evanson**

Barry Fried**

Virgina Gardener**
Renate Gassmann-Duvall, Ph. D.**
Grand Wailea Resort, Gregory A. Koestering**
Elizabeth J. Grigson**

Liz Haase**

Isaac Davis Hall** for Sierra Club, Mary Evanson, Maui Air Traffic Association, Steven Pitt, James Bendon, the National Audubon Society, Hui Alanui o Makena, Dana Naone Hall and Maui Malama Pono, Inc.

Dwight Hamilton**
Lisa Hamilton**
Donald Hasenyager**
Skippy Hau**
Hawaii Audubon Society, Daniel K. Sailer**
Hawaii Hotel Association, Murray E. Towill**
Hawaii Organic Farmers Association, Diana Dahl**
Tom Hudgens**
Claire K. Hughes**
Hyatt Regency Maui, Ed Crovo**

Ginger Ikenberry**
International Colony Club, Kent Ueland**

Sandra Duarte Jackson**
Karen Jennings**
Thomas Jike**

Kaahumanu Center, Todd Hondo**
Christine Kafka**
Hans Kanuha**
Kapalua Land Company, Ltd, Wayne Hedani**
Sheila Kawai**
Kawelo Construction, David Vitarelli**
Ian Kinnear**
Klahani Resorts Corporation, Jerry Downer**
Kathleen Klett**
Krasnow Institute for Advanced Study, George Mason University, Harold Morowitz**
Janie Kunin**
Neal Kunin**

Rosemarie Labonski*
Douglas K. Lamerson**
Ralf Lee**
Kristen Lennon** for Mary Matsukawa, Donna Russell, Ernest Matsukawa, David Tester, Julie Leonard, C. Scott Leonard, Julian Jounthin, Keely, Hunkins, Debra Choffo, Kathy Maxwell-Juan, Jovie Cabajan, Kristopher Gentry, Eric K. Brom, Joshua H, Jim Bagou, Steve Hancock, James Mullinix, Victor M.

Cardona, Joseph Cosner, Anthony F. Perry, Bruce Camarera, Diana Santiago, Debbie Kamalii, Juliana, Keely Hunkins, Debra Chaffo, E. Tavares, Kari Erwin, Pam Ediger, B, Greig, J. Albian, T. Serrno, Wendy Lenpaz

Alex and Joan Lessin**
Lila**
James C. Lindsay**
Mary Ann Lundquist**
Terry and Stacy Lynch**

Jack Madden**
Carol Mahan**
Makena Resort/Maui Prince Hotel, Donn J. Takahashi**
Jonathan and Betty Mann**
Martha E. Martin**
Joe E. Masters**
Maui Air Traffic Association, Inc., Stephen J. Pitt**
Maui Carpenter's Union, Local 745, William Nishibayashi**
Maui Chamber of Commerce, Mr. Patrick Ryan**
Maui Electric Company, Ltd., Mr. Edward Reinhardt**
Maui Hotel Association, Ms. Terryl Vencl, Executive Director**
Maui Land & Pineapple Company, Inc., Mr. Paul Meyer**
Maui County Baptist Association, Sam Miguel**
Maui Marriot Resort, Jim Hale**
Maui Software, William Modesitt**
Maui Tomorrow, Mr. Richard Joseph Lafond, Jr., Executive Director**
Charles Kauluwehi Maxwell**
Dick Mayer**
Kimberly E. Moore**
Steven M. Moser, M.D., F.A.C.P., Internal Medicine and Nephrology**
Rita Mouren**
V. Lucile Mundy**
Gordon Y. Muraoka**

Dwight Nakao**
Native Hawaiian Plant Society, Linda Nelson**

Leland Okura**
Phillip B. Olsen**

PacRim Research, Marc Hodges**

Crystal G. Paiwa**
Hester Paiwa**
Eugene L. Parra**
Cynthia Parton**
Godwin J. Pelissero, Jr.**
July Plummer**
Christopher Pope**

Deanna Rasmussen**
Renaissance, Wailea Beach Resort, Jerry Phelps**
Susan Richardson**
Denise Riegel**
Frederick W. Rohlfing, Esq.**

Anil V. Sampat**
Sierra Club, Conservation Committee, Maui Group, Lucienne De Naie**
Steve Serlin**
Annamarie Sheehan**
Glenn Shepherd**
Shirley Shepherd**
Barbara Sinclair**
Sisters of Hula Halau Wehiwehi o Leilehua, Gordean Bailey**
Marilyn Smith**
Mr. William D. Smith**
Spreckelsville Community Association, Mr. Jack Thompson, President**
State of Hawaii, Department of Accounting and General Services*
State of Hawaii, Department of Agriculture**
State of Hawaii, Department of Budget and Finance, Housing Finance and Development Corporation**
State of Hawaii, Department of Defense, Office of Civil Defense**
State of Hawaii, Department of Education*
State of Hawaii, Department of Hawaiian Home Lands**
State of Hawaii, Department of Health, Environmental Management Division**
State of Hawaii, Department of Land and Natural Resources, State Historic Preservation Division**
State of Hawaii, Department of Transportation*
State of Hawaii, Land Use Commission, Ms. Esther Ueda, Executive Officer**
State of Hawaii, Office of Environmental Quality Control**
Earl E. Stevens**
Marjory Stone**
Adele H. Sumida**
William R. Syfers**

Walter T. Tamao**
Joy Tamayose**
Michael G. Tappeiner**
Tropical Orchid Farm, Mr. Jeffrey B. Parker**
Patricia Tummons**

U. S. Army Corps of Engineers, Pacific Ocean Division**
U. S. Department of Agriculture, Natural Resources Conservation Service*
U. S. Department of Commerce, NOAA, Office of Ecology and Conservation, Director**
U. S. Department of the Interior, Geological Survey, District Chief**
U. S. Department of Interior, National Park Service, Haleakala National Park,
Mr. Donald W. Reeser**
U. S. Department of Interior, Office of Secretary, Office of Environmental Policy and Compliance**
U.S. Environmental Protection Agency, Region IX**
University of Hawaii, Environmental Center**

Ed & Debra Vaughn**

Wailea Destination Association, Nancie Brown, President**
Florence M. Waldow**
Cole Warren**
West Maui Taxpayers Association, Gina Aranki**
Gregory Westcott**
Masako Westcott**
Barbara Woods**

T. Yamada**
Kendrick Yee**

10.7 PERSONS TESTIFYING AT PUBLIC HEARING

Tom Cannon
Celeste King
Isaac Hall
Dana Naone Hall
Brian Huse
Nicole Walthall
Charles K. Maxwell
Don Reeser
Marsha Wienert

Jim Shefte
Lisa Hamilton
Dave Chenoweth
Cynthia Herberg
Jeffery Parker
Audrey M. Garcia
Karen Ardoin
Steven Moser
Mary Evanson
A.B. Hughes
Dan Judson
Debra Sullivan
Renate Gassmann-Duvall
Kathy Bungarz
Doug MacCluer
Jack Thompson
Larry Feinberg
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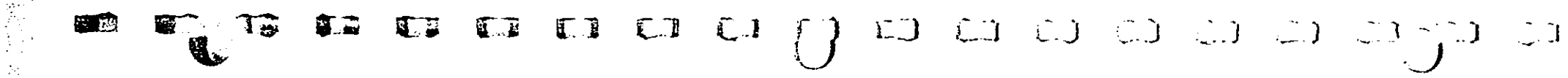

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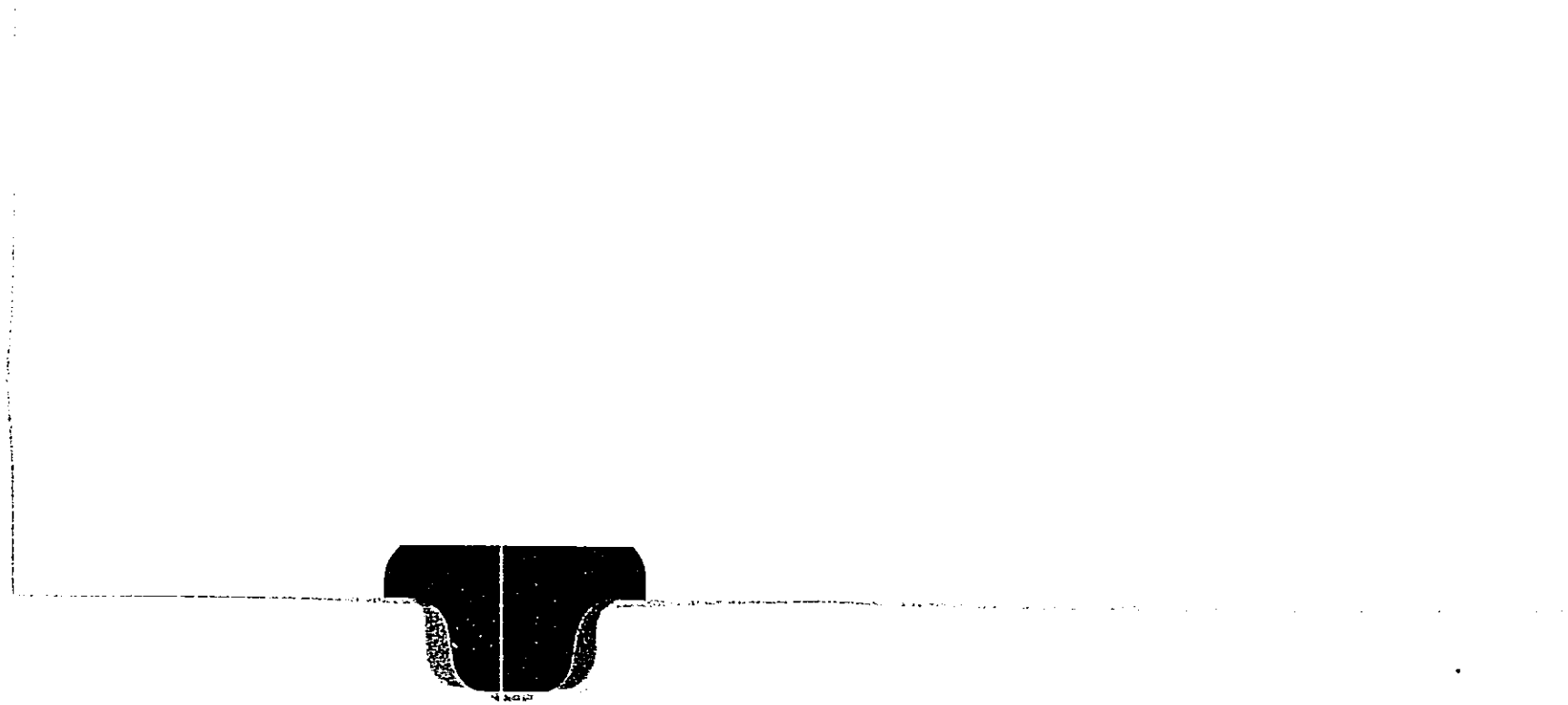

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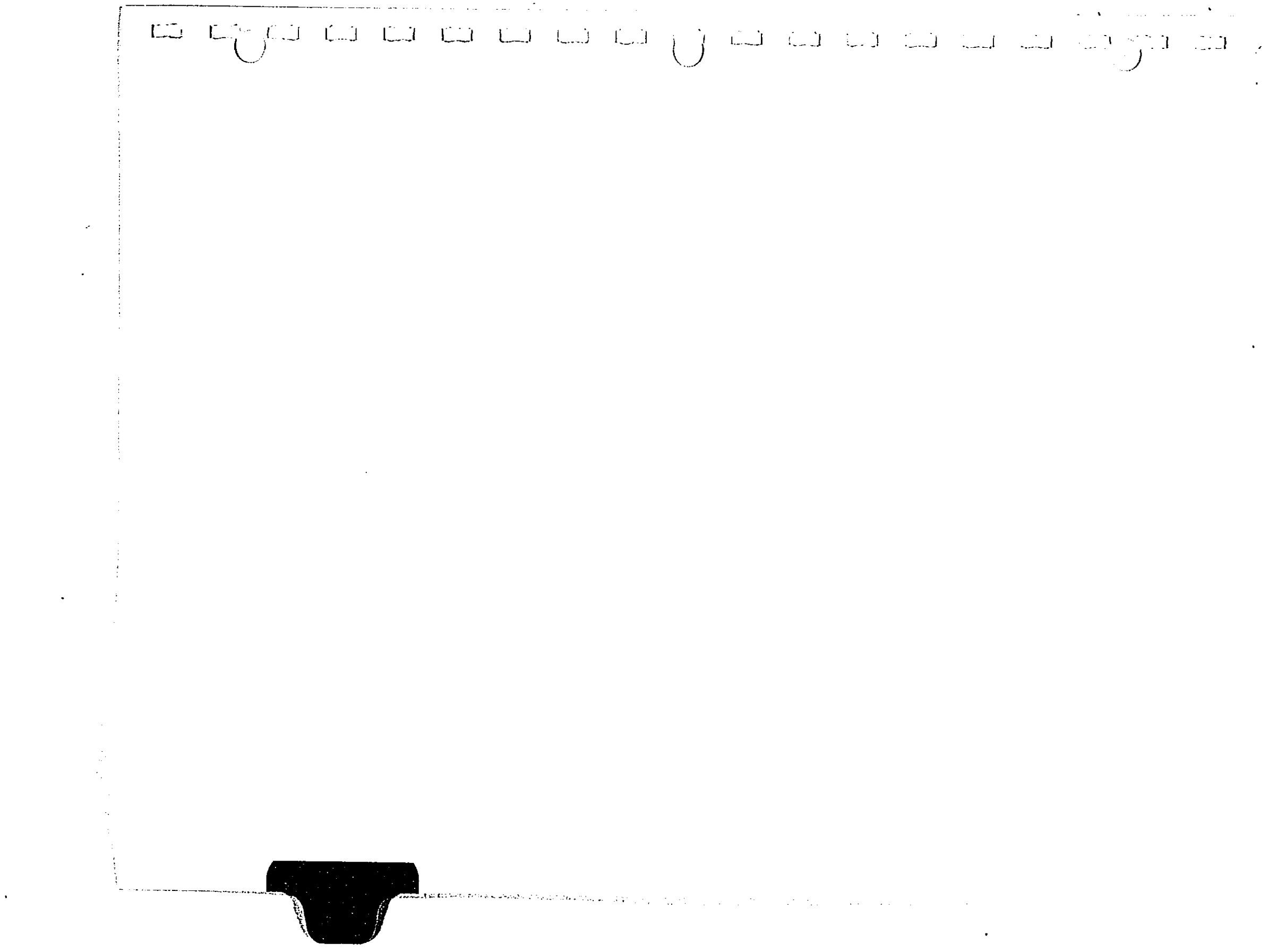

SECTION 13.0
GLOSSARY OF TERMS

This Glossary contains definitions of technical terms, abbreviations and acronyms that are used in the Kahului Airport Environmental Impact Statement.

- A -

AC - Advisory Circular, published by the Federal Aviation Administration.

ACHP - Advisory Council on Human Preservation.

ALP - Airport Layout Plan.

ALS - Approach Lighting System - Configuration of lights positioned symmetrically along the extended runway threshold and extended towards the approach. An ALS augments electronic landing aids.

ARFF - Airfield Rescue and Fire Fighting (formerly Crash Fire Rescue).

ASAP - Alien Species Action Plan.

ASV - Annual Service Volume - A reasonable estimate of the airfield's capacity.

ATC - Air Traffic Control.

ATCT - Airport Traffic Control Tower.

Air Carrier (Airline) - An air carrier certified under FAR Parts 121 or 127. Aircraft operated by an airline that holds a certificate of public convenience and necessity authorizing performance of scheduled air transportation. Air carrier airlines conduct scheduled services on specified air routes operating aircraft with more than 60 seats. These air carriers may also provide non-scheduled or chartered services as a secondary operation.

Air Navigation Facility (NAVAID) - Although generally referring to electronic radio wave transmitters (VOR, NDB, ILS), it also includes any structure or mechanism designed to guide or control aircraft involved in flight operations.

Air Taxi - Aircraft operated by a company or individual that performs air transportation on a scheduled or non-scheduled basis over either designated or unspecified routes, with light aircraft having less than 60 seats. An air carrier certified under FAR Part 135. Commuter flights are a special category of air taxi operations.

Aircraft Delay - A delay in departing from or arriving at an airport experienced by an aircraft that is caused by inadequate airfield capacity. Technically, delay is the difference between constrained and unconstrained operating time.

Aircraft Mix - An arbitrary classification system which identifies and groups aircraft having similar operational characteristics for the purpose of computing runway capacity and determining facility requirements. Classes of aircraft are differentiated by gross takeoff weight and number of engines.

Aircraft Operations - The airborne movement of aircraft. There are two types of operations: local and itinerant.

1. Local Operations are performed by aircraft which:
   (a) operate in the local traffic pattern or within sight of the airport;
   (b) are known to be departing for or arriving from flights in local practice areas located with a 20-mile radius of the airport;
2. Itinerant Operations are all aircraft operations other than local operations.

Aircraft Type - A distinctive model of aircraft, as designated by the manufacturer. Also used to identify groups of aircraft having similar operational characteristics for the purpose of computing runway capacity.

Airport - An area of land or other hard surface, excluding water, that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

Airport Environs - The area surrounding an airport that is affected by airport operations.

Airport Master Plan - Long-range plan for identifying airport development requirements.

Airport Noise Compatibility Program - A program developed in accordance with FAR Part 150, including measures proposed or taken by the airport operator to reduce existing compatible land use and to prevent the introduction of additional incompatible land uses within the area.

Airport Surveillance Radar (ASR) - Radar providing position of aircraft by azimuth and range data without elevation data. It is designed for a range of approximately 50 miles. Also called ATCT Terminal Radar.

Airside - That portion of the airport facility where aircraft movements take place, airline operations areas, and areas that directly serve the aircraft (taxiway, runway, maintenance, and fueling areas). See Landside.

Airspace - The space lying above the earth or above a certain area of land or water which is necessary to conduct aerodynamic operations.

Annual Service Volume - The upper band of annual aircraft operations that an airfield can be expected to accommodate. Annual service volume does not take into account reductions in volume due to specific levels of delay.

Apron - A paved area on the airfield usually immediately adjacent to the terminal area or hangars on which aircraft are parked.

Aviation Forecast - Estimates of future aircraft operations, passenger traffic, cargo and mail, based aircraft, mix of aircraft and other factors that affect airport facilities and operations.

Avigation Easement - An easement allowing aircraft operations in the airspace above a parcel of land not located on airport property. Provides for the right of flight at any altitude above the approach surface and controls obstructions to flight and the creation of electronic interferences to aircraft operations.

- B -

BLM - U.S. Bureau of Land Management.

Based Aircraft - An aircraft permanently stationed at an airport, usually by some form of agreement between the aircraft owner and airport management.

Building Restriction Line (BRL) - A BRL is a line on the airfield surface denoting the required spacing or set back for Runway or Taxiway centerline behind which buildings can be constructed.

- C -

CDBG - Community Development Block Grants.

CEQ - The Presidents Council on Environmental Quality is the agency responsible for the oversight and development of national environmental policy. Created by NEPA, CEQ also shares this responsibility with EPA.

CERCLA - Comprehensive Environmental Response Compensation and Liability Act.

CGAPS - Coordinating Group on Alien Pest Species.

CIP - Capital Improvement Program.

CZM - Coastal Zone Management.

Categorical Exclusion - A category of project actions, which a federal agency identifies in it's NEPA procedures, that do not individually or cumulatively have a significant effect on the environment.

Charter - A non-scheduled flight offered by either a supplemental or certificated airline.

Commuter Airline - Aircraft operated by an airline that performs scheduled air transportation over specified routes using aircraft with fewer than 60 seats. Commuter airlines provide at least five scheduled round trips between two or more points or carry mail.

Control Tower/Air Traffic Control Tower (ATCT) - A central operations facility in the terminal air control system consisting of a tower cab structure (including an associated IFR room if radar equipped) using air/ground communications and/or radar, visual signaling, and other devices to provide safe and expeditious movement of terminal air traffic.

Cooperating Agency - A federal agency, other than the lead agency, that has legal jurisdiction or special expertise to comment on the project actions of a lead agency.

Crosswind Runway - A runway aligned at an angle to the prevailing wind which allows use of an airport when crosswind conditions on the primary runway would otherwise restrict use.

Cumulative Effects - Effects that are the result of incremental impacts of an action, when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or non-federal) or person undertakes such actions.

- D -

dBA - A weighted sound level filtered or weighted to reduce the influence of low and high frequency noise.

DLNR - Department of Land and Natural Resources (Hawaii).

DOD - U.S. Department of Defense.

DOI - U.S. Department of Interior.

DOT - U.S. Department of Transportation.

DOT-A - Airports Division of the Hawaii State Department of Transportation.

Decibel - A unit of measurement of sound intensity.

Direct Effects - Effects that are caused by an action and occur at the same time and place as the action.

Domestic Flight - A flight within a single country.

- E -

EIA - Environmental Impact Assessment.

EPA - U.S. Environmental Protection Agency.

Environmental Impact Statement (EIS) or Environmental Assessment (EA) - A study performed to determine the effect proposed changes will have on the physical and socio-economic environment of a development project. A document prepared under the National Environmental Policy Act of 1969. The completion of an EA often precedes the decision to prepare an EIS.

- F -

FAA - Federal Aviation Administration.

FAR - Federal Aviation Regulation. FAR Part 36 establishes noise certification standards for aircraft; FAR Part 77 establishes standards for obstructions in navigable airspace; FAR Part 150 describes requirements and procedures for conducting a voluntary aircraft noise and land use compatibility study.

FBO (Fixed Base Operator) - An operator of one or more aircraft who has a permanent fixed aviation service facility at an airport. FBOs usually engage in aviation activity such as flight instruction, fuel sales, repairs, aircraft rental and sales, and air charter.

FHWA - Federal Highway Administration.

FONSI - Finding of No Significant Impact.

ft. - foot, feet.

FY - Fiscal Year.

- G -

General Aviation (GA) - All civil aviation activity except that of air carriers certificated in accordance with FAR Parts 121, 123, 127, and 135. The types of aircraft used in general aviation activities cover a wide

spectrum from corporate multi-engine jet aircraft piloted by professional crews to amateur-built single-engine piston acrobatic planes, balloons, and dirigibles.

Glide Slope (GS) - The electronic vertical guidance component of an ILS.

Ground Support Equipment (GSE) - Equipment used for servicing aircraft on the apron.

Groundside - The area on the access roadway side of the airport which is generally public (see Landside).

- H -

HC & S - Hawaii Commercial and Sugar Company.

HDOA - State of Hawaii, Department of Agriculture

HDOT-AIR - State of Hawaii, Department of Transportation, Airports Division.

HEPA - Hawaii Environmental Protection Act.

HRS - Hawaii Revised Statute.

HUD - U.S. Department of Housing and Urban Development.

Heliport or Helipad - An airport or area of an airport used or intended to be used for the landing and takeoff of helicopters (rotorcraft).

Hydrant Fueling System - An underground system of pipes through which aircraft fuel is delivered directly from a central supply to fixed outlets (hydrant pits) at aircraft parking positions.

- I -

INS - Immigration and Naturalization Services.

ISTEA - Intermodal Surface Transportation Efficiency Act.

Indirect Effects - Effects that are caused by an action and occur later in time, or at another location, yet are reasonably foreseeable in the future.

Instrument Flight Rules (IFR) - Rules that govern flight procedures under instrument meteorological conditions (IMC) caused by limited visibility or other operational constraints.

Instrument Landing System (ILS) - a precision landing aid consisting of localizer (azimuth guidance), glide slope (vertical guidance), marker beacons (range and approach fix information), and approach light system. Establishes a course and a descent path to align an aircraft with a runway for final approach.

Integrated Noise Model (INM) - A computer based airport noise exposure modelling program developed for the FAA.

International Flight - International flights involve an origin in one country and a destination in another. U.S. carriers require FAA and Presidential approval for international flights.

Intrastate - Activity entirely within state boundaries.

Itinerant Operation - All aircraft arrivals and departures other than local operations.

- J -

Jet Blast - The high-velocity movement of air behind a jet engine in operation.

- K -

Kona Wind - A wind blowing from the southwest.

- L -

lb. - pound/pounds.

Ldn (Day-Night Average Sound Level) - The 24-hour average sound level, in decibels, with a 10-decibel penalty applied to night time (10:00 p.m. to 7:00 a.m.) levels.

Leq (Equivalent Sound Level) - The equivalent A-weighted sound level for a specified period of time.

LOC - Localizer (horizontal guidance component of ILS).

LOS - Level of Service.

LUD - Land Use District (Hawaii).

Landside - That portion of the airport utilized for all activities except aircraft movement (see Airside). The landside generally includes the following elements: vehicular access roads and parking, passenger terminal, cargo terminal, aircraft hangars, FBOs, fuel storage area, CFR equipment, and maintenance facilities.

Lead Agency - The agency, or agencies, that have taken the primary responsibility for preparing the environmental impact statement.

- M -

mg/m^3 - milligrams per cubic meter.

MGTOW - Maximum Gross Takeoff Weight.

Min. - Minute(s).

MIRL - Medium Intensity Runway Lights.

MM - Middle Marker (part of an ILS).

MSL - Mean Sea Level.

Marker Beacon - A VFR navigational aid which transmits a narrow directional beam. It is associated with an airway of an instrument approach.

Master Plan - Long-range plan for identifying airport development requirements.

Military Operation - A takeoff or landing by military aircraft.

Movement - Usually synonymous with the term operation (i.e., a take-off or a landing).

- N -

NA - Not Applicable.

NASKA - Naval Air Station - Kahului.

NAVAID - See Air Navigation Facility.

NM - Nautical Mile.

NPS - U.S. Department of Interior, National Park Service.

Narrow Body Aircraft - Term used for commercial aircraft of the type B727, B737, B757, DC9 or similar; i.e. having a single aisle and a maximum of three seats on each side of the aisle.

National Environmental Policy Act (NEPA) - Federal legislation that establishes environmental policy for the nation. It provides an interdisciplinary framework for federal agencies to prevent environmental damage and contains "action forcing" procedures to ensure that federal agency decision-makers take environmental factors into account.

Notice of Intent (NOI) - The first formal step in the environmental impact statement process, consisting of a notice with the following information: a description of the agency's proposed scoping process, including scoping meetings; and the name and address of the persons to contact within the lead agency regarding the environmental impact statement.

Non-Directional Beacon (NDB) - An electronic ground station transmitting in all directions in the L/MF frequency spectrum; provides azimuth guidance to aircraft equipped with direction finder receivers. These facilities are often established with ILS outer markers to provide transition guidance to the ILS system.

Noise - Noise is any undesired electronic signal or, in acoustics, any undesired sound.

Noise Abatement - A procedure for the operation of aircraft at an airport which minimizes the impact of noise on the environs of the airport.

Noise Contour - A line on a map connecting points of equal noise exposure.

Noise Exposure Map (NEM) - A scaled, geometric description of an airport, it's noise contours and surrounding area as described in FAR Part 150.

Noise Mitigation - Activities that make aircraft noise less intense or serious or severe for the noise receivers.

Non-Precision Approach Procedure - A standard instrument approach procedure in which no electronic glide slope is provided.

- O -

OGG - Airport/Airline designator for Kahului Airport.

OM - Outer Marker (part of an ILS).

OSP - Office of State Planning (Hawaii)

Operation - An aircraft arrival at (landing) or departure from (takeoff) an airport.

- P -

PAPI - Precision Approach Path Indicator.

PAR - Precision Approach Radar - Equipment that may be used to monitor certain non-radar approaches, but is primarily used to conduct precision approaches where the radar controller issues specific verbal instructions to the pilot.

Peak-Hour Demand - That level of activity, existing or forecast, which is representative of typical peak-day conditions; demand levels in excess of the peak-hour value may occasionally occur as atypical highs.

Precision Instrument Runway - A precision instrument runway is one which uses an instrument landing system (ILS) or precision approach radar (PAR). A planned precision instrument runway is one for which a precision approach system is indicated either on an FAA or DOD approved airport layout plan, or on other FAA or DOD planning documents.

- R -

RCRA - Resource Conservation and Recovery Act.

RI/FS - Remedial Investigation/Feasibility Study

RW & R/W - Runway.

Ramp - That portion of the Aircraft Operation Area usually lying between runways and groundside facilities where aircraft are parked and serviced and passengers and cargo are loaded and unloaded (also see Apron).

Record of Decision (ROD) - A public document that reflects the agency's final decision, rationale behind that decision, and commitments to monitoring and mitigation.

Reliever Airport - A metropolitan area general aviation airport with facilities and services suitable for attracting and diverting general aviation activity away from major air carrier airports. The immediate benefit is reduced congestion and additional capacity at the air carrier facility.

Rotorcraft - Referring to helicopters.

Runway - A runway is a defined rectangular area on an airport prepared for the landing or takeoff of aircraft.

Runway Blast Pad - A surface adjacent to the ends of runways provided to reduce the erosive effect of jet blast and propeller wash.

Runway Clear Zone or Runway Protection Zone - A runway clear zone or runway protection zone is a trapezoidal area at ground level, under the control of the airport authorities, for the purpose of protecting the safety of approaches and keeping the area clear of the congregation of people. The runway clear zone begins at the end of each primary surface and is centered upon the extended runway centerline. The term "clear zone" has been replaced by "protection zone".

Runway Safety Area - A runway safety area is a rectangular area, centered on the runway centerline, which includes the runway (and stopway, if present) and the runway shoulders. The portion abutting the edge of the runway shoulders, runway ends, and stopways is cleared, drained, graded, and usually turfed. Under normal conditions, the runway safety area is capable of supporting snow removal, fire fighting and rescue equipment, and accommodating the occasional passage of aircraft without causing major damage to the aircraft.

- S -

sec. - second(s)

SMA - Special Management Area.

SQ. FT. or sq. ft. - Square Feet.

Scope - The types of actions to be included in a project, the range of alternatives, and the impacts to be considered.

Service Roads - Public or restricted roads within the airport boundary, primarily used for service purposes.

Socio-economic - Data pertaining to the population and economic characteristics of a region.

- T -

TW & T/W - Taxiway.

TACAN - Tactical Air Navigation Equipment.

TVOR - Terminal Very High Frequency Omnirange Station.

T-Hangar - A T-shaped aircraft hangar which produces shelter for a single airplane, or generically, aircraft hangars for General Aviation aircraft.

Taxiway - A taxiway is a defined path, from one part of an airport to another, selected or prepared for the taxiing of aircraft.

Terminal - A building or group of buildings on an Airport used for processing enplaning and deplaning passengers or air cargo.

Tiering - The process of preparing multiple levels of environmental review, typically including general matters in broad environmental impact statements with subsequent narrower environmental impact statements.

Touch-and-Go - A touch-and-go operation is used for flight training or proficiency and is an operation in which the aircraft lands and begins its take-off roll without stopping. It is counted as two operations.

Tradewind - A wind blowing from the northeast.

Transient Operations - That portion of itinerant operations performed by aircraft other than those based at the airport in question.

- U -

UHF - Ultra High Frequency.

USDA - United States, Department of Agriculture.

USFWS - United States, Fish and Wildlife Service.

USGS - United States, Geological Service.

- V -

VASI - Visual Approach Slope Indicator (providing visual glide path).

VFR - Visual Flight Rules, that govern flight procedures in good weather.

VHF - Very High Frequency.

VORTAC - Co-located VOR and TACAN.

Very High Frequency Omnirange Station (VOR) - A ground based radio (electronic) navigation facility transmitting signals in all directions in the VHF frequency spectrum providing azimuth guidance to pilots by reception of electronic signals.

- W -

Wide Body Aircraft - Term used for high capacity commercial aircraft of the types Boeing B747, Douglas DC-10, Lockheed L1011, Airbus A300 or similar, i.e. aircraft with double aisles in the passenger cabin and seating configurations exceeding six abreast.

Wind Coverage - Wind coverage is the percent of time for which aeronautical operations are considered safe due to acceptable crosswind components.

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