FINAL
ENVIRONMENTAL IMPACT STATEMENT

VOLUME II 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

7-5-01
7-19-01
7-27-01

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 II of V: APPENDICES A TO K

For further information:

Mr. David J. Welhouse
U.S. Department of Transportation
Federal Aviation Administration
Honolulu Airports District Office
Box 50244
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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ENVIRONMENTAL IMPACT STATEMENT
KAHULUI AIRPORT IMPROVEMENTS

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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

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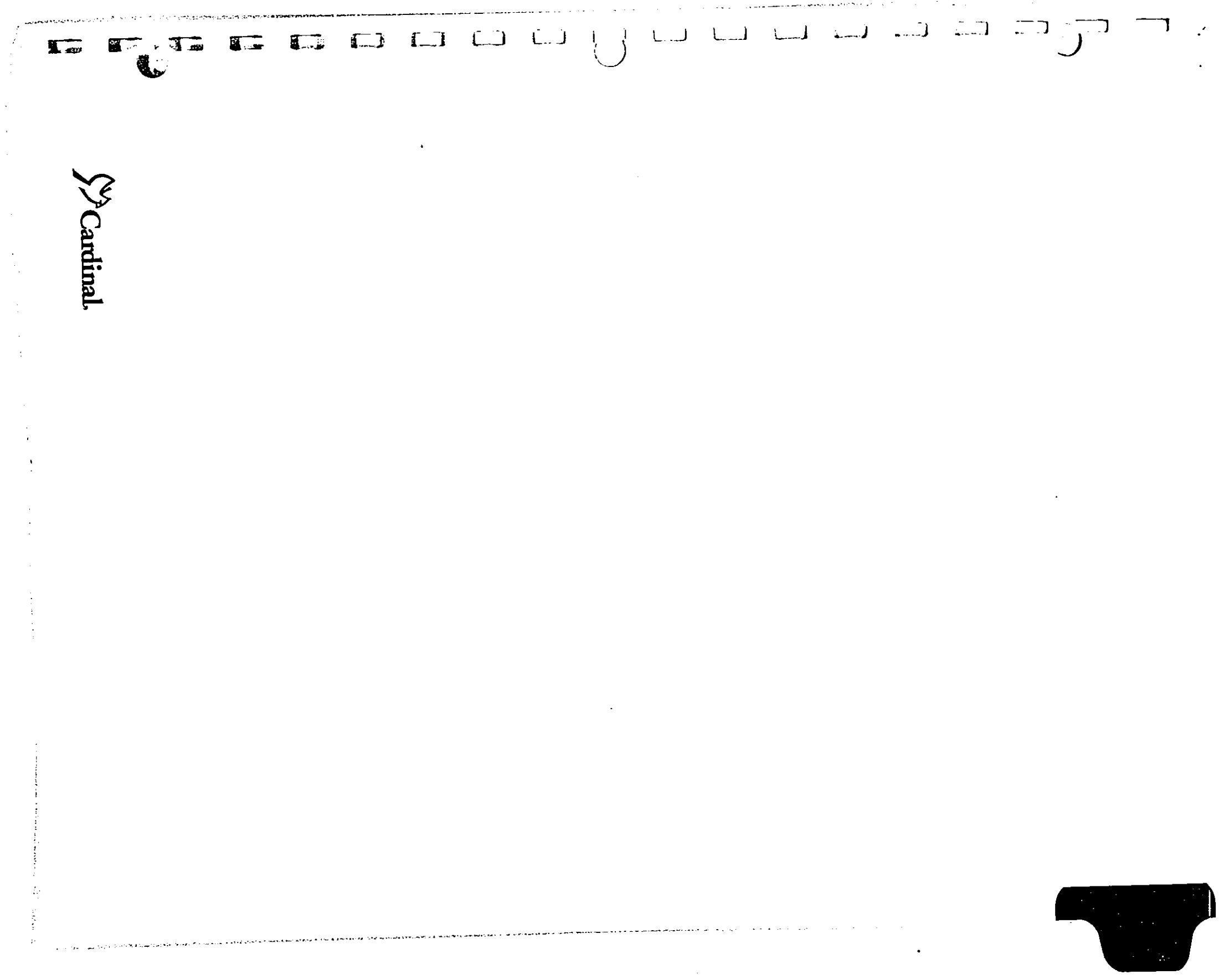
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APPENDIX A

COMMENTS AND MEETING TRANSCRIPTS

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APPENDIX A
COMMENTS AND MEETING TRANSCRIPTS

This Appendix presents the meeting notices, the comments received during the scoping process and the OEQC preparation comment period, and the transcripts of the Scoping Meetings.

Section A.1 contains the meeting and EIS preparation notices for this EIS.

Section A.2 contains the comments received during the EIS scoping process and from the HRS 343 EIS preparation comment period.

Section A.3 contains the HRS 343 results to be a consulting party on this EIS.

Section A.4 contains comments received after the scoping process.

Section A.5 contains the transcripts of both Scoping Meetings.

A.1 MEETING NOTICES

The following notices are presented in Exhibits A-1 through A-5.

- Intent to Prepare an Environmental Impact Statement and Hold Scoping Meetings published in the Federal Register, Vol. 59, No. 67, April 7, 1994
- Notice of Meeting, published in the "Honolulu Advertiser," April 20 and 22, 1994
- Notice of Meeting, published in the "Honolulu Star Bulletin," April 20 and 22, 1994
- Notice of Meeting, published in "The Maui News," April 20, 22 and 24, 1994
- Office of Environmental Quality Control (OEQC), Environmental Preparation Notice, published in the "OEQC Bulletin," May 23, 1994 and June 8, 1994

Dated: March 24, 1994.

J.C. Card,

Rear Admiral, U.S. Coast Guard, Commander, Eighth Coast Guard District.

[FR Doc. 94-8377 Filed 4-6-94; 8:45 am]

BILLING CODE 4910-14-M

Federal Aviation Administration

Intent To Prepare an Environmental Impact Statement and Hold Scoping Meetings for Kahului Airport, Kahului, Maui, HI

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of intent to prepare an Environmental Impact Statement and to hold two (2) public scoping meetings for Kahului Airport, Kahului, Maui, Hawaii.

SUMMARY: The Federal Aviation Administration, in cooperation with the State of Hawaii, Department of Transportation, Airports Division is issuing this notice to advise the public that an Environmental Impact Statement will be prepared for proposed improvements at Kahului Airport. To ensure that all significant issues related to the proposed action are identified, two (2) public scoping meetings will be held on May 18, 1994.

FOR FURTHER INFORMATION CONTACT: David J. Welhouse, Airport Engineer/Planner, HNL-621, Federal Aviation Administration, Honolulu Airports District Office, P.O. Box 50244, Honolulu, Hawaii, 96850-0001, Telephone: 808/541-1243.

SUPPLEMENTARY INFORMATION: The Federal Aviation Administration (FAA), in cooperation with the State of Hawaii, Department of Transportation, Airports Division, will prepare a joint Environmental Impact Statement (EIS) for proposed improvements at Kahului Airport in accordance with the requirements of the National Environmental Policy Act of 1969, as amended, and Chapter 343, Hawaii Revised Statutes, as revised.

The Joint Lead Agencies for the preparation of the EIS will be the Federal Aviation Administration and the State of Hawaii, Department of Transportation, Airports Division.

The proposed improvements at Kahului Airport include, but are not limited to:

1. Extend and Strengthen Runway 2/20 from 7,000 feet to 9,600 feet.
2. Construct a new airport access road.
3. Relocate the Instrument Landing System (ILS) and Approach Lighting System (ALS) on Runway 2.
4. Acquire land for Runway 2 approach protection, and approach lighting system.
5. Other development items recommended in the June 1993 Master Plan.
6. Potential long range projects not currently planned in the Master Plan or shown on the Airport Layout Plan including:
   A. Construct Phase II of the passenger terminal building.
   B. International flight operations and facilities.
   C. Long term helicopter facility.

Alternatives

The alternatives to the proposed development that will be examined in the EIS include the following:

1. The proposed alternative.
2. Alternative expansion at Kahului Airport such as a parallel runway or different runway lengths.
3. Alternative modes of travel.
4. Utilization of other existing State airports.
5. Reactivation of the abandoned Puunene Airfield.
6. Consideration of potential other general aviation airport sites.
7. No Action.

Comments and suggestions are invited from Federal, State and local agencies, and other interested parties to ensure that the full range of issues related to these proposed projects are addressed and all significant issues identified. Comments and suggestions may be mailed to the FAA informational contact listed above.

Public Scoping Meeting

To facilitate receipt of comments, Two (2) public scoping meetings will be held on Wednesday, May 18, 1994. The first meeting will be held in the Kahului Airport Terminal at 10 a.m. Hawaii Standard Time. The second meeting will also be held in the Kahului Airport Terminal at 7 p.m. Hawaii Standard Time. Public comments on the scope of the EIS will be accepted through Friday, June 17, 1994.

Issued in Hawthorne, California on March 30, 1994.

Robert C. Bloom,

Acting Manager, Airports Division, AWP-600.

[FR Doc. 94-8323 Filed 4-6-94; 8:45 am]

BILLING CODE 4910-13-M

Aviation Rulemaking Advisory Committee Meeting on Aircraft Certification Procedures Issues

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of meeting; correction.

SUMMARY: The FAA is issuing this notice to advise the public of a correction to a Notice of meeting published on March 29, 1994 (59 FR 14707). This notice amends the agenda previously presented, to include items pursuant to Concept Briefings that will be presented to the Federal Aviation Administration's Aviation Rulemaking Advisory Committee to discuss aircraft certification procedures issues.

DATES: The meeting will be held on April 21, 1994, at 9 a.m. Arrange for oral presentations by April 14, 1994.

ADDRESSES: The meeting will be held at the General Aviation Manufacturers Association, Suite 801, 1400 K Street, NW., Washington, DC 20005.

FOR FURTHER INFORMATION CONTACT: Ms. Kathy Ball, Aircraft Certification Service (AIR-1), 800 Independence Avenue, SW., Washington, DC 20591, telephone (202) 267-0235.

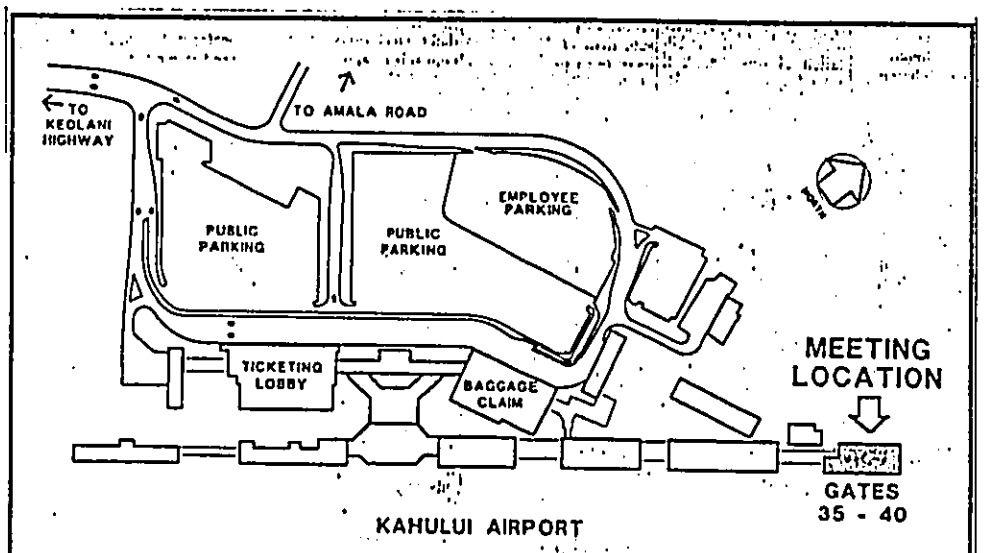
SUPPLEMENTARY INFORMATION: Pursuant to section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92-463; 5 U.S.C. App. II), notice is hereby given of a meeting of the Aviation Rulemaking advisory committee to be held on April 21, 1994, at the General Aviation Manufacturers Association, Suite 801, 1400 K Street, NW., Washington, DC 20005. The agenda for the meeting will include:

Opening Remarks.
Review of Action Items.
Working Group Reports.
  Parts Working Group presentation of Concept.
  Production Certification Working Group presentation of Concept.
Old Business.
New Business.

Attendance is open to the interested public, but will be limited to the space available. The public must make arrangements by April 14, 1994, to present oral statements at the meeting. The public may present written statements to the committee at any time by providing 25 copies to the Assistant Executive Director for Aircraft Certification Procedures or by bringing the copies to him at the meeting. Arrangements may be made by contacting the person listed under the heading FOR FURTHER INFORMATION CONTACT.

Sign and oral interpretation can be made available at the meeting, as well as an assistive listening device, if requested 10 calendar days before the meeting.

EXHIBIT A-1, Federal Register



PUBLIC SCOPING MEETING

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

The Federal Aviation Administration (FAA), *in cooperation with the State of Hawaii, Department of Transportation,* Airports Division are holding two (2) public scoping meetings on the proposed improvements at Kahului Airport. A joint Environmental Impact Statement (EIS) will be prepared for the proposed improvements at Kahului Airport in accordance with the requirements of the National Environmental Policy Act of 1969, as amended, and Chapter 343, Hawaii Revised Statutes, as revised.

The Joint Lead Agencies for the preparation of the EIS will be the Federal Aviation Administration and the State of Hawaii, Department of Transportation, Airports Division.

The proposed improvements at Kahului Airport include, but are not limited to:

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4. Acquire land for Runway 2 approach protection, and approach lighting system.
5. Other development items recommended in the June 1993 Master Plan.
6. Potential long range projects not currently planned in the Master Plan or shown on the Airport Layout Plan including:
   A. Construct Phase II of the passenger terminal building.
   B. International flight operations and facilities.
   C. Long term helicopter facility.

ALTERNATIVES: The alternatives to the proposed development that will be examined in the EIS include the following:

1. The proposed alternative.
2. Alternative expansion at Kahului Airport such as a parallel runway or different runway lengths.
3. Alternative modes of travel.
4. Utilization of other existing State airports.
5. Reactivation of the abandoned Puunene Airfield.
6. Consideration of potential other general aviation airport sites.
7. No Action.

Comments and suggestions are invited from Federal, State and local agencies, and other interested parties to ensure that the full range of issues related to these proposed projects are addressed and that all significant environmental, economic and social issues which need to be considered in the EIS are identified.

PUBLIC SCOPING MEETING: To facilitate receipt of comments, two (2) public scoping meetings will be held on Wednesday, May 18, 1994. The first meeting will be held in the Kahului Airport Terminal at 10:00 a.m. Hawaii Standard Time. The second meeting will also be held in the Kahului Airport Terminal at 7:00 p.m. Hawaii Standard Time. Validated Public Parking will be available.

The meeting location is disability accessible. Should you need additional assistance for other disabilities, for example, sign language interpretation and large type print, please contact the Department of Transportation, Airports Division at 838-8828 (V/TDD) at least five (5) working days before the scheduled meeting.

If you cannot attend the meeting and have written comments you wish to submit, or wish to be added to the mailing list, please write to the address below by June 17, 1994. If you would like further information about the proposed project or the meeting, please address your inquiries to:

Federal Aviation Administration
Airports District Office
P.O. Box 50244
Honolulu, Hawaii 96850

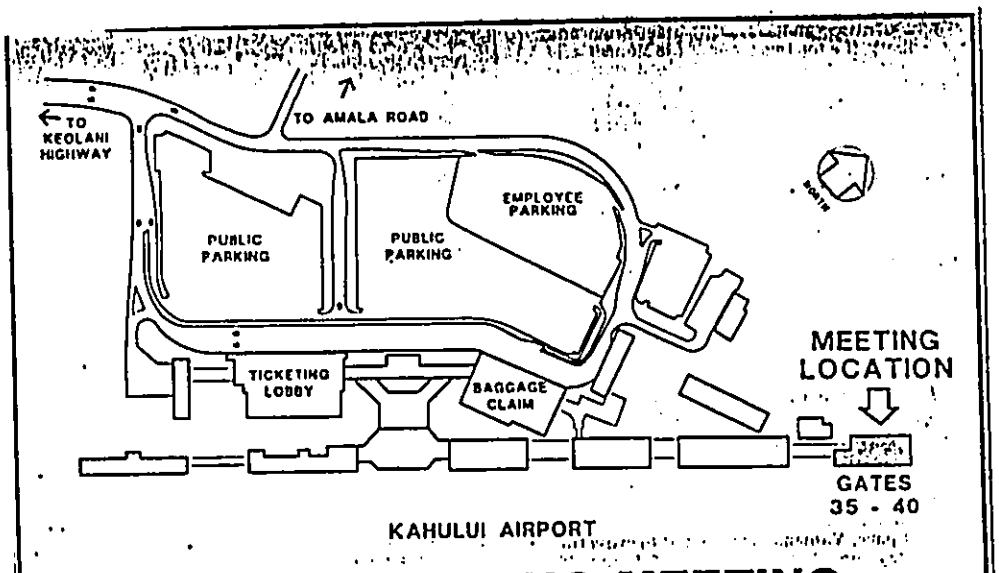
or call:

Ph. (808) 541-1243

Glenn M. Okimoto
for Rex D. Johnson
Director of Transportation

(Hon. Adv.: Apr. 20, 22, 1994) (A-27091)

EXHIBIT A-2, Honolulu Advertiser



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Airports District Office
P.O. Box 50244
Honolulu, Hawaii 96850

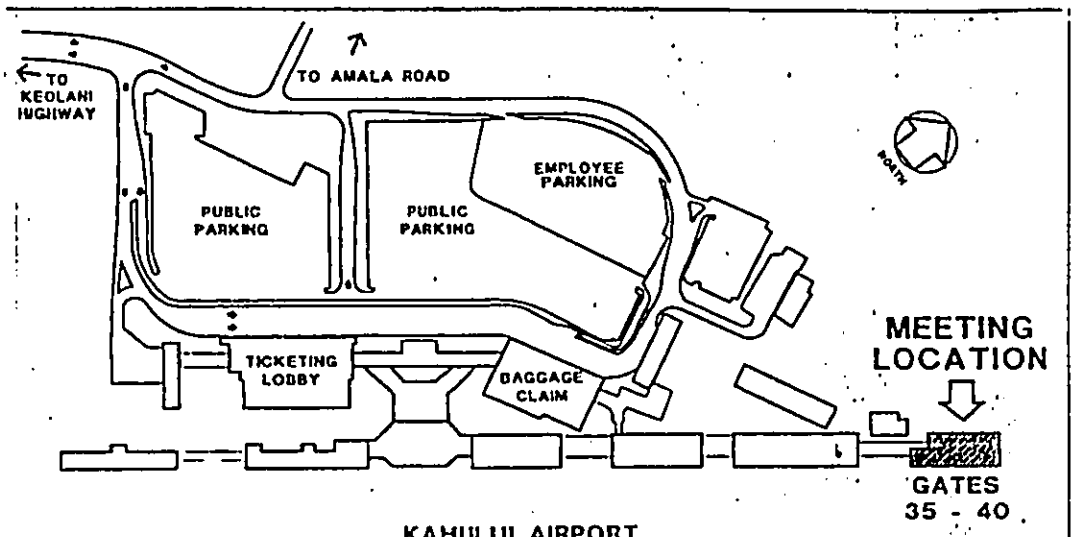
or call:

Ph. (808) 541-1243

Glenn M. Okimoto
for Rex D. Johnson
Director of Transportation

(Hon. S.-B.: Apr. 20, 22, 1994) (SB-0081)

EXHIBIT A-3, Honolulu Star Bulletin



KAHULUI AIRPORT

PUBLIC SCOPING MEETING

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Federal Aviation Administration
Airports District Office
P.O. Box 50244
Honolulu, Hawaii 96850

or call:

Ph. (808) 541-1243

(Sgd.) Glenn M. Okimoto
for Rex D. Johnson
Director of Transportation

(MN: Apr. 20, 22, 24, 1994)

EXHIBIT A-4, The Maui News

consultation period is to establish the scope and depth of coverage that the Draft EIS should have.

Aggrieved parties who wish to challenge the agency's determination have sixty days from the initial date of publication of the EIS Preparation Notice to initiate litigation.

Please send the original copy of your comments to the accepting authority and duplicate copies of the comments to the proposing agency or applicant, consultant and OEQC.

MAUI

KAHULUI AIRPORT

District: Wailuku
TMK: 3-08-01:19,20,45,73,76-78,80-92,95-98,100-106,121,123,124,127,129,131,133,134,136,138,141,142,144,145,147-149,152-155,157-162,166,168,173-176,178,181-187,189-193,195,196,204-206,209,211,212,214-220,222
Accepting Authority:
Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Suite 400
Honolulu, Hawaii 96813
Proposing Agencies:
Department of Transportation, Airports Division
Honolulu International Airport
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1898
Attention: Owen Miyamoto (838-8600)
and
Federal Aviation Administration (FAA)
800 Independence Avenue, SW
Washington, D.C. 20591
Attn: FAA Asst. Administrator for Airports (ARP-1)(202)267-8938
Consultant:
Edward K. Noda and Associates, Inc.
615 Piikoi Street, Suite 1000
Honolulu, Hawaii 96814
Attention: Brian Ishii (591-8553)
Deadline: June 22, 1994

The State of Hawaii, Department of Transportation, Airports Division (DOTA), in cooperation with the Federal Aviation Administration (FAA) will prepare a Joint Environmental Impact Statement (EIS) for proposed improvements at Kahului Airport. The Joint EIS will be prepared in accordance with the requirements of the National Environmental Policy Act of 1969, as amended, and Chapter 343, Hawaii Revised Statutes (HRS 343), as revised. Upon completion and approval, this EIS will supersede all previous HRS 343 environmental documents for these proposed improvements at Kahului Airport.

The Joint Lead Agencies for the preparation of the EIS will be the Federal Aviation Administration and the State of Hawaii, Department of Transportation, Airports Division.

The proposed improvements at Kahului Airport include, but are not limited to:

1. Extend and Strengthen Runway 2/20 from 7,000 feet to 9,600 feet.
2. Construct a new airport access road.
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The alternatives to the proposed development that will be examined in the EIS include the following:

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3. Alternative modes of travel;
4. Utilization of other existing State airports;
5. Reactivation of the the abandoned Puunene Airfield;
6. Consideration of potential other general aviation airports sites; and
7. No action.

OAHU

CONVENTION CENTER

District: Honolulu
TMK: Div. 2, Zone 3, Plat 35, Parcels 1,2,4,5,8/Plat 36, Parcels 18,24,25
Accepting Authority:
Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Suite 400
Honolulu, Hawaii 96813
Proposing Agency:
Convention Center Authority
841 Bishop Street, Suite 2222
Honolulu, Hawaii 96813
Attention: Alan Hayashi (586-2340)
Consultant:
Helber Hastert and Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813
Attention: Leslie Kurisaki (545-2055)
Deadline: June 22, 1994

The State of Hawaii Convention Center Authority ("Authority") is currently requesting proposals from qualified design/builders for the design and construction of a convention center facility on a 9.65-acre site at the intersection of Kapiolani Boulevard and Kalakaua Avenue, in Honolulu. An environmental assessment (EA) has been

EXHIBIT A-5, OEQC Bulletin

A.2 COMMENTS RECEIVED FROM SCOPING AND HRS 343 PREPARATION COMMENT PERIODS

The commentors during the scoping and HRS 343 preparation periods, commented on a broad range of issues. The issues include a complete description and analysis of the Proposed Project and alternatives, and impact analysis in the categories of: air quality; flora and fauna; alien species (foreign pests); coastal zone impacts; endangered species; infrastructure and public services; farmland; hazardous waste; archaeology and cultural resources; traffic; land use; aircraft noise; airport safety; socio-economic impacts; visual and light emissions; water quality; and wetlands. In addition, the issue of growth and secondary/indirect impacts as it relates to the proposed airport development has been a controversial subject for many years. Copies of the letters and the corresponding response letters are included after Section A.4. Those letters marked with an asterisk (*) were "no comment" letters.

A.2.1 HRS PREPARATION NOTICE

American Lung Association of Hawaii*
Ms. Dana Naone Hall
Ms. Lisa Hamilton
Mr. Terry A. Lynch
Mr. Jack Thompson
Mr. Gregory Westcott
Ms. Masako Westcott

Department of Business, Economic Development & Tourism, Land Use Commission
Department of Business, Economic Development & Tourism, Energy Division*

Office of Hawaiian Affairs*

Board of Water Supply, Maui County

U. S. Department of the Interior, Fish and Wildlife Service
U. S. Environmental Protection Agency

A.2.2 SCOPING MEETINGS

Yolanda Ululani Alonzo
Donald P. Ballard, President, Hawaii Helicopters
Kenneth J. Barr
William A. Camps
Len D. C. Cowper
John P. Douglas, M.D.

Virgina Gardner
Dr. Renate Gassmann-Duval, Chair, Kanaha Pond Advisory Committee
Dr. Renate Gassmann-Duval, Maui Representative, Hawaii Audubon Society
Carolann G. Guy
Abby Janis
Harvey Janis
Lois Janis
William Kehoe, Aston Kaanapali Shores
Isaac Davis Hall
Richard J. Lafond, Jr., President, Maui Tomorrow
Steven M. Moser, M.D.
Vernon M. Oato
Kenneth Okamura, Maui County Farm Bureau
Jeffrey Parker, Tropical Orchid Farm
Donald N. Reaser, The Estate of James Campbell
Donald W. Reeser, Superintendent, Haleakala National Park
Mr. Jimmy Rust, The Maui Pueo Coalition
James W. Smith, CLU, CIC, HMAA Insurance Services
William D. Smith
Jack Thompson, President, Spreckelsville Community Association
Phillip Thomas
Terryl Vencl, Executive Director, Maui Hotel Association
Vida Rose Yap
Anonymous

A.3 CONSULTING PARTY REQUESTS

James A. Bendon, M.D., Maui Radiology Consultants
Mary M. Evanson
Isaac Davis Hall, Attorney at Law, on behalf of:
the Maui Air Traffic Association;
the Maui Group of the Sierra Club;
Mary Evanson;
Hui Alanui o Makena; and
Dana Naone Hall
Dana Naone Hall
Lisa Hamilton
Hawaii Sierra Club Conservation Committee, Maui
Richard J. Lafond, Jr., Executive Director, Maui Tomorrow
Terry J. Lynch
Jody L. Mitchell
Steven M. Moser, M.D., F.A.C.P.

Jeffrey B. Parker, Tropical Orchid Farm
John M. Perry
William D. Smith
Jack Thompson, President, Spreckelsville Community Association
Elaine S. Wender
Gregory Westcott
Masako Westcott
Vida Rose Yap

A.4 COMMENTS RECEIVED AFTER SCOPING PROCESS

The following persons have sent comments to the FAA after the formal scoping process and are include for information in this EIS. This is the current list at the time of publication.

Christine Simpson
Mrs. Louise L. Randall
Barbara Little
Judith G. Stetson
Kathleen H. Waln
David C. Berkshire
Dr. Pamela Murphy
M. Ruth Niswander
Kathleen Maria Pouls
Charles and Teresa Burgess
Lisa R. Chun
Durfee Elementary School, Rm 19, Ms. Kust
Ms. Sue L. Minor
Michele Buster
Thomas Vullo
William & Judith Tanner
N. Susanna Bluestein
Jennifer Juntado
Eve Abraham
Bruce D. Killips
Victor & Kim Flake

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merican Lung Association
f Hawaii
15 N. Kukui Street
uite 100
onolulu, HI 96817-3951
ax: (808) 537-5971
hone: (808) 537-5966

AMERICAN LUNG ASSOCIATION. of Hawaii

June 24, 1994

MEMORANDUM

TO: Owen Miyamoto, Airport Administrator
Department of Transportation

FROM: Shirley Robinson, Director of Environmental Health and Advocacy

RE: ENVIRONMENTAL ASSESSMENT
KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
STATE PROJECT # AM 1011-07

The American Lung Association of Hawaii does not have comments at this point. Please send us a copy of the draft EIS for review. Thank you.

SR:dc

AMEMO

DANA NAONE HALL
2087 WELLS STREET
WAILUKU, MAUI, HAWAII 96793
(808) 244-0017
FAX (808) 244-8775

June 21, 1994

Governor John Waihe'e
c/o Office of Environmental Quality Control
220 S. King St., Suite 400
Honolulu, HI 96813

Re: Preparation of Joint EIS for Kahului Airport

Dear Governor Waihee:

On May 18, 1994 I testified at the scoping session held at Kahului Airport on the Joint Environmental Impact Statement ("EIS") being prepared for Kahului Airport projects. Subsequently, Notice of EIS Preparation for Kahului Airport was published in the OEQC Bulletin.

I call to your attention two serious deficiencies in the Notice. First, the Notice states that "[t]he proposed improvements at Kahului Airport include, but are not limited to" six enumerated projects. The public is unable to effectively comment on the scope of the airport "improvements" if we are kept in the dark as to what exactly are all of the proposed projects. If there are any other proposed projects or improvements apart from those specifically listed in the Notice, they should be disclosed immediately through publication in a new Notice, superceding the present Notice, and allowing for the required 30 day comment period.

Second, the list of alternatives to the proposed development that will be examined in the Joint EIS includes, as item number one, "[t]he proposed alternative." Again, the public cannot effectively comment when the proposed alternative is not identified. The result of such an inadequate and deficient Notice not only hampers the public's ability to comment but frustrates the active public participation encouraged by our state and federal environmental laws.

Finally, as DOT has yet to seriously consider the numerous issues and concerns raised in written comments I submitted on the earlier State EIS, I direct your attention to the comments section in both the Draft State EIS and the Final State EIS and incorporate those comments by reference herein.

Please also consider this a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement for proposed "improvements" at Kahului Airport. I look forward to receiving a copy of the Draft Joint EIS so that I may submit comments on the draft document, as well as a copy of the Final Joint EIS when it is available.

If you have any questions about any of the above, please do not hesitate to contact me.

Sincerely yours,

Dana Naone Hall

Dana Naone Hall

DNH/jp

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
96.076

March 14, 1996

Ms. Dana Naone Hall
2087 Wells Street
Wailuku, Maui, Hawaii 96793

Dear Ms. Hall:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your letter of June 21, 1994 regarding the Environmental Impact Statement (EIS).

The EIS Scoping and Preparation Notice is intended to serve as a notification that an EIS is being prepared and to allow initial public and agency input into the EIS process. The concerns and questions raised by the public and agencies during the scoping period will be considered in the preparation of the EIS. The full description of the Proposed Project and alternative will be in the Draft EIS. The Draft EIS will be published shortly and will allow the public and interested agencies further opportunity for review and comment.

The description of the Proposed Project is covered in Section 2.4, "The Proposed Project." The description and analysis of the alternatives is addressed in Section 4.0, "Alternatives to the Proposed Project." Your comments on the previous State EIS were considered in the development of this new EIS.

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like Nu Ke Ala Aloha
Working Together to Provide Gateways of Aloha

June 16th, 1994

RECEIVED
JUN 23 1994
EDWARD K. NODA & ASSOCIATES

Governor, State of Hawaii
c/c Office of Environmental Quality Control
220 S. King St., Suite 400
Honolulu, HI 96813

Re.: Joint EIS for Kahului Airport

Dear Sirs:

I request to be a consulting party for the preparation of the Joint Environmental Impact Statement for the proposed enlargement at Kahului Airport.

Comments submitted in connection with the Draft EIS of the Master Plan Update, contain issues which remain unresolved. (A copy of these comments is enclosed.)

Some of the unresolved issues have not only not been adaquately addressed but have become more concerning. For example costs.

Only one page in the State EIS contains specific reference to the issue of costs which are described as "ball park" (page 92, DEIS).

Meanwhile costs of the airport system are already being passed along to the resident population.

"Resident fares up as Higher airport user fees arrive." Maui News, March 13, 1994) "Thomas Dereg, Aloha's acting president...said the recent hike in landing fees..precipitated the increase." "Fees amounted to an increase of more than 110 percent." If Aloha is to remain stable... it... must...pass...costs on" to residents but to avoid "a negative impact (on) the visitor industry" Aloha Airline "elected to leave its visitor fare unchanged."

Please send a copy of the Draft and Final Joint EIS documents so that I can submit comments.

Lisa Hamilton, S.R. Box 190, Hana, HI 96713.

Thank you.
Lisa Hamilton

cc. Proposing Agencies: Department of Transportaion, Airports; Federal Aviation Administration.
Consultant, Edward K Noda.

Comment of issues regarding
the Kahului Airport Master Plan Update,
the Draft Environmental Impact Statement.
November 1991

This submission is to include as appendicies the Review, Assessment and Comment submitted by:

Hawai'i La' leikawai Association;
The Sierra Club;
letter, Nov. 7 1991. House of Representatives Research office to Ed Hirata, director DOT requesting Airport Conversion information. Letter unanswered as of Nov. 22 1991

Respectfully submitted by Lisa Hamilton
1-248-8001. S.R. Box 190, Hana, 96713

RECEIVED
NOV 2 3 1991

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE KAHULUI AIRPORT MASTER PLAN UPDATE
AND INTERNATIONALIZATION OF KAHULUI AIRPORT
submitted by Lisa Hamilton

The Draft Environmental Impact Statement (DEIS) for the Kahului Airport Systen Master Plan is flawed by significant omissions, inconsistencies and errors.

The most basic of these flaws is the DEIS conclusion that the proposed airport expansions will have no effect on the numbers of tourist arrivals at Maui. As the central most basic point in the DEIS, it is essential that documented justification be provided, particularly since both supporters and opponents of airport expansion believe that expansion will bring more people and tourist dollars to Maui.

The Statewide the airport system is expected to cost at least $2.8 billion. Nearly $400 million is estimated for the cost of projects under consideration in the DEIS. If this airport expansion will not promote growth in arrivals, what, then, is the economic justification for the state airport system becoming greatly endebted if it fails to increase visitor counts?

If, on the other hand, this conclusion is wrong, then the DEIS's dismissal of a number of secondary, cumulative and incremental impacts is also wrong. This would render the DEIS inadaquate in satisfying the requirements for an Environmental Impact Statement which is mandated by law to "systematically analyse environmental and social impacts"... "of any kind, whether immediate or delayed on any component in the whole of the environment." (HRS 343)

Accomodating 'unconstrained growth' is a policy decision contrary to the Hawaii State Plan at severel points and the County of Maui General Plan which specifically puts the county on the record as opposing "internationalization" of Kahului Airport and 'prohibiting' elongation of runways at Kahului Airport beyond the present 7,000 foot length.

Recommendation: Either the FEIS acknowledge that the proposed construction will increase the visitor count with related increased environmental impacts, which then themselves should be fully addressed, or it should provide documentation to justify the assumption that such an increase will not occur. In the latter case, it then must be explained how so massive an expenditure is justified if it fails to increase the tourist counts. The FEIS should explain how violation of the state and County of Maui Plans will be avoided.

Amoung the impacts which are dismissed or omitted on the ground that the airport expansion will have no affect on visitor arrivals at Maui are: no impacts on employment, ground transportation, water supply, solid waste, health care facilities, introduction of plant or animal pests or on human disease transmission.

ECONOMICS AND COSTS:

There is not discussion of a potential impact of airport expansion on the indiginous economy either directly nor through a secondary impact of foreign investment on Maui's land value. Nor is there discussion of how airport expansion will benefit the local economy.

The DEIS is nearly 1000 pages in length. One, page 92, is alloted to the issue of costs. "These are order-of-magnitude or 'ball park' cost estimates of the improvements" How much faith can be placed in such cost estimates? Many issues here need greater discussion in the FEIS. For example, demand for air travel has plateaued nationwide; the airlines posted record losses in 1990; four of the twelve major U.S. carriers have recently filed for Chapter 11 bankruptcy-court protection. What impact might signs of trouble in the airline industry have on the Hawaii State Airport System?

AIRPORT REVENUE BONDS. Tax exempt revenue bonds are being used to finance the state-wide multiple billion dollar airport expansion program. At the last public hearing on November 13, 1991 at which the state proposed to issue an additional $600,000,000 of bonds, two persons from the public attended and both spoke in oppostion to additional bond issence on the grounds that there was inadaquate information provided. The Legislative Auditor review the Airport System Financing through Revenue Bonds in 1969 and again in 1977. The Auditor has not recently reviewed the Airport financing system. The reputation of the state is at stake if there should be a problem with solvency in the Airports Division.

Throughout the process of the Airport system expansion,public imput seems to have been truncated. None of the public hearings on the Revenue Bonds have been held on any of the outer islands although the Airport system is a statewide system with the impacts of expansion effecting every aspect of the social, economic and physical environment.

Recommendation: The entire issue of financingj of the Airport System should be fully reviewed. The FEIS should address the issue of due process, as regard the issuance of billions of dollars worth of bonds; explain the effect of the 'change in definition' of airport revenues as proposed on page A-92 of the Official Bond statement; provide updated traffic forecasts; cash flow statements as projected over the forecast period: the effect of landing fees, concession fees, airline leases and fuel taxes on cash flow; current financial statements. Hearings on the issuence of additional Airport revenue bonds should be held on Maui and the other outer islands.

AIRPORT CONCESSIONS. The DEIS notes that the Duty Free concession generated 87% or $201,107,750 in 1990 of concession generated revenues at p. 294. It omits mention that in 1991 Duty Free was unable to meet the terms of its agreement with the DOT nor that a new, more lenient agreement had to be negotiated. Inclusion of information on this issue is important as an indicator of the health of the tourist industry as well as the state of economy in parts of the world upon which Hawaii has become to depend for tourist dollars.

In general more discussion of concessions and their impact on airport

development is needed in the DEIS. Some concessions are not publicly owned corporations. Such privately held entities are not subject to disclosures associated with public corporations such as financial statements or annual reports.

Duty Free Shoppers, although a Hawaii corporation, is a privately held company with officers who reside in California and Hong Kong. Duty Free has a store on Maui at Whalers Village. How much money is generated from this source is not disclosed in the DEIS but it should be in the FEIS.

The other concessions at Kahului Airport are:

W.H. SMITH operates a gift shop. W.H. Smith's U.S. offices are in Georgia but its headquarters are in London, England. The U.S. component of W.H Smith is not sold on U.S. stock exchanges.

ISLAND KING OF HAWAII has a flower concession at Kahului Airport. is a privately held Hawaii corporation but also with officers in a foreign country, in this case, Japan.

HOST INTERNATIONAL has the food concession at Kahului Airport. It is a part of Marriott Corporation, a corporation with operations in 20 countries employing 209,000 workers, worldwide. The Marriott Corporation is sold on several US stock exchanges.

Recommendation: Particuarly since it is not readily available elsewhere, it is important that concession information be disclosed in the FEIS. Such information should include ownership profiles; business policies and practices as shown by preformance in other areas of the world as regards employment practices, particularly as regard women and minorities; charitable giving and concern for the social and physical environment. The total annual revenue collected by these concessions on Maui, broken down by concessionaire; copies of the agreements with the concessionairs need to be disclosed in the FEIS.

AIRLINE AGREEMENTS: Until recently airline landing fees in Hawaii have been amoung the lowest in the nation. Recent negotiations with the airlines are expected to raise landing fees to be amoung the highest in the nation. Airfares are sensitive to such costs which could lead to a spiraling effect of costs with impacts on tourist counts and as wr is for residents in cost of living increases.

Once airport facilities are in place "there is virtually nothing the local jurisdiction can do to control the use of the facilities" Elliot Cutler, a Washington lawyer specializing in airport cases, has said.

In its 1990 Report to the Governor the DOT states that the Hawaii "needs" about 13 additional international routes including 7 between Hawaii and various European countries, 4 to various Asian countries and one each to Australia and South America. Moreover the current 1989 Japan-US Memorandum of Understanding, a route agreement between these countries has not been fulfilled. Japan still has the right to establish several routes between Japanese cities and destinations in the US including Maui.

In 1990 the people of Maui County became aware that the State had been aggressively pursuing Maui-direct-to-Japan routes in connection with the Gateway Proceedings. Judge John Mathias, who presided over these proceedings, expressed surprise at local oppostion to direct Maui-Japan flights since the State lobbiests in Washington D.C. had not indicated the local opposition. The Hawaii Visitors Bureau (HVB) maintains domestic offices including those at Washington D.C., Chicago, Los Angeles, New York, San Francisco. HVB international offices are in Canada, United Kingdom, Germany, New Zealand, Australia, Korea, Tokyo, Hong Kong and Singapore.

Increasingly the airline industry is a global industry, dominated by fewer, larger carriers. Rules limiting foreign ownership of U.S. airlines has been relaxed recently. Northwest Airlines is now 49% owned by KLM, Royal Dutch Airlines; Hawaiian is partially owned by Japan.

Boeing's new 777 subsonic airliner will provide the "greatest payload, range capability and growth potential" of any aircraft in the medium-size aircraft catagory. It will be capable of seating up to 440 passengers. It will also be capable of taking off fully loaded and flying direct to Japan from Maui's 7,000 foot runway. Japan Airlines, which has ordered 20 of these craft, and United Airlines, which has ordered 34, both have routes to Kahului Airport.

Recommendation: The FEIS should include disclosure of objectives and effects of these airline on negotiations. The effect of the construction of facilities at Kahului airport on international agreements pertaining to the allocation of airline routes; the states plans with regard to encouragment of new routes vis a vis Kahului Airport. Information as to the impact of the Boeing 777 and other new aircraft which may impact the situation here should be fully discussed.

CEDED LANDS: The State of Hawaii Airports Systems Revenue Bonds, Series of 1991 states at page 16 "The Legislative Auditor has identified portions of lands underlying runways at ...Kahului, Hilo and Keahole airports as Ceded Lands". The Final Report on the Public Land Trust, submitted by the Auditor in December 1986 states at page 19 that "Limited time and resources did not permit an extensive examination of all airport ...lands" although some ceded lands were identified in Kahului Harbor. The Action Plan to Address Controversies Under the ...Public Land Trust" which was submitted in January 1991 acknowledges at page 143 that the inventory remains incomplete due to "lack of funding".

Recommendation: A Ceded Land impact should be thoroughly analysed at both Kahului Airport and because of potential impacts of airport related facilities, at Kahului Harbor as well.

INCREASED LIKELIHOOD OF FUEL SPILLS resulting from increased inter-island fuel barge traffic. Underground storage tanks.

The DEIS (p 14 & 232-233) notes that "increased airline fuel consumption

will increase the number of fuel barges entering the Harbor creating additional demand for berthing space." Fuel use at Honolulu requires no inter-island transport of fuel because oil refineries are located on Oahu. In contrast all fuel use at Kahului requires trans-shipment of fuel from Oahu to Maui with a resultant increased risk of fuel spills associated with that otherwise unnecessary trans-shipment. Thus increased fuel use at Kahului increases the risk of fuel spill occurrence over that which would occur if the increased air traffic occurred at Honolulu and not a Kahului.

Currently many overseas-bound aircraft are unable to take off from Kahului's runways with a full load of fuel and must stop in Honolulu to load fuel. The elimination of this Oahu refueling requirement will greatly increase fuel consumption at Kahului, as will the new direct Maui-overseas flights that would otherwise terminate in Honolulu. This will result in a much greater increase in fuel consumption at Kahului, whereas an increase in inter-island flights only would result in a ~~major~~ MINOR increase, as the inter-island airlines generally refuel their planes at Honolulu, thus avoiding the need for inter-island transport of fuel.

The discussion of fuel and oil spills in the DEIS considers only on-site spills and fails to address the increased likelihood of spills during inter-island transport.

Honolulu Fueling Facilities Corporation, which proposes to handle fuel storage and handling at Kahului Airport has requested a three acre site for this purpose with underground tanks capable of storing up to 800,000 gallons of jet fuel. Mitigation of adverse impacts from leakage or spillage is inadaquately discussed.

Recommendation: The FEIS should compare projected fuel consumption at Kahului under all alternatives and compare the economic and ecological costs assoicated with potential spills and leaks under all alternatives.

ALIEN PEST INTRODUCTIONS and human disease transmission. The DEIS mentiuns the likelihood that increased air traffic at Kahului, particularly direct overseas flights will increase the number of alien pest species that are introduced to Maui. However, the DEIS give no description of the economic and ecological damage that will result from these introductions nor does it mention that presently direct overseas flights to Maui are primarily from temperate climates. Pest and disease introductions from tropical regions are far more potentially threatening in both economic and ecologic terms.

Recommendation: The FEIS should compare the likelihood of air transport-related pest introduction to Maui under all alternatives and compare their economic and ecologic impacts on Maui's agricultural industry and native ecosystems under each alternative.

COMMENT: The DEIS fails to address the likelihood that crime will increase with increased visitor traffic.

The DEIS, at p. 257, documents that Maui County has the highest crime rate per resident population in Hawaii, though that rate falls to below average for the state when de facto population (including visitors) is considered. Clearly, the increase in Maui's crime rate is directly related to the influx of visitors. To the extent the proposed airport additions increase the visitor population, they will also increase the crime rate. It is therefore inaccurate to claim, as the DEIS does, at pp. 16, 257, that increased drug traffic is the only adverse impact of the proposed construction.

Recommendation: The FEIS should describe increased crime rates likely to occur because of airport additions.

COMMENT: The DEIS fails to address the impact of airport additions on Maui's critical housing shortage.

Because of the DEIS's highly questionable assumption that proposed airport construction will not increase visitor counts on Maui, it fails to address the impact on housing such construction will have by increasing visitor counts and employment in the visitor industry. Instead, the DEIS, at p. 284, claims that issues of "Maui's growth rate, resort development, labor shortages, affordable housing, and infrastructure are not related to improvements at Kahului Airport. The DOT forecasts indicate the projects under consideration for Kahului Airport are not expected to significantly affect the growth of the visitor industry, or visitor industry jobs beyond that which is already projected." The DEIS then recounts Maui's horrendous housing shortage and the population growth that will be necessary to service the ever-growing tourist industry.

The DEIS thus assumes away the basic complaint of those who oppose the airport expansion project. Again, the DOT assumption of "no increased project-related visitor growth" is central to its optimistic conclusion of no adverse impact.

Because DOT's assumption may be wrong (and indeed are very probably wrong), adverse growth-related impacts should be described in the FEIS, which will be inadequate and legally insufficient under NEPA standards if they are not properly addressed.

Recommendation: The FEIS should discuss the impact of the proposed construction on the availability of affordable housing on Maui.

HOUSE OF REPRESENTATIVES
STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

Minority Research Office

7 November, 1991

Edward Y. Hirata
Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Hirata:

This is to request information on behalf of a Ms. Lisa Hamilton of SR Box 190, Hana, Maui, who was referred to my office by Rep. Mike O'Kieffe (61h District - West Hawaii/East Maui). Ms. Hamilton is a constituent of Rep. O'Kieffe and is compiling information on the concessions at Kahului Airport. In order to respond to an Environmental Impact Statement on Kahului Airport, Ms. Hamilton would appreciate receiving the following information before Friday, November 22, 1991. As information on concessions is a matter of public record, I would be most grateful if your department could accommodate this request. Please respond to her directly.

May I also request that I be sent a copy of the response to Ms. Hamilton. This will ins. that my office and Rep. O'Kieffe are kept informed and will be able to bette. accommodate additional and/or similar requests we may receive in the future.

The requested information is as follows:

1. Confirmation that the four providers of concessions at Kahului Airport are Island King of Hawaii, W H Smith, Host International/Host Marriott, and Duty Free Shoppers.

   - Does total revenue collected by these concessions amount to $6 million a year?
   - Is it possible to receive an individual breakdown of the revenues of each of the four concession providers?

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
96.082

March 14, 1996

Ms. Lisa Hamilton
S.R. Box 190
Hana, Maui, Hawaii 96713

Dear Ms. Hamilton:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your letter of June 16, 1994 requesting to be a consulting party and providing your comments on the Kahului Airport Joint Environmental Impact Statement (EIS). Your comments on the previous State EIS have been considered in the preparation of this Joint EIS.

The economic impacts of the Proposed Project is discussed in Section 3.5 of the Draft EIS. In addition, the project costs are presented in Section 2.5.

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like Nui Ke Ala Aloha
Working Together to Provide Gateways of Aloha

6/19/94

Dear OEQC and Governor -

Thank you for including me as a consulted party on the Joint EIS for Kahului Airport.

There seems to be no sense of arrival at an exotic destination at the Oahu airport.

Environmental impacts are a big concern; we need to maintain Maui's unique character.

Please make me a consulted party.

Sincerely,
Terry A Lynch

TERRY. A. LYNCH
P.O. Box 338
HANA, MAUI, HI. 96713
ph: 248-8969

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
96.083

March 14, 1996

Mr. Terry A. Lynch
P. O. Box 338
Hana, Maui, Hawaii 96713

Dear Mr. Lynch:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AH1011-07

Thank you for your letter of June 19, 1994 regarding the subject Environmental Impact Statement (EIS). Your concerns about the Proposed Project are addressed in the following sections of the Draft EIS.

1. Environmental Impacts:
Section 3.0 Affected Environmental, Probable Consequences and Mitigation Measures

2. Internationalization:
Section 6.0 Growth Inducing Impacts
Section 8.0 Other Related Issues

I look forward to your comments on the Draft EIS. Should you have any other questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

ST:fd

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

June 20, 1994

Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 S. King St. Suite 400
Honolulu, Hawaii 96813

'94 JU 21 A1:..

OFC...
QUAL:.

Sirs,

Enclosed are my comments regarding the updating of the F.E.I.S. for Kahului Airport, Kahului, Maui.
I also request to be included as a consulting party to participate in the Joint Environmental Impact Statement for Kahului Airport.

1. Incompatible residential areas. The State E.I.S. limits its solutions to excessive aircraft noise to three actions; buy the houses, sound proof them, get signed release from responsibility waivers from residents not wanting the above. There are other obvious solutions that deal with the source rather than the sufferer.

a) Do not exempt Hawaii from the federal regulations requiring stage 3 engines by the year 2000.
b) Limit all Kahului night flights to stage 3 aircraft.
c) Establish a meaningful, working noise abatement program at Kahului Airport immediately. The Plan 150 study is long overdue.
d) Move general aviation, helicopters and night cargo flights to Puunene Airport as soon as possible.

2. Runway length. Though it appears Maui's citizens have lost the battle to keep the runway at 7,000 feet, this would be our preference. If it is to be lengthened then limit it to 8,500 feet. This length will satisfy those wanting direct flights to the mainland and will discourage international flights. The only reason for the proposed 9,600 feet is to satisfy the Maui Visitors Bureau so they can expand their visitor markets. Maui has done well with its current markets.

3. Internationalization. Though this aspect is down-played by those advocating the longer runway, we all know that international flights will receive automatic approval at the federal level because of current world econonics. Overseas flight will be devastating to the Spreckelsville community without strict curfew requirements. History shows us that curfew is a bad word when related to Kahului Airport and probably would not happen.

4. Parallel runway. It is refreshing to see that the State is finally talking openly about their plans to develop a parallel runway instead of telling us, "This is just an idea we're kicking around". A parallel runway must not be constructed. The State E.I.S. admits that this runway would require the State's condemning 17 acres of Spreckelsville residential land and sound

attenuating the rest. This action would destroy one of Maui's most desirable communities featuring quality homes, sandy beaches, water recreation and a favorite place for local residents.
The D.O.T. attempts to ease resident concerns regarding excessive noise resulting from this runway by stating it will only be used for landings. This is not true. During Kona conditions airplanes would be forced to takeoff on that runway and the noise would be shattering in this community. I would be happy to discuss the rational for this Kona statement if anyone questions it. This runway would also require the State re-aligning Hana Highway at great taxpayer expense. Is this a high priority when considering all other State needs?

5. Maui's infrastructure. Every airport hearing reiterates the need for roads, water, sewers, housing, emergency services, etc. on this island. The cry seems to be heard then put aside. It is general practice that before business or residential developments are approved, there is an agreement that roads and other services will meet a certain standard. This should also apply before airport development is approved and allowed to function. Before expanding the airport we should make those necessary infrastructure improvements so Maui residents are not further inconvenienced by unwise development.

6. Safety. Finally, it is hoped that the emotional testimony about the unsafe 7000 foot runway will be given no credibility. That issue was long ago put to rest except for the non-thinking Chamber of Commerce.

Mahalo for this opportunity to express the concerns of this fine community.

Jack Thompson, President
Spreckelsville Community Association
204 Kealakai Pl.
Paia, Hawaii 96779

Tel. 877-5749
Fax 877-3310

Copies to:
Owen Miyamoto
Airports Division, Department of Transportation
Honolulu, Hawaii

FAA Asst. Administrator for Airports
Federal Aviation Administration, Washington D.C.

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
96.109

March 14, 1996

Mr. Jack Thompson, President
Spreckelsville Community Association
204 Kealakai Place
Paia, Hawaii 96779

Dear Mr. Thompson:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AH1011-07

Thank you for your letters of June 8, 1994 to Mr. Welhouse, and June 20, 1994 regarding your concerns on the proposed Kahului Airport projects and the Joint Environmental Impact Statement (EIS). The concerns which you have raised in the Preparation and Scoping periods are addressed in the following sections of the Draft EIS:

1. Incompatible Residential Area:
   - Section 3.2 Noise
   - Section 4.4 Other Runway Alternatives
   - Section 8.0 Other Related Issues

2. Runway Length:
   - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
   - Section 2.4.4 Proposed Airfield Developments
   - Section 4.3 Master Plan Alternatives
   - Section 4.4 Other Runway Alternatives
   - Section 4.5 Alternative Runway Construction Phasing
   - Section 6.1 Lengthened Runways

3. Internationalization:
   - Section 6.0 Growth Inducing Impacts
   - Section 8.0 Other Related Issues

4. Parallel Runway:
   - Section 2.4.4 Proposed Airfield Developments
   - Section 3.0 Affected Environment, Probable Consequences and Mitigation Measures

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

	Section 3.2	Noise
	Section 4.3	Master Plan Alternatives
	Section 4.4	Other Runway Alternatives

5. Maui's Infrastructure:

Section 2.2.15	Infrastructure
Section 2.4.8	Proposed Roadway Systen
Section 2.4.9	Proposed Utilities and Drainage Systems
Section 3.22	Public Facilities, Infrastructure and Services, and Aviation Safety
Section 4.2	No-action Alternative
Section 5.0	Cumulative Impacts

6. Safety:

Section 2.3.2	Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
Section 3.22.9	Aviation Safety

I look forward to your comments on the Draft EIS. If you have any other questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Valley Farm P.O. Box 485 Ha'ikū, Hawai'i 96708 808-572-1609

6-19-94

Governor John Waihe'e
State of Hawai'i
Office of Environmental Quality Control
220 S. King St. Suite 400
Honolulu Hawai'i 96813

RECEIVED
JUN 23 1994
EDWARD K. NODA & ASSOCIATES

Re: Preparation of the Joint Environmental Impact Statement for Kahului Airport, Maui, Hawai'i.

Dear Governor Waihe'e:

I am writing to you regarding my participation in the public debate of the State of Hawai'i's Department of Transportation's proposed expansion at Kahului Airport on Maui.

I have testified at all public hearings on Maui, submitted comments on the State's EIS, testified before the Land Use Commission on the DOT's request to reclassify land in Kahului for airport expansion, and most recently at the May 15th Zoning session for the joint State and Federal EIS.

Please consider this a formal request to be a consulted party in the preparation of the Joint Environmental Impact Statement for the

Valley Farm P.O. Box 485 Ha'ikū, Hawai'i 96708 808-572-1609

Proposed expansion at Kahului Airport.
Please send me a copy of the Draft Joint EIS so that I may submit comments on the draft document, as well as a copy of the Final Joint EIS when it is completed.

Thank you,

Gregory Westcott

cc: Owen Miyamoto - DOT Airports Division.
FAA Asst. Administrator for Airports.
Brian Ishii, Edward Wada and Associates.

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
96.084

March 14, 1996

Mr. Gregory Westcott
Valley Farm
P. O. Box 485
Haiku, Maui, Hawaii 96708

Dear Mr. Westcott:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your letter of June 19, 1994 to the Governor regarding the subject project. I appreciate your interest in the Environmental Impact Statement (EIS) process and will send you a copy of the Draft EIS and Final EIS when available.

I look forward to your comments on the EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

MASAKO WESTCOTT
P.O. BOX 485
HANA, MAUI, HAWAII 96708
(808) 572-1609

June 19, 1994

Governor John Waihee
State of Hawaii
Office of Environmental Quality Control
220 S. King St., Suite 400
Honolulu, Hawaii 96813

Re: Preparation of the Joint Environmental Impact Statement for Kahului Airport, Maui, Hawaii.

Dear Governor Waihee:

I am writing to you regarding my participation in the public debate of the State of Hawaii Department of Transportation's proposed expansion at Kahului Airport on Maui.

I have testified at all public hearings on Maui, submitted comments on the State's EIS, testified before the Land Use Commission on the DOT's request to reclassify land in Kahului for airport expansion, and most recently at the Scoping Session for the Joint EIS.

MASAKO WESTCOTT
P.O. BOX 485
HANA, MAUI, HAWAII 96708
(808) 572-1609

It was at the May 18th Scoping Session that Mr. Ben Schlappak of the State of Hawaii Department of Transportation told me that the list he read at that meeting was not a complete list of all the projects that would be reviewed by the new EIS. He said that other projects may be added later. I question the public's ability to participate fully without this fundamental information. I request that this list be finalized and made available to the public and that the comment period remain open until it may be reviewed.

Please consider this a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement for the proposed expansion at Kahului Airport. Please send me a copy of the Draft Joint EIS as well as a copy of the Final Joint EIS for my review and comments.

Thank you.

/Masako Westcott

c.c.: Owen Miyamoto
DOT Airports Division
FAA Assistant Administrator for Airports
Brian Ishii, Edward Noda and Associates

BENJAMIN J. CAYETANO
GOVERNOR

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

IN REPLY REFER TO
AIR-EN
96.085

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1880

March 14, 1996

Ms. Masako Westcott
Valley Farm
P. O. Box 485
Haiku, Maui, Hawaii 96708

Dear Ms. Westcott:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your letter of June 19, 1994 to the Governor regarding the subject project. I appreciate your interest in the Environmental Impact Statement (EIS) process and will send you a copy of the Draft EIS and Final EIS when these are available.

The Proposed Project is described in Section 2.4 of the Draft EIS. There will be a review and comment period associated with the publication of the Draft EIS.

I look forward to your comments on the EIS. Should you have any other questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

JOHN WAIHEE
GOVERNOR

ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
Room 104, Old Federal Building
335 Merchant Street
Honolulu, Hawaii 96813
Telephone: 587-3822

June 24, 1994

RECEIVED
JUN 27 1994
EDWARD K. NODA & ASSOCIATES

The Honorable John D. Waihee
Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Suite 400
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Environmental Assessment/Determination For
Proposed Improvements at Kahului Airport

We have reviewed the subject environmental assessment/determination document ("EA") transmitted by letter dated June 17, 1994 from Mr. Owen Miyamoto, Airport Administrator, Department of Transportation and have the following comments to offer:

1) We confirm that the Kahului Airport, as delineated in Figure 5 of the EA is within the State Land Use Urban and Agricultural Districts.

2) We wish to note that the Department of Transportation, Airports Division currently has pending before the Commission a Petition for District Boundary Amendment (LUC Docket No. A92-684/State of Hawaii, Department of Transportation - Airports Division) which requests reclassification of approximately 210.471 acres from the Agricultural District to the Urban District.

3) Review of Figures 1, 2, and 3 of the EA indicates that portions of proposed actions in Phase I and Phase II are within the 210.471 acres being requested for reclassification.

4) We suggest that the joint Federal/State Environmental Impact Statement include a map depicting the State Land Use District in relation to the project area(s).

We have no further comments to offer at this time.

Thank you for the opportunity to provide comments on this matter.

If you should have any questions in regards to this matter, please feel free to contact me or Leo Asuncion of my staff at 587-3822.

Sincerely,

ESTHER UEDA
Executive Officer

cc: DOT-Airports
FAA
✓Mr. Brian Ishii

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
96.077

March 14, 1996

Ms. Esther Ueda
Executive Officer
State of Hawaii
Land Use Commission
Old Federal Building
355 Merchant Street, Room 104
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your letter of June 24, 1994 to the Governor regarding the subject Environmental Impact Statement (EIS). As suggested, we have included a figure, "Existing State Land Use Districts," depicting the State Land Use Districts within the vicinity of the Airport in the Draft EIS.

I look forward to your comments on the Draft EIS. Should you have any questions please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

JOHN WAIHEE
Governor
MUFI HANNEMANN
Director
JEANNE SCHULTZ
Deputy Director
RICK EGGED
Deputy Director
TAKESHI YOSHIHARA
Deputy Director

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

ENERGY DIVISION, 335 MERCHANT ST., RM. 110, HONOLULU, HAWAII 96813 PHONE: (808) 587-3800 FAX: (808) 587-3820

June 23, 1994

Mr. Owen Miyamoto, Airport Administrator
State of Hawaii
Department of Transportation
Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1898

ATTN: Mr. Ben Schlapak

Dear Mr. Miyamoto:

Subject: Environmental Assessment/Determination
Kahului Airport Environmental Impact Statement
State Project No. AH1011-07

This is to inform you that we have no comments on the subject Environmental Assessment/Determination for Kahului Airport Environmental Impact Statement (EIS), State Project No. AH1011-07.

Thank you for the opportunity to comment on the subject EIS.

Sincerely,

Maurice H. Kaya
Energy Program Administrator

MHK/hkeis112

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPIOLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813-5249
PHONE (808) 594-1888
FAX (808) 594-1865

July 14, 1994

Mr. Ben Schlapak
Department of Transportation
Airports Division
400 Rodgers Blvd., Suite 700
Honolulu, HI 96819-1898

Dear Mr. Schlapak:

Thank you for the opportunity to review the Environmental Assessment/Determination for proposed improvements at Kahului Airport, Island of Maui.

We find the assessment sufficient and have no objections at this time. But we would like to review the upcoming joint Federal/State EIS. Please contact me or Linda Delaney, Land and Natural Resource Officer, at 594-1938, should you have any questions on this matter.

Sincerely yours,

Dante K. Carpenter
Administrator

LM:lm
cc: BOT

BOARD OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109

July 5, 1994

Mr. Ben Schlapak
State of Hawaii
Department of Transportation
Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-18998

Re: Environmental Assessment/Determination; Kahului Airport Environmental Impact Statement; State Project No. AM 1011-07

Dear Mr. Schlapak,

We are sorry to comment late on the EISPN. Please note that this document was received in our Department on June 22nd (the end of the consultation period) and that it did not reach staff until June 24th. We hope you will take this into consideration in deciding whether or not to accept these comments.

The EISPN does not address water source issues at all, and we trust that this will be amended in the EIS. We further hope that design efforts to conserve water at the airport will be noted. Please be advised that source development efforts have been delayed and that water availability may be problematic, depending upon your intended time frame.

Please note that single pass cooling systems are essentially prohibited by county ordinance. Air cooled or recirculating systems should be specified. County ordinance also requires the installation of low flow fixtures. If existing structures fail to meet these requirements, we expect that this will be amended. We enclose some guidance on water efficient landscaping and encourage you to consult the Maui County Planting Plan for appropriate drought tolerant species wherever airport changes involve landscaping.

Thank you for the opportunity to comment on this document.

Sincerely,

David Craddick
Director

"By Water All Things Find Life"

Printed on recycled paper

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

IN REPLY REFER TO
AIR-EN
96.081

March 14, 1996

Mr. David Craddick
Director
Board of Water Supply
County of Maui
P. O. Box 1109
Wailuku, Maui, Hawaii 96793-7109

Dear Mr. Craddick:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your letter of July 5, 1994 on the subject Environmental Impact Statement (EIS). Your comments on the water supply for the Airport will be addressed in the Draft EIS, Section 3.22, Public Facilities, Infrastructure and Services and Aviation Safety, and in Section 5.0, Cumulative Impacts.

The facilities that require air conditioning and water supply will be designed in accordance with the Maui County Building Code. I will pass this information to our Engineering Design Section with your guidance on the use of water efficient landscaping.

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Office
P.O. Box 50167
Honolulu, Hawaii 96850

In Reply Refer To: KAE

JUN 28 1994

David J. Welhouse
Airport Engineer/Planner
HNL-621
Federal Aviation Administration
P.O. Box 50244
Honolulu, HI 96850-0001

RECEIVED
JUN 30 1994
EDWARD K. NODA & ASSOCIATES

Re: Notice of Intent to Prepare an Environmental Impact Statement and Hold Scoping Meetings for Kahului Airport, Maui, Hawaii (ER# 94/0336).

Dear Mr. Welhouse:

The U.S. Fish and Wildlife Service (Service) has reviewed the Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) and hold scoping meetings for proposed improvements to Kahului Airport, Maui, Hawaii (FR 59(67):16684). The project sponsor is the Federal Aviation Administration (FAA) of the U.S. Department of Transportation in cooperation with the Division of Airports of the Hawaii Department of Transportation. This letter has been prepared under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act of 1934 [16 U.S.C. 661 et seq.; 48 Stat. 401], as amended, the Endangered Species Act of 1973 [16 U.S.C. 1531 et seq.; 87 Stat. 884], as amended, and other authorities mandating Service concern for environmental values. This letter is also consistent with the National Environmental Policy Act of 1969 [42 U.S.C. 4321 et seq. 83 Stat. 852], as amended. Based on these authorities, the Service offers the following comments for your consideration.

The proposed improvements to Kahului Airport include (1) strengthening and extending Runway 2 by 793 meters (2600 feet), (2) constructing a new access road, (3) relocating the Instrument Landing System and the Approach Lighting System on Runway 2, (4) acquiring land for Runway 2 approach protection and lighting, and (5) conducting other development activities recommended in the June 1993 Master Plan. The implementation of other long-range projects not currently identified in the Master Plan, including the construction of Phase II of the passenger terminal building, an international flight operations facility, and a long-term helicopter facility, are also proposed.

The Service recommends that the draft EIS address potential project-related impacts to fish and wildlife resources and habitats within the vicinity of the proposed project site, including

those of nearby streams, marshes, and coral reefs. The Service recommends that particular attention be given to addressing potential impacts to endangered or threatened species and migratory fishes and birds.

For example, federally endangered Hawaiian stilts (*Himantopus mexicanus knudseni*), Hawaiian coots (*Fulica americana alai*), and Hawaiian ducks (*Anas wyvilliana*) exist at the nearby Kanaha Pond State Wildlife Sanctuary. The stilts, which are commonly attracted to portions of the airfield, have been known to collide with low-flying aircraft. The potential for the proposed project to increase the collision rate between these birds and aircraft should be addressed in the draft EIS.

The potential for making the Kahului Airport less attractive to stilts and other birds may be possible within the scope of the proposed project, and the Service is willing to work with the FAA in exploring possible solutions to the bird/aircraft collision problem. In this regard, it would be beneficial for us to review any preliminary plans, designs, or other information currently existing on the proposed project. The Service requests that the FAA transmit this information to us for discussion and attempt to resolve relevant fish and wildlife issues prior to issuance of the draft EIS. Finally, the Service would like to discuss cooperating agency status in accordance with the NEPA Implementing Regulations [40 CFR Part 1508.5].

The Service appreciates the opportunity to provide comments on the proposed project. If you have questions regarding these comments, please contact our Wetlands Branch Chief, Karen Evans, or Fish and Wildlife Biologist Diane Bowen at 808/541-2479.

– 3441

Sincerely,

Brooks Harper

Brooks Harper
Field Supervisor
Ecological Services

NOI to Prepare an EIS and Hold Scoping Meetings
Improvements to Kahului Airport
Kahului, Maui, Hawaii

cc: NMFS-PAO, Honolulu
EPA-Region IX, San Francisco
DOFAW, Hawaii
DAR, Hawaii
CWB, Hawaii
CZMP, Hawaii

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Mr. Brooks Harper
Fish and Wildlife Services
U.S. Department of Interior
Box 50167
Honolulu, Hawaii 96850

Dear Mr. Harper:

Thank you for your letter of June 28, 1994, regarding the Kahului Airport Environmental Impact Statement. Your concerns are addressed in the Draft EIS in the following sections:

1. Fish and Wildlife:
   - Section 3.11.1 BIOTIC COMMUNITIES
   - Section 3.12 WETLANDS

2. Kanaha Pond Wildlife Sanctuary:
   - Section 3.9 DEPARTMENT OF TRANSPORTATION (DOT) ACT, SECTION 4(f)
   - Section 3.11.1 BIOTIC COMMUNITIES
   - Section 3.12 WETLANDS

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka
Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

United States Department of the Interior

FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS ECOREGION
300 ALA MOANA BOULEVARD
ROOM 6307, P.O. BOX 50167
HONOLULU, HAWAII 96850
Telephone: (808) 541-2749
Fax: (808) 541-2756

IN REPLY REFER TO:

In Reply Refer To: DLB

JUN 19 1995

Mr. Daniel S. Matsumoto
Civil Engineer
U.S. Department of Transportation
Federal Aviation Administration
Airports District Office
Box 50244
Honolulu, Hawaii 96850-0001

Dear Mr. Matsumoto:

The U.S. Fish and Wildlife Service (Service) has received your June 12, 1995, request for consultation under section 7 of the U.S. Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended, (Act) relative to the current situation involving the Hawaiian stilt or ae'o (*Himantopus mexicanus knudseni*), a federally endangered wetland bird, at the Kahului Airport on Maui. The letter stated that the Department of Agriculture's Animal Damage Control has found several dead Hawaiian stilts at the Kahului Airport and it is thought that they are attracted to the ponds that form there after heavy rains.

We are looking forward to cooperating with you to develop a plan to reduce or eliminate ponding areas around the Kahului Airport that are attracting these Hawaiian stilts. We would like to schedule a meeting and a site visit with your designated non-federal representative, the Airports Division, at their earliest convenience. Please contact our Chief of the Interagency Cooperation Branch, Margo Stahl, at (808)541-2749 to make arrangements.

Sincerely,

Brooks Harper

Brooks Harper
Field Supervisor
Ecological Services

cc: Ben Schlapak, DOT-A
J. Murphy, ADC
Brian Ishii, EK Noda

United States Department of the Interior

FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS ECOREGION
300 ALA MOANA BOULEVARD
ROOM 6307, P.O. BOX 50167
HONOLULU, HAWAII 96850
Telephone: (808) 541-2749
Fax: (808) 541-2756

IN REPLY REFER TO:

In Reply Refer To: DLB

JUL 10 1995

Mr. Daniel S. Matsumoto
Civil Engineer
U.S. Department of Transportation
Federal Aviation Administration
Airports District Office
Box 50244
Honolulu, Hawaii 96850-0001

Dear Mr. Matsumoto:

The U.S. Fish and Wildlife Service (Service) has received your June 12, 1995, letter requesting information on the presence of Federally listed, proposed, and candidate endangered and threatened species that may be present in the area of the Kahului Airport for inclusion in the Environmental Impact Statement (EIS) associated with the proposed airport improvements. The Service agrees that the Hawaiian stilt or ae'o (*Himantopus mexicanus knudseni*) and the Hawaiian coot or 'alae ke'o ke'o (*Fulica alai*), both federally endangered wetland birds, occur at Kanaha Pond next to the Kahului Airport.

The Service is unable to concur yet as to whether the proposed project will impact protected species until a complete description of the entire project has been provided for our review. We look forward to working with you as you develop plans for improvements to the Kahului Airport and to reviewing the Draft EIS. If you have any questions, please contact our Branch Chief for Interagency Cooperation, Ms. Margo Stahl, or Fish and Wildlife Biologist Diane Bowen at 808/541-2749.

Sincerely,

Brooks Harper

Brooks Harper
Field Supervisor
Ecological Services

cc: Ben Schlapak, DOT-A
J. Murphy, ADC
Brian Ishii, EK Noda

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105-3901

JUN 14 1994

David J. Welhouse, Area Engineer/Planner
FAA HNL-621, Honolulu Airports District Office
Federal Aviation Administration
PO Box 50244
Honolulu HI 96850

Dear Mr. Welhouse:

The US Environmental Protection Agency (EPA) has reviewed the April 7, 1994 Federal Register Notice of Intent (NOI) to prepare a Draft Environmental Impact Statement (DEIS) for KAHULUI AIRPORT IMPROVEMENTS, Kahului, Maui, Hawaii. The DEIS will be jointly prepared with the Hawaii Department of Transportation, Airports Division. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), §309 of the Clean Air Act, and the Council on Environmental Quality's Regulations for Implementing NEPA (40 CFR 1500-1508).

According to the NOI, the proposed improvements at Kahului Airport include, but are not limited to: 1) extend and strengthen Runway 2/20 from 7,000 feet to 9,600 feet; 2) construct a new airport access road; 3) relocate the Instrument Landing System and Approach Lighting System on Runway 2; 4) acquire land for Runway 2 approach protection; and 5) other development items recommended in the June 1993 Airport Master Plan. Other potential long-range projects not currently planned in the Master Plan, or shown on the Airport Layout Plan, include: 1) construct Phase II of the passenger terminal building; 2) international flight operations and facilities; and 3) a long-term helicopter facility. We have prepared scoping comments which should, as applicable, be addressed in the DEIS for the various build alternatives. Our comments are enclosed.

We appreciate the opportunity to comment on the NOI. Please send two copies of the DEIS to my attention (code: E-3-1) when it is filed with our Washington, D.C. office. If you have any questions, please call me at 415-744-1574 or David Tomsovic of my staff at 415-744-1569.

Sincerely,

David J. Farrel, Chief
Environmental Review Section
Office of Federal Activities

Enclosure: 11 pages

JUN 14 1994

cc: Dean Higuchi, EPA, Honolulu
Ken Mittelholtz, EPA, Washington DC (OFA, code: 2252)
Patricia Port, DOI, San Francisco
Stanley T. Albright, NPS, San Francisco
Owen Miyamoto, HDOT, Honolulu
Dr. Bruce Anderson, HDOH, Honolulu

EPA COMMENTS ON FAA NOTICE OF INTENT (NOI) - KAHULUI AIRPORT IMPROVEMENTS, MAUI, HAWAII. Enclosure 1.

JUN 14 1994

I) NEPA COMMENTS

1. Project Purpose & Need: The Draft Environmental Impact Statement (DEIS) should clearly outline the basic purpose and need for the project. It should also describe the roles and responsibilities of the Federal Aviation Administration (FAA) and the Hawaii Department of Transportation (HDOT), as well as any other lead or cooperating agencies.

2. Alternatives: The NOI identifies several alternatives in addition to the proposed action, including alternative modes of travel, utilization of other existing State airports, and reactivation of the abandoned Puunene Airfield. We encourage your office to closely examine these alternatives in the DEIS, in terms of existing conditions, potential or projected impacts, mitigation measures and permit requirements. The DEIS should carefully examine the environmental benefits (and negatives) of the build alternatives in terms of various environmental parameters: air quality, wetlands/water quality, groundwater, noise, hazardous substances contamination, wildlife and other natural resources. Potential impacts to infrastructure should also be assessed in the DEIS, e.g., impacts to roadway capacity due to increased vehicular traffic and impacts to areawide sewage treatment capacity from new commercial/residential developments.

3. Mitigation: The DEIS should identify a full spectrum of mitigation for potential adverse impacts. The National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) place strong emphasis on mitigation to avoid, reduce or compensate for adverse impacts. The CEQ's Regulations at 40 CFR 1502.16(h) provide that EISs must discuss means to mitigate adverse impacts. The CEQ has stated that an EIS should identify "all relevant, reasonable mitigation measures that could improve the project...even if they are outside the jurisdiction of the lead agency or the cooperating agencies..." In the CEQ's words, the EIS is the "ideal vehicle in which to lay out not only the full range of environmental impacts but also the full spectrum of appropriate mitigation." (CEQ, Questions and Answers About the NEPA Regulations, Question #19, March 16, 1981). Additionally, we recommend that, for the various mitigation measures, the DEIS identify which party (FAA, HDOT) is responsible for implementing the mitigation as well as its implementation schedules, funding sources, monitoring and enforcement. It would be helpful for the DEIS to contain a single table identifying the mitigation which will be required.

4. Applicable Requirement and Permits: We recommend that the DEIS contain a table identifying the Federal, State and local

JUN 14 1994

requirements which may apply to the proposed project for each alternative site (e.g., laws, regulations, Executive Orders). In terms of permits, specific project components may require environmental permits or permit modifications from the Army Corps of Engineers, EPA, the State of Hawaii or local agencies. For each alternative site, the DEIS should list and describe existing permits and pending permit applications as well as any new or modified permits which may be needed for project components.

5. Cumulative Impacts: We suggest that the DEIS discuss ongoing and proposed projects at or near each alternative site to help the reader understand potential cumulative impacts. Recent environmental documents should be briefly described (State of Hawaii EISs or other documents prepared under Hawaii state law requirements; NEPA Environmental Assessments and EISs). The cumulative assessment section should identify: project title; project purpose; projected environmental impacts; mitigation; date of document or project approval; and whether the project has been built, is underway or is pending.

6. Cooperating Agencies: It is unclear at this time whether the potential for introducing alien species into Maui's ecosystem may be exacerbated by the proposed project. Earlier this year the National Biological Survey (US Interior Department) wrote, "The potential effect of alien species introduction on Maui's agriculture, native biota, and quality of life is so serious that neglect in imposing preventive measures now will appear gravely irresponsible in hindsight." The US Department of the Interior subsequently wrote to the FAA that it reconsider an earlier decision that the National Park Service should not be a cooperating agency on the Kahului Airport EIS.

In keeping with NEPA's spirit of "agency cooperation early in the NEPA process" (40 CFR 1501.6), we strongly encourage the FAA to request both the US Fish & Wildlife Service (F&WS) and the National Park Service (NPS) to be cooperating agencies, specifically to ensure that the project would afford maximum protection to native species and their habitats. We believe that by enlisting the "special expertise" (40 CFR 1508.26) from both the F&WS and the NPS, the FAA would have the best opportunity to effectively analyze potential project impacts to the surrounding ecosystem and, ideally, to mitigate those impacts to below significance.

II) WATER QUALITY COMMENTS

A) Water Quality

Introduction: The maintenance and protection of water quality is an important consideration when preparing the DEIS. A number of project activities may adversely affect surface and ground water quality. Project activities may result in new or increased

discharges regulated under the National Pollutant Discharge Elimination System (NPDES) provisions of the Clean Water Act (CWA); increased erosion and runoff of pollutants containing sediments, hydrocarbons, pesticides and fertilizers regulated under NPDES stormwater rules; the placement of dredged or fill material regulated under §404 of the CWA; and the accidental discharge of hazardous materials and hydrocarbons. We recommend that the DEIS address the following:

1. Existing Conditions: The DEIS should identify the existing inland waters in the project area, including streams, creeks, coastal wetlands and estuaries. It should describe the current condition of these inland waters as well as their classification under Hawaii's water quality standards. Under Hawaii's Administrative Rules (Title 11, Department of Health, Chapter 54, Water Quality Standards), inland waters are categorized as class 1, class 1.a., class 1.b., or class 2.

Class 1 is the most protective category. The Rules provide, "It is the objective of class 1 waters that these waters remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source."

Class 1.a. waters include all inland waters in preserves, reserves, sanctuaries and refuges established under Hawaii state law; all inland waters in state or national parks, state or national fish and wildlife refuges, and all inland waters that are officially identified as a unique or critical habitat for threatened or endangered species.

The objective of class 2 waters is to protect their use for recreational purposes, propagation of fish and aquatic life, shellfish, agricultural supplies, and commercial and industrial purposes. The Rules provide that class 2 waters "shall not act as receiving waters for any discharge which has not received the best degree of treatment or control..." (underline added).

2. Compliance with Water Quality Standards: Discuss how the proposed project would comply with State and local water quality management plans, State water quality objectives, and State-adopted, U.S. EPA-approved water quality standards. Under §313 of the Clean Water Act, the FAA must meet Hawaii water quality standards and manage the project in a manner to protect or improve water quality where standards are not established.

The DEIS should assess how the project will fully protect these beneficial uses. The impact assessment should consider pollutants from the various project activities (erosion/sedimentation, hydrocarbons, pesticides, other toxics, debris, etc.).

3. Wastewater Treatment: The DEIS should describe the existing wastewater treatment capacity in the project area and potential project impacts (both direct and indirect) to area wastewater systems. Direct impacts would be the effect of airport developments on areawide wastewater capacity (e.g., phase II passenger terminal facility), while indirect impacts would be new residential and commercial facilities associated with improvements at Kahului Airport. A major factor in terms of assessing indirect impacts to wastewater treatment capacity would be any hotels that may be built if international flight operations commence (please refer to Infrastructure Comment).

4. Nonpoint Source Water Pollution: §319 of the CWA requires States to assess nonpoint source water pollution problems, develop nonpoint source pollution management programs, and implement controls to protect and improve water quality. The FAA should contact the Hawaii Department of Health to determine what water pollution control measures are necessary to comply with Hawaii's nonpoint source program. EPA recently issued Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (EPA, Office of Water, Washington, D.C., 840-B-92-002, 1993). This document is a good source of information on measures to control nonpoint source water pollution from various activities and sources, including construction activities, stormwater discharges, runoff from paved areas (runways/roadways), and the leachate of pesticides and fertilizers.

5. Stormwater Permitting: The DEIS should note that, under the CWA, any project disturbing a land area greater than five (5) acres requires a stormwater discharge permit. The DEIS should document the project's consistency with applicable stormwater permitting requirements, including mitigation measures that may be necessary. The Hawaii Department of Health should be contacted regarding their requirements. Information on stormwater permitting can be obtained from Eugene Bromley, EPA Region IX stormwater coordinator, phone: 415-744-1906.

B) SECTION 404

CWA §404 governs the placement of dredged or fill material into waters of the United States, including wetlands and other special aquatic sites. Should the project require the placement of dredged or fill material into waters of the United States, the DEIS should clearly demonstrate the project's consistency with the key elements of the 404(b)(1) Guidelines, specifically:

1) selection of the least damaging practicable alternative;
2) minimization of fill;
3) mitigation for the unavoidable loss of wetlands or other waters of the United States;
4) consistency with Water Quality Standards; and
5) compliance with the Endangered Species Act.

If compensatory mitigation is proposed, the DEIS should discuss in detail:

1) the party or parties responsible to ensure that the mitigation is implemented (FAA; HDOT), including the respective role of each party in developing, implementing and monitoring the mitigation;
2) the acreage and location of the mitigation area;
3) detailed maintenance and monitoring plans for the mitigation area, including criteria by which to measure the success of mitigation; and
4) contingency plans, should the mitigation fail.

III) AIR QUALITY COMMENTS

A) Criteria Air Pollutants

Introduction: Although the entire State of Hawaii is an "attainment area" for the various criteria pollutants regulated under the Clean Air Act (e.g., ozone, carbon monoxide, oxides of nitrogen and particulate matter < 10 microns in diameter), we nevertheless believe it is very important for the DEIS to identify and mitigate adverse air impacts. As noted in NEPA Comment 3 above, mitigation measures are designed to avoid, reduce or compensate for adverse project impacts.

Increased emissions of oxides of nitrogen and hydrocarbons (both ozone precursors) may reasonably be expected to occur under the build alternatives from construction-related activities, increased vehicular traffic, and increased flight activities (direct air quality impacts). Indirect or secondary emissions would likely increase as well from new commercial, industrial and residential developments associated with the airport. Increased emissions of carbon monoxide (CO) and particulate matter < 10 microns in diameter (PM10) would almost certainly rise as well, both construction-related and operational. Accordirgly, we request that the DEIS discuss the following:

1. Direct Emissions: For all criteria pollutants, quantify project-related emission rates for all alternatives, including No Action. This should include emissions from all stationary and mobile sources: construction, aircraft, fueling and ground operations, fuel burning, transportation to and from the airport, etc. The projected emissions for each alternative should be compared to existing emissions. Specifically,

a) The DEIS should quantify projected CO emissions for areas where CO levels may increase, including roadway interchanges, passenger dropoff/pickup areas, and aircraft staging areas. It should discuss the potential for CO violations at terminal "hotspots" such as passenger dropoff/pickup areas.

b) The DEIS should quantify the expected PM10 levels under No Action and the build alternatives for construction and at full buildout. Potential sources of concentrated PM10 emissions should be assessed in the DEIS.

c) The DEIS should quantify the projected emissions of hydrocarbons and oxides of nitrogen and discuss whether they would contribute to ozone problems.

2. Indirect Emissions: Quantify the project's potential secondary effects upon CO, PM10 and ozone levels resulting from changes in ground traffic volume (automobiles, commercial vehicles, buses and shuttles) at the estimated time of completion (ETC) and at full project buildout. For the build alternatives, the following should be discussed for the baseline and full buildout:

a) average daily traffic,
b) peak hour volume,
c) volume to capacity ratios for major interchanges and roads in the project area, and
d) changes in trips, vehicle miles traveled (VMT) and emissions.

3. Sensitive Receptors: For each of the alternative project areas, the DEIS should identify sensitive receptors such as schools, hospitals, childcare centers and playgrounds. These sensitive receptors should be modeled for potential localized impacts, particularly CO and PM10 emissions. Particular attention should be paid to impacts to sensitive receptors caused by increased emissions associated with new facility developments. Appropriate mitigation for adverse impacts to sensitive receptors should be identified in the DEIS.

4. Air Mitigation: We encourage the FAA and the HDOT to thoroughly analyze a broad range of mitigation to reduce or eliminate adverse air quality impacts associated with the project (please refer to NEPA Comment 3 above regarding the "full spectrum" of appropriate mitigation that EISs must identify). Mitigation may include:

a) Adopting airport entrance and parking policies which encourage airline passengers and airport employees to utilize public transit, shuttle services, or carpool/vanpool arrangements. We suggest you consider the feasibility of differential pricing policies in the DEIS, i.e., single occupant vehicles would pay a higher parking rate (for both airline passengers and facility employees).

b) Integrating transit/shuttle features into the build alternatives. The DEIS should discuss existing transit/shuttle resources and methods to integrate such features into the project. We encourage the FAA and the HDOT to work closely with local transit agencies and other

transportation providers to identify and implement the maximum feasible shuttle/transit opportunities.

c) Reducing emissions from aircraft and ground vehicles (e.g., flight scheduling to minimize delays, towing, regulating use of aircraft engines on the ground, use of alternative fuels, control of emissions from fueling, vapor recovery, electrification of ground service vehicles, etc.).

We have had occasion to review a Response to Comments on the DEIS for the Immediate Action Program, Lindbergh Field, San Diego Airport, prepared by the Port of San Diego. In its response to comments, the Port identified opportunities where CO emissions can be significantly reduced by electrifying ground service vehicles and using alternative fuels for a wide variety of equipment, including tractors, belt loaders, cabin service vehicles, lavatory trucks, food trucks, fuel trucks and auxiliary power units. We would encourage your agency and the HDOT to assess the feasibility of similar mitigation for the Kahului DEIS.

d) Reducing adverse air impacts during the construction phase by adhering to applicable rules and best management control practices to minimize PM10 emissions.

B) Air Quality Conformity

§176 of the Clean Air Act requires that Federal agencies must demonstrate that projects which they fund, approve, permit or authorize do not cause new violations of federal air quality standards, aggravate existing violations of air quality standards or delay timely attainment. More specifically, under CAA §176(c) [42 U.S.C. §7506(c)], Federal agencies are prohibited from engaging in or supporting in any way actions or activities that do not conform to an applicable State Implementation Plan.

The DEIS should discuss the project's consistency with the CAA's conformity requirements. Should the FAA determine that a conformity determination is necessary, we recommend that the draft conformity determination be circulated for public and inter-agency review before or when the DEIS is issued. A potential benefit to this approach is that comments on the draft conformity determination could be addressed by the FAA before signing the project Record of Decision (ROD). A second benefit is that mitigation measures required by the conformity determination could be accommodated in the ROD. If you have questions on air quality conformity, please call Mr. Bob Pallarino, EPA Region IX Air & Toxics Division, phone: 415-744-1212.

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C) Hazardous Air Pollutants

1. Asbestos: The DEIS should discuss whether the demolition or renovation of any structures at the alternative sites will require the disturbance or removal of asbestos-containing materials (ACMs). If so, we recommend that your office contact the Hawaii Department of Health (HDOH), Air Quality Bureau regarding compliance with the asbestos NESHAPS rule (National Emission Standards for Hazardous Air Pollutants) and related asbestos requirements. The need to comply with State of Hawaii asbestos requirements should also be discussed in the DEIS. Please contact Mr. Ken Hall, HDOH state asbestos coordinator, phone: 808-586-5800 if asbestos is an issue for the project.

2. Other Hazardous Air Pollutants: The DEIS should discuss the types and volumes of hazardous air pollutants that are presently emitted at each alternative project site as well as those which may be emitted at the alternative sites as a result of implementing the project. Our review of a previous FAA DEIS (Phoenix Sky Harbor Master Plan Improvements, 1991) suggests that both mobile and stationary sources emit a wide variety of hazardous air pollutants (including benzene, toluene, phenol, formaldehyde, xylene, ethylene, styrene, and naphthalene). Title III of the CAA (Hazardous Air Pollutants) identifies the hazardous air pollutants which are regulated under federal law. Relatedly, the DEIS should explore the possibility of reducing hazardous air emissions at each alternative site by reducing the use of hazardous materials which contribute to such emissions.

IV) BIOLOGICAL RESOURCES

We recommend that the DEIS identify critical habitat areas and natural resources at each alternative site (wildlife habitat; critical habitat for threatened/endangered species; wildlife corridors; fishery resources; wetlands). The DEIS should describe each site's existing resource values and how they may be affected by the project. Appropriate mitigation for adverse impacts should be assessed in coordination with the Army Corps of Engineers; EPA; the US Fish & Wildlife Service; and the Hawaii Department of Land & Natural Resources, Forestry & Wildlife Division.

V) NOISE

1. Noise Impacts: Since the project may lead to increased aircraft operations (by larger-size aircraft), the DEIS should assess reasonably foreseeable noise impacts associated with projected operations at each alternative site. This would be particularly important if the airport were to handle international flights, which may be a major increase over existing airport-related noise. In addition, the project may lead to increased auto, bus and truck traffic. An analysis of

possible increased noise from these sources at each site should be in the DEIS.

2. Noise Mitigation: The DEIS should discuss mitigation measures to reduce adverse noise impacts to affected residences and communities. For example, the DEIS should discuss whether a Part 150 study will be prepared so as to implement noise mitigation for surrounding residences or communities that may be adversely affected. The DEIS should discuss mitigation which the FAA may or will require as a condition of project approval (e.g., buyout or soundproofing of severely affected properties; use of noise easements). A clear depiction of noise impacts and mitigation is particularly important if international flight operations are approved as part of the project.

VI) POLLUTION PREVENTION

The Pollution Prevention Act of 1990 (42 U.S.C. 13101-13109) established that, whenever feasible, it is the national policy of the United States that pollution should be prevented or reduced at the source; that pollution that cannot be prevented should be recycled in an environmentally sound manner; and that disposal or release of pollutants into the environment should be employed only as a last resort. We encourage the FAA and the HDOT to follow this type of an approach.

The Council on Environmental Quality (CEQ) has encouraged all Federal agencies to incorporate appropriate pollution prevention principles and mechanisms in their NEPA planning and decision-making. This CEQ guidance to Federal agencies was published in the January 29, 1993 Federal Register. We recommend that the DEIS contain a wide variety of pollution prevention measures, which may include energy and water conservation measures, solid waste recycling, and hazardous waste minimization. Appropriate commitments to implement such measures should be included in the DEIS.

VII) HAZARDOUS MATERIALS/HAZARDOUS WASTE/HAZARDOUS SUBSTANCES

1. Hazardous Waste: The DEIS should discuss the types and volumes of hazardous materials that are presently used at each alternative project site, as well as the types and volumes of hazardous waste that are generated at each alternative site. Projected types and volumes of both hazardous materials and hazardous waste should be presented for both No Action and the Build Alternatives. Appropriate measures to reduce the use of hazardous materials should be discussed in the DEIS. If the use of hazardous materials is reduced, the amount of hazardous waste requiring treatment and disposal should be reduced as well.

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2. Emergency Response Planning: The DEIS should discuss the existing emergency response plan for the project area and potential project impacts to this plan. Any notifications to the areawide emergency response plan should be noted in the DEIS, including timely, adequate responses to spill incidents affecting sensitive populations (schools, hospitals, childcare facilities, playgrounds) and natural resources. Any emergency response plan for the Kahului Airport should be consistent with existing areawide emergency response plans, including the areawide plan maintained by the US Coast Guard. We recommend close coordination with the Coast Guard's Marine Safety Office in Honolulu.

3. Hazardous Substances Contamination: Known or suspected hazardous substances contamination at each alternative site is an issue which should be discussed in the DEIS. The DEIS should discuss whether any sites contaminated with hazardous substances are in the alternative project areas. It should discuss whether the proposed project would affect environmental remediation work at any project sites. The FAA should consult the Hawaii Department of Health regarding their concerns on hazardous substances contamination in relation to the proposed project (for each alternative site).

4. Polychlorinated Biphenyls (PCBs): The DEIS should discuss whether PCBs are present at the alternative project sites or whether the project would require the removal or disturbance of PCBs. The extent of PCB contamination at the alternative project sites should be discussed as well. If PCBs are presently in use or stored at alternative project sites, the DEIS should discuss compliance with EPA's PCB rule. The DEIS should note that the Toxic Substances Control Act (TSCA) and EPA's PCB rule (40 CFR Part 761) govern the use, storage and disposal of PCBs and PCB-contaminated equipment and substances.

5. Lead Contamination: The DEIS should discuss whether lead contaminants are at the alternative project areas (i.e., lead-based paints, lead or lead-soldered water supply lines, lead-contaminated soils) . If lead contamination is known or suspected, the DEIS should specify the location of such contaminants and describe the condition of the lead-based painted surfaces. The DEIS should describe potential health and safety impacts to construction workers, airport employees and airline passengers from sources of lead contamination. Results of testing for lead contamination should be presented and discussed in the DEIS. The DEIS should discuss appropriate mitigation to protection public health from exposure to lead.

JUN 14 1994

VIII) INFRASTRUCTURE

We recommend that the DEIS assess how the various alternatives may affect the basic infrastructure of the island, including wastewater treatment/disposal facilities, wastewater and rainfall sewers, solid waste disposal capacity, electric power facilities, drinking water systems, roadway networks and community services (schools, hospitals, clinics, police/fire services). Potential impacts to the existing infrastructure should be documented in the DEIS, as well as appropriate mitigation to reduce or avoid adverse impacts. We suggest close coordination with the various utility and service providers on the island (e.g., power and light, water, police and fire services).

IX) ENVIRONMENTAL JUSTICE

The President recently signed Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (see February 16, 1994 Federal Register at p. 7629). In a transmittal memorandum for the heads of all Federal agencies, the President stated, "Each Federal agency shall provide opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of meetings, crucial documents, and notices." The DEIS should reflect, as appropriate, the requirements of EO 12898.

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3452

March 12, 1996

Mr. David J. Farrel, Chief
Environmental Review Section
Office of Federal Activities
U.S. EPA, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Dear Mr. Farrel:

Thank you for your letter of June 14, 1994 regarding the Kahului Airport Environmental Impact Statement (EIS). The following responses are keyed to your comments in your letter:

I) NEPA Comments:

1. Project Purpose & Need:
   - Section 1.0 — INTRODUCTION AND SUMMARY
   - Section 2.3 — PURPOSE AND NEEDS OF THE PROPOSED PROJECT

2. Alternatives:
   - Section 3.0 — AFFECTED ENVIRONMENT, PROBABLE CONSEQUENCES AND MITIGATION MEASURES

3. Mitigation:
   - Section 3.0 — AFFECTED ENVIRONMENT, PROBABLE CONSEQUENCES AND MITIGATION MEASURES

4. Applicable Requirement and Permits:
   - Section 2.6 — PROJECT APPROVAL/PERMITS
   - Section 7.6 — CONFORMANCE WITH STATE AND COUNTY PLANS, GOALS AND POLICIES.

5. Cumulative Impacts
   - Section 5.0 — SIGNIFICANT CUMULATIVE IMPACTS

6. Cooperating Agencies
   - Section 1.3.3 — APPLICANT AND COOPERATING AGENCIES

II) A. Water Quality Comments

1. Existing Conditions
   - Section 3.8.1 — EXISTING CONDITIONS

2. Compliance with Water Quality Standards
   - Section 3.8.3 — SIGNIFICANCE CRITERIA AND ANALYSIS

3. Wastewater Treatment
   Section 3.22.2 WASTEWATER COLLECTION, TREATMENT AND DISPOSAL

4. Nonpoint Source Water Pollution
   Section 3.8 WATER QUALITY

5. Stormwater Permitting
   Section 3.13 HYDROLOGY, FLOODPLAIN MANAGEMENT AND DRAINAGE

B. SECTION 404:
   Section 2.6 PROJECT APPROVALS/PERMITS
   At this time the applicability of Section 10 or Section 404 has not been determined by the Corps of Engineers.

III) Air Quality Pollutants

A. Criteria Air Pollutants
   Section 3.7 AIR QUALITY, CLIMATE, AND METEOROLOGY

B. Air Quality Conformity
   Section 3.7 AIR QUALITY, CLIMATE, AND METEOROLOGY

C. Hazardous Air Pollutants
   Section 3.20 SOLID WASTE, HAZARDOUS/TOXIC WASTE AND WASTE WASH WATER

IV) BIOLOGICAL RESOURCES
   Section 3.9 DEPARTMENT OF TRANSPORTATION (DOT) ACT, SECTION 4(f)
   Section 3.11 BIOTIC RESOURCES
   Section 3.12 WETLANDS

V) NOISE
   Section 3.2 NOISE

VI) POLLUTION PREVENTION
   Section 3.8 WATER QUALITY
   Section 3.18 ENERGY ANALYSIS
   Section 3.20 SOLID WASTE, HAZARDOUS/TOXIC WASTE AND WASTE WASHWATER

VII) HAZARDOUS MATERIALS/HAZARDOUS WASTE/HAZARDOUS SUBSTANCES

1. Hazardous Waste
   Section 3.20 SOLID WASTE, HAZARDOUS/TOXIC WASTE AND WASTE WASHWATER

2. Emergency Response Planning
   Section 3.22.3 TELECOMMUNICATIONS
   Section 3.22.4 POLICE AND FIRE SERVICES AND PUBLIC SAFETY
   Section 3.22.5 HEALTH CARE FACILITIES

3. Hazardous Substances Contamination
   Section 3.20 SOLID WASTE, HAZARDOUS/TOXIC WASTE AND WASTE WASHWATER

4. Polychorianted Biphyenyls(PCBs)
   Section 3.20 SOLID WASTE, HAZARDOUS/TOXIC WASTE AND WASTE WASHWATER

5. Lead Contamination
   Section 3.20 SOLID WASTE, HAZARDOUS/TOXIC WASTE AND WASTE WASHWATER

VIII) INFRASTRUCTURE
   Section 3.22 PUBLIC FACILITIES, INFRASTRUCTURE AND SERVICES AND AVIATION SAFETY

IX) ENVIRONMENTAL JUSTICE
   Section 1.3 THE SCOPING PROCESS
   Section 3.5 SOCIO-ECONOMIC IMPACTS

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

NAME: Yolanda Ululani Alonzo

ADDRESS: 715 South Kihei Road, Apt #103
Kihei, Maui, HI 96753

SUBJECT: Extension of Kahului Airport Runway

I personally support the runway extension to the Kahului Airport. I work for Kaanapali Beach Resort Association and I receive numerous 800# calls daily from people throughout the United States asking for information on Maui. This tells me that the tourist are very interested in coming to Maui as a Destination. I feel we should accommodate the airlines with more runway space and available flights coming into Maui. Yes, this will increase our population during high season and hopefully increase our visitior statistics during the low season. More tourists, means more jobs for the people of Maui County and increased revenues for the State of Hawaii. Tourism in Hawaii is one of our vital resources of income and affects everyone. I support the runway extension if it will bring more tourists here to Maui and to the State of Hawaii. We need to envision the continual growth for the tourist industry to prosper here in Hawaii and yes, we need to support whatever it takes to do it! Yolanda U. Alonzo 5/18/96

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
96.078

March 14, 1996

Ms. Yolanda Ululani Alonzo
715 South Kihei Road, Apt. #103
Kihei, Maui, Hawaii 96735

Dear Ms. Alonzo:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your testimony at the Scoping Meeting on May 18, 1995 for the subject Environmental Impact Statement (EIS). Your concerns are addressed in the following section of the Draft EIS.

1. Section 3.5 Socio-economic Impacts

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hawaii Helicopters

August 23, 1994

Owen Miyamoto
Airports Administrator
STATE OF HAWAII DOT-Airports Division
Honolulu International Airport
Ewa Service Court Road
Honolulu, Hawaii 96819

Re: Kahului Heliport Safety

Dear Mr. Miyamoto,

HHI has recently been subjected to several in depth inspections of its operations by personnel from the NTSB, our local FAA Flight Standards District Office and the Washington Flight Standards District Office. Presently, we are undergoing a *National Aviation Safety Inspection Program* (NASIP) inspection. As this letter is being written, there are three NASIP representatives on property.

One item of concern shared by each of the aforementioned entities is the congestion at the Kahului Heliport. The close proximity of each operator's flight operations presents significant safety concerns which we feel must be addressed. It is my impression that the consensus of opinion of operators, pilots and regulatory agencies alike, is that the Kahului Heliport is not of the best design and is presently utilized for frequency of operations that exceed its inherent design limitations.

While it is true that the Heliport has a perfect safety record there are several "near miss" incidents documented, one of which is recorded on video. Because of significant investments made by the various operators at the Kahului Heliport we are concerned that safety issues may be compromised.

As previously stated in our correspondence, we are sympathetic to the challenges presented to DOT as a result of the increasing popularity of helicopter touring. We appreciate the efforts DOT has made to alleviate this situation, the most recent being the proposed relocation of the heliport to a safer, more community friendly location.

While the helicopter tour industry is organized, I believe its unlikely that the Maui helicopter operators will stand together in support of this proposed relocation. I feel that this may be largely due to the economic impact of relocating. However, from a safety and community relations standpoint, HHI is strongly supportive. To this end, we stand ready to provide any assistance you may require. I would be happy to meet with you or any of your representatives to discuss this important issue further. Should you have any questions please feel free to call. I can be reached toll free at 1-800-994-9099.

Kahului Heliport Hangar 106
Post Office Box 330010
Kahului, Hawaii 96733

Telephone (808) 877-3900
Telex 7238476 WINGS
1-800 346-2103 From Continental US
FAX (808) 877-4721

Sincerely,

Donald P. Ballard

Donald P. Ballard
President

cc: Norm Wiemeyer, NTSB
Thomas Accardi, Washington FSDO
Peter Beckner, Honolulu FSDO
John Sakamoto, Kahului Airports District Manager

enclosures(2)

BENJAMIN J. CAYETANO
GOVERNOR

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
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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
96.086

March 14, 1996

Mr. Donald P. Ballard
President
Hawaii Helicopters
Kahului Heliport, Hanger 106
P. O. Box 330010
Kahului, Maui, Hawaii 96733

Dear Mr. Ballard:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your letter of August 23, 1994 concerning the safety of operations at Kahului Airport. Your concerns will be addressed in the Draft EIS in the following sections:

1. Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities

2. Section 2.4.4 Proposed Airfield Developments

3. Section 3.22.9 Aviation Safety

4. Section 4.4.3 Relocation of Helicopters/General Aviation Operations to an Off-Airport Site

I look forward to your comments on the Draft EIS. Should you have any other questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like Na Ke Ala Aloha
Working Together to Provide Gateways of Aloha

May 23, 1994

P.O Box 1637
Kihei, Maui, Hawaii, 96753

Dear Mr. Welhouse
FAA
Po. Box 50244
Honolulu, Hawaii, 96850

Letters HONOLULU ADVERTISER - MAY 22, 1994

Airport: Hawaii's 'Tammany Hall'

I hope that everybody read and took seriously the opinion piece by Bruce Nobles, president of Hawaiian Airlines, in your May 17 paper. He applies the strange concept of cost-effectiveness to the building of the new interisland air terminal at a cost of $150 million, or $250 per sq.ft.

Being new to Hawaii, he may not appreciate the traditional role of the airports in our society. They are the Tammany Hall of Hawaii, through which work is supplied to the contractors who in turn supply money to the politicians. Cost-effectiveness has nothing to do with it. Over the years I have been amazed to find major renovations being started on top of major renovations barely completed.

Apparently the voters have accepted this on the theory that this money comes from user fees, which, in their minds are mainly paid by tourists. However, each of us from Hawaii who uses the airport pays those user fees each time. A tourist pays only on the rare visit to Hawaii.

HAROLD G. LOOMIS

Dear Mr. Welhouse,

I have already submitted my testimony thru the Court reporter on your Kahului Airport EIS Hearing May 19, 1994. But this article really caught my eye and rang a bell... at least to anyone who knows what Tammany Hall was... and stood for.

When you think about it, and read the legals, all the never-ending contracts put out to bid, that's what it is !! It's a never-ending gravy-train; the public - though as it may be. It never stops. It seems 75% of these projects aren't even needed, just created to give friends jobs and someone's else's money. It sure would be different if it was coming out of their salaries! It sure is easy - and even wasteful - to spend other people's money on unneeded things.

Which brings up the point of all these Kahului Airport expansions. It seems the '87-88 expansion should service Maui for at least the next 25 years. If you leave the runway the long it is maybe 50 years. If you move helicopter and General Aviation to Puunene with a very modest facility, the runway can stay the same at Kahului, no 2nd runway, and no more wasted money for 50 years except for maintenance and operating expenses. I hope your EIS takes into account the long neglected expansion on Maui as well as the social problems created by even the present amount of tourism, a overrun small island by even the present amount of tourism.

Sincerely, Kenneth J. Barr

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

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Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Mr. Kenneth J. Barr
P.O. Box 1637
Kihei, Maui, Hawaii 96753

Dear Mr. Barr:

Thank you for your letter of May 23, 1994, regarding the Kahului Environmental Impact Statement (EIS). Your concerns will be addressed in the following sections in the Draft EIS:

Section 2.3	PURPOSES AND NEEDS OF THE PROPOSED PROJECT
Section 4.4	OTHER RUNWAY ALTERNATIVES

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

May 18, 1994

Mr. William A. Camps
293 Ohina Place
Kihei, Hawaii 96753

A Written Testimony
c/o Federal Aviation Agency
and Department of Transportation
Airports Division

"CLEARANCE NEEDED TO LAND"

One of the hottest issues facing the Maui Community is the "KAHULUI AIRPORT RUNWAY EXTENSION PROJECT".

It is apparent to all that lines have been drawn and camps set with regard to this matter. "THE PRO'S vs. THE CON'S.

Since everything at this point is speculation, let's look as some facts:

FACT: Tourism is Hawaii's #1 Industry.

FACT: The State of Hawaii, at present, has two (2) airports with international capabilities, namely Honolulu and Hilo.

FACT: The evening of 10 September 1992, for six (6) hour period, the National Weather Bureau, led by Mr. Timothy Craig, tracked hurricane "INIKI" on direct northerly course toward the leeward coast of Oahu. We are all aware of the change in course of the storm.

Putting these facts together and speculating a direct hit by the "Right Front Quadrant" of the storm, it's strongest section, at Honolulu International, the devastation would have been calamitous.

Hilo simply does not have the facilities to accommodate the amount of visitors needed to support our most lucrative industry.

Survival, in any form, is not a game of rhetoric. Survival is as serious as serious can get.

The long we fail to realize the importance of this project the smaller the odds of economic survival becomes.

Respectfully,

William A. Camps
WILIAM A. CAMPS

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
96.103

March 14, 1996

Mr. William A. Camps
293 Ohina Place
Kihei, Maui, Hawaii 96753

Dear Mr. Camps:

Subject: Joint State/Federal Environmental Impact Statement
Scoping Meeting, Kahului Airport
State Project No. AM1011-07

Thank you for your written comments of May 18, 1994 on the Kahului Airport Environmental Impact Statement (EIS). I believe your comments are addressed in the following sections of the Draft EIS:

1. Runway Length:
   - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
   - Section 2.4.4 Proposed Airfield Developments
   - Section 4.4 Other Runway Alternatives
   - Section 6.1 Lengthened Runways

2. Socio-Economic:
   - Section 3.5 Socio-economic Impacts
   - Section 3.6 Secondary Socio-economic Impacts

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

American Pacific Air, Inc.
P.O. Box 1505, Kahului, Maui, Hawaii 96732 • Tel. (808) 871-8115
Kahului • Kailua - Kona

Mr. David J. Welhouse,
Airport Engineer/Planner,
Federal Aviation Administration,
Airports District Office,
P.O. Box 50244,
Honolulu,
HAWAII 96850.

May 11, 1994.

Dear Dave,

Our telecon of even date, refers.

Reference is made to the notice appearing in the Maui News advising of the meeting to be held on Maui, May 18th. 1994 to conduct Public hearings on expansion to the existing runway 02/20 Kahului Airport and reactivation of Puunene Airfield.

The notice calls for written comments.

Enclosed herewith is a copy of a letter which I wrote to Brian Miskae, Planning Director, Maui County who have appointed a team of consultants to conduct a study of Puunene for multiple use, including a base for fixed wing light aircraft and heliport. The County have asked me to act as adviser to the consultants on the aviation aspects of this study.

A copy of this letter has also been sent to Harvey R. 'Bud' Riebel, Manager, Systems Management Branch, Air Traffic Division, FAA Western Region, LA.

I would like this letter to be included with the written comments you have called for.

Sincerely,

Len D.C. Cowper.
President.
AMERICAN PACIFIC AIR, INC.

American Pacific Air, Inc.
P.O. Box 1505, Kahului, Maui, Hawaii 96732 • Tel. (808) 871-8115
Kahului • Kailua - Kona

Mr. Brian Miskae,
Planning Director,
Maui County Council,
200 S. High Street,
Wailuku,
Maui,
HAWAII 96793.

March 4, 1994.

Dear Brian,

PUUNENE AIRFIELD

Thank you for the past correspondence which you have sent to me, concerning the proposal to reactivate Puunene Airfield, hereinafter referred to as P.A., these being the enclosures to the letter from Rex D. Johnson, Director of Transportation, to the Hon. Junior Moniz, Maui County Council Member.

Before commenting on these individual letters, let me say that our organization has been in operation since 1986 and that we are the largest fixed wing F.B.O. in the State in terms of number of aircraft owned (13) plus hours flown per annum.

Since starting our operation with two aircraft, I have consistently proposed the reactivation of the old P.A. for light fixed wing aircraft and helicopters. It was patently obvious, even to the most casual observer that with the natural growth of Maui, flying activity would eventually reach a point whereby the Kahului Airport, hereinafter referred to as K.A., would be unable to handle the traffic flow without serious delays and a reliever airport was an absolute necessity. In short get all of the General Aviation activity, with the possible exception of Pt. 135 operators, off K.A. and leave it for Air Carrier operations.

In 1987, the then Director of Transportation, Ed Hirata, together with Owen Miyamoto, D.O.T. Airports Administrator, who are to be commended for their foresight, suggested the reactivation of P.A. for fixed wing G.A. aircraft and helicopters.

This suggestion was hailed by the great majority of the G.A. Community who welcomed the opportunity to move away from K.A. In discussion with Owen at that time, he correctly pointed out that Kahului would eventually reach saturation and would then be faced with with the same problems existing at Honolulu whereby G.A. fixed wing aircraft were forced to conduct their activities either at Dillingham Airfield or Ford Island.

It should be noted that in the eyes of an Air Traffic Controller, a take-off and landing, whether it be a Cessna 150 or a 747 is still considered a movement simply by virtue of the fact that only one aircraft can be on a runway at any one time, and there is no reduction in workload for an Air Traffic Controller regardless of type.

When it is realized that a C150 engaged in touch and go landings during training, completes an average of 8 take-offs and landings per hour, multiplied by the number of such training flights we make every day, simple arithmetic shows that we complete thousands of take-offs and landings

FAA Written & Flight Test Examiner • Accident Prevention Counselor • FAA Certified Flight Instructors • Aircraft Hire and Air Tours

every year and thus constitute more movements than any other aircraft using K.A. The only other aircraft coming anywhere that number of departures and arrivals would be helicopters. Remove that lot from K.A. and you extend the present useful life of K.A.

Further, and as far as the FAA are concerned, every aircraft departing or arriving, whether it be training flights, touch and go landings or Air Carrier operations, is to be afforded equal access to the airport, meaning that no priority is to be given to Air Carriers such as Aloha/Hawaiian/United etc. etc. It is written into the FAA Charter that they will promote and foster the growth of aviation - all aviation and that a Public Airport receiving Federal funding, such as Kahului, will offer equal access to all users.

As noted, I have followed the proposal to reactivate P.A. since 1987. I know most of the individuals involved and have spoken with them on this subject beginning with Owen Miyamoto and Bob Rahideaux, previous Manager at Kahului Control Tower. I have attended countless Public meetings concerning the expansion at K.A. and have given written and verbal support to the extension of Rwy 02/20.

Let me now address the comments from the various individuals, made in the letters you have sent me.

March 3, 1988. Owen Miyamoto, Airports Adminstrator to Henry Sumida, FAA Admin. HNL.

Para 2. He quite correctly states that in the 1995 - 2000 year time period projections, capacity at Kahului will become a problem. He also makes reference to a proposed parallel runway at Kahului.

I suggest to you that such a proposed parallel runway, to be built on what is now ag. land, owned by the sugar company should be viewed as little more than a pipe dream, certainly in the next decade and probably well into the 20th. Century. (i) the land would need to be purchased from HC&S at an exorbitant price and rezoned (ii) the land does not have the bearing strength as it exists and the cost of construction would be excessive (iii) such a proposed parallel runway would be initially, 3,500' and used for G.A. aircraft activity, with proposed extension to 8,500' at some later date. We all know the time that has elapsed since the proposals to extend the present runway 02/20 and the ongoing law suits filed against the D.O.T., filed by various opponents, and any suggestion of a parallel runway would simply invoke more litigation which would take years to resolve, if ever,(iv) if a runway were ever built it would also involve redefining the Hana Highway which would have to be realigned. Personally I never see it happening in our lifetime.

April 28, 1988. Letter from Robert Rahideaux, Manager Air Traffic Control Tower, Kahului.

This one page letter from Rahideaux is the single most damning letter of them all and in my view is the opinion of one individual which completely killed the idea of P.A. as a reliever airport. Nowhere does it give any consideration to projected increased activity at K.A. and is also factually incorrect. He states that P.A. is five miles South of K.A. It is in fact six miles and lies outside of Controlled Airspace. He also states that P.A. lies underneath the ILS to Rwy 02 at K.A. Not true. Aircraft inbound on the ILS are displaced 2 miles horizontally and 1,600' vertically from P.A. (Taking into account that P.A. is 108' above MSL.)

He also states that 'the development of a G.A. Training Airport without positive ATC control etc. etc..' At no time has anybody suggested that P.A. not be under positive control. I have consistently stated that procedures should be developed with positive control either in the form of a Control Tower or Unicom is absolutely necessary at P.A.

And as if to give further support to his argument, his last para. talks about the effect on the adjacent community at Kihei. This comment in itself is entirely out of his terms of reference as noted in the letter he received from Frank Torikai, Acting Manager, Airspace Procedures Branch, FAA. i.e. para. 3 which states, inter alia,'such impacts of airports proposals are not germane to airport airspace analyses conducted by the FAA.'

Rahideaux's opening comment that 'Maui ATC Tower vehemently objects to the establishment of a G.A. reliever airport at P.A. ', will be discussed further in this letter.

This one page letter from one individual obviously formed the basis for support from the Airspace Branch who then set out to condemn any further suggestion of P.A as a reliever airport and who gave little, if any thought to the increased activity that was inevitable at K.A. and the impact on the airport users.

This condemnation was passed back to the D.O.T. who were forced to think of alternatives which included their suggestion to expand G.A. facilities at K.A. and construct a parallel runway. I wonder how much these studies cost the State in consultants fees?

June 8, 1988 Letter from Capt. James H. Mooney, HNL ALPA Representative.

This letter does not in essence totally condemn P.A. as a reliever airport. He correctly addresses various concerns which are likely to occur in the mind of any airline Captain using K.A. and in para. 10 he states that prior to action being taken, conferences be held with various interested parties. To my knowledge and as far as I can ascertain, such conferences, with active pilots present were never held and the whole idea of P.A. was arbitarily condemned by the Airspace Div.

I have in my possession minutes of a meeting held by the Airspace Div. together with a list of the attendees at that meeting. All of them were Airspace people and conspicuous by their absence is anybody representing the airspace users. The pilots and contrary to the spirit suggested by Capt. Mooney.

It looked more like a meeting of 'the good old boys' who got together to squash any idea of reactivating P.A.

As you know, we have had recent discussions with Capt. Tim Flournoy, Successor to Capt. Mooney and the new ALPA Representative who is generally in favor of P.A. for G.A. operations. Like so many Air Carrier Captains using K.A., they are getting totally fed up with TCAS warnings going off during their final approaches to the airport.

June 16, 1988. Letter from Air Force Representative, Lt. Col. George R. Bailey.

This letter barely needs comment. He talks about P.A. being 1/2 mile from the ILS to Rwy 02 at Kahului. As already noted the distance is 2 miles. His comments regarding training for his crews should also be countered by asking him why his crews find it necessary to conduct their training at Kahului, the second busiest airport in the State, when they can conduct the same kind of ILS training at Hilo, Kona or Lihue where there is far less traffic. Why clutter up an already congested airport? Manyof their training flights are simply touch and go landings so why not use their own facilities at Wheeler AFB? Obviously the Air Force do not have the same constraints placed upon them in terms of time and fuel consumed as do civilian aircraft.

His para. 4 refers to the Star Wars program which is now a dead issue in any case, but deserves one final comment.

Their lazer equipment is or was located atop Mt. Haleakala which beamed to a satellite,

rebounding to be picked up at a receiving station located behind Kihei. As part of their experiments, the Air Force wanted an aircraft to fly over the receiving station from various angles, at various heights and day and night in order to track it and test their equipment. Lt. Col. Bailey probably doesn't know it but I was the pilot who flew one of our aircraft on contract to the Air Force for these missions.

As a matter of interest, they never did see us even though we flew right over them. Furthermore, Lt. Col. Bailey also probably doesn't realize it but their receiving station lies right in the middle of our training area with at least 6 aircraft a day buzzing around the entire area including their receiving station. In fact we use their receiving station building for practicing 'turns around a point' an exercise for Student Pilots. So my question is, what does his letter and his Star Wars program have to do with Puunene, five miles away?

The presence of this letter in the file simply illustrates some of the wooly kind of thinking and excuses put forward to justify condemning P.A.

June 24, 1988. Letter from Jefferey H. Thorstenson, Manager Airspace and Procedures Branch.

Again, this letter is not factual and contains glaring inaccuracies which I find somewhat amazing, coming as they do from a man in his position.

He now talks about P.A. being located 4.25 miles South of K.A. I do not know what charts or what scale he was using, but any Sectional Chart he cares to study shows P.A. as six miles and outside of Controlled Airspace. Our Student Pilots know that much. He also makes reference to P.A. being 1/2 mile from the inbound ILS approach path to Rwy 02. It is not as dicussed earlier.

In his opening statement he talks about reactivation of one of the existing runways at P.A.

Nowhere in any correspondence can I find reference to using one of these runways. This has never been proposed as far as I am aware and I can only conclude, in the absence of any evidence to the contrary, that he made this assumption himself. The present crop duster strip is too short for most private pilots and the other runway is used for drag racing.

June 30, 1988. Letter from Henry Sumida, Airports District Manager, FAA.

This letter simply echoes what has been stated by Thorstenson and refuted above.

May 11, 1989. Letter from Owen Miyamoto asking for consideration of P.A. for helicopters.

June 20, 1989. Letter from Robert Green Jr., Manager, Maui ATC Tower.

This letter basically echoes what was said by his predecessor, Rahideaux even to the point of mentioning the noise nuisance to residents of Kihei. Again out of his terms of reference. One is left wondering if the fact that he lives at Kihei had any bearing on his comments. It should perhaps be noted that the nearest habitation at Kihei to P.A. is miles away and unlikely to be disturbed by a C150/C172. Our training area lies behind Kihei and we fly over Puunene to reach this area. What difference does it make if we depart from K.A. or P.A.? In 8 years of operation we have never once had a complaint about noise even from local residents around K.A.

Green took over from Rahideaux. Prior to his takeover there were and still are, Air Traffic Controllers who were active pilots. On their days off they frequently came to the hangar to fly and talk airplanes and they were welcome because among other things, it gave our Student Pilots a chance to meet the people they were talking with and to get a Controllers' viewpoint. During these visits we talked about P.A. from time to time and I was interested to get an ATC view of the idea

of reactivating P.A. from a practical standpoint. Most of these Controllers had previously worked in Towers across the Mainland and their views and input was important. Two of them had worked in Towers which they claimed had G.A. airfields in closer proximity than P.A. was to K.A. One of them, Mark Scognamillo even went to the trouble of giving me let down plates of various Mainland airports illustrating his point. Soon thereafter, Mark told me that he had been instructed by Green not to discuss this matter further with me as 'it constituted conflict of interest.' My answer was, 'whose interest? Green's?'

Mark Scognamillo and the other pilot from the Tower, J.J. Jaskirski, no longer work for the FAA. From that time until the present, we have never had a visit from any of the three licensed pilots still in the Tower and I ask myself if this is due to pressure from Green?

August 14, 1989. Letter from Jefferey H. Thorstenson, Manager, Systems Management Branch.

There is no requirement for a visual approach procedure that takes aircraft over P.A. This was introduced and is used purely at Captains' discretion. One reason it was introduced was an effort to avoid turbulence for aircraft inbound over McGregor Pt./Outer Marker but in reality, the turbulence is virtually the same anywhere over the valley during strong Trade Wind conditions. This I know from daily personal experience. Under such conditions it would be more useful if ATC offered inbound aircraft the option of making their approach via Nakalele Pt. and Wailuku as recommended by Capt. Flournoy. Any approach from the South whether it be an ILS or visual approach is potentially dangerous due to turbulence. As noted by Capt. Flournoy, at least three Cabin Attendants with Aloha Airlines have been injured during the past 12 months and one aircraft suffered some structural damage.

Even with the use of a visual approach, inbound aircraft approaching from the South, flying a normal 3 degree glide path would still have a vertical separation above P.A. of at least 1,600' or more.

Letter from David J. Welhouse, Airport Engineer/Planning, FAA.

This letter is interesting in that it goes from Rahideaux 'vehemently opposing the use of P.A. for any G.A. operations', and numerous letters from the Airspace Div. FAA supporting Rahideaux, all with a definite 'NO' to any G.A. activity, to a position of 'well, it now looks O.K. for helicopters to be there.'

The interesting point here is that for the four years prior to this letter I have been saying what Owen Miyamoto has said all along, that helicopter and light aircraft activity at Kahului will eventually reach a point where Air Traffic Controllers will be saturated and it will be physically impossible, without extensive delays, to handle the volume of traffic. It does not take a crystal ball or a degree in nuclear physics to figure that out and what surprises me is that it has taken this long for the FAA to realize it. Right now ATC at K.A. estimate that helicopter activity alone represents 35% of all movements and with the number of new helicopters coming on line, will increase, as will our own now that we are easing out of the current recession.

To Summarize.

(i) There are hundreds of G.A. airfields across the Continental U.S. in closer proximity to major airports than P.A. is to K.A. The Washington Area. Dulles Intl. National and Baltimore Airports all have G.A. airfields with overlapping Control Zones all around them. At Anchorage, Alaska there are no less than 6 G.A. airfields, Elmdorf AFB and Anchorage Intl. all within a 5 mile radius of each other. The Sectional Chart for Anchorage shows a notation next to Merrill Field, indicating that just that one airfield may have up to 300 movements per hour or up to 5 aircraft per minute operating. 2 Miles away at Elmdorf there is a constant flow if heavy jet transports and

jet flighters. At Anchorage Intl., a mile away from the main runways, with a constant flow of DC10/747 aircraft lies Lake Hood, a float plane base with floatplanes wing tip to wingtip all around the lake departing and arriving. In short, more G.A. aircraft just in that one area than we will ever see in Hawaii. I flew in that area and asked the ATC Controllers, what if any problems they had with so many aircraft. They said none. Procedures were in place and it all worked smoothly. Another example is Hayward G.A. airfield which lies directly under the ILS approach path to Oakland Airport. Again procedures are in place and light aircraft operating at Hayward have a 600' cap on their altitude while in the pattern.

The point here is that P.A. can be made to work if the Airspace Div. are instructed to make it work. As I see it, having read the letter from Rahideaux, they have decided that it is easier to just say no. And have then tried to justify their position with various arguments that contain a lot of inaccurate statements.

Having made that decision, and without any forethought to the long term effects that decision would have at K.A. it forced the DOT to spend hundreds of thousands of taxpayer dollars in consultant's fees, trying to find an alternative solution including a suggested parallel runway at K.A.

If action had been taken to reactivate P.A. for G.A. operations when first suggested back in 1987, we would in all probability be at P.A. now. Six years have now elapsed and I suggest that even if action was taken today to move G.A. to P.A., saturation will occur before it becomes a reality and the FAA have nobody to blame except themselves for failure to implement long term planning.

(ii) The State owns the land at P.A. and there is no cost involved in land aquisition. The bearing strength has already been determined by the fact that there are already runways in existence and the adjacent stone quarry recovers material from the surface without excavation.

(iii) As you know, in 1989 the Federal Government gave the State $353,263.00 to conduct a study of P.A. as a reliever airport. To date not one nickel of that money has been spent. This comes as no great surprise when all that the DOT have ever heard from the FAA is negative comment and that they will never be able to use P.A.

(iv) To my knowledge, nobody has ever suggested using the existing runways at P.A. It has been my suggestion that another runway be laid at the South end of the property aligned to and parallel to Rwy 02/20 at K.A. Such a runway could be say 4,000' in length and for Day VFR traffic only. It would not require runway lighting and the cost would be minimal. Simply grade the area and black top it. This is all that would be required for piston engined aircraft.

By placing such a runway further to the South it further displaces it from the ILS approach path to Rwy 02 at K.A. and from my calculations, complies with TERPS in terms of Lateral and vertical separation from the ILS.

Aircraft departing that runway would commence a right turn at 300' (as we do at K.A.) and if necessary, place a cap of 500' on their altitude while in the pattern and until such time as they make contact with Departure Control. Welhouse suggests a cap of 500' for helicopters using P.A. Why not fixed wing aircraft which are perfectly capable of maintaining 500'. If a Kona wind was in effect, traffic would turn left after take-off. If weather conditions forced K.A. to go IFR on the rare occasions that that happens, flying at P.A. would be terminated pending improved conditions.

(v) A Control Tower or Unicom to be established with published procedures for entry/exit the area.

(vi) Helicopter operations would take place in an area over a mile away and to the West and adjacent to the present crop duster strip.

(vii) Various suggestions have been forthcoming including using Hana Airport for light aircraft training. In the first place for roughly 50% of the year it is virtually impossible to get there due to adverse weather, low cloud and rain. If it's raining anywhere on Maui it will at Hana. Secondly it is an uncontrolled airport with swarms of helicopters departing and arriving during the day and certainly not the environment for a Student Pilot to be operating in. Example. On March 2 of this year, a Student Pilot making touch and go landings there was forced to abort in the middle of a take off roll when a helicopter crossed the runway right in front of him and just a few feet above the surface of the runway. The alertness of the Student Pilot averted what would almost certainly have been a mid-air collision. This in spite of his radio calls downwind and on final approach announcing his intentions. The helicopter pilot apologised stating that he did not see him. FSDO have been notified. Further, it takes approximately one hour to fly to Hana and return and most of our young Student Pilots simply do not have the money to go back and forth to Hana for training. It would be an unfair financial burden upon them. Kapalua is out of the question for the reasons we all know.

(viii) Concerning saturation at K.A. On February 20 and 21st of this year we had aircraft involved in touch and go landings. On the 20th. it was a C172 and the 21st. a C150. During the course of this training the aircraft were advised by the Tower Controller to terminate their activity and return to the hangar. On the 22nd. I spoke with Bob Green the Manager of ATC and asked him the reasons why. He replayed the tapes and as suspected, the Controller was simply physically unable to handle the volume of inbound/outbound traffic. I told Green that I did not blame the Controllers who do everything possible to assist us, but there has to be a limit to what anybody can achieve under the circumstances, and again repeated that this just one reason why we want to be off K.A. for good. His response was still negative, which came as no surprise.

Taking us out of the air was of course illegal under the terms of the FAA Charter which states that they will provide equal access to all users of a Public Airport receiving Federal funding.

Bearing in mind that we are in a recession the visitor count for Maui currently runs at an estimated 2.3 million tourists a year. This figure is expected to double within the next five years. Assuming that it does as we move out of this recession, if we are forced to delay or terminate training at Kahului, I am prepared to file an injunction against the DOT/FAA which will deny further Federal funding to the airport until such time as they are able to give us equal access either at Kahului or elsewhere. If necessary I would go to Washington and present our case to the Administrator personally.

The fact remains that we provide flight training and aircraft rentals to local residents and tourist pilots here on vacation. The tourist rentals alone provide considerable income for the State both in terms of money coming into the local economy plus State taxes. If the local residents wish to take up a career in aviation they either do it here or move elsewhere. We have trained hundreds of pilots ranging from gas station attendants, bar waiters, construction workers etc. and several of them are now flying commercially for commuter airlines and local Air Carriers. My question is this. If they cannot train on Maui, why should they be forced to go elsewhere? In the first place most of them do not have the financial resources to go anywhere else so why should they be denied a career of their choice?

The following is a letter from David R. Hinson, FAA Administrator, dated September 8, 1993 which sums up his views on General Aviation.

It is headed General Aviation Policy Statement and reads as follows:

General Aviation is critically important to the Nation's economy and to the national transportation system. General Aviation plays a crucial role in flight training for all segments of aviation and provides unique personal and recreational opportunities. It makes vital contributions to activities ranging from business aviation, to agricultural operations, to Warbird preservation, to glider and balloon flights.

Accordingly, it is the policy of the FAA to foster and promote general aviation while continuing to improve its safety record. These goals are neither contradictory nor separable. They are best achieved by cooperating with the aviation community to define mutual concerns and joint efforts to accomplish objectives. We will strive to achieve the goals through voluntary compliance and methods designed to reduce regulatory burden on general aviation.

The FAA's general aviation programs will focus on:

1. SAFETY. To protect recent gains and aim for a new threshold.

2. FAA SERVICES. To provide the general aviation community with responsive, customer-driven certification, air traffic, and other services.

3. PRODUCT INNOVATION AND COMPETITIVENESS. To ensure the technological advancement of general aviation.

4. SYSTEM ACCESS AND CAPACITY. To maximize general aviation's ability to operate in the National Airspace System.

5. AFFORDABILITY. To promote economic and efficient general aviation operations, expand participation, and stimulate growth.

As you know, at the present time we are forced to operate out of a T-hangar, not by choice but out of necessity. There is no alternative accomodation on the airport. I understand that there are now 28 people on the waiting list for a T-hangar. If we moved to P.A. most of these people including ourselves would be willing to lease land from the DOT and build their own hangars. We would be willing to lease at least 4 acres which would enable us to build an 80'x120' hangar complex which would then allow us to apply for an FAA Repair Station License, have a proper facility that would house reception, lecture rooms, Aero Club ammenities for local residents, such as they have on the Mainland, plus have a vintage aircraft park housing WWII aircraft in serviceable condition. All of this would be a welcome addition to the beaches and other facilities offered to tourists and again generate income for the State.

In closing Brian, let me say that any comments made here concerning the FAA should not be construed as derogatory but more as constructive criticism. The FAA is an excellant Government Agency with many experienced professionals for whom I have the highest regard. As an FAA Designated Pilot Examiner I work closely with the local FSDO and with whom I have an excellant working relationship. However, having said that, as in any organization there are bound to be individuals and bureaucrats in any Government Agency, quite content to sit back and live with the status quo rather than exercise whatever talent they may have to find a better alternative solution to a problem or who lack the ability and foresight to make important decisions. Those individuals have been identified in this letter. Who was it said, if you never make a decision, you never make a mistake.

Perhaps it's about time their Superiors took a closer look at these people in authority in their Air Space Div. Honolulu. Clearly, the traffic problems at Kahului are going to get a lot worse in the foreseeable future and if the FAA continue to reject Puunene, somebody, somewhere had better come up with an alternative ASAP. And they can forget about expanding at Kahului for the

reasons discussed earlier in this letter. As residents we know why that will not happen. To put it bluntly, they blew it in 1988.

It is interesting to note that almost without exception the people in the local FSDO, the active pilots who use the airspace like the rest of us, support the idea of reactivating P.A.

As an Addendum to this letter.

With regard to your selection of a consultant for the upcoming study of Puunene, I would like to request that I be considered to assist them with the aviation aspects of the study. Clearly, and from the foregoing letter, I think you will agree that I have an intimate knowledge of what has taken place to date over action, or should I say, inaction regarding G.A. use of Puunene.

My background in aviation is extensive and as follows:

My father, who was also a pilot was a Texan, but I was born in New Zealand. During WWII I put up my age, joined the RNZAF and ended the war flying P51's. In 1946 I went crop dusting and Aero Club instructing. In 1951 rejoined the RNZAF on an 8 year short service commission. Instructed on Tiger Moths, T6's, Jet trainers, was adjutant of a P51 ANG Sqdn. then reassigned to #14 Jet Fighter Sqdn. Singapore during the Communist insurgency of Malaysia. Spent 2-1/2 years on bombing and strafing of Communist jungle camps. Resigned as a Sqdn. Ldr. and in 1958 joined Cathay Pacific Airways, Hong Kong flying DC3 and DC4 aircraft. In 1961-62 took furlough from CX and went to Laos/Thailand/Vietnam flying a variety of different piston engined aircraft for Air American/Bird and Sons. In 1962 returned to CX flying DC6, L188, CV880, B707, L1011 and 747's both in training role and as Line Capt. Ended up as Operations Manager/Director Flight Operations and still actively flying. Reached retirement age in 1982 after 25 years with the airline and in 1983 came to live in Hawaii. During those 25 years held the distinction of being the only American in an otherwise all British Commonwealth flight crew, and being directly in control of 8 x L1011's and 6 x 747 aircraft, 500 Cockpit Crew, 2,800 Flight Attendants, and 3,000 Chinese Staff.

For several years prior to retirement I was a Board Member of the Hong Kong Airport Advisory Committee. See enclosed letter. This Committee basically fulfilled the same functions as those of the DOT, Airports Division, airport expansion, security etc. and anything involved with running the airport.

From that date to the present time I have flown almost everday on Pt.135 operations with local tour aircraft and as President and Owner of American Pacific Air, Inc. I have over 30,000 hours flying time. In short I have been flying all my life.

Sincerely,

Len D. Cowper

President.

AMERICAN PACIFIC AIR.INC.

布政司署
香港下亞厘畢道

GOVERNMENT SECRETARIAT
LOWER ALBERT ROAD
HONG KONG

本函檔號 Our Ref.: ECON 2/581/67
來函檔號 Your Ref.:

20 June 1983

Captain L D C Cowper,
Cathay Pacific Airways Ltd,
Hong Kong International Airport,
Kowloon.

Dear Sir,

I have been advised by the Director of Civil Aviation that you have now retired from Cathay Pacific and are therefore unable to continue as a member of the Airport Operations Committee.

May I take this opportunity to express the Government's appreciation of the valuable contribution you have made during your service on the Committee.

Yours faithfully,

(P. Jacobs)
Secretary for Economic Services

General Aviation - Fixed Wing Operators - Kahului.

There are 30 T-hangars at the Kahului Airport. They were built for the use of pilots wishing to house one aircraft. The terms of the lease signed by the tenants prohibits their use for Commercial operation.

At present at least 1/3rd. are being used commercially, not from choice, but simply because there is no alternative accomodation available to them. Three of these hangars are being occupied by Pt.135 Operators and three of them are doubled up with more than two owners sharing a hangar.

At last count there are 28 pilots on the waiting list for a hangar with these people being forced to park their aircraft in the open space marked, 'Transient Parking Only'.

There is a desperate shortage of tie down spots. We requested 12 tie downs and were allocated 10 and as a result I have two dismantled aircraft in the garages at my home.

The bottom line to this shortage adds up to lost revenue that could have been collected by the State.

The land at Puunene, 1,785 acres, is leased to HC&S for cane cultivation. HC&S pay $1 (one dollar) per acre per year or the princely sum of under $2,000 for the lot and furthermore, do not pay any property taxes on that land.

When GA moves to Puunene we will be seeking to lease 6 acres of land and I know of many others who will seek to lease land for the purpose of building their own hangars. I very much doubt if the State will lease us the property for $1 per acre and it takes little imagination to realize the potential income that will be generated by our move to that location.

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3402

March 18, 1996

Mr. Len Cowper, President
American Pacific Air, Inc.
P.O. Box 1505
Kahului, Maui, Hawaii 96732

Dear Mr. Cowper:

Thank you for your written comments of May 11, 1994 for the Kahului Airport Environmental Impact Statement (EIS). Your concerns are addressed in the following Sections of the Draft EIS:

Airfield Capacity: Section 2.3.2	PROVIDE SAFE, EFFICIENT, ECONOMICAL AND CONVENIENT AIR TRANSPORTATION AIR FACILITIES
General Aviation: Section 4.4.3	RELOCATION OF HELICOPTERS/GENERAL AVIATION OPERATIONS TO AN OFF-AIRPORT SITE

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

JOHN P. DOUGLAS, M.D.

211 Pauahilani Place
Kailua, Hawaii 96734

Federal Aviation Administration
Airports District Office
P.O.Box 50244
Honolulu, Hawaii 96850

re: Expansion of Kahului and expansion of general aviation

Dear Sirs;
I am strongly in favor of lengthening the runway at Kahului Airport for obvious safety reasons. I also adamantly request that general aviation access to airports be increased on Maui presently and on Kauai in the future.

The runway controversy has taken an unfortunate misrepresentation by the media and public. If you have ever watched a DC-10 come to a stop with full reverse thrust at the absolute end of runway 2, it does not take much imagination to foresee the potential for a real catastrophe if the winds or landing conditions had a lengthening effect on the landing distance of such a large airplane. Maui would no longer hold the honor of the excellent recovery of the topless Aloha jet. Instead it would be known for a jumbo jet disaster in paradise solely for the lack of enough runway. What a pity that would be. It is not a matter of tourism expansion. Instead it is a matter of public safety, pure and simple.

General aviation access to Kapalua airport should be immediately implemented. The use of public funds ($22 million) to purchase this field absolutely dictates that public access should follow. The availabilityof matching Federal funds for maintenance and operation of this field is no small consideration. In times of a shrinking state economy, the public awareness of such blatant waste of annual operating monies should not be overlooked as a potent political force. Surely the opening of access to this field would have negligible noise and traffic effects if restricted to daylight and reduced power climbouts, yet would qualify the field for Federal matching funds.

These same arguments apply equally to the foreseeable acquisition of Princeville. Both Kapalua and Princeville are slightly removed from their respective major airports. Therefore the public access to these areas would be enhanced by allowing private aviation reasonable landing privileges. And hopefully some careful forethought to make Princeville open will allow the use of Federal monies in its purchase. Again, the political awareness of saving state expenses in the operation of airports is not to be underestimated. Thank you for your consideration.

Sincerely,

J. P. Douglas

cc:Maui Council, Brian Miskae, Stanford Miyamoto.

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

John P. Douglas, M.D.
211 Pauahilani Place
Kailua, Oahu, Hawaii 96734

Dear Dr. Douglas:

Thank you for your letter concerning the expansion of Kahului Airport, and general aviation at Kapalua and Princeville Airports. Your comments on Kahului Airport will be discussed in the Draft Environmental Impact Statement, as follows:

Section 2.3	PURPOSES AND NEEDS OF THE PROPOSED PROJECT
Section 4.4	OTHER RUNWAY ALTERNATIVES

As for your comments regarding the general aviation and expansion of Kapalua and Princeville Airports, they will be directed to the planners who are undertaking the State Aviation System Plan and the Princeville Airport Master Plan.

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka
Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Asociates

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

NAME: Virginia Gardner

ADDRESS: 234 A Holomakani Pl.
Kula, Hi. 96790

SUBJECT: Kahului Airport

introduction of alien species
damage to fragile environment
increase of crime
inadequate infrastructure to support increased traffic
threat to preservation of quality of life, natural beauty
and charm of Maui both for tourists and residents.

For these reasons among others I strongly oppose a longer runway and/or international airport on Maui. This little island is bulging at the seams now. Residents do not have adequate affordable housing, decent jobs or good schools. Many are angry or have been brainwashed to believe they must sacrifice their way of life in order to survive. If Maui becomes another Waikiki, we will not have an alternative here to offer visitors. Mindless unrestricted development is not the answer.

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
96.079

March 14, 1996

Ms. Virginia Gardner
234 A Holomakani Place
Kula, Maui, Hawaii 96790

Dear Ms. Gardner:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your comments at the Scoping Meeting on May 18, 1995 for the subject Environmental Impact Statement (EIS). Your concerns are addressed in the following sections of the Draft EIS.

1. Introduction of Alien Species:
   Section 3.11 Biotic Communities

2. Damage to Fragile Environmental:
   Section 3.11 Biotic Communities

3. Increase of Crime:
   Section 3.5 Socio-economic Impacts
   Section 3.6 Induced Socio-economic Impacts
   Section 3.22.4 Police and Fire Services and Public Safety

4. Inadequate Infrastructure to Support Increase Traffic:
   Section 3.22.8 Surface Transportation System

5. Threat to Preservation of Quality of Life, Natural Beauty and Charm or Maui Both for Tourists and Residents:
   Section 2.3 Purpose and Needs of the Proposed Project
   Section 3.0 Affected Environment, Probable Consequences and Mitigation Measures
   Section 3.5 Socio-economic Impacts

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Kanaha Pond Advisory Committee
Dr. Renate Gassmann-Duvall, Chair
534 Olinda Road
Makawao, HI 96768-9102

May 26. 1994

Federal Aviation Administration
Airport District Office. Honolulu
Attn: Mr. David Wellhouse
P.O. Box 50244
Honolulu, HI 96850
and
State of Hawai'i
Department of Transportation
Attn: Mr. Ben Schlapak
400 Rodgers Blvd. Suite 700
Honolulu. Hawai'i 96819-8821

Dear Sirs:

Thank you for coming to Maui May 18, 1994 for scoping meetings on the Kahului Airport Federal Environmental Impact Statement.

In reviewing your handout. we wish to convey the following concerns:

1) The proposed developments #7 and #8 (Lease lots Ground Transportation Facilities along Keolani Place) Fig. 3 (2010 Airport Master plan Phase 3).

These lots are inside or directly bordering the existing perimeter of Kanaha Pond Wildlife Sanctuary [KPWS]. To our understanding both areas (#7,#8) are wetland and have to be seen as an integral part of the sanctuary complex. Any commercial use here would destroy. by filling. essential habitat for Hawaiian waterbirds including three endangered species. This is wholly unacceptable.

2) The future fuel line from the harbor along Amala Place and up to Kalialinui Gulch (2010 Airport Master plan Phase 1.2.3).

This fuel line is unacceptable due to its proximity to KPWS [as well as the shoreline and Kalialinui Gulch]. It will create an unacceptably high risk that either tsunami. earthquakes, or subsidence due to shoreline loss. etc., could all lead to its rupturing with leakage into KPWS.

3) Bulk fuel storage tanks #10 Fig. 2 (2010 Airport Master Plan Phase 2) adjacent to Kalialinui Gulch. Such tanks, if somehow damaged. in such location. would cause an extraordinary risk to pollution of both KPWS and the ocean environment.

As you might be aware KPWS is a Natural & National Landmark and Hawaii's oldest most viable Wildlife Sanctuary. It is currently listed as important essential habitat for three federally-listed endangered species of Hawaiian waterbirds (Hawaiian Stilt Himantopus mexicanus. Hawaiian Coot Fulica alai and Hawaiian Duck Anas wyvilliana). The USFWS considers KPWS as resource Category Type I Under this categorization the habitat is unique and irreplaceable. Further attempts to constrict this wetland sanctuary cannot be accepted.

Thank you for your immediate attention to these important issues. We would appreciate a written response to our concerns at your earliest convenience.

Respectfully,

Dr. Renate Gassmann-Duvall. Chair
Kanaha Pond Advisory Committee

cc: Elizabeth Anderson. County of Maui Planning Department
Denise Antolini. Sierra Club Legal Defense Fund
Karen Evans. U.S. Fish & Wildlife
Mary Evanson. Sierra Club Maui Group
David Hill. Hawaii Audubon Society
Michael Lee. Army Corps of Engineers
Steven Montgomery. Conservation Council for Hawaii
Linda Nelson. Native Hawaiian Plant Society
Ronald Walker. Hawaii Division of Forestry and Wildlife

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
96.080

March 14, 1996

Dr. Renate Gassmann-Duvall, Chair
Kanaha Pond Advisory Committee
534 Olinda Road
Makawao, Maui, Hawaii 96768-9102

Dear Dr. Gassmann-Duvall:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your comments on May 26, 1994 on the subject Environmental Impact Statement (EIS). Your concerns will be addressed in the following sections of the Draft EIS.

1. Proposed Developments #7 and #8.

   The boundary of the Kanaha Pond Wildlife Sanctuary (KPWS) is being revised to include the Keolani Place lease lots (#7) mentioned in your letter.

   The impacts of the Ground Transportation facility expansion, Lease Lots (#8), are addressed in Section 3.11, Biotic Communities. The Wetlands are discussed in Section 3.12, Wetlands.

2. The Future Fuel line from Harbor to Airport Bulk Fuel Storage (Beyond Phase 3):
   Section 3.0 Affected Environment, Probable Consequences, and Mitigation Measures

3. Bulk Fuel Storage Tanks:
   Section 3.0 Affected Environment, Probable Consequences, and Mitigation Measures

Section 3.4	Geology, Physiography, Soils, Agricultural Potential and Earthquakes
Section 3.8	Water Quality
Section 3.13	Hydrology, Floodplain Management and Drainage

4. Kanaha Pond Wildlife Sanctuary:
   Section 3.11 Biotic Communities
   Section 3.12 Wetlands

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

For the Protection of Hawaii's Native Wildlife

1088 Bishop St. Ste.
[illegible]
HONOLULU, HAWAII [illegible]

HAWAII AUDUBON SOCIETY

May 17. 1994

FEDERAL AVIATION ADMINISTRATION
Airports District Office
Box 50244
Honolulu, HI 96850-0001

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 Punchbowl Street
Honolulu, HI 96813

SUBJECT: Scope of issues for the Federal Environmental Impact Statement for the Kahului Airport Expansion.

I am speaking today on behalf of the Hawaii Audubon Society as its Maui Representative. We thank-you for this opportunity to comment on the Federal Environmental Impact Statement's (FEIS) scope for the planned expansion of the Kahului Airport.

We are most concerned with the effects that the proposed airport expansion, and runway lengthening, will have on the birdlife at the adjacent very important wetland and wildlife sanctuary, the Kanaha Pond Wildlife Sanctuary. Kanaha Pond Wildlife Sanctuary is currently important essential habitat for three federally listed Endangered Species of Hawaiian Waterbirds (Hawaiian Stilt Himantopus mexicanus, Hawaiian Coot Fulica alai, and Hawaiian Duck Anas wyvilliana). The already published environmental impact statement by the State of Hawaii was not adequate with respect to effects of airport expansion on KPWS. Important issues that we should like to see addressed by the FEIS are listed below:

Noise disturbance to birds by increased number of flights, expansion of facilities and its associated traffic and adjacent development.

Effects of increased light levels caused by aircraft or surrounding development associated with expansion on KPWS' birds, as well as effects on seabird groundings.

Effects of increased influx of new alien species (e.g. snakes, or new bird-biting mosquito species) associated with expansion.

Effects of increased predator pressure (e.g. rats, feral cats, dogs etc.) on birds, on nesting success, etc.

Risks of increased bird-aircraft airstrikes [Three known aircraft-airstrike kills of the endangered Hawaiian Stilt occurred in 1993; how will recurrent kills, or "take" under Endangered Species Act provisions. be handled by FAA?]

Methods for rectifying the current contradiction between the Hawaiian Waterbirds Recovery Plan (USFWS 1985) mandate to increase the numbers of endangered waterbirds at KPWS and the FAA-DOT-DLNR's memorandum of agreement on KPWS-management, in light of airport expansion and increases in air-traffic.

Finally, the "Terrestrial Fauna Study" as prepared for the state environmental impact study was insufficient, since it only focused on effects of runway extension of 5-23. It needs to be redone in view of the current airport expansion and development proposal.

Thank-you again for this opportunity to comment on this matter.

Respectfully submitted,

Dr. Renate Gassmann-Duvall
Maui Representative
Hawaii Audubon Society

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Dr. Renate Gassman-Duval
Maui Representative
Hawaii Audubon Society
1088 Bishop Street, Suite 808
Honolulu, Hawaii 96813

Dear Dr. Gassman-Duval:

Thank you for your letter of May 17, 1994 on the Scoping Meeting for the Kahului Airport Environmental Impact Statement (EIS). Your concerns are addressed in the following Sections of the Draft EIS:

Kanaha Pond Wildlife Sanctuary:
- Section 3.9 DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(F)
- Section 3.1 BIOTIC COMMUNITIES
- Section 3.12 WETLANDS

Alien Species:
- Section 3.11 BIOTIC COMMUNITIES

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

Carolann G. Guy
330-A Naniloa Drive Wailuku Hawaii 96793(808)244-3589*

May 18, 1994
Kahului Airport: EIS Scoping Meeting/Gates 35 to 40

Greetings. My name is Carolann Guy, I am concerned that failure to move forward decisively and expeditiously on the Kahului runway extension will adversely impact Maui's economic well-being. Therefore, I ask that the EIS process move decisively, expeditiously and thoroughly to a sound resolution.

At 38 years old, a part of Maui's workforce and God willing, expect to continue for 25 - 30 years. And yes, like many others I also expect to retire on Maui.

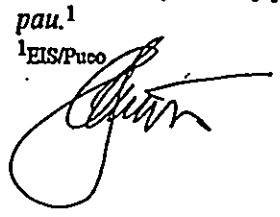
However, at this precise moment, together with my husband, we await the arrival of our first born child any time soon.

What in the world has this to do with our local economy's health and Maui's need for a longer runway?
While I can speak to you about the significance of tourism and maintaining this major industry's vitality in meeting the foreign competition. Or extending our hospitality to inner America through direct routes. And the economic efficiency for airlines if this runway is completed quickly. We have already witnessed flight service reduced to/from Maui. Or perhaps the 43,000 jobs linked to this single industry through direct or emerging opportunities. And many of these careers are agriculturally related. Agriculture that provides green beltways, reasonably priced fresh produce and flowers and protects us from unbridled development. Or I can speak to you about the possibilities that exist for diversification that a reliable and affordably efficient transportation hub offers to Maui's future. We have also witnessed the impacts that reduce this area of welcome growth.

However, I invite you to expand your attention to another area of measurable shrinkage.
My mother-in-law has waited 80 years for this birth. Although she has several other grandchildren, this grandchild will be the first to be born here in Hawaii or even on Maui.
You see, the rest of her children did not return after college. 20+ years ago, Maui lacked the economic opportunities and diversity to offer foreseeable economic stability and possibility to attract her children back to Maui's shores. As a result, we've lost the vigor of that generation, the influence of their education and the emotional anchor of intergenerational family life.
And this is not isolated. So many of Maui's tutus and tutukanes must travel regularly to participate in their grandchildren's milestone events - baptisms, communions, graduations, weddings, etc.
Have we considered what a community built without young adults will become? The common term - brain drain? Have we considered that this single phenomenom is likely responsible for diminishing the Hawaiian culture? When we have no youth to whom we may pass the traditions and culture, does it not die with the elders?

It is 20 years later. My husband and I look toward 20 years from now. Will we too face the same daunting choice? Sending our child to college with the bleak prospect of her return? Will she decide in the year 2012 that Maui lacks the will to offer her economic mobility, opportunity and stability because of what we fail to accomplish today? We sincerely hope not.
Preserve the future by preserving Maui's economic viability.
pau.[1]

[1]EIS/Puco



NO 3

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
96.075

March 14, 1996

Ms. Carolann G. Guy
330-A Naniloa Drive
Wailuku, Maui, Hawaii 96793

Dear Ms. Guy:

Subject: Joint State/Federal Environmental Impact Statement
Scoping Meeting, Kahului Airport
State Project No. AM1011-07

Thank you for your letter comments of May 18, 1994 on the Scoping Meeting for the Kahului Airport Environmental Impact Statement (EIS). I believe your concerns are addressed in the following sections of the Draft EIS:

1. Economic Impacts:
Section 3.5 Socio-Economic Impacts
Section 3.6 Induced Socio-Economic Impacts

2. Growth Impacts:
Section 6.0 Growth Inducing Impacts

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

NAME: ABBY JANIS

ADDRESS: 884 West Mokuea Place
Kahului, Maui, HI 96732

SUBJECT: Regarding the airport Landing Strip extension ~
Most 'important to me. is SAFETY. I feel
the runway NEEDS to be long enough for the
the aircraft we have Flying in. I have heard
Pilots claim that they feel it is Not Long enough
Now for the Jets that we have Flying in
Now.
If the 747'S will be flying in --- we need to
make Sure the Island is Ready to handle the large
amount of People that will arrive at one time.
We need to make SURE the run way is
Safe with leeway in case of emergency. We
have to make Sure the Island is equipped to
handled emergency of aircraft that large.

I am most Concerned About SAFETY All the
way — all aspects.

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
96.089

March 14, 1996

Ms. Abby Janis
884 West Mokuea Place
Kahului, Maui, Hawaii 96732

Dear Ms. Janis:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your statement at the Scoping Meeting on May 18, 1994 for the subject Environmental Impact Statement (EIS). Your concerns will be addressed in the following sections of the Draft EIS.

1. Airfield Length:
   - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
   - Section 2.4.4 Proposed Airfield Developments
   - Section 4.3 Master Plan Alternatives
   - Section 4.4 Other Runway Alternatives

2. Infrastructure and Safety:
   - Section 3.22 Public Facilities, Infrastructure and Services and Aviation Safety

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

NAME: HARVEY JANIS

ADDRESS: 100 HAUOLI ST #401
WAILUKU, HI 96793

SUBJECT: AIRPORT RUNWAY EXTENSION

AM IN FAVOR OF THE EXTENSION FOR SAFETY. I HAVE HEARD SEVERAL ACCOUNTS OF NEAR ACCIDENTS FROM PILOTS, ETC. BECAUSE OF THE SHORT RUNWAY

Harvey Janis 5/18/94

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
96.090

March 14, 1996

Mr. Harvey Janis
100 Hauoli Street, #401
Wailuku, Maui, Hawaii 96793

Dear Mr. Janis:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your comments at the May 18, 1994 Scoping Meeting for the subject Environmental Impact Statement (EIS). Your concerns will be addressed in the following sections in the Draft EIS.

1. Airfield Length:
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   - Section 2.4.4 Proposed Airfield Developments
   - Section 4.3 Master Plan Alternatives
   - Section 4.4 Other Runway Alternatives

2. Infrastructure and Safety:
   - Section 3.22 Public Facilities, Infrastructure and Services and Aviation Safety

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

NAME: LOIS JANIS Lois T. Janis

ADDRESS: 100 HAUOLI STREET #401
WAILUKU, HI 96793

SUBJECT: KAHULUI AIRPORT STUDY

I AM INTERESTED IN A RUNWAY EXTENSION IF:

1) IT WILL PROVIDE GREATER SAFETY FOR AIRLINE PASSENGERS

2) USE OF THE NEW RUNWAY BY LARGER PLANES CARRYING MORE PASSENGERS WILL NOT BE ABUSED ONCE THE EXTENSION IS BUILT

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
96.091

March 14, 1996

Ms. Lois Janis
100 Hauoli Street, #401
Wailuku, Maui, Hawaii 96793

Dear Ms. Janis:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AH1011-07

Thank you for your statement at the May 18, 1994 Scoping Meeting for the subject Environmental Impact Statement (EIS). Your concerns will be addressed in the following sections of the Draft EIS.

1. Airfield Length:
   - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
   - Section 2.4.4 Proposed Airfield Developments
   - Section 4.3 Master Plan Alternatives
   - Section 4.4 Other Runway Alternatives

2. Infrastructure and Safety:
   - Section 3.22 Public Facilities, Infrastructure and Services and Aviation Safety

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

ASTON
ASTON KAANAPALI SHORES
100 Kaanapali Shores Place • Lahaina, Hawaii 96761 • 808-667-2211

May 24, 1994

Mr. David Welhouse
FAA
Airports District Office
P.O. Box 50244
Honolulu, Hi 96850

Dear Mr. Welhouse,

Concerning the study being done on Kahului (OGG) Airport; I would like to see the runway extended for safety reasons.

I am a pilot and aircraft owner and fly frequently out of OGG and see no safety concerns for myself or my 172 Cessna.

The problem I have observed was on a NO WIND day with a WET runway a DC-10 heavy landed a bit long and was barely able to stop before the end of runway 02. The plane shuddered and you could sense the almost panic situation as the nose dug into the runway end.

Before coming to Maui in 1978 I lived in the Virgin Islands and the same safety concerns were voiced on the existing 4000 foot runway at St. Thomas being used by 727 aircraft. It wasn't until an American 727 went off the end of the runway through a gas station killing 36 people that the runway was extended.

I urge you to not let this happen on Maui as runway 02 ends very close to the ocean.

Sincerely,

William Kehoe

William Kehoe
3445 L. Honoapiilani Hwy.
Lahaina, HI 96761

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3452

March 12, 1996

Mr. William Kehoe
3445 L. Honoapiilani Highway
Lahaina, Maui, Hawaii 96761

Dear Mr. Kehoe:

Thank you for your letter of May 24, 1994, regarding the Kahului Airport Environmental Impact Statement. Your concerns will be addressed in the following sections of the Draft EIS:

Section 2.3.2	PROVIDE SAFE, EFFICIENT, ECONOMICAL AND CONVENIENT AIR TRANSPORTATION FACILITIES
Section 3.22.9	AVIATION SAFETY

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

ISAAC DAVIS HALL
ATTORNEY AT LAW
2087 WELLS STREET
WAILUKU, MAUI, HAWAII 96793
(808) 244-9017
FAX (808) 244-6778

OF COUNSEL:
D. RICHARD GESCH

May 18, 1994

Mr. David J. Welhouse
Federal Aviation Administration
Airports District Office
PO Box 50244
Honolulu, HI 96850

Mr. Ben Schlapak
Airports Division
Dept. of Transportation
State of Hawaii
400 Rodgers Blvd.
Suite 700
Honolulu, HI 96819-1898

Re: Scope of Joint Federal and State EIS for the Kahului Airport

Dear Federal Aviation Administration and Department of Transportation:

This letter is submitted on behalf of the Maui Air Traffic Association, Inc., the Maui Group of the Sierra Club, Mary Evanson, Hui Alanui o Makena and Dana Naone Hall. All of the above formally request to be consulted parties in the preparation of an adequate joint Environmental Impact Statement ("EIS") for the Kahului Airport. It is hoped that the Federal Aviation Administration ("FAA") and the Department of Transportation ("DOT") will liberally consult with the groups and individuals listed above through the law offices of Isaac Hall to obtain information and guidance which will help assure that the joint EIS meets all state and federal requirements. We have the following comments on matters that are properly within the scope of the joint EIS which should be discussed in detail.

1. Withdrawal of the State Final EIS

DOT had prepared and accepted a Final EIS. The acceptance for this EIS, and the EIS itself, should be withdrawn, as it is legally impossible to prepare this EIS and leave the earlier prepared, inadequate document in place. The earlier EIS preparation notice published in the Federal Register and the OEQC Bulletin should be withdrawn for the same reason. The preparers of this EIS must not, in any way, adopt or rely upon the earlier EIS or the studies prepared for it as they are wholly inadequate and unacceptable.

2. Public withdrawal of commitment to projects

The EIS is to be prepared before any commitment is made to any particular alternative in order to provide the greatest flexibility in planning and decision-making and to avoid any premature adoption of a plan of action before the EIS has been prepared.

DOT is already committed to the 9,600 foot runway. DOT already adopted and approved this alternative. DOT has sought a boundary amendment and a change in zoning for the 9,600 foot runway. DOT is already designing the 9,600 foot runway. DOT has already purchased property, with public funds necessary for this extension.

This joint EIS will be a sham unless DOT, publicly and in writing, withdraws its commitment to the runway extension to 9,600 feet, and other Kahului Airport projects, and withdraws its applications for all permits or approvals for these particular projects.

3. Politics should not be allowed to influence the EIS process

In the preparation of the prior EIS, politics were allowed to supercede and distort the environmental process. The primary consultant, Belt Collins, met regularly with both DOT, and the sub-consultants preparing studies for the EIS, to determine what DOT wished to do and to orchestrate and coordinate studies to advocate DOT's positions, to obscure important environmental issues and to try to argue against those whom they felt were "opponents."

A lobbying front, called the Pueo Coalition, was comprised of the hotel industry, the tourism industry, the Maui Chamber of Commerce and the construction industry, among others, supported DOT's Kahului Airport expansion plans, including, most importantly, the extension of Runway 2-20 to 9,600 feet. Pueo's primary concerns were "jobs" and facilitating visitor industry growth, and little concern was expressed about mitigating the adverse impacts of the airport, such as could be accomplished through the adoption of operational noise restrictions, the implementation of measures to prevent the introduction of alien species, the protection of endangered species and assuring that the necessary physical and social infrastructure is in place.

All too often DOT, Belt Collins and the sub-consultants were in league with those who sought the expansion of the airport for purely economic reasons. This, unfortunately, is already occurring during the preparation of the new joint EIS, as is documented by the following:

a. After E.K. Noda and Associates was awarded the primary contract for the joint EIS, its representatives were paid by DOT to observe and provide assistance to DOT during

the Land Use Commission proceedings on Maui involving the extension of Runway 2-20 to 9,600 feet; and

b. The DOT and the FAA scheduled a private, separate meeting with the Pueo Coalition on Tuesday, May 17, 1994 to help prepare them for the public scoping meeting. I asked to be present during the morning meeting and was told that I could not attend. The DOT would not permit others to attend this private meeting. DOT invited others to attend a "separate but equal" meeting that afternoon.

Separate private meetings are wholly inconsistent with the intent of both NEPA and HEPA and serve to provide the basis for reaching understandings between DOT, the FAA and special interest groups such as the Pueo Coalition. Scoping sessions must be "open." Pre-scoping session "closed" meetings with expansion advocates violates NEPA.

The FAA and DOT have apparently decided that proponents and opponents of airport expansion cannot have an open, public dialogue. This is false, and such a presumption violates NEPA and HEPA and will only contribute to the preparation of an unacceptable document. The members of the Maui community are capable of designing an airport which is also compatible with the surrounding environs.

4. The scope of the EIS is established by law and court orders

The scope of this EIS is already established by the National Environmental Policy Act of 1969, as amended ("NEPA"), and Chapter 343, Hawaii Revised Statutes, as revised ("HEPA"), the regulations respectively promulgated thereunder and case law construing these statutes and regulations.

The scope of this EIS has also been determined based upon court orders in the Second Circuit Court which bind DOT, and effectively the FAA as well, with respect to this joint EIS.

To save time, the information contained within the request to be a consulted party, dated August 8, 1990, included in the comments on the prior draft EIS, dated November 22, 1991 and within other letters to DOT and in the pleadings of the relevant court cases, are hereby incorporated by reference.

5. Timetable for EIS, Acceptance, Agency Decisions and Implementing Actions

The FAA and DOT, and the joint EIS should disclose the timetable for the preparation of the EIS, its acceptance, agency selection of alternatives and adoption of a plan of action and implementing actions, such as design-work, permitting, expenditures of public funds, and the like.

6. Incorporation of Part 150, General Aviation and Biological Opinion studies within the EIS

NEPA and FAA regulations encourage the incorporation of certain studies into the EIS process and the EIS itself. The Maui General Aviation Study, the Kahului Airport Part 150 Noise Compatibility Study, the Biological Opinion on Endangered Species and all other necessary studies should be conducted and completed before the new joint Draft EIS is published.

The Noise Compatibility Study must study all of the operational restrictions which the FAA has agreed, in its own regulations, may be imposed.

7. Review of project as a whole

The EIS cannot be limited to the six proposed improvements listed in the Notice of the Public Scoping meeting. NEPA and HEPA require that these improvements be studied within the context of the airport expansion project as a whole. These would include all projects in the June, 1993 Master Plan and those projects shown on the amended Airport Layout Plan.

To the extent that the FAA and DOT plan to include within the scope of this EIS (a) the construction of Phase II of the passenger terminal building, (b) international flight operations and facilities, and (c) a long term helicopter facility, the proposed locations for these facilities should be clearly shown. The precise actions which must be taken to internationalize the Kahului Airport should be described in detail, with particular reference to those which have already occurred.

The previous EIS indicated that (a) there would be no international flight operations or facilities prior to the year 2010 and that (b) any long term helicopter facility would be located away from the Kahului Airport. Alternatives such as not including international flight operations and facilities at the Kahului Airport and locating long term helicopter facilities elsewhere should be studied in the joint EIS.

8. Study of all significant environmental, economic and social issues

Airport expansion, and particularly runway extensions, are infrastructural improvements that induce growth. Even if the DOT disagrees with this position, it constitutes a reasonable, opposing view which should be fully explored.

The geographical scope of the impacts of the airport expansion cannot be limited to those experienced within the airport boundaries or to areas immediately surrounding the airport. For example, noise impacts, traffic impacts and alien species introduction impacts are island-wide in scope. The FAA and DOT should not attempt to ignore noise impacts on ocean recreation areas or on endangered species at Kanaha Pond. Nor should the impacts of alien species introductions at Haleakala National Park or upon farms and agricultural/ horticultural activities in Maui's rural areas be ignored. Traffic impacts on our major arteries to resort destination areas also must be analyzed.

We note again the necessity of addressing impacts upon endangered species at Kanaha Pond and Haleakala National Park. Records exist of aircraft killing endangered stilts in landing and taking off at the airport. A biological opinion should be written on these killings or strikes and on the impacts of aircraft noise and lights on endangered species at Kanaha Pond.

The FAA and DOT must conduct all necessary research and studies to allow for the proper assessment of environmental impacts. Impacts upon parklands, wetlands, water quality and endangered species all require special assessment. Phil Bruner, based upon the report submitted in the earlier EIS, is not competent to study endangered species.

Often the scope of an EIS is prematurely established through agreed-upon "scope of work" sections in contracts between the FAA and DOT and the prime consultants and sub-consultants. These must be disclosed now.

9. This EIS should actually develop mitigation measures that solve difficult environmental problems

In the past DOT, its consultants and monied special interest groups have refused to develop or support mitigation measures to reduce adverse environmental impacts to acceptable levels, it appears, simply because they do not want to do anything that those concerned with the effects of airport expansion on the environment think is necessary. This

violates NEPA and HEPA. At a minimum, the following mitigation programs should be developed through this EIS:

a. An operational noise abatement program

It is imperative that in this EIS an operational noise abatement program be developed in detail, which can be implemented prior to any runway extension, to reduce significant adverse noise impacts on surrounding residential neighborhoods in Spreckelsville, in Kahului, on endangered species at Kanaha Pond and on ocean users. It is important that this noise abatement program be fully funded and that restrictions be placed upon aircraft operations rather than requiring the forced relocation of neighboring residents.

b. Prevention of the introduction of alien species

It is imperative that a program be developed in the EIS, that can be implemented prior to extending any runways and prior to internationalizing the airport, to prevent the introduction of further alien species. Any increased introductions harms Maui's farmers, endangered species and parks, including Haleakala National Park.

c. Protect endangered species

Endangered species are already in jeopardy as a result of aircraft operations at the Kahului Airport. A program needs to be developed through the EIS, which can be implemented before any runway extensions, that protects endangered species and helps them to increase in numbers. DOT and FAA must relinquish their control over Kanaha Pond to assure that violations of the Endangered Species Act will not continue in an attempt to serve aviation interests.

d. Concurrently address infrastructural deficit

A program must be developed through the EIS, which can be implemented prior to the extension of any runways, that, at an absolute minimum, assures that our major roadway arteries to tourist destination areas are capable of handling the increased traffic generated at the airport.

10. Aviation demand calculations must be revised

The aviation demand figures utilized in the prior EIS to justify the airport expansion project are now totally outdated. These figures must be revised. These demand figures should reflect the decreased traveler interest in Hawaii, the higher cost of air travel to Hawaii and the decrease in numbers of routes and seats devoted by air carriers to Hawaii.

11. Revised project costs

The cost figures for the airport improvements used in the prior EIS must be revised. The revenues from the duty-free lease have plummeted. Greater reliance is now being placed upon increases in airport landing fees, such that airport improvement costs will be passed on to consumers who must pay more to travel.

12. The alternatives to be examined in the EIS should be expanded

The alternatives to be examined, as listed in the notice for the public Scoping Meeting, are too constricted and should be expanded.

Extending Runway 2-20 to 8,500 feet and not extending the runway at all should be studied in detail. Runway 2-20 need be no longer than 8,500 feet to facilitate direct, non-weight-restricted, flights to the West Coast. A 9,600 foot runway has greater adverse environmental impacts and facilitates internationalization.

The alternative of relocating general aviation operations elsewhere should be reviewed within the context of decreasing the need to construct a parallel runway.

Relocating helicopter operations to a facility outside of the airport boundaries should be fully addressed along with helicopter noise impacts.

The alternative of limiting the number of international airports to those which already exist, instead of having an international facility in each county, should be discussed as an alternative which decreases the potential for pest introductions.

This comment upon the proper scope of the joint EIS could continue in detail. We feel that prior letters to the FAA and DOT have made our concerns with the proper scope and breadth of this EIS clear.

It must be frankly acknowledged that the Kahului Airport was originally placed in a sensitive environmental area. It is surrounded by habitats for endangered species, park lands, significant coastal resources and residential areas. The Kahului Airport cannot expand unless and until it is made compatible with its surrounding environment.

We do not wish to be viewed as the opponents or those who would not be satisfied with any EIS that may be prepared. We truly feel that the EIS process should lead to the design of an airport which can be accepted by all members of the Maui community, especially if that design incorporates mitigation measures for an operational noise mitigation program, the actual prevention of the further introduction of further alien species, the protection of endangered species, the elimination of the physical and social infrastructural deficits, among other appropriate measures.

We want to work closely with you to help develop an EIS which fully addresses and analyzes all the environmental impacts which will be generated by an expansion of the Kahului Airport. We look forward to the preparation of a joint EIS which is in accordance with NEPA and HEPA, the respective underlying regulations and relevant court orders.

Sincerely yours,

Isaac Hall

IH/jp

BENJAMIN J. CAYETANO
GOVERNOR

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
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400 RODGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1880

IN REPLY REFER TO:
AIR-EN
96.073

March 14, 1996

Mr. Isaac D. Hall
Attorney at Law
2087 Wells Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Hall:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your letter of May 18, 1994 regarding the subject Environmental Impact Statement (EIS). The following is a response to your concerns in the order presented. A list of the corresponding sections of the Draft EIS addressing your concerns is also included.

1. The previous State EIS prepared for Kahului Airport will not be withdrawn, but will be superseded by this Joint State/Federal EIS.

2. The Federal Aviation Administration (FAA) and the State of Hawaii, Department of Transportation (HDOT), are following the State and Federal Guidelines for the preparation of the Joint EIS. As such, all reasonable alternatives to the Proposed Project will be examined.

3. The Airports Division is willing to meet with all groups interested in the Kahului Airport project. As you know, representatives of the Airports Division are participating in meetings with you and representatives of the Pueo Coalition in an attempt to resolve differences between the parties at the "Kahului Airport Expansion Dispute Resolution Committee" meetings.

4. Section 1.0, Introduction and Summary, and Section 8.0, Other Related Issues, of the Draft EIS deals with the preparation and compliance of the FAA and HDOT with the applicable laws and court-ordered stipulations. The information from the previous State EIS and court cases have been considered in the preparation of this EIS.

5. The Draft EIS will be available for review shortly. It is expected that the Final EIS will be available in mid- to late 1996. The phasing for the Proposed Project are discussed in Section 2.5 of the Draft EIS.

6. The results of the technical studies including the FAR Part 150 Noise Compatibility Program, Maui General Aviation Site Selection Report, and Flora and Fauna studies used in preparing the Draft EIS are included as Appendices to the Draft EIS.

7. The EIS is being prepared in compliance with both NEPA and HEPA. A list of projects to be addressed in the EIS is presented in Section 2.4, "the Proposed Project," of the Draft EIS.

The following is a list of the corresponding sections of the Draft EIS which addresses your concerns.

Internationalization:
Section 6.0 Growth Inducing Impacts
Section 8.0 Other Related Issues

Helicopter Facilities:
Section 4.4.3 Relocation of Helicopters/General Aviation Operations to an Off-Airport Site

8. Your comments on the environmental impacts are addressed in Section 3.0, Affected Environmental, Probable Consequences and Mitigation, and Section 4.0, Alternatives to the Proposed Project.

9. The environmental impacts and mitigation measures are described in Section 3.0, Affected Environment, Probable Consequences and Mitigation Measures, of the Draft EIS.

10. The aviation demand forecast for Kahului Airport was revised in the report, "Update of Hawaii Aviation Demand Forecasts," (Aries Consultants, Ltd., October 1994). The revised forecast is discussed in Section 1.8.3, Update of Hawaii Aviation Demand Forecasts.

11. The Costs for the Proposed Project are presented in Section 2.5, Project Phasing of the Draft EIS. The economic impacts of the Proposed Project is addressed in Section 3.5, Socio-Economic Impacts of the Draft EIS.

12. The Alternatives to the Proposed Project and the impacts are discussed in Section 4.0, Alternatives to the Proposed Project.

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
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FAX: (808) 541-3462

March 12, 1996

Mr. Isaac Davis Hall
2087 Wells Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Hall:

Thank you for your letter of May 18, 1994 regarding the subject Environmental Impact Statement (EIS). The following is a response to your concerns in the order presented, and with the appropriate sections of the Draft EIS noted:

1. The previous State EIS prepared for Kahului Airport will not be withdrawn, but will be superseded by this Joint (State-Federal) EIS.

2. The Federal Aviation Administration (FAA) and the State of Hawaii, Department of Transportation (HDOT) are following the State and Federal guidelines for the preparation of the Joint EIS. As such, all reasonable alternatives to the Proposed Project will be examined.

3. The Airports Division is willing to meet with all groups interested in the Kahului Airport Project. Representatives of the Airports Division are participating in meetings with you and representatives of the Pueo Coalition to attempt to resolve differences between the parties at the "Kahului Airport Expansion Dispute Resolution Committee" meetings.

4. Section 1.0, Introduction and Summary, and Section 8.0, Other Related Issues, of the Draft EIS deals with the preparation and compliance of the FAA and HDOT with the applicable laws and court-ordered stipulations. The information from the previous state EIS and the court cases has been considered in the preparation of this EIS.

5. The Draft EIS will be available for review shortly. It is expected that the Final EIS will available in mid-1996. The phasing for the Proposed Projects are discussed in Section 2.5 of the Draft EIS.

6. The results of the technical studies including the FAR Part 150 Noise Compatibility Program, Maui General Aviation Site Selection Report and Flora and Fauna studies used in preparing the Draft EIS are included as Appendices to the Draft EIS.

7. The EIS is being prepared in compliance with both NEPA and HEPA. A list of the projects to be addressed in the EIS is presented in Section 2.4, "the Proposed Project," of the Draft EIS. In addition, the following is a list of the corresponding sections of the Draft EIS which pertain to your comments:

Internationalization	
Section 6.0	Growth Inducing Impacts
Section 8.0	Other Related Issues
Helicopter Facilities	
Section 4.4.3	Relocation of Helicopters/General Aviation Operations to an Off-Airport Site

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11. The costs for the Proposed Project are presented in Section 2.5, Project Phasing of the Draft EIS. The economic impacts of the Proposed Project is addressed in Section 3.5, Socio-Economic Impacts of the Draft EIS.

12. The Alternatives to the Proposed Project and the impacts are discussed in Section 4.0, Alternatives to the Proposed Project.

Thank you for your comments during the Scoping Process. The EIS will be prepared in compliance with NEPA and HEPA. We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

Maui Tomorrow
P.O. Box 1497
Wailuku, Maui, Hawaii 96793
phone & fax: (808) 877-2462

federal Aviation Administration
Airports District Office
PO Box 50244
Honolulu, Hawai'i 96850

TESTIMONY TO THE FEDERAL AVIATION ADMINISTRATION REGARDING PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED EXPANSION AND RUNWAY EXTENSION AT KAHULUI AIRPORT

On behalf of our members - nearly 700 residents of the County of Maui, and numerous other State residents, part-time residents and tourists - the Board of Directors of Maui Tomorrow has asked me to submit these comments and suggestions regarding specific items that must be analyzed and published in the preparation of an environmental impact statement.

Our comments, which address five major focus areas including economic impacts, safety, internationalization, environmental impacts, and social impacts, are relevant to the analysis of all proposed action alternatives.

It should be remembered that the EIS law requires the production of a disclosure document , nothing less. After full disclosure of all potential impacts of a project, decision makers are allowed to make whatever decision they feel to be most appropriate, given full knowledge of those impacts .

In this vein, we insist that the document discuss the full range of impacts for each project proposed in the master plan. For every facility requirement discussed, all potential impacts of each project should be discussed. Furthermore, each project's impacts should be fully and individually discussed for each area of impact, whether social, economic, environmental, or other.

The EIS should cover impacts on all areas of air, land, and water that may potentially be affected by either primary or secondary impacts of any of the projects proposed. Due to the scale and nature of the projects proposed, impacts on all areas of Maui, Moloka'i, Lana'i, and Kaho'olawe should be disclosed. For example, scenic tour aircraft facilities may have noise impacts in areas far beyond the airport environs. Another example is that of introduced pest species, which, once established, may migrate far from the airport site, wreaking ecological, agricultural, and economic havoc in our national park and farming industry.

Economic Impacts

It has not yet been shown that the net effect of the runway extension would be diversification of Maui's economic base. Indeed, if the runway extension is more of a stimulus to tourism than it is to agriculture, the result will be a less diversified economy.

In the Maui County General Plan , (Section II - Economic Activity, Part B - Visitor Industry) Objective 2 states:

> *"To control the development of visitor facilities so that it does not infringe upon the traditional social, economic and environmental values of our community."*

An examination should be made of the possibility that runway extension would disrupt agricultural and social pursuits, and of whether the County's natural resources will be further depleted. The EIS should study the potential that further growth in tourism would accelerate the decline of the agricultural and manufacturing sectors of our economy.

Agricultural pests would severely hamper efforts to diversify our economic base by making it harder (more costly) for diversified agriculture to succeed.

Recent pest introductions, otherwise known as "species pollution," on Maui include yellow jackets and a new species of crab spiders; and mullein, a weed species that is capable of destroying the habitat of silverswords and other endangered plant species in Haleakala National Park.

The maximum capacity of each runway configuration should be clearly analyzed in terms of the number of flights and the number of passengers that each configuration will ultimately be able to handle. The point at which each runway configuration will become a constraint on visitor industry growth should be disclosed.

The relative potential for facilitation of growth beyond the year 2010 should be discussed. Although the master plan discusses improvements only

through the year 2010, they should be discussed in terms of the impacts that may occur throughout the expected lives of the various facilities proposed.

The DOT should abandon its ludicrous contention that these airport developments will have no facilitating effect on growth in Maui County, and proceed with a full assessment of all primary and secondary impacts of each project, as required by State law and the Hawaii Administrative Rules.

The Hawaii State Plan and State Functional Plans should be discussed not only in terms of which objectives and policies are supported by the proposed airport development projects, but also the EIS should include a discussion of the Hawaii State Plan and State Functional Plans objectives and policies with which the proposed airport development projects are not consistent.

Economics and the environment are inseparable when it comes to Maui's visitor industry. Lengthening of the runway at Kahului will hurt, rather than help, our main industry. Maui must be careful not to let the success of tourism degrade the natural environment and quality of life upon which that tourism depends. Otherwise, we will have "tourism killing tourism."

Visitors love our beautiful scenery, the climate, the ocean and beaches, all in the context of the Hawaiian culture. Preserving these things can actually be profitable. What turns visitors off is the commercialization and overdevelopment of these irreplaceable resources. Facilitating an unconstrained projection will facilitate broad and numerous impacts, all of which must be analyzed.

Tourism on Maui has already passed the point of diminishing returns. According to State figures provided by the airport consultants, we have 42 visitors for every hundred residents on an average day. triple the tourist density of any other island in the State. Let's not lose the vision that we on Maui previously had of keeping quality up, while keeping the quantity of tourism, and its adverse impacts on residents, relatively low. Other destinations, such as Bermuda, have done so and prospered. Let us not go down the path of Coney Island in New York, or of Mallorca in the Mediterranean. The EIS should evaluate potential mitigation measures such as those implemented by Bermuda, and negative impacts such as those experienced by Mallorca.

The EIS must be forthright in its purpose. If the proposed airport development project objective is stated to be, "...to provide safe, efficient, economical and convenient transportation facilities,..." then, as the airport stands now, those objectives have been achieved. Thus, clearly, the "no

action" alternative is outstanding as the most desirable and useful project scenario to achieve the desired objective.

Growth in airport facilities of the nature of the alternatives proposed inevitably result in increased air traffic; and increased air traffic unfortunately results in decreased safety. Efficiency is lost as efforts are wasted to create what is contrary to the desires of the community. Economic hardship is compounded by the strain on public facilities and infrastructure. And convenience is lost as users encounter more obstacles to their passage within, and to and from, the airport.

To further attain, and indeed, maintain the proposed objectives of "...safe, efficient, economical and convenient transportation facilities,..." would require not accepting the increased or forecast demand. Thus, air traffic would remain at its current safely manageable level, ground traffic would not suffer further congestion, the County would not incur the costs of having to meet the burden on its infrastructure, and the whole facility and its impacts would be convenient for the people who have to live with it in their community. Mitigation measures required to maintain currently safe, efficient, economical, and convenient facilities ought to be assessed within an alternative of constraining the demand on these facilities.

All forecasts for Visitor Arrivals should be based on most recent trends. Previous forecasts (the M-K forecasts) upon which the projection of future visitor arrivals were based, assumed that the number of visitor units on Maui would increase from 18,000 in 1990 to 33,000 by 2010. Forecasts should be discounted based on

1) no new major hotel construction since 1992,

2) the ongoing economic recession,

3) the fact that Maui already has the highest ratio of visitors to residents in the State,

4) the fact that, as a result of the aforementioned ratio, Maui's residents have expressed their desire to limit further hotel construction, and

5) the ongoing financial troubles that are being experienced by the hotels on Maui, as a result of the over-building in that industry which has created a glut of hotel rooms and a decline in occupancies.

Contradictions in the EIS would render it vulnerable to challenge. It cannot simultaneously predict changes in the environment as a result of no changes at the airport, while also predicting no changes in the environment as a result of the proposed development changes at the airport. Nor can the EIS be predicated on the notion that nothing changes in the environment of Maui

County no matter which alternative is chosen. Especially if it assumes a forecast demand of nine million or so passengers by the year 2010. The EIS should avoid such hypocrisies.

Bear in mind that when assessing secondary impacts, the EIS must consider that the growth stimulus which an expanded airport would be, in the absence of adequate growth management mechanisms and adequate infrastructure, will drive another destructive boom-bust cycle of economic activity. What must be considered are the impacts of one-way travelers, migrant workers answering the call for more laborers, flooding the job market, depressing wages; the impacts of perpetuating boom-bust economic development.

Additionally what must be considered is that secondary impacts, such as declining quality of the visitor experience and the homogenization of the Maui vacation with all other sunny resort vacations, will do more harm than good to the visitor industry and Maui's economy. People will not come if it costs them less to travel to Disneyland, and if coming to Maui gives them no better than a Disneyland experience.

Safety

In the course of airport runway discussions, questions of safety have been raised. In addressing this issue, it is essential to clarify that it is not simply a matter of runway length, but <u>who determines what is safe</u> and how these decisions affect operations at Kahului Airport. This issue has to be further considered in the broader context of who controls the future operations of Kahului Airport, as well as the impacts of runway lengthening and internationalization on the Maui community.

The Federal Aviation Administration (FAA) has determined that Kahului Airport is <u>safe</u> with its 7,000 foot runway and its 1,000 foot safety extension for the planes presently using the airport.

Federal Aviation Regulations assure the safety of planes landing and taking off in all conditions, for the FAA sets the safety standards for flying into and out of Kahului Airport, not the county or state.

Before an airline can fly a plane into an airport it must prove to the FAA that the plane can haul the amount of weight the distance the airline wants to haul it and clear any obstacle such as mountains even with an engine malfunction. The airlines have to prove that even in the worst case scenario they can manage the runways servicing the planes. These "minimum" requirements allow for a comfortable margin of safety under <u>all</u> conditions of

landing and takeoff. Aircraft that do not comply with these stringent safety requirements are simply not allowed to use the airport.

"Safety is not the issue" -- in the DOT's plans to extend the runway at Kahului Airport, according Owen Miyamoto, Director of the State Airports Division of DOT. He has also stated that LaGuardia Airport in New York City handles 35,000,000 passengers a year with a 7,000 foot runway. This includes service with DC-10's and L-1011's. This further substantiates the safety of Kahului's 7,000 foot runway which services only a fraction of the traffic that LaGuardia services. In fact, La Guardia's accident history involves snow and ice accumulation on jets and runways. If this were to occur at Kahului, the entire State would have much more to worry about than mythical runway length anxieties.

If the EIS proposes that safety is a consideration for proposal of the runway lengthening and airport expansion, then the EIS must thoroughly, forthrightly, and without reservation or prejudice discuss any existing safety violations, weaknesses, and oversights. Without justification, there is no ground for safety anxieties, nor reason for action.

Former state representative Mark Andrews who took part in the decision to fund the recent 1,000 foot safety extension at Kahului, said that the "State legislature funded the safety extension to meet the safety needs of the planes presently using Kahului Airport. A longer runway would only be to accommodate larger airplanes."

The Airline Pilots Association (ALPA) based in Washington D.C. rates airports as to their safety, with the least safe ones being given a black star. Maui is <u>not</u> a "black-starred" airport. Los Angeles International Airport is a "black-starred" airport. Therefore, ALPA's own guidelines support the determination that Kahului Airport is presently safe for existing uses.

Despite the obvious, some proponents of the planned runway extension say that lengthening of the runway is essential to correct a "safety condition." Once the runway is lengthened, however, larger and more heavily loaded planes will come into Kahului.

The bottom line is that no matter what length runway we have at Kahului, there will be airlines that will bring in the largest planes they can be permitted to land, and those planes will have the same margin of safety we have now. <u>It is the airlines who push the margin of safety to the FAA minimum requirements, and they will continue to do so with every runway length</u> .

A member of ALPA has spoken on Maui in support of lengthening the runway. He has alleged that FAA standards are inadequate because they are based on new airplanes, with new brakes and new engines. It is clear that he believes that the longer the runway the better. However, if he believes that the FAA allows planes to operate under unsafe conditions, his redress is with the FAA, not with the County of Maui.

If pilots such as he believe it is unsafe to fly into Kahului Airport, are they not morally and legally culpable for operating in conditions which they believe to be unsafe? They continue to fly into the "black-starred" airports, such as L.A. Why aren't the pilots taking a stand in those scenarios by refusing to perform services which they believe are unsafe?

From calls placed to both the FAA Flight Standards District Office in Honolulu and the Aircraft Certification Section of FAA in Los Angeles, what we learned has confirmed that we have not been getting the whole story on the so called "safety problem."

An FAA Test Pilot responded to the ALPA member's allegation of inadequacy of FAA standards. He told us several facts that have previously been conveniently omitted from safety discussions by those promoting a lengthened runway as a safer runway.

1) Airplanes must be maintained to the standards at which they were originally certified. Although the brakes are not new, they must provide a certain amount of stopping power, or the plane is not allowed to fly . The same goes for engines. Although they are not new, they must provide the amount of thrust they were certified for, or the plane is not allowed to fly . This was confirmed by the Flight Standards District Office in Honolulu.

2) When computing required runway length, the FAA does not give any credit for application of reverse engine thrust. This means that our runway is long enough for all existing aircraft to land or to abort a takeoff even without reversing their engines.

3) Aircraft brakes have been upgraded in many planes since they were originally certified. This increased braking capability is not taken into account when the FAA determines required runway length. Therefore, the brakes on many older aircraft are more than adequate for our runway at Kahului.

4) FAA standards are designed so that the probability of a fatal situation occurring is somewhere between one in a million and one in a billion. Developed during an open rule-making process, with the full participation of the airlines, the pilots, and the general public, the FAA standards provide the highest level of safety possible .

5) Modifications to the FAA standards are now underway that would give credit for application of reverse engine thrust, thus allowing bigger and heavier planes to land on existing runways.

6) Newer, more fuel-efficient generations of aircraft are now able to reach Maui from international airports. Thus, without any lengthening at all , Kahului's 7,000 foot runway is able to handle a larger variety of heavier aircraft. Any lengthening would be a waste of resources on an obsolete tarmac.

Interestingly, the aforementioned FAA Test Pilot recently recommended that a low level wind shear warning system be installed at Kahului airport. And, he said that there are many other ways to increase the margin of safety at Kahului, but lengthening the runway was contrary to those solutions.

In the context of our unique, small island community there are other aspects of safety to be considered.

1) If an accident were to occur with a larger, more heavily loaded plane flying with the minimum safety standards, it would mean a larger, more serious accident with more casualties. Already the emergency medical services and hospital are inadequate to deal with a major aircraft accident. Rather than extending the runway, the State needs to improve our emergency medical services and hospital.

2) A real safety issue at Kahului Airport is the presence of small aircraft and helicopters using the same facilities. By developing Puunene Airport as a site for this traffic, as well as night freight flights, safety could be enhanced at Kahului Airport. This would also improve the quality of life for people in Kahului and Spreckelsville. The monies appropriated for runway extension could be channeled into this project.

3) With internationalization there would be an increased risk of terrorism and hijacking. Security at Honolulu, or any other international airport, is much stricter than that at Kahului. This is because the likelihood and danger of terrorism is so much higher. Also, with internationalization there would be an increase in drug trafficking and gang violence as seen on Oahu. Runway lengthening would thus create a new and certain safety problem; certainty being a qualifier that cannot be assumed of an aircraft accident at any time at any given airport. Only the morose and exploitative would say otherwise.

5) With more visitors there would be more crowding on our highways with an increase in traffic accidents and casualties. On the highways is where the real carnage is occurring, not at the airport.

6) With internationalization there would be an increase in the introduction of exotic pests which could threaten personal safety and the health of the agricultural businesses. For example, brown tree snakes have been found in the wheel wells of planes arriving in Honolulu from Guam.

7) With limited state financial resources, any amount not spent on creating superior learning environments for our community's children, meaning schools and the teachers employed in them, is creating a safety problem; this due to the tensions and psychological stresses that arise as children are crowded into hot, inadequately supplied classrooms.

The feelings of ALPA are no more relevant than that of any other private association. They are certainly not as valid as the statements of the FAA that the airport is safe. If the views of ALPA are to be included in the EIS, then the views of the FAA, and responsible opposing views of other citizens groups should be included as well. You may contact us for our suggestions.

In summary, the safety issues that must be addressed in the EIS are:

1) the safety implications of extending the runway and the resulting internationalization of the Kahului airport,

2) the safety benefits of the alternative of maintaining the present runway length and upgrading present emergency and medical facilities, improving our surface transportation infrastructure, and opening Puunene airport.

3) the safety implications of extending the runway and allowing heavier, more fully loaded jets to operate,

4) the safety implications of the alternatives of either installing or not installing a low level wind shear warning system,

5) the perceived safety benefits of modifications to the FAA standards which would give credit for application of reverse engine thrust,

6) the safety implications of a potential aircraft accident as regards existing emergency facilities' inadequacies on Maui,

7) the safety implications of not developing Puunene airport for helicopter and cargo traffic while lengthening the Kahului main runway and thus increasing jet traffic,

8) the safety implications of increased roadway traffic on Maui,

9) the safety implications of potential species pollution, and,

10) the safety implications of continued under-funding of the public school system despite the projected community stimulus the proposed changes would create.

Safety is a definite priority for responsible residents of Maui County. Contrary to the assertions of those who want to lengthen the runway, Maui Tomorrow does appreciate the moral problems involved with making our airport less safe; therefore, we are supporting the no action alternative for the existing runway, which maintains the runway length at 7,000 feet. We believe that an EIS of full disclosure will support this wisdom.

Internationalization

Based upon HRS Environmental Impact Statement Rules, we require that the EIS fully assess the impacts of internationalization.

One of the well-known reasons for the on-going denial of landing routes directly from Japan to Kahului is the length of the existing Kahului main runway. Once it is lengthened, that will not be a constraint, and the likelihood of internationalization will become an inevitability. Therefore, internationalization is a potential secondary impact that could be expected as a result of runway lengthening. The Environmental Impact Statement Rules of the State of Hawaii declare in Section 11-200-17(i) that

> *"The draft EIS shall contain a statement of the probable impact of the proposed action on the environment, which shall include consideration of all phases of the action and consideration of all consequences on the environment; direct and indirect effects shall be included. The interrelationships and cumulative environmental impacts of the proposed action and other related projects shall be discussed in the draft EIS. It should be realized that several actions, in particular those that involve the construction of public facilities or structures (e.g., highways, airports, sewer systems, water resource projects, etc.) may well stimulate or induce secondary effects. These secondary effects may be equally important as, or more important than, primary effects, and shall be thoroughly discussed to fully describe the probable impact of the proposed action on the environment.*
> [emphasis added]

There are other sections of the EIS rules that could be cited in support of our position, but we believe that the above is quite relevant, and sufficiently specific that there is no doubt as to whether the full impacts of internationalization should be discussed.

The EIS must address the likely impact of proposed runway expansion in the context of international aviation agreements. It must present the dynamic

impact of the expanded route rights that the United States has already accorded to foreign carriers, which, combined with the amendments that show the designated terminal point as the State of Hawai'i, rather than Honolulu, give foreign carriers access to Maui. The EIS must not fail to fully address the impacts of these agreements and the impacts of internationalization. A general analysis would be insufficient.

Environmental Impacts

Bear in mind that environmental impacts necessarily impact social and economic systems. As such, each of the following points ought to be evaluated in the context of all potential impacts -- environmental, social, and economic.

Environmental impacts, which must be addressed, associated with such international flights include, but are not limited to:

1. Direct introduction of species pollution, whether insects, snakes, or plants, to which valuable native species have no resistance. In addition, such exotic species generally do not have natural predators here in Hawaii. The resulting population explosions can devastate entire native ecosystems.

2. Increased frequency of such introductions due to loss of one level of filtering through Honolulu. For example, an wasp carried on flights from overseas would have to exit the international flight in Honolulu and board a plane bound for Maui under current conditions. The odds of this happening are an order of magnitude lower than would be the chances with direct international flights to Kahului.

3. Generally increased environmental degradation due to increased pressure for development (a) beyond the carrying capacity of this fragile island ecosystem, and (b) beyond the true needs of the natural and sustainable growth rate of Maui's community of residents.

In Kipahulu, we are fortunate enough to have a United Nations designated Biosphere Reserve that is home to scores of endangered species of plants and animals found nowhere else in the world. In the last 20 years or so, the menace known as the brown tree snake has decimated the native bird population on Guam. It is certainly not attractive to tourists either! This venomous snake is capable of killing pets and small children, and has even been found coiled around babies in their cribs! Hiking along our forest trails would never be the same. In effect, Maui would no longer be paradise as depicted so earnestly by visitor bureaus.

This risk and its associated impacts must be considered in EIS impact analyses. It is a very real secondary impact, both as a physical threat and as a

cost-to-prevent . There should be discussion of the snake's impact on the visitor industry, on local lifestyles, and on native fauna, and thus also native flora.

What is the cost impact of agricultural inspection teams to protect us? Take the Guam example: Putting the horse after the cart, the U.S. Fish & Wildlife Service is now in the process of declaring the native forests of Guam off limits to development, in the hope that native birds will make a comeback if the Service can figure out how to get rid of the snakes. The trouble is, there aren't any of these birds left in the forests, and getting rid of the snakes once they have become established is a problem that has not yet been solved. Meanwhile, growth is unnaturally constrained.

The brown tree snake is just one of the pests that we would expose ourselves to with a lengthened runway. The EIS must address the impacts of all potential threats, including but not limited to killer bees and malaria carrying mosquitoes; and each potential threat must be assessed as an individual case-study because each has implicitly different impacts to a community's economy, ecology, and social health, safety, and welfare.

According to the State Department of Agriculture, lengthening of runways to allow access from more airports will definitely increase the number of direct pest introductions into Maui. The impacts of this increase should be assessed for the entire County of Maui.

The EIS must not fail to consider the impacts on endangered species and wildlife in the airport vicinity, and specifically at Kanaha Pond. The Endangered Species Act is a mandated consideration under NEPA laws. There must be analysis of how such species would be affected by the increased air traffic and attendant noise.

The EIS should discuss the potential of excessive diversion drying up the water sources for the Kanaha Pond. Future developments surrounding Kanaha Pond should be properly designed to continue to allow fresh water flows, unadulterated by non-point source pollution, into Kanaha Pond.

The Maui Coastal Scenic Resources Study of 1990 should be used to assess view corridors and potential impacts resulting from airport developments.

Hawaii State Coastal Zone Management objectives and policies should be listed and fully discussed as they relate to the proposed projects. In particular, Coastal Hazards should be fully discussed, including a discussion of the functional abilities of the runway(s) in time of a tsunami, and the danger of repeat tsunami to incoming rescue crews.

Coastal ecosystems should be fully discussed, especially as related to non-point source pollution, given that the Master Plan proposes to channel tarmac runoff into nearby bays which are used for recreation and subsistence purposes by local residents.

It is inappropriate to cover the designated agricultural land with cement and asphalt until Maui has open space, land conservation, and alien pest control plans that effectively preserve and protect the beautiful reasons why people fly to Maui.

The Board of Directors of Maui Tomorrow is reaffirming its belief that unless and until other controls are soon formulated and implemented, and specific, effective, enforceable, enact-able growth management mechanisms are in place for Maui County, including protections for our native species of flora and fauna, runway extension is a mistake for Maui County. It is our knowledge that limiting the length of the runway is the only way to prevent damaging stresses to Maui's resources, infrastructure, and natural environment.

Social Impacts

The EIS must adequately address the noise impacts of the proposed changes. The noise impacts of the proposed expansion of Kahului Airport would be a blight on the economy and social fabric of this community. Quality of life will deteriorate, property values will decline, and as the island becomes a less attractive place to reside and to vacation, the decrease in revenues will transform this thriving community into a morass of social and environmental ills. Primarily, the physical and psychological health of residents will suffer from the increased air traffic noise.

To evaluate these factors, adequate and uniquely appropriate criteria must be used in the noise contour models and evaluations. Noise measurement sites should be shown on any maps referencing noise impacts. The EIS ought to serve the NEPA standards for noise exposure, not the FAA guidelines -- guidelines which the EPA has deemed inadequate for the purpose of conducting assessment of true environmental impact. Indeed, *Aviation Week* reported two years ago that the Port Authority of New York decided to establish its own strict noise limits, alleging that the FAA wasn't doing its job.

Limiting the scope of analysis to only those areas within the FAA guideline contour of 65 Ldn ignores potentially severe impacts.

In a report entitled "Effects of Jet Aircraft Noise on Mental Hospital Admissions," published in the *British Journal of Audiology* (1977) scientists

determined one of the more dramatic adverse effects of jet aircraft operations on residents. The study showed a 29% increase in hospital admissions of patients suffering nervous breakdowns and mental injuries in the maximum noise areas around Los Angeles International Airport, over those of a corresponding control area.

Reliance on the misleading, insufficient, and flawed Ldn metric for assessing noise contours would mask such considerations in the EIS. The Ldn flattens the effect of single noise events by diluting them in the annual average matrix.

An analogy to this would be saying that a woman only had three - quarters of a child in each of four years, rather than saying that on a certain day in the month of August she had one child, the following year another, then a year off, and then the following year another. By FAA-type standards, she had four partial children; by NEPA-type standards she had three whole children; individual and cumulative impacts about which I'm sure she would have plenty to say.

For the EIS to begin to adequately address attendant noise impacts with proposed changes at the airport, it would have to include additional formulas for establishing true noise impacts, such as the SEL (Single Event) metric. It would also have to admit to the NEPA and ANSI guidelines for noise compatibility, which show levels of 65 Ldn to be too high, and that noise exposure levels measured in Ldn, necessary to protect against both activity interference and hearing loss, be no greater than 55 dBA. It would have to address the repercussions of the compounding factors of ambient noise, single event contours, and airport facility attendant operational noise increases. It would also have to take into account the FAA recognition that,

"*...no two communities... are identical,...*" and that,

"*Adjustments to the land-use categories and noise levels may be necessary in considering specific local conditions...*"

Maui is a unique island, and among the specific local conditions that necessarily must be considered and adjusted for is the fact that the broad Central Valley is a huge natural amphitheater, with jet aircraft noise audible from Haiku to Waikapu, from Wailuku to Kihei, and throughout Kahului, Waiehu, Waihee, and Spreckelsville.

Taking this into account with the population contours of Maui, there must be admittance of the significant and detrimental impacts on a majority of the County residents.

In Central Maui alone resides 33% of the population. The sum of populations directly affected by the operations of jet aircraft, including over flights, taxi, and take-off, throughout Central, East, and South Maui, totals 77% of the County population. To propose that there would only be minimal and minor impacts in most scenarios would be an insensitive oversight and fallacy. Clearly, the likelihood of severe negative impacts on a three-quarters of island residents warrants great deliberation; full disclosure being necessary for such deliberation.

The EIS must not assume that the community would adapt to the conditions with sound attenuating architecture. Otherwise, it must also address the economic and social impacts of such an undue burden on the community.

The EIS must also include,

1) projection of the number of flights,

2) the likely flight patterns,

3) the increased size of the aircraft making those flights,

4) and the related noise from such flights, as would increase through the availability of longer runways and expanded facilities.

The EIS should also discuss what flight pattern changes can be expected from each of the alternatives, and how will they affect the sound environment of outlying areas, including currently quiet parks and Federal Wilderness Areas.

There are several other matters that the EIS must address.

Changes under consideration for Kahului airport should not be referred to as "improvements" unless an independent authority determines through just deliberations that they improve the environment and the quality of life and every other aspect of Maui County they affect. Without a completely revealing and substantively adequate EIS, one cannot make such a judgment as to refer to the proposed changes as "improvements."

The EIS should not be so vague as to substantiate itself by referring to "generally available information regarding the environmental characteristics of the project sites and surrounding areas." All sources of information must be cited including the authority and qualifications of those sources. Otherwise, the document refers to opinions or hearsay.

There are millions of ways to do just about anything. Thus, serious, balanced, community-developed, and environmentally concerned alternatives must be among the considerations. This means that community study groups must be organized to develop community-wide acceptable alternatives for the

objectives sought by this proposed project. It would behoove the agencies preparing the EIS to begin organizing such community development sessions among community associations and public interest groups in the very near future and prior to preparation of the EIS, so that the alternatives proposed by the community that must live with the airport and its impacts can be received as serious and respected input to the process of growth and development.

Regarding land, the exact acres of land that would need to be acquired to develop any of the alternatives must be stated. Additionally, the identification of, and proposed administering of ceded lands must be addressed. To not do so would be to ignore one of the major natural features of the land upon which the airport and the proposed runway extension reside.

The options to runway extension must be fairly represented. A "broad range" of options cannot refer only to runway lengths with corresponding facility relocation. A broad range of options should include such things as upgrading the facility while maintaining its current carrying capacity.

Maui Tomorrow, one of this state's most pro-active and largest public interest groups, asks for your respectful attention to the aforementioned concerns and preferences of our membership. Many citizens from all walks of life have encouraged us to speak on their behalf regarding these items of importance to their quality of life. All will be grateful for your professional consideration and action.

Thank you for the opportunity to comment. We are hopeful that the Department of Transportation, in recognition of the high value of public monies at its command, will fully disclose the many potential primary and secondary impacts of this and all future projects, as required by law, and that the FAA will insist that the DOT uphold such judicious standards of integrity.

We look forward to receiving a copy of the Draft EIS, and especially its detailed analysis of the impacts of airport internationalization on Maui's social, economic, and natural environment, wholly regarded.

Sincerely,

Richard Joseph Lafond Jr.

Richard Joseph Lafond Jr.
Executive Director

cc: Haleakala Times

Isaac Davis Hall
Maui News
National Park Service
OEQC
DOT, Airports Division
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March 12, 1996

Mr. Richard Joseph Lafond
Executive Director
Maui Tomorrow
P.O. Box 1497
Wailuku, Maui, Hawaii 96793

Dear Mr. Lafond:

Thank you for your letter and testimony regarding the Kahului Airport Environmental Impact Statement (EIS). Your concerns areaddressed in the following sections in the Draft EIS:

Economic Impacts		
	Section 3.5	SOCIO-ECONOMIC IMPACTS
Runway Lengths		
	Section 2.3.2	PROVIDE SAFE, EFFICIENT, ECONOMICAL AND CONVENIENT AIR TRANSPORTATION FACILITIES
	Section 2.4.4	PROPOSED AIRFIELD DEVELOPMENTS
	Section 4.3.2.2	RUNWAY 2-20
	Section 4.4	OTHER RUNWAY ALTERNATIVES
	Section 6.1	LENGTHENED RUNWAYS
Alien Pests		
	Section 3.11	BIOTIC COMMUNITIES
Forecasts		
	Section 1.8	INCORPORATION OF STUDIES AND OTHER DOCUMENTS
Safety		
	Section 2.3	PURPOSES AND NEEDS OF THE PROPOSED PROJECT
	Section 3.22.9	AVIATION SAFETY
Internationlization		
	Section 5.1.4	INTERNATIONAL OPERATIONS
	Section 6.0	GROWTH INDUCING IMPACTS
	Section 8.0	OTHER RELATED ISSUES
Environmental Impacts		
	Section 3.0	AFFECTED ENVIRONMENTAL, PROBABLE CONSEQUENCES AND MITIGATION MEASURES

Kanaha Pond

The Kanaha Pond Wildlife Sanctuary (KPWS)is controlled and managed by the Department of Land and Natural Resources. KPWS is within the Kahului Airport boundary due to Federal Aviation Administration deed restrictions (Section 3.11). The development of Kahului Airport will not affect the groundwater at KPWS.

Social Impacts
Section 3.5 SOCIO-ECONOMIC IMPACTS

Airplane Noise
Section 3.2 NOISE

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

COMMENTS FOR THE ENVIRONMENTAL IMPACT STATEMENT SCOPING MEETING

INTERNATIONALIZATION AND LENGTHENING OF KAHULUI AIRPORT MASTER PLAN UPDATE

Steven H. Moser M.D.

May 18, 1994

A. LENGTHENING THE RUNWAY AND INTERNATIONALIZATION OF KAHULUI AIRPORT WILL RESULT IN AN INCREASE IN POPULATION FOR MAUI COUNTY

The underlying premise of the 1991 state EIS that the population of Maui will increase to the same extent whether or not Kahului Airport is internationalized is of utmost importance in the entire EIS. It is a startling conclusion that flies in the face of common sense. The premise is not credible for the following reasons, among many others:

1. The lengthening of the runway* to accept the landings and takeoffs of fully loaded international wide-bodied aircraft would signal our community's willingness to accept unlimited growth of the tourist industry and population. The county administration and County Council would feel compelled to expand tourism with easing of restrictions on land conversions from agricultural or rural to urban or business/hotel, encouraging faster growth to keep up with anticipated markedly increased demand.

2. Such a signal would catalyze an increase in investment and expenditure in the tourist sector of the economy, and would send a strong message to the world tourist trade that Maui is now open to direct flights from anywhere in the world.

3. Infrastructural growth would continue to lag behind the massive expansion of the tourist sector, and the current problems we face (see below) would be exascerbated into the foreseeable future, with no chance to "catch up".

4. The decision to internationalize the airport over the majority's opposition in this county might create a sense of

* [Runway lengthening will eventually lead to the construction of an International Arrivals Facility, even if this is not built immediately, because the same pressures for internationalization that now exist in great force will continue to exist unabated into the future. For this reason, runway lengthening de facto equals internationalization, whether it is so stated in the EIS or not.]

despair and impotence among the population, leading to an overall sense of the futility of opposition to unlimited growth, such that the forces that favor unllimited growth would be unchallenged in the public arena. This would translate into stronger political favor for growth in the governing authorities.

5. The EIS has not taken into account the added population and ensuing infrastructural necessities that will be accrued from the increased military presence that will be established as Maui becomes the focus of more military activities (see below). Additionally, ease of access will make Maui more attractive for other large corporations and government institutions to use Maui as a base of operations due to direct wide-bodied flights, increased freight capabilities (both in bulk size and quantity), and increased infrastructural capabilities.

6. The nature of tourist travel would change depending on the international character of the tourist trade.

a. International tourism, as opposed to U.S. tourism, favors development through economic factors not considered in the EIS. International travellers would tend to come from countries that are by and large more affluent than citizens of the United States. In fact, the compilation on foreign ownereship in Hawaii available from the Department of Planning and Economic Development on a yearly basis demonstrate indisputably that increased international traffic has resulted in massive foreign ownership of real estate and development of that property over the last decade. Maui could be expected to follow Honolulu in this trend.

b. The types of tours coming to Maui on nonstop flights would differ depending on the availability of nonstop flights. Large tours would find it easier to fly here. One could envision specialty tours such as "golf tours" or "fishing tours", and almost certainly "shopping tours" with these activities as the main purpose for travel for large tour groups who can be directly transported here. Development of foreign owned and operated concessions (golf courses, hotel accomodations, marinas, shopping centers, etc.) would be developed to cater to such specified tours, adding to our infrastructural burden, but contributing very little to the local economy or tax base.

c. Following the example of Honolulu, international tourists arriving on Maui as their primary destination would make Maui a base for travel to other islands, thereby increasing the number of interisland flights to all other islands. This would result in greatly increased air traffic at Kahului Airport, and not, as the EIS suggests, less traffic. This is a glaring oversight in the EIS which must be redressed. Airport infrastructure, traffic, surrounding development, pollution and other factors would be profoundly greater than addressed in the state EIS.

7. If, on the other hand, there were no runway lengthening, the message would be "sent" that Maui, as a community, wishes to preserve its local character by resisting unlimited growth of tourism, and this would more likely lead to rational planning by the County Council and the administration of the county to limit growth and concentrate on infrastructural improvements.

8. The recent forecast, as stated in the State EIS for the expansion of Kahului airport runway, of the equality of projected population whether or not internationalization is allowed at Kahului Airport has been made on the basis of information supplied by the Department of Planning and Economic Development, supplemented by discussions with representatives of the Office of State Planning, DBEDT, HVB, individual County Planning Departments, Hawaii Hotel Association, Airlines Committee of Hawaii, airlines providing overseas and interisland service, and various tour operators. This way of thinking reveals a glaring bias on the side of pro-development factions in Hawaii. The state EIS mentions no discussions with conservationists, local Hawaiian groups, local community groups, the National Parks Service, the Department of Agriculture, the Department of Health, the Hawaii Medical Association, and other leading groups that have cautioned against internationalization of the airport for multiple reasons.

For all of the above reasons and others that I have not mentioned, it is my opinion that there will be a large difference in the forecasted populations, development, and infrastructural loads depending on the internationalization of Kahului Airport. I believe that the projections are inaccurate in that they do not take into account attitudinal differences in our local population and among international tourist interests depending upon our choice of airports. Also, international tourism brings a qualitative difference to the tourist trade, with additional pressures favoring development that would not necessarily add to the local economy, while burdening our infrastructure more.

B. LACK OF INFRASTRUCTURE

1. Roads

The road system of Maui is currently strained to its limit. While several recent changes have been made (the addition of two lanes between Dairy Road and Kula Highway, the addition of bike lanes on Hana Highway, and the repaving of several roads), little substantive improvement has been made and major changes will not be soon in coming. If current delays due to construction are any indication, we can expect major longterm disruptions of travel to most destinations when major construction in undertaken on this

island.

The state EIS of 1991, in its "Summary of Impacts and Mitigation Measures", states, with ample appendiceal support,

> Generally, the Level-of-Service (LOS) for vehicle turning movements at unsignalized intersections studied decreases due to longer delays caused by higher traffic volumes. (p.13)

This conclusion reveals an incredible degree of naivete in its assumption that in some way all of those who want to turn left at a busy intersection, but are unable to do so because of "high traffic volumes", will somehow disappear or cease to exist. This sort of logical flaw permeates the entire EIS document, ignoring the already critical traffic problems on this island for some mathematical paper model that magically eliminates left turns for drivers who need to get to work or start their long-awaited vacations.

Another typical example of such illogical thought can be found on P. 13 again:

> 2. Diversion of Traffic - As traffic volumes increase, motorists could divert to lesser used or proposed routes which would lessen the amount of improvements to the existing regional highways system.

This amazing conclusion suggests that increasing pressure on old or unbuilt roads would somehow "lessen" improvements needed on those roads. It will be interesting to see drivers plowing through cane fields on these unimproved "proposed routes". This discussion of the traffic situation needs to be rewritten by someone with a basic understanding of logic and the concept of cause and effect.

2. Accidents.

At the same time as roads are being overutilized, there is no limit to the number of automobiles that are being rented and sold, and none is anticipated. Parts of Wailuku are nearing gridlock already at certain hours, and this can only get worse. On larger streets, the traffic stream is so steady at rush hour that people are taking considerable risk to enter from smaller streets and driveways. Elderly residents and tourists alike find that their reflexes aren't fast enough. Our increasing number of drunken drivers have more chances for mayhem.

Many have noted increasingly aggressive driving among local and tourist drivers alike, as delays lead to risk-taking maneuvers

to avoid missing airplanes or being late for work. Many tourists arrive in an exhausted state only to undertake a bewildering drive along confusing streets and winding roads to an uncertain destination in an unfamiliar car.

It is little wonder that the number of accident victims presenting to the emergency room at Maui Memorial has increased by 25% in the five years between 1985 and 1989. This is already straining our capacity at the hospital. Most of the victims of the Hana minibus accident a few years ago could not be handled at our facility because it was full, and they were evacuated to Honolulu. A large bus accident with many casualties would severely strain our system, and many might not survive.

There is no rapid transit or public tranportation system on Maui, and none is anticipated in the future.

The transportation of jet fuel from the fuel tanks in Kahului dock area to the airport for use in the jets is done by large tankers on Hana Highway, often at rush hour in the mornings, with a potential for motor vehicle accident, with ensuing fire and loss of life.

Driving conditions are particularly hazardous in certain areas of the island such as the busy central Valley during cane burning season, when there is a great deal of smoke or haze on the roads, depending on the time of day, especially in the mornings. Whales and windsurfing also distract tourist frequently, and have resulted in accidents.

3. Hospital.

The state EIS devoted one page, with no appendiceal support, to the status of Maui Memorial Hospital, and slightly more to the overall health services (emergency only) of Maui County. Given the marked deficiencies in both the hospital and medical services in general, such an oversight by the writers of the EIS deserves condemnation.

a. Overall Bed Capacity.

The national average for number of beds per population is 2.8 beds for 1000 persons. The population of Maui is now estimated at approximately 100,000 permanent residents and a transient population which fluctuates between 30-50,000 persons on a given day. Therefore, Maui Memorial, the only acute care hospital on Maui, should have over two hundred beds conservatively speaking for our permanent population alone, and another fifty or so beds for our transient population.

Maui Memorial currently has 145 acute care beds. This represents one-third to one-quarter the number of beds that we should have in this community. It should also be noted that this number of acute care beds includes 30 or so longterm care beds occupied by patients for whom beds cannot be found at local nursing homes because of lack of longterm care beds on Maui.

The hospital is almost always at 100% occupancy and often above this. This hospital has one of the fastest bed turnover rates in the state, and while care is not yet compromised because of its excellent nursing and medical staff, it may soon become so with more pressure. Maui Memorial Hospital has been cited for two years of noncompliance with state and federal regulations for doubling up on beds in rooms that were built for single beds. Despite appeal to the 1993 legislature to fund expansion of bed capacity to be able to correct this situation, no capital improvement monies have been granted for several years for such expansion, and the hospital is under threat of decertification because of continued noncompliance.

b. Emergency Room.

The hospital has recently added much needed ER space to cope with more injuries and increased numbers of acutely ill patients, but slow anticipated growth in the number of medical-surgical beds will be a limiting factor in our ability to care for our acutely ill patients. While not currently an unsafe place to be cared for, the hospital would not be able to handle a greatly increased daily influx of patients, whether they suffered from motor vehicle accidents, drownings and broken necks, heart attacks, or other activity and stress related conditions.

c. Intensive Care

The hospital should have approximately 20-25% of its beds as intensive care and stepdown care beds (i.e. monitored beds), which should amount to about 30 to 40 beds for the current 145 acute care beds. Maui Memorial Hospital has only 12 ICU/CCU beds and thirteen monitored beds. These beds are in a constant state of turnover, with great demands made on staffing and resources to assure high-quality care for the patients.

There is no coronary bypass or coronary angioplasty for persons with acute coronary disease, or open heart capability at Maui Memorial Hospital, with all patients needing such services having to be flown to Honolulu. There is no neurosurgical capability at MMH and no burn or laminar flow capability.

d. Alcohol and Substance Abuse.

There is currently no detoxification ward or center in Maui Memorial Hospital or on Maui. Such patients are routinely handled in the Emergency Room or on the open hospital ward. Although the state is building an alcohol and substance abuse treatment facility, we anticipate difficulties in funding and staffing this facility when it opens.There a inadequate long term drug rehabilitation available on Maui at a time when these problems are beginning to markedly increase.

e. Psychiatric Services.

The psychiatric ward of the hospital has recently been renovated, but remains understaffed due to lack adequate physician participation for the foreseeable future because of lack of reimbursement for physician services and liability concerns.
In general, there are very few psychiatrists serving the needs of the indigent and underinsured population of Maui, i.e.,those patients most likely to utilize services, either for inpatient or outpatient needs. Absence of childrens psychiatric services at the hospital have been the subject of an ongoing debate and rancor for three years, and the inpatient facility remains unstaffed to this day.

4. General Medical Services.

Large areas of Maui are underserved by the medical establishment. Areas of the heaviest growth are the least served:

	Internists	Surgeons	OBGYN	Psych
Lahaina/Honokawai	1 (Kaiser)	1 (part)	1 (part)	0
Kihei/Wailea	2	0	0	0
Kula	0	0	0	0
Makawao/Pukalani	0	0	0	0
Paia/Haiku	0	0	0	0

These areas are far from the hospital, with difficult travel conditions, high priced real estate, poor schools, all of which make it difficult to attract these specialties into these areas, a situation which is likely to become worse with internationalization due to the pressures to increase traffic congestion, land values and so on.

5. Water and Sewage

Developments of both housing and hotels unit already approved by the council, but not yet built, will bring Maui to the limit of its presently available water and sewage capacity when they are built and inhabited. Even for these projects, additional capacity will probably be needed. The currently planned use of primary treatment for the wastewater (as has been recently granted in Honolulu by EPA exemption) may, when applied on Maui, have adverse effects on the near-marine environment due to the shallowness of the archipelagic waters on the south coast of Maui. The main development to be expected from further expansion of tourism will be on the entire southern and western coast of Maui, which empties into these archipelagic waters.

The public health aspects of shallow disposal of primary effluent may be serious, including the transmission of hepatitis, pathogenic bacteria, heavy metals, and toxic chemicals from near shore outfalls. Marine effects include devastating algae plumes, attraction of pelagic predators such as sharks resulting in numerous recent attacks, and potential avoidance of polluted waters by seasonal marine mammals, such as the humpback. Tourism would be adversely impacted by either the perception or the reality of sewage pollution of these beach areas. Acute gastrointestinal illnesses and other infections from enteric organisms have been seen on occasion by physicians here.

The Water Department of the county is anticipating developing new water resources by tapping into the artesian wells in central Maui. Because of modern monoculture techniques and year-round growing, these aquifers underlie some of the most heavily fertilized and sprayed agricultural lands in the United States. In the past many of these well have been found, like their counterparts on Oahu, to be contaminated with a variety of pesticides and nitrates, including EDB, DBCP, TCE and Atrazine.

While a few nearby wells have recently tested for contamination, the state and county have spent very little time or money to map out the connection between the aquifers, in order to determine pressure gradients with increased stress of use. Much more study must be done to guarantee the safety of this new water supply.

Also the county is planning to divert EMI water from Kula to support agriculture and suburban development in Central Maui. In addition, there is again talk of taking more water from Hanawi stream, one of the last such surviving natural East Maui streams.

During the recent construction of a large building complex in the old Maui County Fairgrounds by A&B Company, the water level of Kanaha Pond was noted to drop to critically low levels apparently because of massive siphoning of pond water to settle dust in the construction site. Endangered species (the Hawaiian stilt and various migratory birds which winter here) which live and breed in this wildlife preserve were being jeopardized.

The county may not be able to safely exploit more water resources than it already has. Dust control during the construction phases of the airport runways and structures would necessitate the use of water from a nearby location, making it likely that Kanaha Pond would again be utilized.

At any rate, Kanaha Pond is extremely vulnerable to degradation in the event of massive airport expansion due to construction runoffs, and jet fuel leaks, as well as encroachment as the industrial and commercial airport-related infrastructure expands in the only direction available, as the browtht is otherwise limited by a highway to the east and south, and the ocean to the north.

Ciguatera fish poisoning, increased algae counts and seaweed, and reef die-off may all be the result of various forms of man-made contamination of the marine environment, with direct and indirect effects on human health and well being.

No mention is made of other sources of contamination of ground water or the marine environment by seepage of underground storage tanks that now exist (the DOH estimates that a substantial percentage of existing tanks in the area are now leaking) or that will be built to accomodate the increased number and size of rental car agencies, private service stations, county and state facilities, and airport jet fuel facilities.

While mention is made in the state EIS that the newly constructed drainage ditch between Kanaha Pond and the Airport will drain a large area of the west end of the airport and surrounding agricultural areas, the continual drainage of fertilizers, pesticides, petroleum products which run off the vast area that is drained is minimized. Even if the main pollution will occur during times of high rain and flooding, this pollution will be very significant with a great potential to permanently damage the ocean environment near the outfall. Also, no mention is made as to the interconnections of this ditch with Kanaha Pond (i.e., is there any interchange between the pond water and the ditch?).

The impact of airport expansion on turtle nesting areas and popular windsurfing beaches on the ocean side of the airport needs to be addressed.

C. IMPORTATION AND EXPORTATION OF EXOTIC DISEASES, PESTS, AND PLANTS

1. Imported Pests.

At the current levels of operations at the airport, the island of Maui is subjected to numerous imported pests which are finding a niche in the delicate ecosystems that exist here. Plants which are hardier, and insects that are more aggressive than endemic species, find it easy to grow and multiply among the relatively less vigorous biota. Evidence of the few past incursions of such plants include the ubiquitous ironwood and eucalyptus that encroach upon our native forests. The small biting spider that infests our gardens for the past 5-6 years is another successful hitchiker.

Future contaminations can only multiply exponentially as flights come from all areas of the world, with larger planes and more people, less time and personnel to process and inspect each planeload, and less sensitivity to the native habitat. We can only imagine the effects of accidental or purposeful importation of one of the many poisonous insects and reptiles that exist in other jungles and forests. Guams brown tree snake catastrophe is an example of how vulnerable this island is to such imported pest.

The supposition that since Oahu is already infested with some of these exotics and that therefore it is only a matter of time before Maui and the other islands become similarly infested, does not justify therefore throwing open the doors to unbridled direct international tourism, but rather must make us more vigilant to avoid these species by becoming more cognizant of the dangers and careful.

2. Exported Pests.

Another area that was not mentioned in the state EIS is the very important area of the exportation of local pests to other parts of the world. The Mediterranean fruit fly (medfly) and other fruitflies are capable of devastating entire fruit industries in California and other areas to the point where several years ago, there was a serious proposal to attempt to eradicate them in the Hawaiian Islands by a massive aerial pesticide spraying program. This was successfully repelled by a large grassroots resistance movement.

Direct flights out of Maui would vastly increase the chances for exportation of fruitflies to all parts of the world, leading to possible severe economic effects in those countries, and eventually to the reality of a massive eradication program on Maui and the other islands, with the accompanying civil unrest, health effects and environmental damage. Other potential hazardous exports exist.

3. Importation of Infectious Diseases.

Infectious diseases, especially the many tropical diseases that we physicians see only in textbooks, are a real concern to the medical community here. Not only do we worry about the importation of such well known ailments as tuberculosis, malaria, hepatitis and AIDS, but less commonly known but deadly diseases such as Chaga's Disease, Japanese Encephalitis, visceral leishmaniasis, cholera *, elephantiasis, and many others need only the introduction of the appropriate insect vector, or an infected person to take root here. Viral and rickettsial diseases are also possible.

There is minimal expertise on Maui or in Honolulu regarding tropical diseases. Laboratory services for the diagnosis of such diseases are on the mainland, and turnaround time for such tests, assuming physicians know what tests to order, and if they are available, will be several weeks, to the detriment of the patients who present with these unusual problems. Such diseases and their inherent problems will much more likely to occur with direct international flights from Asia and South America than from Europe. The main increase anticipated from internationalization is from the East (Asia).

In addition, no one knows what the effects of a constant barrage of thousands of new respiratory and gastrointestinal strains of viruses and bacteria from all parts of the world might have on the immunologic function of our resident population. there is some theoretical basis to the probability that some form of immune tolerance or other immunologic defect might develop after years of such an antigenic bombardment. Are we to be the experimental subjects for this hypothesis? Limitations in personnel and funding in the state health department in the areas of vector control, epidemiology, and laboratory services make the likelihood of early detection and control of such diseases unlikely.

The state EIS nowhere addressed these problems inherent in the yearly arrival of millions of international travellers onto our small island to interact with our 100,000 residents. Neither does it address where the funding will come from for the increased numbers of AIDS cases that will accrue to us due to those infected wishing to come to our "paradise" to live their last months or years, or those others who do not know they have the deadly virus who come here to practice unsafe sex while on vacation, thereby infecting our young men and women.

. Increased International and Local Drug Trafficking.

Internationalization of Kahului Airport would inevitably result in increase attempts to smuggle narcotics and other illicit

*[Two cases of cholera were recently diagnosed in Honolulu. Given to numerous sewage spills that have recently occured in the Kaanapali area, the chances of increased transmission of this lethal disease are enhanced with greater east-west traffic bringing in more carriers from endemic areas.]

pharmacologic substances into the United States. Intradiction and other law-enforcement would need to under a radical upgrade to counteract this influx. If experience in other locales is to be believed, only a fraction of the drugs will be found, the rest finding its way to the mainland or into the local market. Illicit drug use among the disenfranchised local population and the vacationers, with all of its inherent morbidity and mortality, can be expected to further strain the health care system and inadequate drug treatment facilities. This problem is not adequately addressed in the EIS.

E. Increased Prostitution and Racketeering.

With increased eastern tourism and inherent pleasure seeking activity, prostitution and gambling can be expected to increase. Organized crime, which is typically involved in organizing both of these activities, as well as drug sales, can be expected to become well established on Maui.

Prostitution can be expected to increase dramatically the incidence of sexually transmitted disease among tourists and the local population as well. The incidence of AIDS in particular will increase among our young people.

Violent crime and motor vehicle accidents related to drug sales and use respectively, will increase.

F. EFFECTS OF OVERCROWDING

As more foreign tourists from prosperous nations come to Maui, there will be a proportionately greater number of individuals and corporations who will want to buy property here, either to live on or for speculation. This well-described process has already created an enormous increase in land values which has all but disenfranchised the local population. Many now cannot afford to live here. Those who cannot afford to move away are forced either into homelessness, if they are alone, or into overcrowded conditions as families move in with their relatives.

Homelessness is a problem that has not yet been successfully addressed in Honolulu, where the problem has been the greatest. Maui will rapidly become a worse problem for displacement and homelessness, and will have even fewer resources with which to deal with the problem.

The stress of overcrowding may lead to many emotional disturbances, increased domestic violence and societal crime, escapist activities such as alcoholism and drug abuse, suicide, incest and unplanned pregnancy, and so on. Depression and anxiety have become more evident as people struggle to pay bills, educate children, and pay exorbitant rent on the meager combined incomes of family members working several jobs. These parents can provide little supervision of their stressed children and adolescents. Stress related medical illnesses such as heart attack, peptic ulcer, hypertension, and others are rampant on Maui.

Such fragmentation of the family and society come at a time when there are gross budgetary cutbacks in social services across the board and the spirit of voluntarism is lost with the curtailment of leisure time. We find our courts and jails expanding, while our interventive and supportive services are being diminished or reaching the point of exhaustion. All of these current phenomena will only get worse as the economic pressures escalate with the rapid growth of tourism and development that can be expected from internationalization. Gradual growth would be much better tolerated.

G. POLLUTION FROM ENERGY PRODUCTION

1. Increased Energy Demand.

Tourism is an energy intensive business with enormous consumption of fossil fuel for, among other things, the many rental cars, the brightly hotel rooms and grounds, the numerous hot showers, the air conditioning, the helicopters, and not least, the massive airplanes that transport the visitors. Crowding more power plants into Central Maui, larger and more numerous airplanes on our runways, more traffic onto our slowing highways will increase our exposure to hydrocarbons, carbon monoxide, and particulates with their inherent health effects. We assume that we are better off than large urban areas in this regard, but this assumption may not be valid considering the increasing traffic densities and slower speeds that will be occuring with rampant expansion.

2. New Coal and Diesel Capacity.

The EIS does not address the effects on Maui's air and water from the increased generation of energy. Coal is anticipated by most to be the main fossil fuel of the future. A fluidized coal bed is anticipated for Puunene HC&S, increased diesel generating capacity is projected for Maalaea, and sources of energy production may be forthcoming.

3. Adverse Wind Conditions in Maui Central Valley.

On typical tradewind days, Maui's Central Valley creates a vorticeal flow that circles from Paia, through Puunene, over Kihei, up to Kula, and back to Paia to recirculate. Pollutants recirculate under these conditions. On Kona Wind (south or east winds), inversion conditions often exist and lead to smog, increased asthma attacks and other respiratory and cardiac conditions.

4. Sugar Cane Burning and VOG.

Sugar cane burning occurs for 9 - 10 months of the year, and in recent years, VOG from volcanic eruptions on the island of Hawaii have adversely affected Maui's air quality. These non-point sources are never factored in discussions of Maui air quality. The EIS is also silent on these matters.

5. Combustion of Jet Fuels--Increased International and Interisland Flights.

The burning of jet fuels as fully loaded wide-bodied jets take off full throttle from Kahului Airport will also have an impact on local air quality. It is highly unlikely that the amount of jet fuel combusted in our air mass will decrease with internationalization for the obvious (but overlooked in the EIS) reason that in addition to the numerous large international flights that will be coming in and out of this airport, there will of necessity be a great increase in the number of interisland flights arriving and departing Maui. The number will increase because many of the international tourists now making Maui their primary destination will use Maui as a base from which to visit other islands. This situation is obvious to anyone who has spent a few hours in Honolulu International Airport. An internationalized Maui airport will become a second hub for interisland flight.

The combustion products of jet fuel are well known, and are known to be carcinogenic. None of the health effects of these substances are addressed in the EIS. There is no risk analysis. Such a discussion would appear to be essential in any fair analysis of internationalization.

There is also the matter of "dumping" of jet fuel prior to a jet landing at Kahului in order not to exceed landing weight restrictions. Such dumps are increasingly frequent over populated areas in the flight path, especially Kihei and Maalaea. This will increase as more international flights are arriving. Adverse effects of such exposure to residents has not been calculated.

H. AIR ACCIDENTS -- INCREASED RISK AND INADEQUATE RESPONSE

1. Increased Crowding of Airport and Regional Airspace.

As alluded to above, internationalization would lead to an increased number of international and interisland flights. All of these flights would traverse the Central Valley of Maui from two directions with one major approach depending on the wind direction. The Central Valley of Maui represents approximately 7 miles by 10 miles of navigable area between two large mountains for the many large and rapidly moving airplanes that fly to this island. This is relatively narrow area for the sweeping turns and long approaches that must be made in order to land at our runway. Increased numbers of flights will attenuate reaction times in this narrow space and leave less room for error.

Hawaii is the most distant point from the major land masses of Australia, Asia and the Western Hemisphere. Pilot fatigue from long overseas flights, combined with potential lack of acquaintance with local conditions and geography may compound this lack of maneuvering room, leading to more likelihood of accident.
Turbulence from large widebodied airplanes and rapid sequencing of takeoffs and landings may increase the chances of turbulence related accidents, especially for smaller interisland airlines, commuter and general aviation flights.

General aviation, if it stays at Kahului Airport or even if it moves to Puunene, will still fly into and out of the Central Maui airspace, thereby creating an important contribution to the probability of an accident involving commercial flights.

If a parallel runway is not built, the existing runway would potentially experience overcrowding in terms of taxiing. If a parallel runway were built, the necessity of aircraft crossing the current runway to the arrival area could present a hazard for incoming aircraft.

The burning of sugar cane has been known to create problems with visibility on the runway approach, and with increased pressure of international flights, this could compound the chances of pilot error and accident. Frequent volcanic eruptions over the last 10 years in the island of Hawaii have contributed to the frequent haze and decreased visibility, and can be expected to continue in the foreseeable future.

2. Inadequate Emergency and Medical Response.

Maui Memorial Hospital is currently incapable of handling more than a handful of critically ill persons. (see above). During the last large scale disaster drill in October 1991, held at Puunene

airfield, MMH was occupied at 110% of its capacity, and was not able to admit any of the "casualties". This is not an unusual occupancy for this overburdened hospital.

In regards to the DMAT team based on Maui (which was deployed to Kauai in the aftermath of Iniki), under the best of circumstances, the 50% critically ill casualties anticipated in such a disaster would have definitive care delayed until their arrival in Honolulu, which must await 1). notification of the National Guard and Air Force in Honolulu, 2). mobilization and flight to Maui, 3). transport (if disaster is not conveniently at airport) of casualties to airplanes, 4). triage and loading of casualties onto transport planes, 5). flight back to Honolulu, 6). transfer to ground transport from airplanes, 7). transport, through local traffic, to hospital, assuming there are beds readily available (many hospitals are frequently full). There are no burn beds on Maui, and a handful on Oahu.

It is notable in the above-mentioned disaster, that all responders had been prepared for weeks in advance for the event, an practice which will obviously not be possible in event of a real accident. Many such accidents will not conveniently be located at an airstrip close to the airport during morning hours. On the other hand, the choice of a terrorist action as the "disaster" points up the very real chance of increased terrorist activity at an international airport. Maui has neither the manpower or expertise to deal with such activities.

I. INCREASED MILITARY PRESENCE WITH INTERNATIONALIZATION AND RUNWAY LENGTHENING.

1. Strategic Defense Initiative.

Haleakala has, for many years, been a center for military satellite identification and tracking (TRW and AVCO GEODDS). In 1989 and 1990, the Air Force conducted the Relay Mirror Experiment for the Strategic Defense Initiative. An Air Force C5A, one of the largest transport planes in the world, landed at Kahului Airport to deliver the equipment for this experiment. After the completion of this experiment, the facility has continued, in both publicized and clandestine experimentation, to advance laser warfare technology ("hazing" of Soviet satellites, laser tracking through tungsten cloud from missile launched from Kauai Barking Sands facility).

The recent addition of a four meter telescope further attests to the intention of the Air Force to continue to utilize Maui as an essential experimental station for SDI. More to the point, however, is the probability that due to its extreme westward location to the continental United States, Haleakala will assume a more essential

military significance in the age of strategic laser warfare.

It is of importance that Senator Daniel Inouye recently stated in the press that in order to obtain federal funds to upgrade and improve Haleakala Highway (i.e. federalize it), a longer runway would need to be built. Presumably, interest in a federal highway would arise only as a result of the federal government's interest in Haleakala as an important military asset, as opposed to a mere research facility. The presence of a national park has not as yet provoked such an offer from the federal government.

It is conceivable that Haleakala could become a groundbased strategic laser (or other direct energy weaponry) facility with the responsibility for detecting and destroying enemy missiles aimed at the continental United States, similar to the position occupied by Pearl Harbor in an earlier era. Such a facility would necessitate a runway capable of transporting equipment and hardware both during the development and operational phases. Increase military traffic might include faster military aircraft with longer runway needs.

2. Increased Utilization of Kahului Airport as a Practice Facility.

Kahului Airport is currently the site of military aircraft practice approaches, landings and takeoffs, and touch and go operations. A longer runway would very likely result in more such activity with different varieties of faster and larger airplanes, and perhaps more night training missions. Parking and storage of military aircraft could also be expected as the pressure on the military to find training fields increases.

3. Effects of Increased Militarization of Maui.

Military operations worldwide have resulted in environmental pollution, increased production and expenditure of energy, increased probability of accidents, and increased infrastructural needs (roads, communications, housing, recreation, land utilization).

The weapons of directed energy warfare may generate toxic wastes, utilize great amounts of energy, and result in unanticipated accidents. These possibilities are not addressed as a result of airport lengthening in the EIS. Some directed energy systems may need nuclear power generation to power them, introducing nuclear materials into the Maui County Nuclear Free Zone (legislatively approved by the Maui County Council in 1984).

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96.104

March 14, 1996

Dr. Steven M. Moser, M.D.
1883 Mill Street
Wailuku, Maui, Hawaii 96793

D r Mr. Moser:

Subject: Joint State/Federal Environmental Impact Statement
Scoping Meeting, Kahului Airport
State Project No. AM1011-07

Thank you for your comments of May 18, 1994 on the Kahului Airport Environmental Impact Statement (EIS). I believe your concerns are addressed in the following Sections of the Draft EIS. The responses are numbered in accordance with your letter.

A. Lengthening the Runway and Internationalization of Kahului Airport will result in an Increase in Population for Maui County.

1. Runway Length:

Section 2.3.1	Relationship of the Proposed Project to the Goals and Objectives of the State and County
Section 2.3.2	Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
Section 2.4.4	Proposed Airfield Developments
Section 4.2	No-Action Alternative
Section 4.3	Master Plan Alternatives
Section 4.4	Other Runway Alternatives
Section 4.5	Alternative Runway Construction Phasing
Section 5.0	Cumulative Impacts
Section 6.0	Growth Inducing Impacts
Section 7.6	Conformance with State and County Plans, Goals, and Policies

2. Internationalization:

Section 3.5	Socio-economic Impacts
Section 3.6	Secondary Socio-economic Impacts
Section 6.0	Growth Inducing Impacts
Section 8.0	Other Related Issues

3. Infrastructure:

Section 2.2.15	Infrastructure
Section 2.4.8	Proposed Roadway System
Section 2.4.9	Proposed Utilities and Drainage System
Section 3.22	Public Facilities, Infrastructure and Services and Aviation Safety
Section 4.2	No-action Alternative
Section 5.0	Cumulative Impacts

4., 5., 6., and 7.

Growth:

Section 6.0	Growth Inducing Impacts
Section 3.6	Secondary Socio-economic Impacts

Relationship to State and County Objectives:

Section 2.3.1	Relationship of the Proposed Project to the Goals and Objectives of the State and County
Section 7.6	Conformance with State and County Plans, Goals, and Policies

Infrastructure:

Section 2.2.15	Infrastructure
Section 2.4.8	Proposed Roadway System
Section 2.4.9	Proposed Utilities and Drainage System
Section 3.22	Public Facilities, Infrastructure and Services and Aviation Safety
Section 4.2	No-action Alternative
Section 5.0	Cumulative Impacts

Internationalization:

Section 6.0	Growth Inducing Impacts
Section 8.0	Other Related Issues

B. Lack of Infrastructure:

Section 2.2.15	Infrastructure
Section 2.4.8	Proposed Roadway System
Section 2.4.9	Proposed Utilities and Drainage System
Section 3.22	Public Facilities, Infrastructure and Services and Aviation Safety
	No-action Alternative
Section 4.2	No-action Alternative
Section 5.0	Cumulative Impacts

Environmental Consequences:

Section 3.0	Affected Environment, Probable Consequences, and Mitigation Measures
Section 3.8	Water Quality Impacts
Section 3.9	Department of Transportation (DOT) Act, Section 4(f)
Section 3.11	Biotic Communities
Section 3.12	Wetlands
Section 3.22.7	Recreational Facilities
Section 5.1.3	Maui Northshore Greenway Bikeway

C. Importation and Exportation of Exotic Diseases, Pests, and Plants:

Section 3.11	Biotic Communities
Section 5.3.1	Alien Species
Section 6.2	International Arrival Facilities
Section 8.2	Analysis of International Flight Operations

D. Increased International and Local Drug Trafficking

Section 3.5	Socio-economic Impacts
Section 3.6	Secondary Socio-economic Impacts
Section 3.22	Public Facilities, Infrastructure and Services and Aviation Safety
Section 6.2	International Arrival Facilities
Section 8.2	Analysis of International Flight Operations

E. Increased Prostitution and Racketeering

Section 3.5	Socio-economic Impacts
Section 3.6	Secondary Socio-economic Impacts

Section 3.22	Public Facilities, Infrastructure and Services and Aviation Safety
Section 6.1	International Arrival Facilities
Section 8.2	Analysis of International Flight Operations

F. Effects of Overcrowding

Section 3.5	Socio-economic Impacts
Section 3.6	Secondary Socio-economic Impacts
Section 3.22	Public Facilities, Infrastructure and Services and Aviation Safety
Section 5.0	Cumulative Impacts
Section 6.0	Growth Inducing Impacts
Section 8.2	Analysis of International Flight Operations

G. Pollution from Energy Production

Section 3.7	Air Quality, Climate and Meteorology
Section 3.18	Energy Analysis
Section 3.22	Public Facilities, Infrastructure and Services and Aviation Safety

H. Air Accidents -- Increased Risk and Inadequate Response

Section 3.22	Public Facilities, Infrastructure and Services and Aviation Safety

I. Increased Military Presence with Internationalization and Runway Length

Section 2.3.1	Relationship of the Proposed Project to the Goals and Objectives of the State and County
Section 2.3.2	Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
Section 2.3.3	Provide Air Transportation Facilities for Cargo and Passenger Service Consistent with Planned Growth and in Order to Accommodate Existing and Forecast Aviation Demand
Section 3.5	Socio-economic Impacts
Section 3.6	Secondary Socio-economic Impacts
Section 3.22.9	Aviation Safety
Section 7.6	Conformance with State and County Plans, Goals, and Policies

Section 6.0 Growth Inducing Impacts
Section 8.0 Other Related Issues

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

ST:fd

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

NAME: Vernon M. Oato

ADDRESS: 140 Uwapo Road #53-202
Kihei, HI 96753

SUBJECT: Support of Kahului Airport Runway Extension

I would like to express my support for extending the airport runway at Kahului Airport. I support the position taken by the Pueo coalition (attached) and I would like to add my own qualifiers.

#1. Maui's main source of sustenance for the economy is the visitor industry. We have reviewed and determined that the growth of this sector, as evident by the expansion of the hotel industry, was opportunistic for a healthy Maui. It is time we focus on supporting the infrastructure to maintain this framework as the master plan has already addressed. It would be self defeating not to do so. Growth is inevitable and to ignore the emerging markets and the impact they will have in the future is no more than the ostrich burying its head in the sand. Let see this thing through now or we'll fall by the wayside and have to address this in the future when it becomes imperative. Do it now, do it right.

#2. The current situation with the airlines on load capacity just doesn't make sense. The runway is long enough for larger planes only if they fly without full cargo.?!

#3. This is apparent.

#4. Supporting the islands agriculture industry strengthens the diversity of he economy.

#5. Who knows better than the people we entrust with our safety. Each time I return to Maui, I have to reflect on the safety issues when the airplane uses the total length of the runway each time we land. If there's no apparent margin of error, somewhere down the line that extra length of runway is going to be an issue and it may be tragic.

#6. I consider myself an environmentalist at heart but I see no reasonable threat to environment. I support whatever findings of the outcome.

#7. Supported as stated. Let do it right without compromising our future.

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
96.087

March 14, 1996

Mr. Vernon M. Oato
140 Uwapo Road #53-202
Kihei, Maui, Hawaii 96753

Dear Mr. Oato:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your comments from the Scoping Meeting on May 18, 1994 for the subject Environmental Impact Statement (EIS). Your concerns on the Proposed Project are addressed in the following sections of the Draft EIS.

1. Economic Impacts:
   - Section 3.5 Socio-Economic Impacts
   - Section 3.6 Induced Socio-Economic Impacts

2. Runway Length:
   - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
   - Section 2.4.4 Proposed Airfield Developments
   - Section 4.3 Master Plan Alternatives
   - Section 4.4 Other Runway Alternatives
   - Section 6.1 Lengthened Runways

3. Environment and Safety:
   - Section 3.0 Affected Environment, Probable Consequences and Mitigation Measures
   - Section 3.22 Public Facilities, Infrastructure and Services and Aviation Safety

4. Economic Impacts:
   - Section 3.5 Socio-Economic Impacts
   - Section 3.6 Induced Socio-Economic Impacts

Hana Like Na Ke Ala Aloha
Working Together to Provide Gateways of Aloha

5. Safety:
   - Section 3.22 Public Facilities, Infrastructure and Services and Aviation Safety

6. Environmental Impacts:
   - Section 3.0 Affected Environment, Probable Consequences and Mitigation Measures

7. Proposed Project:
   - Section 2.0 Project Description
   - Section 4.0 Alternatives to the Proposed Project

I look forward to your comments on the Draft EIS. Should you have any other questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

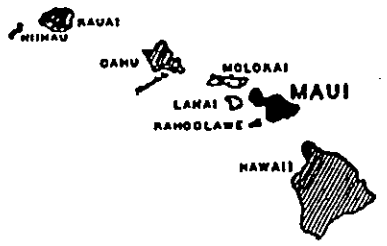
Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Maui County Farm Bureau

Affiliate of the Hawaii Farm Bureau Federation & the American Farm Bureau

Post Office Box 148 • Kula, Hawaii 96790



May 18, 1994

Mr. David J. Welhouse
Airport Engineer/Planner
Federal Aviation Administration
P.O. Box 50244
Honolulu, HI 96850

Re: Airport Runway Extension, Kahului Airport

Dear Mr. Welhouse:

Attached are policies adopted and approved by the Hawaii Farm Bureau Federation, which represents all counties in Hawaii. Maui County Farm Bureau is an affiliate of the Hawaii Farm Bureau Federation which adopts the policies as well.

Based on these policies and stated purpose, the Maui County Farm Bureau continues to support the extension of the Airport runway.

Yours truly,

Kenneth Okamura
President, MCFB

The purpose of MCFB - Farm bureau is a free, independent, non-governmental, voluntary organization of farm and ranch families united for the purpose of analyzing their problems and formulating action to achieve educational improvement, economic opportunity, and social advancements and, thereby, to promote the national well-being.

We, members of the MCFB, are proud of our organization and the contribution it is making to our state and national economies and to our social well-being. Abundant production on our farms is a public asset, and we will continue to strive for the attainment of our goal of a well-fed and peaceful world.

We reaffirm our belief in the American way of life, with equal opportunity for all and a government of the people, by the people, and for the people.

State and National farm policies - We support market-oriented agriculture. We believe that market-oriented agriculture is the most efficient means of producing food and fiber and provides farmers with the greatest opportunity for economic well-being. This means that farmers and ranchers must be granted the freedom to produce at a profit. Market-oriented farm policies effectively implemented should maximize agriculture efficiency and increase farm profit through:

1. Assurance of unrestricted access to domestic and world markets so farmers can receive the highest possible market prices;and
2. Assurance of reliable unfettered transportation for agricultural commodities.

Government programs should be carefully designed and implemented to enhance our competitive position in world markets and to avoid undue interference with market-directed adjustments in production and marketing.

Transportation

1. General Transportation:

We support the development of sound, long-range state and county transportation systems encompassing all modes of transportation.

The State, counties and private sector should work together to reduce transportation costs to enhance the movement of agricultural products.

2. Air and Sea Transportation:

The State should assist industry in seeking greater availability of air and surface cargo transportation.

We encourage appropriate state funding of adequate harbor and airport facilities for the handling of perishable agricultural products.

International trade:

We recommend more effort toward increasing international trade on a commercial basis because exports represents such a significant part of the total market for our agricultural production.

Pest management:

The state should be responsible for pest problems of regional nature. Individual farmers should be responsible for pest management on their own farms.

We support all Department of Agriculture quarantine and inspection programs that prevent the introduction of new diseases and pests into the state due to our island insularity.

Farmer participation in government affairs:

We encourage farmers to participate in governmental affairs at the national, state and county levels by making themselves available to serve on various boards and commissions, and by speaking out on matters affecting the community.

These policies were adopted and approved by Hawaii Farm Bureau Federation delegates, which represent all counties in Hawaii, on October of 1993 for the year of 1994. Maui County Farm Bureau is an affiliate of the Hawaii Farm Bureau Federation which adopts their policies as well.

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Mr Kenneth Okamura, President
Maui County Farm Bureau
P.O. Box 148
Kula, Maui, Hawaii 96790

Dear Mr. Okamura:

Thank you for your letter comments of May 18, 1994 on the Scoping Meeting for the Kahului Airport Environmental Impact Statement (EIS). Your concerns are addressed in the following Sections of the Draft EIS:

Transportation		
	Section 2.3.2	Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
	Section 2.4.4	Proposed Airfield Developments
	Section 4.3	Other Runway Developments
	Section 6.1	Lengthened Runways
International Trade		
	Section 5.1.4	International Operations
	Section 6.0	Growth Inducing Impacts
	Section 8.0	Other Related Issues
Pest Management (Alien Species)		
	Section 3.11	Biotic Communities

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

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-EP
96.100

March 14, 1996

Mr. Kenneth Okamura, President
Maui County Farm Bureau
P. O. Box 148
Kula, Maui, Hawaii 96790

Dear Mr. Okamura:

Subject: Joint State/Federal Environmental Impact Statement
Scoping Meeting, Kahului Airport
State Project No. AH1011-07

Thank you for your comments of May 18, 1994 on the Scoping Meeting for the Kahului Airport Environmental Impact Statement (EIS). I believe your concerns are addressed in the following Sections of the Draft EIS.

1. Transportation:
   - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
   - Section 2.4.4 Proposed Airfield Developments
   - Section 4.3 Other Runway Developments
   - Section 6.1 Lengthened Runways

2. International Trade:
   - Section 5.1.4 International Operations
   - Section 6.0 Growth Inducing Impacts
   - Section 8.0 Other Related Issues

3. Pest Management (Alien Species):
   - Section 3.11 Biotic Communities

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

To: Accepting Authority: Governor, State of Hawaii
Proposing Agency: State of Hawaii, DOT, Airports Division
Proposing Agency: Federal Aviation Administration, Washington
Consultant: Edward K. Noda and Associates

Subject: Preliminary comments on some aspects of the proposed Joint EIS for "improvements" at Kahului Airport.

Dear Sirs,

My name is Jeffrey Parker. Thank you for the opportunity to give you my input regarding the scope of the proposed Federal E.I.S for the Kahului Airport Expansion.

I am the owner and operator of the Tropical Orchid Farm in Haiku, Maui. My company has the distinction of being the largest exporter of live orchid plants on Maui. As such, we are very concerned about several aspects of the Airport Expansion.

Firstly, the previously prepared State E.I.S has been questioned and condemned by many members of the community. In my opinion, one of the biggest reason for this condemnation is the disingenuous way that the State DOT sought to avoid scrutiny of international arrivals in it's E.I.S. Initially, the State as well as supporters of the Expansion, admitted publicly that one of the purposes of the Expansion was to encourage international flights (to "boost our economy"). As DOT officials became aware of public opposition to direct international arrivals, they simply changed their position to "we have no plans to internationalize Kahului Airport". As we all now know, DOT was fully aware that the only obstacle to international arrivals was the short runway length at Kahului, which is too short for jets loaded with enough fuel to reach (for instance) Japan, to take off. DOT's insincerity about this issue was further underscored when Jeanne Schultz testified under oath about the discussions being conducted by DOT with the Japanese about direct flights to Maui from Japan. Also, if one studies the floor plans of the new arrival facilities, one can easily see that the facilities can be converted overnight to Customs and Immigration facilities. So, it is my belief (and hope) that the new Federal E.I.S. should treat the Expansion as an international facility, as everyone already knows that that is what it is. If we admit that this Expansion is likely to lead to internationalization, we can better address (in the E.I.S.) the very real threats to Maui's eco-system and agriculture which could arise from direct overseas flights. Treating the Expansion as a potential international arrivals facility would also restore some of the public's confidence in the E.I.S. process.

At my farm, one of our biggest concerns is the introduction of new alien pest species. In the last five years, we have had to do battle with several new pests including a new slug which can do incredible damage to our plants in a single night. I was clearing some groundcover the other day and was shocked to see how these slugs are breeding in the mud underneath the groundcover literally by the hundreds! How can I keep them out of my nursery when the surrounding countryside is crawling with millions of individuals?

And this is a pest which we never saw before three years ago. We also have had problems with a new thrip which attacks orchid flowers and a new orbatid mite which does not attack the orchids but would cause our shipments to be rejected by Mainland states if it was to be found in our boxes. I would like to mention another pest which has become established on Oahu but not yet on Maui. This is the Bulbul, an aggressive bird species from Southeast Asia which has been known to hop down the rows of dendrobium orchids, breaking off every flower spike, apparently just to be mean. These are very serious problems facing us, and you can see that our concern is that soon us farmers may be spending so much of our time and resources fighting new arrivals that we will not have any time or money left to take care of the other aspects of our businesses.

Many supporters of the Airport Expansion, as well as the E.I.S. itself, seem to take the position that " if the pests reach Oahu via international arrivals, then it is only a matter of time before that pest reaches Maui anyway, therefore we shouldn't be concerned about internationalizing Kahului." This was refuted in sworn testimony by Haleakala National Park biologist Art Medeiros (as well as many others). He gave many examples of cases where a particular new introduction was identified on Oahu first, which gave DOA scientists time to develop bio-controls or eliminate the problem through other methods before the pest could make its way to Maui or other outer islands. He pointed out that Oahu's urban environment surrounding the airport makes it far easier to spot and isolate these new pests than if they were being introduced directly to the relatively rural environment of Maui, and particularly to the cane fields surrounding Kahului Airport. For example, a brown tree snake falling out of a landing gear on the approach to Kahului would have a far greater chance of going undetected than a tree snake falling out over urban Oahu. In fact, nests of these horrible snakes have been found on military bases near Honolulu Airport.

This brings me to the issue of the brown tree snake. The facts coming in from Guam are shocking: the number of brown tree snakes per square mile has now reached 20,000 snakes; the native bird population has been almost completely decimated, people do not go out walking through the brush or at night; damage to Guams' electrical system due to shorts caused by snakes has been estimated to go as high as 120 million dollars per year! The species is particularly threatening because of its breeding and life cycles. One female snake can carry hundreds of fertile eggs. The eggs remain fertile for up to 5 years, so that it is not necessary to introduce both a male and female. One fertilized female is enough to start an epidemic. Recently, according to a press release by Tish Uehara of State DOA, a live brown tree snake was discovered in a crate that had been shipped from Guam to Texas. The crate had been in storage in Texas for over a year, indicating that this species is capable of living without food or water for very long periods of time.

And yet, with this serious threat to our economy and quality of life, our state legislature could bring itself to appropriate only $100,000 to combat the threat of this introduction. Later, when "hard-times" hit our economy, the $100,000 was cut down to only $60,000. It find it ridiculous that our "representatives" would see fit to come up with only $60,000 for such a serious problem when recently, Gov. Waihee spent $80,000 on a 5 day junket to Japan! Something is seriously wrong with our priorities in this state. An explosion of brown tree snakes would devastate Hawaii's tourism industry, as well as affect every other aspect of life here. This brings me to a key issue; funding:

Historically, our state government has been very reluctant to appropriate funds for things like pest interdiction. In the previous state E.I.S, for example, the "Mitigation Measures" given to deal with the alien species problem were suggestions like "providing additional resource staff." and "Providing additional inspectors for increased inspection coverage..", and the very questionable Measure #5; "Various procedures, public awareness efforts, and a stricter enforcement program."

No where in the document does it specify how many additional personnel would be enough, or, most importantly, how these positions will be funded. Historically, the DOA, due to a lack of adequate funding, has not done an adequate job in intercepting alien species to this state. My question then, is, If we haven't had adequate protection in the past, why should we believe that simplistic statements like the ones given in the previous E.I.S Mitigation Measures are adequate?

In the new Federal E.I.S., will the Mitigation Measures be just a "wish-list"? Or should the acceptance of the document be SUBJECT TO (as I believe) THE FUNDING FOR THE MITIGATION MEASURES ALREADY BEING APPROPRIATED?

Being a resident of Maui for over 20 years, I really didn't know too much about the fragile eco-system of our island. Last year I had the opportunity to take a class at Maui Community College given by a biologist from Haleakala National Park. The course was titled "Natural History of the Hawaiian Islands". I want to tell you that it completely changed the way I look at the Island and all its plant and animal creatures. The thousands of native species which have become extinct in modern times has earned Hawaii the nickname of "The Endangered Species Capital of the World". Most, if not all, of these extinctions were caused by introductions of alien species. Points which really impressed me:

1. How many species have been lost already, but also, how many still exist but are under constant threat of extinction.

2. How unique Hawaii's flora and fauna are.

3. How large the scientific community is here (large) and how dedicated these people are to trying to preserve and describe what is left.

I would like to make the point that, if I could live here for 20 years and not really have a clue about what is going on here in biological terms, then I suspect that the consultants who will prepare this E.I.S. also don't "have a clue". The consultants can make up for their ignorance in one of two ways:

A. Enroll in the next Natural History of the Hawaiian Islands course at MCC, which is being offered this coming July 25 through August 11, and is being taught by Haleakala biologist Art Medeiros, or;

B. Include the Haleakala Park biologists in the E.I.S. process. Haleakala Park is the center for all scientific study on Maui, and is only natural that representatives from

the park be consulted about this E.I.S. This is an opportunity for the new E.I.S. to have scientific credibility, in contrast to the very un-scientific State E.I.S.

Another problem in controlling introduced alien species centers on the State's failure to construct and operate adequate Quarantine facilities. Small diversified agriculture has been denoted by the State itself as "the fastest-growing sector of the economy". It is absolutely crucial to any new (or existing ag venture) to be able to import new breeding stock. This holds true for the ornamental nursery industry as well as for food-producing farms. The Quarantine Facility on Maui has almost ceased to exist. It is in a state of disrepair, and persons wishing to import new material are practically discouraged from doing so, by the lack of "quarantine space" as well as the poorly designed building itself. Temperatures can soar above the 95 Degree mark, most of the time resulting in the death or injury of valuable breeding stock.. Until recently, it was almost impossible to "reserve" a quarantine room, because unscrupulous growers were allowed to reserve rooms on a continual basis, just "in case" they wanted to import something. If they had nothing to import at that time, they would simply give the reservation to one of their friends.

The system we have now, of threatening people with fines if they're caught importing a plant or animal, only encourages people to break the law. What we really need is a large "world-class" Quarantine Station which makes it easy for people to import plants and animals. This way, plants and animals can be scrutinized by DOA officials for possible dangerous pests, rather than having people think of ways to "smuggle" the creatures in. For example, I would like to see a Quarantine Program capable of handling the following scenario: An unknowledgable passenger boards a plane in Los Angeles or Nagoya with a restricted plant in his luggage. When the plane arrives in Maui, instead of scaring people with the threat of fines, etc., DOA representatives offer the passengers an easy, affordable quarantine for any restricted items they may be carrying. In this way, people are encouraged to work with inspectors, instead of encouraging them to try and smuggle the items. Yes this would cost money, but I'm convinced that a course of action similar to this would enable us to really begin to get a handle on the alien introductions problem, rather than the inadequate approach currently being used.

I believe that an adequate E.I.S. must examine the flaws in the current Quarantine Program, and come up with a more effective plan, if we are to take steps which could Internationalize Kahului Airport.

So in summary, in order to get the Airport Expansion underway and to avoid more litigation in the courts, the Federal E.I.S. must do the following:

1. Stop pretending that the expansion is not intended to "internationalize" Kahului Airport so that a real review of likely impacts can take place.

2. Include input from representatives of Maui's scientific community, especially Haleakala Park biologists and officials.

3. Provide for Funding of the "Mitigation Measures" before the E.I.S. can be Accepted.

4. Provide for a new and reinvigorated (5) Quarantine Program, drawing on expertise of Maui's scientists and those of us in the plant and animal industries.

I have several other concerns, including how to protect Kanaha Pond Wildlife Santuary, which has been called "the most important wetland in the Pacific Basin", but hope that others will ask for a better review of this and other issues.

Thanks for the chance to participate in this important matter.

Sincerely,

Jeffrey B. Parker

Jeffrey B. Parker
Owner
Tropical Orchid Farm
P.O. Box H
Haiku, Hi. 96708

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

IN REPLY REFER TO:
AIR-EN
96.099

March 14, 1996

Mr. Jeffery B. Parker
Tropical Orchid Farm
P. O. Box H
Haiku, Maui, Hawaii 96708

Dear Mr. Parker:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AH1011-07

Thank you for your comments presented during the scoping process for the subject Environmental Impact Statement (EIS). Your comments will be addressed in the following sections of the Draft EIS.

1. Internationalization:
Section 5.1.4 International Operations
Section 6.0 Growth Inducing Impacts
Section 8.0 Other Related Issues

2 and 3. Environmental studies and impacts:
Section 3.0 Affected Environment, Probable Consequences and Mitigation Measures

4. Alien Pests:
Section 3.11 Biotic Communities

5. Kanaha Pond Wildlife Sanctuary:
Section 3.12 Wetlands

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airport Administrator

c: FAA-ADO-HNL

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2435 Kaanapali Parkway Management Office, Bldg. H-6 Lahaina, Maui, Hawaii 96761-1916 Phone 808 661-4567 Fax 808 661-851

May 17, 1994

Mr. Ben Schlapak
State Department of Transportation
Airports Division
Honolulu, HI

Dear Mr Schlapak:

Please enter this letter as written testimony in support of the runway extension for the Kahului Airport.

As a resident, employer and businessman on Maui, I feel that the State needs to proceed with the proposed lengthening of the Kahului Airport runway. I feel that many industries will benefit from this extension, the farmers will be allowed additional air cargo capacity for their products to be flown to the Mainland and tourism will be allowed to continue as our number one employer and tax generator.

It is a fact that tourists do not travel to Maui because of the inconvenience of changing planes in Honolulu. We must provide easier access to the general public to Maui, if we don't other destinations will lure our visitors to their shores. If this happens small business will suffer along with the county of Maui who rely heavily on the tax's that come from the hotel tax and related revenues from the hotel industry.

I urge your support of our runway extension, the impact on the environment will be minimal compared to the impact on everyone's life style if the airport is not extended.

Sincerely,
THE ESTATE OF JAMES CAMPBELL

Donald N. Reaser
Asset Manager, Maui

dar:D1052100\K10037

Owned and Operated by The Estate of James Campbell

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1880

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

IN REPLY REFER TO:
AIR-EN
96.102

March 14, 1996

Mr. Donald N. Reaser
The Estate of James Campbell
Asset Manager, Maui
2435 Kaanapali Parkway, Bldg. H-6
Lahaina, Maui, Hawaii 96761-1916

Dear Mr. Reaser:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your comments of May 17, 1994 on the subject Environmental Impact Statement (EIS). Your concerns will be addressed in the following sections of the Draft EIS.

1. Airfield Length:
   - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
   - Section 2.4.4 Proposed Airfield Developments
   - Section 4.3 Master Plan Alternatives
   - Section 4.4 Other Runway Alternatives

2. Economic:
   - Section 3.5 Socio-economic Impacts
   - Section 3.6 Secondary Socio-economic Impacts

3. Growth:
   - Section 6.0 Growth Inducing Impacts

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Hiyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

IN REPLY REFER TO:

United States Department of the Interior

TAKE PRIDE IN AMERICA

NATIONAL PARK SERVICE
Haleakala National Park
P.O. Box 369
Makawao, Maui, Hawaii 96768

STATEMENT BY NATIONAL PARK SERVICE
FEDERAL AVIATION ADMINISTRATION SCOPING MEETING
FOR
KAHULUI AIRPORT EIS

BY
DONALD W. REESER

SUPERINTENDENT, HALEAKALA NATIONAL PARK

MAY 18, 1994

I am speaking for the National Park Service, Department of the Interior.

The Hawaii Department of Transportation 1992 Final Environmental Impact Statement failed to address the impacts airport runway extension and internationalization will have on Haleakalā National Park resources. In accordance with the National Environmental Policy Act, it is imperative that the federal EIS not ignore these impacts nor the body of law that provides special protection for National Parks and their natural resources.

We recommend that the following topics be fully addressed in the federal EIS:

-- Kahului Airport area environment and its conduciveness for the survival of introduced alien species arriving aboard aircraft from foreign countries.

-- Special quarantine and inspection preventative measures necessary to decrease the likelihood of accidental alien introductions contained in baggage and carried by passengers.

-- Monitoring measures necessary for early detection of introduced alien species.

-- Contingency action plans for locating and eradicating serious pests such as the brown tree snake should a nucleus population be established.

-- Speculative assessment of the impacts alien species arriving from foreign countries might have on the native Hawaiian plants and animals in Haleakalā National Park with special emphasis on endangered species.

The airport expansion project proposal is a federal action which could have serious and irreversible adverse effects on public values and the natural integrity of Haleakalā National Park. Therefore on September 7, 1993 the National Park Service requested to be a Cooperating Agency in the preparation of the Federal Environmental Impact Statement for expansion of Kahului Airport. Enclosed are copies of an exchange of letters between the FAA and the NPS and requests made to FAA by the Office of Environmental Policy and Compliance, U. S. Department of the Interior. It is our understanding that the U. S. Environmental Protection Agency (Region 9) also supports our request. Thank you for the opportunity to comment.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
600 Harrison Street, Suite 515
San Francisco, CA 94107-1376

March 24, 1994

Mr. Daniel S. Matsumoto
Acting Airport District Office Manager
U.S. Department of Transportation
Federal Aviation Administration
Box 50244
Honolulu, Hawaii 96850

Dear Mr. Matsumoto:

It has come to our attention that a request from the National Park Service (NPS) to become a Cooperating Agency on the Kahului Airport extension project has been rejected. The Office of Environmental Policy and Compliance (OEPC) urges you to reconsider this decision.

According to a letter from the National Biological Survey (NBS), (copy attached) "the effect of alien species introductions on Maui's agriculture, native biota, and quality of life is so serious that neglect in imposing preventive measures now will appear gravely irresponsible in hindsight." (Loope, February 28, 1994).

While this threat is serious, mitigation and preventive measures can be developed and exercised. What is in order is a multi-agency approach that will address the needs and concerns of all interested and involved parties.

The intent of the National Environmental Policy Act (NEPA) would support NPS's being an active participant in the planning process. Since Haleakala's concerns regarding endangered species will eventually be addressed, your NEPA process would be facilitated by incorporating these issues, and assistance from Haleakala staff, early in the process.

We would appreciate your reviewing the enclosed letter from NBS and reconsidering the park's offer to cooperate with you in the NEPA process for the Kahului Airport expansion project.

If we can be of further assistance, please do not hesitate to call us.

Sincerely,

Patricia Sanderson Port
Regional Environmental Officer

cc: Donald W. Reeser, NPS
Lloyd Loope, NBS

A38

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
600 Harrison Street, Suite 515
San Francisco, CA 94107-1376

File

April 1, 1994

William Albee, Manager
Policy & Regulatory Division
Stop AEE-300, FAA Headquarters
800 Independence Ave.
Washington, DC 20591

Dear Mr. Albee:

It has come to our attention that a request from the National Park Service (NPS) to become a Cooperating Agency on the Kahului Airport extension project has been rejected. The Office of Environmental Policy and Compliance (OEPC) urges you to reconsider this decision.

According to a letter from the National Biological Survey (NBS), (copy attached) "the effect of alien species introductions on Maui's agriculture, native biota, and quality of life is so serious that neglect in imposing preventive measures now will appear gravely irresponsible in hindsight." (Loope, February 28, 1994).

While this threat is serious, mitigation and preventive measures can be developed and exercised. What is in order is a multi-agency approach that will address the needs and concerns of all interested and involved parties.

The intent of the National Environmental Policy Act (NEPA) would support NPS's being an active participant in the planning process. Since Haleakala's concerns regarding endangered species will eventually be addressed, your NEPA process would be facilitated by incorporating these issues, and assistance from Haleakala staff, early in the process.

We would appreciate your reviewing the enclosed letter from NBS and reconsidering the park's offer to cooperate with you in the NEPA process for the Kahului Airport expansion project.

If we can be of further assistance, please do not hesitate to call us at (415) 744-4090.

Sincerely,

Patricia Sanderson Port
Regional Environmental Officer

cc: Donald W. Reeser, NPS
Lloyd Loope, NBS

United States Department of the Interior

NATIONAL PARK SERVICE
Haleakala National Park
P.O. Box 369
Makawao, Maui, Hawaii 96768

IN REPLY REFER TO:

A38

February 23, 1994

Mr. Daniel S. Matsumoto
Acting Airports District Office Manager
U. S. Department of Transportation
Federal Aviation Administration
Box 50244
Honolulu, HI 96850-0001

Dear Mr. Matsumoto:

Thank you for your February 16 letter in response to the National Park Service's September 1, request for designation as a Cooperating Agency in preparation of the Environmental Impact Statement (EIS) for the proposed runway extension at Kahului Airport.

We strongly question the validity of the reasons given for not considering the National Park Service as a Cooperation Agency.

1. Even though Haleakalā National Park is 20 (actually 15) miles away from the airport, this distance is truly inconsequential in preventing alien organisms that arrive aboard foreign aircraft from reaching the park and impacting park resources.

2. The fact that some foreign charter flights already are permitted without adequate inspection and quarantine facilities is very worrisome to us and is added justification for the NPS obtaining status as a Cooperating Agency. We believe you would agree that with runway extension the frequency of foreign flights would increase drastically. This increase makes the introduction of alien species a probability instead of a possibility. We question whether or not adequate or any environmental review was done before allowing foreign flights to use Kahului Airport.

3. The National Park Service is mandated for preservation of natural ecosystems including endangered species within Haleakalā National Park, a federal preserve having exclusive jurisdiction, cooperating with the USFWS. Your statement that you do not expect that the airport's impacts upon endangered species within the park to become an issue is very alarming. In fact, we believe it may be contrary to National Environmental Policy Act. As a Cooperating Agency we could help draft the Affected Environment and Environmental Impacts sections to assure this subject is adequately addressed. Enclosed is a memorandum from National Biological Survey scientists substantiating our concerns.

We ask that you promptly reconsider our request for Cooperating Agency status inasmuch as we understand a contractor has been or soon will be selected for preparation of the Federal Environmental Impact Statement.

Sincerely,

Donald W. Reeser
Superintendent

Enclosure

cc: NPS Regional Director, San Francisco
NPS Pacific Area Director
USFWS Pacific Director
2nd Circuit Court, Wailuku

United States Department of the Interior

NATIONAL BIOLOGICAL SURVEY
Washington, D.C. 20240
Maui Office, P.O. Box 369, Makawao, HI 96768

February 28, 1994

To: Superintendent, Haleakala National Park

From: Lloyd Loope and Art Medeiros, National Biological Survey, Maui Office

Subject: Concerns regarding internationalization of Kahului Airport

As per your request, we would like to summarize our major concerns as to the increased potential for introduction and establishment of alien species to Maui if Kahului airport were to become a regular, frequent terminus for incoming international flights. We believe it to be essential in the spirit of the National Environmental Policy Act that these and related concerns be given full consideration in any environmental impact analysis. Unfortunately, the strategy of the State and Federal Departments of Transportation (DOTs) has been to ignore these impacts, claiming that threats to Endangered species beyond the immediate vicinity of the runway and to the natural resources of a National Park 15 miles distant from the airport are not an issue. If the currently proposed expansion of Kahului airport is to take place, mutually agreed upon preventative measures should be required to mitigate these serious potential impacts to the fullest extent possible. The DOTs' position is that they are going ahead with the airport extension and that any mitigation of impacts is someone else's problem.

The potential effect of alien species introductions on Maui's agriculture, native biota, and quality of life is so serious that neglect in imposing preventive measures now will appear gravely irresponsible in hindsight. Of course, this is a very complex subject and not one that is easy to summarize in a few pages. Fortunately, the Office of Technology Assessment of the U.S. Congress has done part of the job for us, as part of a September 1993 report on "Harmful Non-Indigenous Species in the United States" (OTA-F-565). We append their excellent section on Hawaii to assist in explaining our concerns and recommend that the DOTs utilize the entire document in preparing the EIS. (Available from the U.S. Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, D.C. 20402-9328; ISBN 0-16-042075-X)

Direct flights from international ports, especially but not limited to tropical and sub-tropical areas, will inevitably increase the establishment of newly arriving alien species on Maui.

Despite first rate personnel, the protection role of the quarantine program of the federal and state Departments of Agriculture (DOAs) in screening incoming passengers, baggage, and freight at Honolulu International Airport is a leaky sieve. Domestic passengers are requested to fill out a form, voluntarily admitting knowledge of their importation of organic materials. The coverage is marginally better at international arrivals, with use of interviews. This is adequate in dealing with only the most obvious infractions and the most naive of travelers. This preventive effort certainly should not be considered by the public and elected officials as doing more than reducing the influx of alien species.

Over the last 30 years, an average of about 20 new foreign insect species have established each year in Hawaii. Most of these have been caught in light traps placed by entomologists on the Ewa plains. The traps were placed there because areas surrounding an international airport are such a likely area for new, invading species to be found (pers. communication, Dr. John Beardsley, former head of the University of Hawaii Entomology Department, recently retired).

This "leaky sieve" is not, we believe, the fault of the DOAs' quarantine programs. The programs (especially the state program, which has the more difficult task, but far less funding in relation to an immense task) are very thinly stretched and constantly put in a position of trying to fight for more funding. Legislators typically don't realize the magnitude and severity of the problems, and indeed funds are scarce. The inspectors do all they can, given the immensity of the job, the limited funding of the quarantine program, and the feeling that visitors to our islands must not be more than marginally detained for this type of activity. Honolulu's quarantine program is one of the best in the world, with access to many scientists and specialists that Maui does not have. And yet many species "leak" through and become established. How can we assume that the "little brother" quarantine program at Maui's airport will do as good a job?

Proponents of an international airport at Kahului have in the past adopted the stance that if an alien pest establishes on Oahu via Honolulu International Airport, it is then only a matter of time until it gets to Maui. In some cases, this may be true due to aerial interisland dispersal and the lack of interisland quarantine. However, there are numerous examples of alien species that have reached islands other than Maui but have not become established here, often due to the awareness of the harmful effects of that species as a result of education efforts by the Hawaii Department of Agriculture and others. An extreme example would be a species with such devastating effects as the brown tree snake. If such a destructive species were to establish on a single Hawaiian island, heroic efforts would undoubtedly be instituted to prevent interisland transport. If the snake were to become established on Maui, we would be faced with the loss of all native bird species (see OTA report, p. 247). There are numerous other less dramatic cases.

We also suggest that alien species are more likely to become established at Kahului airport than at Honolulu International due its moister, more "hospitable" environs, much of which consists of irrigated sugar cane fields. Tradewinds at Honolulu International tend to blow many new insect arrivals out to sea; at Kahului airport tradewinds tend to blow new insect arrivals inland, into a lush agricultural area. The combination of these factors leads us to predict that a higher percentage of those alien species that slip through quarantine's efforts will become established at Kahului than at Honolulu.

Another factor is the greater diversity of lifezones on Maui than on Oahu. This greater diversity increases the chances of certain types of alien species either establishing more readily or reaching greater numbers and

having a greater effect. Whereas the maximum elevation on Oahu is near 4000 feet, Maui reaches to over 10,000 feet elevation. None of the following are found on Oahu: the high, cool mountain slopes; the cool "upcountry" area of fertile, deep, ash soils; the wet, heavily vegetated Hana coast; and the extensive barely vegetated leeward lava flanks of Haleakala.

The cool upcountry Kula region of Haleakala is one of Hawaii's richest agricultural regions. Kula farmers are already besieged by insect pests on onions, lettuce, cabbage, persimmons, protea, and carnations — cool weather crops not grown on Oahu. Some of the most destructive insects that feed on these crops are specialists, not likely to become established on Oahu due to the lack of these crops.

It is estimated that within a few years, 15 to 20% (75-100 species) of the federally listed Endangered species in the United States will exist on Maui. About 40 species are currently listed. Rain forests on northern Haleakala contain the last remaining habitats for five Endangered Hawaiian birds. Maui is the richest of the Hawaiian islands botanically and realistically is the Hawaiian island where the greatest biological diversity can be protected. Because of recent intensive and sometimes costly measures by state, federal, and private landowners, these natural resources are well-managed for long-term conservation. However, a single new invader such as the brown tree snake could completely reverse much of the progress made in the last few decades.

What are the cumulative costs of alien introductions? They involve loss of native biota, a reduction in our agricultural potential, and changes in quality of life. With each new foreign plant and animals that becomes established here, there is less chance to preserve the island's unique biota, to diversify agriculture, and to maintain a distinctive way of life.

The problem of destructive alien species that have not yet reached Maui is a real world manifestation of Pandora's box. We can't see into the box and predict the future damage. If the problem of alien species is ignored and the lid is opened, we do know that in many cases the changes in store for Maui and its people will be profound, permanent, and irreversible. Once open, the box cannot be closed.

Lloyd L. Loope
Research Scientist

Arthur C. Medeiros
Biologist

U.S. Department of Transportation
Federal Aviation Administration

AIRPORTS DISTRICT OFFICE
P.O. BOX 50244
HONOLULU, HI 96850-0001
Phone: (808) 541-1230
Fax: (808) 541-3462

February 16, 1994

RECEIVED
FEB 18 1994
National Park Service
Haleakala National Park

Mr. Donald W. Reeser, Superintendent
National Park Service
Haleakala National Park
P. O. Box 369
Makawao, Hawaii, HI 96768

Dear Mr. Reeser:

This is in response to your September 7, 1993 letter request for Federal Aviation Administration (FAA) designation as a Cooperating Agency in the preparation of the Environmental Impact Statement (EIS) for the proposed runway extension at Kahului Airport.

The NPS will have ample opportunity to participate in the National Environmental Policy Act (NEPA) process. The development of this EIS will include extensive public scoping meetings, hearings, distribution of EIS information, and agency consultation. The FAA encourages your active involvement in this EIS preparation and welcomes your comments.

However, based on the following reasons, the FAA does not consider your role to be that of a Cooperating Agency, as defined by Title 40 Code of Federal Regulations, Chapter V, Section 1501.6.

1. Haleakala National Park is remote from the airport, i.e., approximately a distance of twenty miles.

2. International (foreign) flights are already using the airport on a charter basis.

3. 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.

The Honolulu Airports District Office staff is available to consult with your staff on the details and issues to be addressed by the EIS. Please contact David Welhouse of our office at (808) 541-1243.

Sincerely,

Daniel S. Matsumoto
Acting Airports District Office Manager

cc: Owen Miyamoto
APP-600
AWP-600

A38

September 7, 1993

Mr. David Wellhouse
Regional Coordinator
Federal Aviation Administration
U. S. Department of Transportation
Federal Building
Honolulu, HI 96850

Dear Mr. Wellhouse:

The project proposed by State of Hawai'i, Department of Transportation to extend the Kahului, Maui Airport runway from 7,000 ft. to 9,600 ft. has been judged to require the preparation of a Federal Environmental Impact Statement in accordance with a June 2, 1993 order of the 2nd Circuit Court, State of Hawaii. Since it can be demonstrated that the effects of this project could have significant impacts to the natural resources of Haleakalā National Park, the National Park Service requests to be a cooperating agency in the preparation of the Kahului Airport Federal Environmental Impact Statement.

1. Haleakalā National Park is habitat for the following species protected under the Endangered Species Act of 1973:

Endangered Birds:	
Akepa, Maui	*Loxops coccineus ochraceus*
Hawaiian Goose (Nēnē)	*Branta sandvicensis*
Honeycreeper, Crested ('Akohekohe)	*Palmeria dolei*
Nukupu'u	*Hemignathus lucidus*
Parrotbill, Maui	*Psuedonestor xanthophrys*
Petrel, Hawaiian Dark-rumped	*Pterodroma phaeophygia sandwichensis*
Po'ouli	*Melamprosops phaeosoma*
Endangered Mammals:	
Bat, Hawaiian hoary	*Lasiurus cinereus semotus*
Endangered Plants:	
Ko'oko'olau	*Bidens micrantha kalealaha*
Carnation	*Schiedea kalealaha haleakalensis*
Nohoanu	*Geranium multiflorum*
Red-flowered Geranium	*Geranium arboreum*
'Oha wai	*Clermontia oblongifolia maulensis*
Wawa'iole	*Huperzia mannii*
Threatened Plants	
Haleakalā Silversword	*Argyroxiphium sandwicense macrocephalum*
Proposed Endangered Plants:	
Pelea	*Melicope balloui*
Pelea	*Melicope ovalis*
Candidate Endangered Plants:	
No common name	*Thelypteris boydiae*
Ko'oko'olau	*Bidens campyloiheca pentamera*
Buttercup	*Ranunculus hawaiensis*
Buttercup	*Ranunculus mauiensis*
Gardenia	*Gardenia remyi*
Large Hawaiian Reed Grass	*Calamagrostis expansa*
Joinvilles	*Joinvillea ascendens*
Lobelia	*Cyanea grimesiana*
Lobelia	*Cyanea kunthiana*
Mint	*Phyllostegia bracteata*
Orchid	*Platanthera holochila*
Tall Hawaiian Sanicle	*Sanicula sandwicensis*

Haleakalā National Park is the home of more endangered and threatened species than any other national park. Reputable ornithologists, botanists and ecologists can substantiate that new introductions of alien species arriving aboard foreign aircraft and becoming established in the very hospitable Maui environment represents a significant threat to the biotic resources of Haleakalā National Park. It can be scientifically substantiated that virtually all organism extinction and reduction of biological diversity in the park can be linked to the introduction (accidental or intentional) of non-native life forms. Furthermore, there is substantial evidence indicating that expanded foreign air service of the type that will be facilitated by the proposed airport expansion is a significant source of introduction of non-native life forms likely to damage the endangered, threatened and candidate species that inhabit Haleakalā National Park. We also believe that there is a very high probability of accidental or intentional introduction of non-native life forms if expansion of the airport results in expanded foreign air service.

For these reasons, we believe that FAA's action in considering approval of the proposed airport expansion is a federal action subject to Section 7 of the Endangered Species Act. Under that Act it is the duty of every Federal agency to "insure that any action authorized, funded or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or resulting in the destruction or adverse modification" of the critical habitat of the species." 16 U.S. Code section 1536(a) (2)

These circumstances also create a sufficiently high probability of intrusion of damaging non-native species into Haleakalā National Park that their probable presence raises substantial prospect of a resulting damaging "use" of the park and the habitat of endangered species within the park. The threat of that impact is sufficiently significant that it may reasonably be considered as potentially falling within the "use" regulated by Sect. 4(f) of the Department of Transportation Act 43 U.S. Code Sect. 303(c), as well as the parallel provisions of the Airport and Airways Improvement Act.

Finally, the threat of these impacts also raises substantial issues concerning compliance with.

the basic legislative policies that govern protection of our national parks, including Haleakala. These policies are embodied in the 1916 National Park Service Organic Act, reinforced by the Redwood Amendments. These Acts require national parks to be left "unimpaired for the enjoyment of future generations," and also "the protection, management and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established."

For all of the above reasons, it is essential that the National Park Service be included as a cooperating agency in the preparation of the contemplated EIS. The design of the EIS should address all of the above issues, and should provide the basis for a biological assessment as required by the Endangered Species Act. The scope of that assessment, and evidence concerning effect on protected species, should be developed in preliminary consultation with the Fish and Wildlife Service in order to assure full compliance with the law.

Donald W. Reeser
Superintendent

cc: UF&WS, Honolulu
NPS, Western Regional Director
NPS, Pacific Area Director
Hawaii 2nd Circuit Court, Wailuku

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7115
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Mr. Donald Reeser, Superintendent
Haleakala National Park
U.S. Department of Interior
P.O. Box 369
Makawao, Haui, Hawaii 96768

Dear Mr. Reeser:

Thank you for your written comments of May 18, 1994 on the Scoping Meeting for the Kahului Airport Environmental Impact Statement (EIS). Your concerns are addressed in the following Sections of the Draft EIS:

Alien Species:

Section 3.11	BIOTIC COMMUNITIES
Section 5.0	CUMULATIVE IMPACTS
Section 8.0	OTHER RELATED ISSUES

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

26 North Puunene Ave.
Kahului, Maui
HI 96732

(808) 871- PUEO

Jimmy Rust
Chairman

Roger Dubin
Vice Chairman

THE MAUI PUEO COALITION
"People United for Economic Opportunities"

Statement of Positions on Kahului Runway Extension

The Maui Pueo Coalition represents 20 organizations with a combined membership of 16,000. It was formed to support the extension of Kahului Airport's main runway to 9,600 ft.

The position of Maui Pueo Coalition and a majority of citizens on Maui is that a longer runway is essential to the long-term economic health of Maui, the safety of all passengers using the airport, the maintenance of a high quality of life and a clean environment.

The Economy

Foreign Competition— In a changing world, old travel patterns no longer apply. Maui must compete in an increasingly international tourism market. According to Hawaii Visitors Bureau projections, by the year 2000 more than 50 percent of all visitors to Hawaii will be from foreign countries.

Domestic and Local Competition— Less dependence on Maui's traditional West Coast markets will be gained through an extended runway. The ability to encourage direct flights to Maui from the Mid West and East Coast will ensure greater stability for our number one industry—tourism. Locally, the impact of extending the runway at Keahole on the Big Island has already been felt. United is now flying 747s direct to the Big Island, flights which are reported to be full. United has stated that these jets would have been routed to Maui instead if Kahului's runway had been of adequate length.

Airline Viability—Airlines have clearly stated that Kahului's 7,000ft runway is too short for economically feasible operations. Maui has a long history of aircraft fuel capacity problems with passengers and cargo being bumped due to takeoff limitations. A 9,600ft runway is the minimum length necessary for sustainable aircraft operations. In the competitive international visitor marketplace airlines will not service a destination with an inadequate airport. Maui's entire economy is dependent on efficient air access. The Maui Pueo Coalition believes that, at minimum, a 9,600ft runway is essential to keep major airlines servicing Maui.

Jobs— More than 43,000 jobs on Maui are directly or indirectly dependent on tourism. As the local population grows, the job base must expand or the next generation will leave for other states. Keeping tourism and new emerging industries healthy will assure job opportunities.

Agriculture— Farmers support the extension of the runway to 9,600 ft because it is essential for reliable air service to export their crops without cargo being bumped and produce spoiling. Efficient air lift capacity is vital to the survival of the pineapple industry and Maui's produce farmers. Farm viability is in itself a protection against development — if a farm fails someone will need to make the land pay and that usually means development.

Economic Diversification—Maui's growing hi-tech industries must have consistent air service to the U.S. Mainland and Asia. Kahului Airport is the linchpin for Maui's growing software, graphic design and small manufacturing industries. Regular international air service is vital to their success. (See study *"The Role of Air Transportation in Maui's Economic Future,"* researched and produced by The Maui Economic Development Board.)

Quality of Life

Uncontrolled Growth a Myth—The runway extension in and of itself will not cause growth. The airport is a facility which services the normal demands of our society. Indeed we have already outgrown the World War II vintage runway which is inadequate for today's needs. Opposition claims that an extended runway will cause a massive influx of visitors or new development pressures are false and a distraction from the reality. The majority believe a modern airport will *enhance* the quality of life.

Citizens Support Runway—Most Maui residents, as evidenced in a SMS Research survey commissioned by The Maui News (October 11, 1992) support a longer runway for convenience and safety. The airport is an essential part of Maui's infrastructure; it is zoning and General Plan controls which determine growth.

Hotel Rooms— The runway extension is needed to service existing hotels which are experiencing low occupancies. The runway has nothing to do with spurring new hotel growth.

Safety

Present Runway Dangerous—While the runway officially meets *minimum* FAA standards most pilots in the 40,000 member Airline Pilots Association consider it only marginally safe. Many would refuse to fly in there if taking such a stance would not jeopardize their jobs. With the strong wind shear factor at Kahului, the Maui Pueo Coalition considers attempts to restrict the lengthening of the runway to be irresponsible, unnecessarily risking passengers lives.

Longer Runway Safer—Maui Pueo Coalition believes that the likelihood of a crash is decreased with a longer runway regardless of size of jets coming in. Wide-bodies jets are currently landing at Kahului. A crash of a DC10 would exceed Maui Memorial Hospital's capacity and this is all the more reason to take a preventative posture by lengthening the runway to make it safer.

The Environment

Alien Species A Concern—Maui Pueo Coalition is deeply concerned about the introduction of alien pests and urges more controls at harbors and airports. Maui Pueo Coalition supports all creative ideas for intercepting alien species and we recommend some portion of landing fees be devoted to conservation efforts. Maui Pueo Coalition would also support introducing an appropriation request (possibly $1 million) to thoroughly study alien species introduction, particularly in regard to airports and harbors. It is the Coalition's belief that substantially more alien species are introduced through harbors than airports and the goal of the study would be to determine real facts as to how pests enter the state. The study would be a cooperative effort between University of Hawaii entomologists, a group such as The Nature Conservancy of Hawaii and the State Dept. of Agriculture. An expert would be appointed to coordinate the study. A report to the Legislature would recommend levels of future funding for alien species interdiction and control.

Runway Would Not Worsen Problem—Maui Pueo Coalition takes the position that a longer runway would not significantly increase alien pest introduction any more than we experience now. Pests are already entering at Honolulu Airport, a substantial amount through the military facilities which do not have controls. In fact if fewer inter-island flights land as a result of direct flights the risk of pests coming in from Oahu is lessened.

Kanaha Pond— There is no evidence that existing flights have impacted bird life at Kanaha Pond. Any impacts on Kanaha Pond would come from runway 5/20 (which is not being extended) not runway 2/20 which *is* to be extended. There is no proof that bird habits are altered in any way by the presence of the airport nor any evidence that an extension of 2/20 would have any negative impact on the bird sanctuary.

Noise Abatement— Maui Pueo Coalition supports adopting into law current recommendations for noise abatement at Kahului. Maui Pueo Coalition encourages cooperation from Aloha Airlines on specific flight paths and timing for night cargo operations until such time as new quieter equipment is brought on line.

Environmental Advantages of a Longer Runway—

— In the case of international flights, establishment of customs facility at Kahului would *strengthen* interception of smuggled fruits, the main source of alien pests.

— A longer runway would allow for stage 3 aircraft which are quieter and more fuel efficient. This would lessen noise impact and pollution.

— A longer runway will strengthen the local economy allowing government, businesses and citizens to contribute more resources to conservation efforts.

— A longer runway would allow an earlier take off point further away from Spreklesville homes, reducing noise impact.

Alternative Runway Lengths

9,600ft the Ideal Length—The Maui Pueo Coalition position is that a runway any shorter than 9,600ft is absolutely not acceptable. A length of 8,500ft would close the door on what Maui needs for its long-term economic viability. Maui Pueo Coalition also believes that 10,500ft provides the optimum efficiency for airlines and allows non-stop access to Mid-west hubs. However, because a 10,500ft runway affects shoreline access, The Maui Pueo Coalition accepts the State of Hawaii's proposal to construct a 9,600ft runway.

Internationalization

Foreign Flights Help Economy—Maui Pueo Coalition supports international arrivals. According to Owen Miyamoto there is no chance that Maui will ever be a truly international airport. There are no significant disadvantages to allowing direct flights from Japan or other foreign sources. International flights offer many economic advantages for the visitor industry, farmers and hi-tech industries.

Global Competitiveness—Without one-stop flights to Maui from major world airports we will see decreased tourism which will lead to fewer jobs and a reduced tax revenue base.

Associated Infrastructure Improvements (included in runway extension project)

Kanaha Park— Maui Pueo Coalition supports upgrading Kanaha Park for recreational use by county residents.

Bike Paths— Maui Pueo Coalition supports the construction of a bikeway along the entire Spreklesville shoreline.

Alahao Street— Maui Pueo Coalition supports reducing the size or relocating the proposed west perimeter parking apron such that Alahao street can be connected to Stable road as far inland as possible so as to provide public thoroughfare from Hana Hwy. to and from the entire Kanaha coastline. We also have no objection to a side link to Stable road for the convenience of Sprecklesville residents.

Highway Improvements— Maui Pueo Coalition supports all highway widening projects that would address current and future traffic needs of airport users.

Parallel Runway

Future Needs—Maui Pueo Coalition considers that a parallel runway is not necessary at this time. Nor are the funds available to build one. However the option of building one in 20 years should be left open. Maui Pueo Coalition would support creating a separate EIS should a parallel runway ever become necessary.

Alternative General Aviation Facility

Puunene Option—Maui Pueo Coalition supports examining Puunene as a reliever airport but there are serious safety considerations involved in havingtwo control towers and mixing air traffic patterns. Maui Pueo Coalition defers to the FAA's expertise in this area.

The undersigned organizations, representing more than 16,000 members, endorse the positions outlined in the Maui Pueo Coalition Kahului Runway Extension position paper.

Maui Visitors Bureau, Roger Dubin

Maui Div ILWU Local 142, William Kennison

Maui Hotel Ass'n., Terryl Vencl

Activity Owners Ass'n., Jan Pinney

Maui Chamber of Commerce, Wayne Hedani

Made in Maui Assoc., Lyle A. Wilkinson

Maui Economic Development Board, Michael Lyons

Hawaii Helicopter Operators Assoc., David Chevalier

Signatures continued →

Signatures continued

The undersigned organizations, representing more than 16,000 members, endorse the positions outlined in the Maui Pueo Coalition Kahului Runway Extension position paper.

Maui Farmers Cooperative Exchange, Henry Koja

Maui Farm Bureau, Paul Otani

Maui Gasoline Dealers Ass'n, Mike Kitagawa

Laborers International Union, Local 368, Daniel Carmichael

Hawaii Operating Engineers Industry Stabilization Fund, John Paul Ortman

Keia La Haui (Haui Today), Nelson Armitage

Mason's Union Local 630, Roy S. Tateyama

Maui Contractors Ass'n, Randy Piltz

IBEW Union, Local 1186, Lew Shimabuku

Hawaii Carpenters Union, Local 745, Maui Div., William Nishibayashi

Plumbers and Pipefitters Local 675, Herbert Kaopua

Hawaii Building & Construction Trades Council, Buzzy Hong

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
96.074

March 14, 1996

Mr. Jimmy Rust
Chairman
The Maui Pueo Coalition
26 North Puunene Avenue
Kahului, Maui, Hawaii 96732

Dear Mr. Rust:

Subject: Joint State/Federal Environmental Impact Statement
Scoping Meeting, Kahului Airport
State Project No. AM1011-07

Thank you for the comments from The Maui Pueo Coalition in their letter on the Scoping Meeting for the Kahului Airport Environmental Impact Statement (EIS). I believe your concerns are addressed in the following sections of the Draft EIS.

1. Economic Impacts:
   - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
   - Section 3.5 Socio-economic Impacts
   - Section 3.6 Induced Socio-economic Impacts

2. Quality of Life:
   - Section 6.0 Growth Inducing Impacts
   - Section 7.6 Conformance with State and County Plans, Goals and Policies

3. Safety:
   - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
   - Section 3.22.9 Aviation Safety

4. The Environment:
   - Section 3.0 Affected Environment, Probable Consequences, and Mitigation Measures

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

5. Alien Species:
   - Section 3.11 Biotic Communities

6. Kanaha Pond Wildlife Sanctuary:
   - Section 3.9 Department of Transportation (Dot) Act, Section 4(f)
   - Section 3.11 Biotic Communities
   - Section 3.12 Wetlands

7. Noise:
   - Section 3.2 Noise

8. Alternative Runway Lengths:
   - Section 4.3 Master Plan Alternatives
   - Section 4.4 Other Runway Alternatives

9. Internationalization:
   - Section 6.0 Growth Inducing Impacts
   - Section 8.0 Other Related Issues

10. Infrastructure:
    - Section 3.22 Public Facilities, Infrastructure and Services and Aviation Safety

11. Kanaha Beach Park:
    - Section 2.4.7 Proposed North Side Facilities

12. Bike Paths:
    - Section 3.22.8 Surface Transportation System

13. Alahao Street:
    - Section 3.22.8 Surface Transportation System
    - Section 8.0 Other Related Issues

14. Highway Improvements:
    - Section 3.22.8 Surface Transportation System

15. Recreational Facilities:
    - Section 3.22.7 Recreational Facilities
    - Section 5.1.3 Maui Northshore Greenway Bikeway

16. Parallel Runway:
    - Section 2.4.4 Proposed Airfield Developments
    - Section 3.0 Affected Environment, Probable Consequences, and Mitigation Measures
    - Section 4.3 Master Plan Alternatives
    - Section 4.4 Other Runway Alternatives

AIR-EN
96.074

: . Alternate General Aviation Facility:
Section 4.4.3 Relocation of Helicopters/General Aviation Operations to an Off-Airport Site

I look forward to your comments on the Draft EIS. Should you have any question, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

HAWAII MANAGEMENT ALLIANCE ASSOCIATION
"Your well-being is our concern"

353 Hanamau St., Suite 23
Kahului, HI 96732
Bus: (808) 871-7200
Fax: (808) 871-7362

MP
62

5/17/94

State & Federal Dept. of Transportation
Attn: Airports Division

Gentlemen:

Please accept this statement for the hearing to be held on May 18, 1994 regarding the Kahului Runway Extension. I have been a resident of Hawaii all my life and the years in Maui County total 24 years. And I am also a businessman on Maui with 1-2 employees.

I very much support the Pueo Coalition Position Statement.

Sincerely.

James W. Smith CLU, CIC
HMAA - Insurance Services
353 Hanamau St. (Ste. 23)
Kahului, Hawaii 96732
Bus. 871-7200

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
96.101

March 14, 1996

Mr. James W. Smith, CLU, CIC
Hawaii Management Alliance
Association, Insurance Services
353 Hanamau Street, Suite 23
Kahului, Maui, Hawaii 96732

Dear Mr. Smith:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your comments presented during the Scoping process in May 1994 for the subject Environmental Impact Statement (EIS). Your concerns will be addressed in Section 2.3, "Purposes and Needs of the Proposed Project", of the Draft EIS and in the following subsections.

1. Runway Length:
   - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
   - Section 2.4.4 Proposed Airfield Developments
   - Section 4.3 Master Plan Alternatives
   - Section 4.4 Other Runway Alternatives
   - Section 4.5 Alternative Runway Construction Phasing
   - Section 6.0 Growth Inducing Impacts

Your concerns on the economic impacts are addressed in the following Section of the Draft EIS.

2. Section 3.5 Socio-economic Impacts

I look forward to your comments on the Draft EIS. Should you have any other questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

May 18, 1994

Mr. Owen Miyamoto
Airports Administrator
Airports Division
Honolulu International Airport
400 Rodgers Boulevard, Suite 700
Honolulu, HI 96819-1898

Re: Public Scoping Meeting for the Kahului Airport
Environmental Impact Statement
State Project No. AM1011-07
May 18, 1994

Dear Administrator Miyamoto:

These comments address the supposed need for proposed airport runway improvements that are the subject of this Federal Environmental Impact Statement (FEIS) scoping meeting.

The DOT State EIS supposed that expansive airport improvements were necessary to accommodate projected tourist arrivals through the year 2010. The economic downturn that began in 1990 shows that exaggerated projections were used by DOT.

The State EIS sought to justify proposed airport improvements costing an estimated $300 million that, according to the State EIS, would not impact 90% of the DOT's projected tourist activity through 2010.

A Social and Economic Impact Assessment (SEIA) was provided as Appendix H of the final State EIS, wherein DOT analyzed what would happen if none of the proposed airport improvements were made. The results of that DOT analysis "would indicate that, without the proposed improvements, the level of activity could be constrained up to ten percent." (SEIA July 16, 1992, cover letter, page 2.)

William D. Smith

P. O. Box 927
Wailuku, Maui
Hawaii 96793

808-878-6776

§2.4.2 of the SEIA (at page 27) observes that the 1990 hotel occupancy rate for the Island of Maui was 70%, and states that "Maui's visitor industry is projected to grow steadily." The table referred to as supporting the latter statement (table 16 on page 32) is based on a 1988 State visitor industry projection showing the following actual (1985) and predicted (1990-2010) statistics for the total number of hotel units in Maui County and the number of occupied hotel units:

Maui County: Year	Total units	Occupied units
1985	14,200	11,100
1990	16,700	13,400
1995	20,500	16,400
2000	24,700	19,800
2005	29,200	23,300
2010	33,000	26,400

The SEIA later explains (page 74) that the November 1988 State visitor industry projections were "based on existing national and international forecasts of economic activity." DOT then increased the November 1988 State projection by 5.3% to create the DOT December 1990 Statewide Airport System Plan "to reflect actual conditions at the time of the study" (page 76).

The Hawai'i Visitors Bureau (HVB) reports the following actual statistics for hotels and condominiums in 1990-1993:

Maui Island: Year	Total units	Occupancy rate (& units)
1990	17,363	70.1% (12,171)
1991	18,241	63.4% (11,565)
1992	18,626	63.5% (11,827)
1993	18,443	67.6 (12,467)
1994	18,550	72.2 (13,393)[1]

[1] HVB/PKP (HVB refers to occupancy rates as reported by Panell Kerr Forster) statistics cannot yet show the total unit count or the actual occupancy rates for 1994. Although the total unit count decreased in 1993, it is assumed that the count will slightly increase in 1994. The occupancy rate for January-March of 1993 (71.8%) contrasted with the occupancy rate for January-March of 1994 (76.6%) was used to extrapolate an annual rate for 1994 from the 1993 annual occupancy rate of 67.6%.

Enclosed is a chart graphing the predicted and actual occupied visitor unit projections relied upon by DOT in the State EIS. Those DOT predictions based on economic activity and statistics from the 1980's gave an inflated expectation of visitor accommodation (and travel accommodation) requirements.

As shown on the chart, even supposing that a very high rate of growth in tourism is maintained from the present situation, the ultimate result in tourist numbers by 2010 will be less than 90% of the original DOT projection.

The SEIA says that proposed airport improvements are only necessary to accommodate the final 10% of the DOT's exaggerated predictions -- an admission that 90% of the inflated predictions relied upon by DOT can be accommodated without any airport improvements.

Given today's realities, and the premises used to make the DOT predictions that were initially presented to justify the proposed airport improvements, the obvious question that arises is this: do we really need the proposed airport improvements?

If less than 90% of the activity predicted by DOT is what Maui should expect, then the answer is no, we do not need the proposed airport improvements, applying only the same rationale that DOT used to first justify the $300 million expenditure.

It should be noted that there has been a decrease in the number of tourist accommodations on Maui (from 18,626 in 1992 to 18,443 in 1193.) It is uncertain when there will be increased demand for additional tourist accommodations justifying investment in additional units. Why would DOT increase travel (i.e., airport) accommodations when the unit count is decreasing?

Two facts compel the conclusion that at least some of the proposed airport improvements should not be made: (1) proposed airport improvements are not necessary to accommodate actual travel activity and (2) the improvements would have serious, substantial and irreparable adverse impacts (such as the introduction of alien pests and disease and the creation of undue stress upon Maui's overburdened infrastructure.)

Needed improvements in schools, hospital facilities, affordable housing, roads, sewage, water, solid waste and the cleaning up of ocean pollution provide plenty of opportunities to spend money and create jobs much more wisely.

There must be some reason for the proposed improvements other than a need to accommodate actual travel activity.

Contrary to endless previous DOT disclaimers and denials, the only evident reason for the proposed improvements is the hope that an improved airport will bring more tourists to Maui.

Since the apparent purpose of the proposed improvements is to increase tourist activity here, it is essential that the scope of the FEIS include a comprehensive socio-economic analysis of (1) the need for and (2) the impact of the proposed improvements.

Aloha,

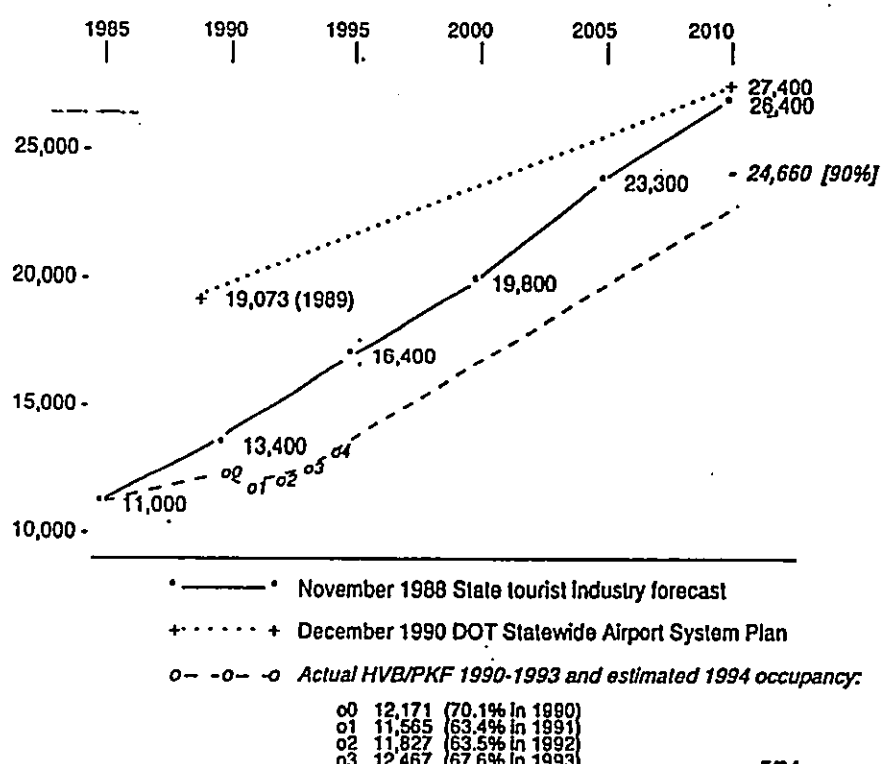
Bill Smith

Bill Smith
P.O. Box 927
Wailuku, HI 96793

Enclosure

Mr. Owen Miyamoto
Airports Administrator
Re: Public Scoping Meeting
for the Kahului Airport
Environmental Impact Statement
May 18, 1994
Enclosure

Predicted and Actual Occupied Visitor Units



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
96.124

March 14, 1996

Mr. William D. Smith
P. O. Box 927
Wailuku, Maui, Hawaii 96793

Dear Mr. Smith:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your comments of May 18, 1994 on the subject Environmental Impact Statement (EIS). Your concerns are addressed in the following sections of the Draft EIS.

1. Need for the proposed projects:
   Section 2.3 — Purposes and Needs of the Proposed Project

2. Aviation Forecasts:
   Section 1.8.3 — Update of Hawaii Aviation Demand Forecasts

3. Socio-economic and Growth Impacts:
   Section 3.5 — Socio-economic Impacts
   Section 3.6 — Induced Socio-economic Impacts
   Section 6.0 — Growth Inducing Impacts

4. Alien Species:
   Section 3.11 — Biotic Communities
   Section 5.0 — Cumulative Impacts

5. Health Care:
   Section 3.22 — Public Facilities, Infrastructure and Services and Aviation Safety

6. Infrastructure:
   Section 3.20 — Solid Waste, Hazardous/Toxic Waste and Waste Wash Water

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   Section 3.22 — Public Facilities, Infrastructure and Services and Aviation Safety

7. Water Quality:
   Section 3.8 — Water Quality
   Section 5.0 — Cumulative Impacts

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

JUN 13 '94

June 8, 1994

David Welhouse
FAA Airport District Office
P.O. Box 50244
Honolulu, Hawaii 96850

Dear David,

Below are my comments on the D.O.T. proposed plans for Kahului Airport as related to the Federal E.I.S. But first, let me express my appreciation for the meetings you held on May 18. I was impressed by the organization of the meetings and the obvious fore-thought put into them. Presentations were short and to the point and the options given testifiers covered most contingencies. You are to be congratulated. I was further impressed the next morning when I found Brian in our Spreckelsville neighborhood checking to learn what the airplane noise was like. Thanks to both of you.

1. Incompatible residential areas. The State E.I.S. limits its solutions to excessive aircraft noise to three actions; buy the houses, sound proof them, get signed release from responsibility waivers from residents not wanting the above. There are other obvious solutions that deal with the source rather than the sufferer.

a) Do not exempt Hawaii from the federal regulations requiring stage 3 engines by the year 2000.

b) Limit all Kahului night flights to stage 3 aircraft.

c) Establish a meaningful, working noise abatement program at Kahului Airport immediately. The Plan 150 study is long overdue.

d) Move general aviation, helicopters and night cargo flights to Puunene Airport as soon as possible.

2. Runway length. Though it appears Maui's citizens have lost the battle to keep the runway at 7,000 feet, this would be our preference. If it is to be lengthened then limit it to 8,500 feet. This length will satisfy those wanting direct flights to the mainland and will discourage international flights. The only reason for the proposed 9,600 feet is to satisfy the Maui Visitors Bureau so they can expand their visitor markets. Maui has done well with its current markets.

3. Internationalization. Though this aspect is down-played by those advocating the longer runway, we all know that international flights will receive automatic approval at the federal level because of current world economics. Overseas flight will be devastating to the Spreckelsville community without strict curfew requirements. History shows us that curfew is a bad word when related to Kahului Airport and probably would not happen.

4. Parallel runway. It is refreshing to see that the State is finally talking openly about their plans to develop a parallel runway instead of telling us, "This is just an idea we're kicking around". A parallel runway must not be constructed. The State E.I.S. admits that this runway would require the State's condemning 17 acres of Spreckelsville residential land and sound attenuating the rest. This action would destroy one of Maui's most desirable communities featuring quality homes, sandy beaches, water recreation and a favorite place for local residents.
The D.O.T. attempts to ease resident concerns regarding excessive noise resulting from this runway by stating it will only be used for landings. This is not true. During Kona conditions airplanes would be forced to takeoff on that runway and the noise would be shattering in this community. I would be happy to discuss the rational for this Kona statement if anyone questions it. This runway would also require the State re-aligning Hana Highway at great taxpayer expense. Is this a high priority when considering all other State needs?

5. Maui's infrastructure. Every airport hearing reiterates the need for roads, water, sewers, housing, emergency services, etc. on this island. The cry seems to be heard then put aside. It is general practice that before business or residential developments are approved, there is an agreement that roads and other services will meet a certain standard. This should also apply before airport development is approved and allowed to function. Before expanding the airport we should make those necessary infrastructure improvements so Maui residents are not further inconvenienced by unwise development.

6. Safety. Finally, it is hoped that the emotional testimony about the unsafe 7000 foot runway will be given no credibility. That issue was long ago put to rest except for the non-thinking Chamber of Commerce.

Mahalo for this opportunity to express the concerns of this fine community.

Jack Thompson, President
Spreckelsville Community Association
204 Kealakai Pl.
Paia, Hawaii 96779

Tel. 877-5749
Fax 877-3310

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Mr. Jack Thompson, President
Sprecksville Community Association
204 Kealakai Place
Paia, Maui, Hawaii 96779

Dear Mr. Thompson:

Thank you for your letters of June 8, 1994, and June 20, 1994 regarding your concerns on the proposed Kahului Airport projects and the Joint Environmental Impact Statement (EIS). The concerns which you have raised in the Preparation and Scoping periods are addressed in the following sections of the Draft EIS:

1. Incompatible Residential Area

Section 3.2	Noise
Section 4.4	Other Runway Alternatives
Section 8.0	Other Related Issues

2. Runway Length

Section 2.3.2	Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
Section 2.4.4	Proposed Airfield Developments
Section 4.3	Master Plan Alternatives
Section 4.4	Other Runway Alternatives
Section 4.5	Alternative Runway Construction Phasing
Section 6.1	Lengthened Runways

3. Internationalization

Section 6.0	Growth Inducing Impacts
Section 8.0	Other Related Issues

4. Parallel Runway

Section 2.4.4	Proposed Airfield Developments
Section 3.0	Affected Environment, Probable Consequences and Mitigation Measures
Section 3.2	Noise
Section 4.3	Master Plan Alternatives
Section 4.4	Other Runway Alternatives

5. Maui's Infrastructure

Section 2.2.15	Infrastructure
Section 2.4.8	Proposed Roadway System
Section 2.4.9	Proposed Utilities and Drainage Systems
Section 3.22	Public Facilities, Infrastructure and Services, and Aviation Safety
Section 4.2	No-action Alternative
Section 5.0	Cumulative Impacts

6. Safety

Section 2.3.2	Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
Section 3.22.9	Aviation Safety

We look forward to your comments on the Draft EIS.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

Note: Originals sent to FAA 5/27/94.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

NAME: _____

ADDRESS: _____

SUBJECT: I REQUEST A FULL TRANSCRIPT OF ALL TESTIMONY PRESENTED AT KAHULUI AIRPORT MEETING 18 MAY 94. PLEASE SEND AS SOON AS POSSIBLE.

Philip Thomas
P.O. Box 1272
Puunene HI 96784

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANE HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.218

August 11, 1994

Mr. Phillip Thomas
P. O. Box 1272
Puunene, Maui, Hawaii 96784

Dear Mr. Thomas:

Subject: Transcripts of the Scoping Meetings
Kahului Airport Environmental Impact Statement
State Project No. AM1011-07

As requested, we have enclosed a copy of the transcripts of the scoping meetings held on May 18, 1994 at 10:00 a.m. and 7:00 p.m. at the Kahului Airport Terminal.

If you have any questions, please contact Mr. Stephen Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

Enc.

MAUI HOTEL ASSOCIATION

1325 Lower Main, Suite 103, Wailuku, Maui, Hawaii 96793 • Fax (808) 244-3094 • Phone (808) 244-8625

MAY 18, 1994

TESTIMONY TO: EIS AGENTS FROM FEDERAL AND STATE AGENCIES

IN REFERENCE TO: THE KAHULUI AIRPORT RUNWAY EXTENSION

My name is Terryl Vencl, Executive Director of the Maui Hotel Association. Our membership is about 200 strong and includes not only properties but business as well.

My focus will be on the economical needs of a continued healthy visitor industry to maintain the quality of life for the residents of Maui.

I believe that the very recent slump in our industry has made the general public acutely aware of the importance of the visitor industry on this island. Our employees have certainly learned how important their jobs are and some are here today to share their stories with you. There was a Maui News survey taken a couple years ago that showed that more than half the residents of this island were in favor of an extended runway. I believe if that survey were taken today, the percentage would be even higher.

More than 43,000 jobs are directly or indirectly dependent on tourism. In the hotel industry alone we employ over 15,000. Our residents cannot support themselves without this industry. There is no alternative at hand that could replace this industry with the same number of jobs or the dollars brought to Maui's economy by the visitor. This is the number one industry! We have to do what we can to keep it healthy.

Even to diversify our economy and we are certainly not opposed to doing that, we will need to be able to compete with other areas of the world with regard to ease of getting in and out for both people and products. The extension of the runway at the Kahului Airport will provide us with that opportunity. We will be able to land flights from the Mid-West and the East Coast.

Growth is not necessarily a by-product of lengthening our runway. We need this extension just to maintain occupany levels in our present hotels and resorts. We do not see this as a vehicle

which will suddenly bring in an influx of people. We see it more as vehicle to help us maintain business and the quality of life for our residents and our employees.

At the same time that we are supportive of the runway extension we know there are concerns that need to be addressed. We support many of the concerns of our opposition such as the introduction of alien species and noise concerns and look to you to help us address those concerns in your EIS.

The Maui Hotel Association supports the position statement presented to you by the Pueo Coalition and we hope you will use our thoughts and comments in producing a Federal EIS that will benefit us all.

Mahalo,

Terryl Vencl

Terryl Vencl
Executive Director

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
96.088

March 14, 1996

Ms. Terryl Vencl
Executive Director
Maui Hotel Association
135 Lower Main, Suite 103
Wailuku, Maui, Hawaii 96793

Dear Ms. Vencl:

Subject: Joint State/Federal Environmental Impact Statement
Scoping Meeting, Kahului Airport
State Project No. AM1011-07

Thank you for your comments in your letter of May 18, 1994 on the Scoping Meeting for the Kahului Airport Environmental Impact Statement (EIS). I believe your concerns are addressed in the following Sections of the Draft EIS:

1. Economic Impact:
   Section 3.5 Socio-economic Impacts
   Section 3.6 Induced Socio-economic Impacts

2. Growth:
   Section 6.0 Growth Inducing Impacts

3. Alien Species:
   Section 3.11 Biotic Communities

4. Noise:
   Section 3.2 Noise

I look forward to your comments on the Draft EIS. Should you have any other questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

Kahului Airport Environmental Impact Statement Scoping Meeting

JUN 2 4 '96

My ancestry is of native hawaiian origin and I am a student majoring in marine biology. The expansion of the Kahului airport will devastate the unique natural beauty and lifestyle of my island home, Maui. The experts have discussed the many detrimental effects of airport expansion. I would like to specifically address that international flights would allow transit of the "Brown Tree Snake" from Guam to Maui. The brown tree snake has been directly linked to the disappearance and extinction of Guam's wild birds. Like Guam, Hawaii's climate and lack of indigenous predators provides a haven for the brown tree snake. According to biologists today, from it's introduction in Guam 50 years ago there are approximately 10,000 brown tree snakes per square mile in Guam (1). It is evident by facts such as these that Maui would hold a similar future if we extend the airport for international flights.. We must deny the brown tree snake's entry into Maui by not extending the airport for international flights. Oahu's international airport is risk in itself, do not leave our island helpless against the entry of the destroyer, the brown tree snake. I urge you to safeguard Maui's future by learning and experiencing our island. I urge you to research scientific journals with the focus on the brown tree snake. You will then be convinced that Maui's beauty and lifestyle is unparalleled and must be preserved.

Works Cited:

Nicoloy, Jeff. May 29-June 4, 1994
Honolulu Advertiser. Page 1

Please include me on the list for consulted parties & send me all relevant documentation including the EIS Sincerely,

Vida Rose Yukino pl.
[illegible] 96705 (808)573-3309

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
96.098

March 14, 1996

FEDERAL AVIATION ADMINISTRATION
HONOLULU DISTRICT OFFICE
ATTN: DAVID WELHOUSE
P.O. 50244
HONOLULU, HAWAII 96850

Ms. Vida Rose Yap
2021 West Lelehuna Place
Haiku, Maui, Hawaii 96708

Dear Ms. Yap:

Subject: Joint State/Federal Environmental Impact Statement,
Kahului Airport, Kahului, Maui
State Project No. AM1011-07

Thank you for your comments of June 20, 1995 on the subject Environmental Impact Statement (EIS). Your comments will be addressed in the following sections of the Draft EIS.

1. Environmental Impacts:
   Section 3.0 Affected Environment, Probable Consequences and Mitigation Measures

2. Alien Species:
   Section 3.11 Biotic Communities

3. Internationalization:
   Section 6.0 Growth Inducing Impacts
   Section 8.0 Other Related Issues

I look forward to your comments on the Draft EIS. Should you have any questions, please contact Mr. Ben Schlapak at 838-8821.

Very truly yours,

Owen Miyamoto
Airports Administrator

c: FAA-ADO-HNL

Hana Like No Ke Ala Aloha
Working Together to Provide Gateways of Aloha

Fold Here Second

Excuse me, but you didn't get the 3rd & 2nd to last speakers points on the board

quarantine
longer safety analysis
appropriate re: carrying capacity
ecclesiate facilities—
not only "infrastructure" but
medical

Fold Here First

Note: Please use tape to seal this document when returning to the addressee. DO NOT STAPLE.

Alien Species

- Section 3.11 Biotic Communities
- Section 5.0 Cumulative Impacts

Airfield Capacity

- Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Air Facilities

Impacts on Safety

- Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
- Section 3.22.9 Aviation Safety

Impacts on Infrastructure (including health facilities)

- Section 2.2.15 Infrastructure
- Section 2.4.8 Proposed Roadway System
- Section 2.4.9 Proposed Utilities and Drainage Systems
- Section 3.22 Public Facilities, Infrastructure and Services and Aviation Safety
- Section 5.0 Cumulative Impacts

JGENE C WASSON III, M.D., INC.
MES A BENDON, M.D., INC.
AVID J. HEENEY, M.D., INC.
EORGE S. BOREN, M.D., INC.
COTT R. BOREN, M.D., INC.
OLKE J. BRAHME, M.D.

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WAILUKU, HAWAII 96793
TELEPHONE (808) 242-9537
FAX (808) 244-6703

'94 JUN 17 P1:25

OUAL

June 15, 1994

Governor John Waihee
c/o Officer of Environmental Quality Control
220 S. King Street, Suite 400
Honolulu, HI 96813

Dear Governor Waihee:

Please consider this a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement (EIS) for proposed "improvements" at Kahului Airport. Please send me a copy of the Draft Joint EIS so that I may submit comments on the draft document, as well as a copy of the Final Joint EIS when it is available.

Sincerely,

JAB:maa

James A. Bendon, M.D.

c: Federal Aviation Administration (FAA)
Department of Transportation
Edward K. Noda and Associates, Inc.

RECEIVED
JUN 23 1994
EDWARD K. NODA & ASSOCIATES

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANI HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.224

AUG 17 1994

James A. Bendon, M.D.
Maui Radiology Consultants
99 S. Market
P. O. Box 1229
Wailuku, Maui, Hawaii 96793

Dear Dr. Bendon:

Subject: Kahului Airport State and Federal
Environmental Impact Statement
State Project No. AM1011-07

As requested, you will be a consulting party as provided under the Hawaii Revised Statutes, Chapter 343 to the Environmental Impact Statement.

Under separate cover, we have sent you a copy of the Environmental Assessment/Determination for the proposed improvements to the Kahului Airport. If you have any additional comments, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

bc: EKNA

June 13, 1994

Federal Aviation Administration
800 Independence Ave. SW
Washington, D.C. 20591

Attn: FAA Asst. Administrator for Airports

I wish to be a consulted party in the preparation of the Joint Environmental Impact Statement regarding the Kahului Airport proposed expansion. Please send me the Environmental Assesment along with any other reports pertaining to this project.

I will also expect to receive the draft EIS and the final EIS when they are prepared. Please let me know when any meetings will be held on the island of Maui regarding this project.

Thank you,

Mary M. Evanson

Mary M. Evanson
P.O. Box 694
Makawao, HI 96768

JOHN WAIHEE
GOVERNOR

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANU HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.221

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

AUG 16 1994

Ms. Mary Evanson
c/o Mr. Isaac Davis Hall
2087 Wells Street
Wailuku, Maui, Hawaii 96793

Dear Ms. Evanson:

Subject: Kahului Airport State and Federal
Environmental Impact Statement (EIS)
State Project No. AM1011-07

As requested by your attorney, Mr. Isaac Hall, you have been made a consulting party to the EIS process as provided under the Hawaii Revised Statutes, Chapter 343. A copy of the Environmental Assessment/Determination (EA) was sent to your attorney. If you should have any additional comments upon review of the EA, please send them to us by August 29, 1994.

In order for us to prevent any duplications, we will be transmitting your copies of all pertinent documents to Mr. Hall. If you would like to have this matter handled in a different manner, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

ISAAC DAVIS HALL
ATTORNEY AT LAW
2087 WELLS STREET
WAILUKU, MAUI, HAWAII 96793
(808) 244-9017
FAX (808) 244-8775

OF COUNSEL:
G. RICHARD GESCH

May 18, 1994

Mr. David J. Welhouse
Federal Aviation Administration
Airports District Office
PO Box 50244
Honolulu, HI 96850

Mr. Ben Schlapak
Airports Division
Dept. of Transportation
State of Hawaii
400 Rodgers Blvd.
Suite 700
Honolulu, HI 96819-1898

Re: Scope of Joint Federal and State EIS for the Kahului Airport

Dear Federal Aviation Administration and Department of Transportation:

This letter is submitted on behalf of the Maui Air Traffic Association, Inc., the Maui Group of the Sierra Club, Mary Evanson, Hui Alanui o Makena and Dana Naone Hall. All of the above formally request to be consulted parties in the preparation of an adequate joint Environmental Impact Statement ("EIS") for the Kahului Airport. It is hoped that the Federal Aviation Administration ("FAA") and the Department of Transportation ("DOT") will liberally consult with the groups and individuals listed above through the law offices of Isaac Hall to obtain information and guidance which will help assure that the joint EIS meets all state and federal requirements. We have the following comments on matters that are properly within the scope of the joint EIS which should be discussed in detail.

1. Withdrawal of the State Final EIS

DOT had prepared and accepted a Final EIS. The acceptance for this EIS, and the EIS itself, should be withdrawn, as it is legally impossible to prepare this EIS and leave the earlier prepared, inadequate document in place. The earlier EIS preparation notice published in the Federal Register and the OEQC Bulletin should be withdrawn for the same reason. The preparers of this EIS must not, in any way, adopt or rely upon the earlier EIS or the studies prepared for it as they are wholly inadequate and unacceptable.

2. Public withdrawal of commitment to projects

The EIS is to be prepared before any commitment is made to any particular alternative in order to provide the

greatest flexibility in planning and decision-making and to avoid any premature adoption of a plan of action before the EIS has been prepared.

DOT is already committed to the 9,600 foot runway. DOT already adopted and approved this alternative. DOT has sought a boundary amendment and a change in zoning for the 9,600 foot runway. DOT is already designing the 9,600 foot runway. DOT has already purchased property, with public funds necessary for this extension.

This joint EIS will be a sham unless DOT, publicly and in writing, withdraws its commitment to the runway extension to 9,600 feet, and other Kahului Airport projects, and withdraws its applications for all permits or approvals for these particular projects.

3. Politics should not be allowed to influence the EIS process

In the preparation of the prior EIS, politics were allowed to supercede and distort the environmental process. The primary consultant, Belt Collins, met regularly with both DOT, and the sub-consultants preparing studies for the EIS, to determine what DOT wished to do and to orchestrate and coordinate studies to advocate DOT's positions, to obscure important environmental issues and to try to argue against those whom they felt were "opponents."

A lobbying front, called the Pueo Coalition, was comprised of the hotel industry, the tourism industry, the Maui Chamber of Commerce and the construction industry, among others, supported DOT's Kahului Airport expansion plans, including, most importantly, the extension of Runway 2-20 to 9,600 feet. Pueo's primary concerns were "jobs" and facilitating visitor industry growth, and little concern was expressed about mitigating the adverse impacts of the airport, such as could be accomplished through the adoption of operational noise restrictions, the implementation of measures to prevent the introduction of alien species, the protection of endangered species and assuring that the necessary physical and social infrastructure is in place.

All too often DOT, Belt Collins and the sub-consultants were in league with those who sought the expansion of the airport for purely economic reasons. This, unfortunately, is already occurring during the preparation of the new joint EIS, as is documented by the following:

a. After E.K. Noda and Associates was awarded the primary contract for the joint EIS, its representatives were paid by DOT to observe and provide assistance to DOT during

the Land Use Commission proceedings on Maui involving the extension of Runway 2-20 to 9,600 feet; and

b. The DOT and the FAA scheduled a private, separate meeting with the Puao Coalition on Tuesday, May 17, 1994 to help prepare them for the public scoping meeting. I asked to be present during the morning meeting and was told that I could not attend. The DOT would not permit others to attend this private meeting. DOT invited others to attend a "separate but equal" meeting that afternoon.

Separate private meetings are wholly inconsistent with the intent of both NEPA and HEPA and serve to provide the basis for reaching understandings between DOT, the FAA and special interest groups such as the Puao Coalition. Scoping sessions must be "open." Pre-scoping session "closed" meetings with expansion advocates violates NEPA.

The FAA and DOT have apparently decided that proponents and opponents of airport expansion cannot have an open, public dialogue. This is false, and such a presumption violates NEPA and HEPA and will only contribute to the preparation of an unacceptable document. The members of the Maui community are capable of designing an airport which is also compatible with the surrounding environs.

4. The scope of the EIS is established by law and court orders

The scope of this EIS is already established by the National Environmental Policy Act of 1969, as amended ("NEPA"), and Chapter 343, Hawaii Revised Statutes, as revised ("HEPA"), the regulations respectively promulgated thereunder and case law construing these statutes and regulations.

The scope of this EIS has also been determined based upon court orders in the Second Circuit Court which bind DOT, and effectively the FAA as well, with respect to this joint EIS.

To save time, the information contained within the request to be a consulted party, dated August 8, 1990, included in the comments on the prior draft EIS, dated November 22, 1991 and within other letters to DOT and in the pleadings of the relevant court cases, are hereby incorporated by reference.

5. Timetable for EIS, Acceptance, Agency Decisions and Implementing Actions

The FAA and DOT, and the joint EIS should disclose the timetable for the preparation of the EIS, its acceptance, agency selection of alternatives and adoption of a plan of action and implementing actions, such as design-work, permitting, expenditures of public funds, and the like.

6. Incorporation of Part 150, General Aviation and Biological Opinion studies within the EIS

NEPA and FAA regulations encourage the incorporation of certain studies into the EIS process and the EIS itself. The Maui General Aviation Study, the Kahului Airport Part 150 Noise Compatibility Study, the Biological Opinion on Endangered Species and all other necessary studies should be conducted and completed before the new joint Draft EIS is published.

The Noise Compatibility Study must study all of the operational restrictions which the FAA has agreed, in its own regulations, may be imposed.

7. Review of project as a whole

The EIS cannot be limited to the six proposed improvements listed in the Notice of the Public Scoping meeting. NEPA and HEPA require that these improvements be studied within the context of the airport expansion project as a whole. These would include all projects in the June, 1993 Master Plan and those projects shown on the amended Airport Layout Plan.

To the extent that the FAA and DOT plan to include within the scope of this EIS (a) the construction of Phase II of the passenger terminal building, (b) international flight operations and facilities, and (c) a long term helicopter facility, the proposed locations for these facilities should be clearly shown. The precise actions which must be taken to internationalize the Kahului Airport should be described in detail, with particular reference to those which have already occurred.

The previous EIS indicated that (a) there would be no international flight operations or facilities prior to the year 2010 and that (b) any long term helicopter facility would be located away from the Kahului Airport. Alternatives such as not including international flight operations and facilities at the Kahului Airport and locating long term helicopter facilities elsewhere should be studied in the joint EIS.

8. Study of all significant environmental, economic and social issues

Airport expansion, and particularly runway extensions, are infrastructural improvements that induce growth. Even if the DOT disagrees with this position, it constitutes a reasonable, opposing view which should be fully explored.

The geographical scope of the impacts of the airport expansion cannot be limited to those experienced within the airport boundaries or to areas immediately surrounding the airport. For example, noise impacts, traffic impacts and alien species introduction impacts are island-wide in scope. The FAA and DOT should not attempt to ignore noise impacts on ocean recreation areas or on endangered species at Kanaha Pond. Nor should the impacts of alien species introductions at Haleakala National Park or upon farms and agricultural/ horticultural activities in Maui's rural areas be ignored. Traffic impacts on our major arteries to resort destination areas also must be analyzed.

We note again the necessity of addressing impacts upon endangered species at Kanaha Pond and Haleakala National Park. Records exist of aircraft killing endangered stilts in landing and taking off at the airport. A biological opinion should be written on these killings or strikes and on the impacts of aircraft noise and lights on endangered species at Kanaha Pond.

The FAA and DOT must conduct all necessary research and studies to allow for the proper assessment of environmental impacts. Impacts upon parklands, wetlands, water quality and endangered species all require special assessment. Phil Bruner, based upon the report submitted in the earlier EIS, is not competent to study endangered species.

Often the scope of an EIS is prematurely established through agreed-upon "scope of work" sections in contracts between the FAA and DOT and the prime consultants and sub-consultants. These must be disclosed now.

9. This EIS should actually develop mitigation measures that solve difficult environmental problems

In the past DOT, its consultants and monied special interest groups have refused to develop or support mitigation measures to reduce adverse environmental impacts to acceptable levels, it appears, simply because they do not want to do anything that those concerned with the effects of airport expansion on the environment think is necessary. This

violates NEPA and HEPA. At a minimum, the following mitigation programs should be developed through this EIS:

a. An operational noise abatement program

It is imperative that in this EIS an operational noise abatement program be developed in detail, which can be implemented prior to any runway extension, to reduce significant adverse noise impacts on surrounding residential neighborhoods in Spreckelsville, in Kahului, on endangered species at Kanaha Pond and on ocean users. It is important that this noise abatement program be fully funded and that restrictions be placed upon aircraft operations rather than requiring the forced relocation of neighboring residents.

b. Prevention of the introduction of alien species

It is imperative that a program be developed in the EIS, that can be implemented prior to extending any runways and prior to internationalizing the airport, to prevent the introduction of further alien species. Any increased introductions harms Maui's farmers, endangered species and parks, including Haleakala National Park.

c. Protect endangered species

Endangered species are already in jeopardy as a result of aircraft operations at the Kahului Airport. A program needs to be developed through the EIS, which can be implemented before any runway extensions, that protects endangered species and helps them to increase in numbers. DOT and FAA must relinquish their control over Kanaha Pond to assure that violations of the Endangered Species Act will not continue in an attempt to serve aviation interests.

d. Concurrently address infrastructural deficit

A program must be developed through the EIS, which can be implemented prior to the extension of any runways, that, at an absolute minimum, assures that our major roadway arteries to tourist destination areas are capable of handling the increased traffic generated at the airport.

10. Aviation demand calculations must be revised

The aviation demand figures utilized in the prior EIS to justify the airport expansion project are now totally outdated. These figures must be revised. These demand figures should reflect the decreased traveler interest in Hawaii, the higher cost of air travel to Hawaii and the decrease in numbers of routes and seats devoted by air carriers to Hawaii.

11. Revised project costs

The cost figures for the airport improvements used in the prior EIS must be revised. The revenues from the duty-free lease have plummeted. Greater reliance is now being placed upon increases in airport landing fees, such that airport improvement costs will be passed on to consumers who must pay more to travel.

12. The alternatives to be examined in the EIS should be expanded

The alternatives to be examined, as listed in the notice for the public Scoping Meeting, are too constricted and should be expanded.

Extending Runway 2-20 to 8,500 feet and not extending the runway at all should be studied in detail. Runway 2-20 need be no longer than 8,500 feet to facilitate direct, non-weight-restricted, flights to the West Coast. A 9,600 foot runway has greater adverse environmental impacts and facilitates internationalization.

The alternative of relocating general aviation operations elsewhere should be reviewed within the context of decreasing the need to construct a parallel runway.

Relocating helicopter operations to a facility outside of the airport boundaries should be fully addressed along with helicopter noise impacts.

The alternative of limiting the number of international airports to those which already exist, instead of having an international facility in each county, should be discussed as an alternative which decreases the potential for pest introductions.

This comment upon the proper scope of the joint EIS could continue in detail. We feel that prior letters to the FAA and DOT have made our concerns with the proper scope and breadth of this EIS clear.

It must be frankly acknowledged that the Kahului Airport was originally placed in a sensitive environmental area. It is surrounded by habitats for endangered species, park lands, significant coastal resources and residential areas. The Kahului Airport cannot expand unless and until it is made compatible with its surrounding environment.

We do not wish to be viewed as the opponents or those who would not be satisfied with any EIS that may be prepared. We truly feel that the EIS process should lead to the design of an airport which can be accepted by all members of the Maui community, especially if that design incorporates mitigation measures for an operational noise mitigation program, the actual prevention of the further introduction of further alien species, the protection of endangered species, the elimination of the physical and social infrastructural deficits, among other appropriate measures.

We want to work closely with you to help develop an EIS which fully addresses and analyzes all the environmental impacts which will be generated by an expansion of the Kahului Airport. We look forward to the preparation of a joint EIS which is in accordance with NEPA and HEPA, the respective underlying regulations and relevant court orders.

Sincerely yours,

Isaac Hall

IH/jp

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANE HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.228

AUG 16 1994

Mr. Isaac Davis Hall
Attorney at Law
2087 Wells Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Hall:

Subject: Environmental Assessment/Determination
Kahului Airport Environmental Impact Statement
State Project No. AM1011-07

Six (6) copies of the Environmental Assessment/Determination for you and your clients were sent to you under separate cover. If there are any additional comments, please send them to us by August 28, 1994.

If you have any questions, please contact Mr. Steve Takashima at (808) 838-8810.

Very truly yours,

Owen Miyamoto

Owen Miyamoto
Airports Administrator

bc: EKNA

DANA NAONE HALL
2087 WELLS STREET
WAILUKU, MAUI, HAWAII 96793
(808) 244-9017
FAX (808) 244-6775

RECEIVED
JUN 23 1994
EDWARD K. NODA & ASSOCIATES

June 21, 1994

Governor John Waihe'e
c/o Office of Environmental Quality Control
220 S. King St., Suite 400
Honolulu, HI 96813

Re: Preparation of Joint EIS for Kahului Airport

Dear Governor Waihee:

On May 18, 1994 I testified at the scoping session held at Kahului Airport on the Joint Environmental Impact Statement ("EIS") being prepared for Kahului Airport projects. Subsequently, Notice of EIS Preparation for Kahului Airport was published in the OEQC Bulletin.

I call to your attention two serious deficiencies in the Notice. First, the Notice states that "[t]he proposed improvements at Kahului Airport include, but are not limited to" six enumerated projects. The public is unable to effectively comment on the scope of the airport "improvements" if we are kept in the dark as to what exactly are all of the proposed projects. If there are any other proposed projects or improvements apart from those specifically listed in the Notice, they should be disclosed immediately through publication in a new Notice, superceding the present Notice, and allowing for the required 30 day comment period.

Second, the list of alternatives to the proposed development that will be examined in the Joint EIS includes, as item number one, "[t]he proposed alternative." Again, the public cannot effectively comment when the proposed alternative is not identified. The result of such an inadequate and deficient Notice not only hampers the public's ability to comment but frustrates the active public participation encouraged by our state and federal environmental laws.

Finally, as DOT has yet to seriously consider the numerous issues and concerns raised in written comments I submitted on the earlier State EIS, I direct your attention to the comments section in both the Draft State EIS and the Final State EIS and incorporate those comments by reference herein.

Please also consider this a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement for proposed "improvements" at Kahului Airport. I look forward to receiving a copy of the Draft Joint EIS so that I may submit comments on the draft document, as well as a copy of the Final Joint EIS when it is available.

If you have any questions about any of the above, please do not hesitate to contact me.

Sincerely yours,

Dana Naone Hall

Dana Naone Hall

DNH/jp

JOHN WAIHEE
GOVERNOR

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANA HOLT
GLENN M. OKIMOTO
JOYCE Y. OMINE
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

IN REPLY REFER TO:

AIR-EN
94.222

AUG 16 1994

Ms. Dana Naone Hall
c/o Mr. Isaac Hall
2087 Wells Street
Wailuku, Maui, Hawaii 96793

Dear Ms. Hall:

Subject: Kahului Airport State and Federal
Environmental Impact Statement (EIS)
State Project No. AH1011-07

Thank you for your comments on the subject EIS. As requested by your attorney, Mr. Isaac Hall, you will be a consulting party to this EIS process as provided under the Hawaii Revised Statutes, Chapter 343. A copy of the Environmental Assessment/Determination (EA) as been sent to your attorney. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994.

In order to us to prevent further duplication of effort, we will be transmitting future correspondence to Mr. Hall. If you would like to handle this matter in a different manner, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

bc: EKNA

June 16th, 1994

RECEIVED
JUN 23 1994
EDWARD K. NODA & ASSOCIATES

Governor, State of Hawaii
o/c Office of Environmental Quality Control
220 S. King St., Suite 400
Honolulu, HI 96813

Re.: Joint EIS for Kahului Airport

Dear Sirs:

I request to be a consulting party for the preparation of the Joint Environmental Impact Statement for the proposed enlargement at Kahului Airport.

Comments submitted in connection with the Draft EIS of the Master Plan Update, contain issues which remain unresolved. (A copy of these comments is enclosed.)

Some of the unresolved issues have not only not been adequately addressed but have become more concerning. For example costs.

Only one page in the State EIS contains specific reference to the issue of costs which are described as "ball park" (page 92, DEIS).

Meanwhile costs of the airport system are already being passed along to the resident population.

"Resident fares up as Higher airport user fees arrive." Maui News, March 13, 1994) "Thomas Dereg, Aloha's acting president...said the recent hike in landing fees..precipitated the increase." "Fees amounted to an increase of more than 110 percent." If Aloha is to remain stable... it... must...pass...costs on" to residents but to avoid "a negative impact (on) the visitor industry" Aloha Airline "elected to leave its visitor fare unchanged."

Please send a copy of the Draft and Final Joint EIS documents so that I can submit comments.

Lisa Hamilton, S.R. Box 190, Hana, HI 96713.

Thank you.
Lisa Hamilton

cc. Proposing Agencies: Department of Transportaion, Airports; Federal Aviation Administration.
Consultant, Edward K Noda.

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAUANE HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.226

AUG 16 1994

Ms. Lisa Hamilton
S.R. Box 190
Hana, Maui, Hawaii 96713

Dear Ms. Hamilton:

Subject: Kahului Airport State and Federal Environmental Impact Statement
State Project No. AM1011-07

Thank you for your comments on the proposed improvements to Kahului Airport. As requested, you will be a consulting party as provided under Hawaii Revised Statutes, Chapter 343 to this Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

June 16th, 1994

Governor, State of Hawaii
o/c Office of Environmental Quality Control
220 S. King St., Suite 400
Honolulu, HI 96813

Re.: Joint EIS for Kahului Airport

Dear Sirs:

The Maui Group of the Hawaii Chapter of the Sierra Club requests to be a consulting party for the preparation of the Joint Environmental Impact Statement for the proposed enlargements at Kahului Airport.

Please send copies of the Draft and Final Joint EIS documents so that we can submit comment when these documents are avilable.

Address: Maui Group, Hawaii Sierra Club, P.O. Box 2000, Kahului, HI 96732.

Thank you.

Sincerely,

Lisa Hamilton

Lisa Hamilton, Co-Chair, Hawaii Sierra Club Conservation Committee.

cc. Accepting authority: Governor, State of Hawaii

Proposing Agencies: Hawaii Department of Transportation,
Airports Division,
Federal Aviation Administration

Consultant: Edward Noda and Associates

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANE HOLT
GLENN M. OKIMOTO
JOYCE T. OLAINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.225

AUG 16 1994

Chairperson
Maui Group of the Hawaii Chapter
of the Sierra Club
c/o Mr. Isaac Davis Hall
Attorney at Law
2087 Wells Street
Wailuku, Maui, Hawaii 96793

Gentlemen:

Subject: Kahului Airport State and Federal
Environmental Impact Statement
State Project No. AM1011-07

As requested by your attorney, Mr. Isaac Hall, your organization has been made a consulting party to this EIS process as provided under the Hawaii Revised Statutes, Chapter 343. A copy of the Environmental Assessment/Determination (EA) was sent to your attorney. If your organization has any additional comments upon review of the EA, please send them to us by August 29, 1994.

In order for us to avoid duplications, we will be transmitting your copy of all pertinent documents to Mr. Isaac Hall. If you would like to have this matter handled in a different manner, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto

Owen Miyamoto
Airports Administrator

bc: EKNA

Maui Tomorrow
P.O. Box 1497
Wailuku, Maui, Hawaii 96793
phone & fax: (808) 877-2462

June 20, 1994

To Whom It May Concern:

Please consider these comments to be a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement (EIS) for proposed changes at Kahului Airport. Please send me a copy of the Draft Joint EIS so that I may submit comments on the draft document, as well as a copy of the Final Joint EIS when it is available.

Thank you.

Richard Joseph Lafond Jr.
Executive Director

Committed to managing growth, preserving natural areas, and ensuring ecologically sound development for Maui

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

IN REPLY REFER TO:

AIR-EN
94.223

AUG 16 1994

Mr. Richard Joseph Lafond, Jr.
Executive Director
Maui Tomorrow
P. O. Box 1497
Wailuku, Maui, Hawaii 96793

Dear Mr. Lafond:

Subject: Kahului Airport State and Federal
Environmental Impact Statement
State Project No. AM1011-07

Thank you for your comments on the proposed improvements to Kahului Airport. As requested, your organization will be a consulting party as provided under the Hawaii Revised Statutes, Chapter 343 to this Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

Deadline for Requesting to be a Consulting Party to the Joint EIS for Kahului Airport

Please send the original copy of your comments to the accepting authority and duplicate copies of the comments to the proposing agency or applicant, consultant and OEQC, by June 22, 1994.

Accepting Authority:
Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 S. King St., Suite 400
Honolulu, HI 96813

Proposing Agencies:
Department of Transportation, Airports Division
Honolulu International Airport
400 Rodgers Blvd., Suite 700
Honolulu, HI 96819-1898
Attn: Owen Miyamoto (838-8600)
and
Federal Aviation Administration (FAA)
800 Independence Avenue, SW
Washington, D.C. 20591
Attn: FAA Asst. Administrator for Airports (ARP-1)

Consultant:
Edward K. Noda and Associates, Inc.
615 Piikoi St., Suite 1000
Honolulu, HI 96814
Attn: Brian Ishii (591-8553)

Deadline: June 22, 1994

* * *

Please consider this a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement (EIS) for proposed "improvements" at Kahului Airport. Please send me a copy of the Draft Joint EIS so that I may submit comments on the draft document, as well as a copy of the Final Joint EIS when it is available.

Terry A. Lynch
P.O. Box 338
Hana, Maui, HI.
96713
ph: 248-8969

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANA HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.227

AUG 16 1994

Mr. Terry A. Lynch
P. O. Box 338
Hana, Maui, Hawaii 96713

Dear Mr. Lynch:

Subject: Kahului Airport State and Federal
Environmental Impact Statement
State Project No. AH1011-07

As requested, you will be a consulting party as provided under the Hawaii Revised Statutes, Chapter 343 to the Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements to Kahului Airport. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

June 22, 1994

Jody L. Mitchell
P.O. Box 1041
Wailuku, Hi. 96793

RECEIVED
JUN 1994
EDWARD K. NODA & ASSOCIATES

Edward K. Noda and Associates, Inc.
615 Piikoi St., Suite 1000
Honolulu, Hi. 96814
Attn: Brian Ishii (591-8553)

Please consider this a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement (EIS) for proposed "improvements" at Kahului Airport. Please send me a copy of the Draft Joint EIS so that I may submit comments on the draft document, as well as a copy of the Final Joint EIS when it is available.

Mahalo,
Jody L. Mitchell

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KANANI HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.227

AUG 16 1994

Ms. Jody R. Mitchell
P. O. Box 1041
Wailuku, Maui, Hawaii 96793

Dear Ms. Mitchell:

Subject: Kahului Airport State and Federal
Environmental Impact Statement
State Project No. AM1011-07

As requested, you will be a consulting party as provided under the Hawaii Revised Statutes, Chapter 343 to the Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements to Kahului Airport. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statement when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

STEVEN M. MOSER, M.D., INC.
INTERNAL MEDICINE AND NEPHROLOGY
1883 MILL STREET
WAILUKU, MAUI, HI 96793
PHONE: (808) 244-3788

June 22, 1994

Governor
State of Hawaii
c/o Office of Environment Quality Control
220 South King Street, Suite 400
Honolulu, HI 96813

Dear Sir:

This is a former request to be a consulting party for the preparation of the joint Environmental Impact Statement (EIS) for proposed "improvements" at Kahului Airport. Please send me a copy of the draft joint EIS so that I may submit comments on the draft document as well as a copy of the final joint EIS when it is available.

Thank you.

Sincerely,

Steven M. Moser, M. D., F.A.C.P.

SMM:lpk

cc: Department of Transportation, Airport Division
Honolulu International Airport
400 Rodgers Boulevard, Suite 700
Honolulu, HI 96819-1898
Attention Owen Hiyamoto

Federal Aviation Administration
800 Independence Avenue SW
Washington, DC 20591
Attention FAA Assistant Administration for Airports (ARP-1)

Edward K. Noda & Associates, Inc.
615 Piikoi Street, Suite 1000
Honolulu, HI 96814
Attention Brian Ishii

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHUANI HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.227

AUG 16 1994

Steven M. Moser, M.D., F.A.C.P.
Internal Medicine and Nephrology
1883 Mill Street
Wailuku, Maui, Hawaii 96793

Dear Dr. Moser:

Subject: Kahului Airport State and Federal
Environmental Impact Statement
State Project No. AM1011-07

As requested, you will be a consulting party as provided under the Hawaii Revised Statutes, Chapter 343 to the Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements to Kahului Airport. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Hiyamoto
Airports Administrator

Enc.

bc: EKNA

Tropical Orchid Farm

Huelo, Maui

To: Consultant
Edward K. Noda
615 Piikoi St., Suite 1000
Honolulu, Hi.
96814
Attn: Brian Ishii

RECEIVED
JUN 23 1994
EDWARD K. NODA & ASSOCIATES

From: Jeffrey B. Parker
Tropical Orchid Farm
P.O. Box H
Haiku, HI.
96708

Dear Sirs,

Please consider this a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement (EIS) for the proposed "improvements" at Kahului Airport. Please send me a copy of the Draft Joint EIS so that I may submit comments on the draft document, as well as a copy of the Final Joint EIS when it is available.

Also, enclosed, please find my preliminary comments on some aspects of the proposed EIS.

Thank You,

Jeffrey B. Parker

Mailing Address: P. O. Box H • Haiku, Maui, Hi. 96708 • Phone (808) 572-8569

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHUNI HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.226

AUG 16 1994

Mr. Jeffrey B. Parker
Tropical Orchid Farm
P. O. Box H
Haiku, Maui, Hawaii 96708

Dear Mr. Parker:

Subject: Kahului Airport State and Federal
Environmental Impact Statement (EIS)
State Project No. AH1011-07

Thank you for your comments on the proposed improvements to Kahului Airport. As requested, you will be a consulting party as provided under Hawaii Revised Statutes, Chapter 343 to this Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

June 19, 1994

John M Perry
265 Kaupea St.
Makawao, Hi 96768
572-7836

Governor, State of Hawaii
℅ Office of Environmental Quality Control
220 S. King St., Suite 700
Honolulu, Hi 96813

Please consider this a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement (EIS) for proposed "improvements" at Kahului Airport. Please send me a copy of the Draft Joint EIS & a copy of the Final Joint EIS when it is available.

Sincerely,
John M Perry
John M. Perry

RECEIVED
JUN 23 1994
EDWARD K. HODA & ASSOCIATES

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANU HOLT
GLENN M. OKIMOTO
JOYCE T. OMPHE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.227

AUG 16 1994

Mr. John M. Perry
265 Kaupea Street
Makawao, Maui, Hawaii 96768

Dear Mr. Perry:

Subject: Kahului Airport State and Federal
Environmental Impact Statement
State Project No. AM1011-07

As requested, you will be a consulting party as provided under the Hawaii Revised Statutes, Chapter 343 to the Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements to Kahului Airport. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,
Owen Miyamoto

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

June 20, 1994

COPY

Mr. Owen Miyamoto
Airports Administrator
Airports Division
Honolulu International Airport
400 Rodgers Boulevard, Suite 700
Honolulu, HI 96819-1898

Re: Environmental Impact Statement
State Project No. AM1011-07

Dear Administrator Miyamoto:

I have previously sent you comments, dated May 18, 1994, addressing the Federal Environmental Impact Statement (FEIS) for proposed construction at Kahului Airport.

Those comments did not include the following formal request, that I am now making to assure you of my interest in the project and the FEIS.

Please consider this a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement for proposed "improvements" at Kahului Airport. Please send me a copy of the Draft Joint Environmental Impact Statement so that I may submit comments on the draft document, any other related documents as they become available and a copy of the Final Joint Environmental Impact Statement when it is available.

Thank you,

Copy: Federal Aviation Administration
Edward K. Noda and Associates
Governor, c/o OEQC

RECEIVED
JUN 23 1994
EDWARD K. NODA & ASSOCIATES

William D. Smith
P. O. Box 927
Wailuku, Maui
Hawaii 96793
808-878-6776

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANI HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.224

AUG 17 1994

Mr. William D. Smith
P. O. Box 927
Wailuku, Maui, Hawaii 96793

Dear Mr. Smith:

Subject: Kahului Airport State and Federal
Environmental Impact Statement
State Project No. AM1011-07

As requested, you will be a consulting party as provided under the Hawaii Revised Statutes, Chapter 343 to the Environmental Impact Statement.

Under separate cover, we have sent you a copy of the Environmental Assessment/Determination for the proposed improvements to the Kahului Airport. If you have any additional comments, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

bc: EKNA

June 20, 1994

Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 S. King St. Suite 400
Honolulu, Hawaii 96813

'94 JU 21 AM

Sirs,

Enclosed are my comments regarding the updating of the F.E.I.S. for Kahului Airport, Kahului, Maui.
I also request to be included as a consulting party to participate in the Joint Environmental Impact Statement for Kahului Airport.

1. Incompatible residential areas. The State E.I.S. limits its solutions to excessive aircraft noise to three actions; buy the houses, sound proof them, get signed release from responsibility waivers from residents not wanting the above. There are other obvious solutions that deal with the source rather than the sufferer.

a) Do not exempt Hawaii from the federal regulations requiring stage 3 engines by the year 2000.

b) Limit all Kahului night flights to stage 3 aircraft.

c) Establish a meaningful, working noise abatement program at Kahului Airport immediately. The Plan 150 study is long overdue.

d) Move general aviation, helicopters and night cargo flights to Puunene Airport as soon as possible.

2. Runway length. Though it appears Maui's citizens have lost the battle to keep the runway at 7,000 feet, this would be our preference. If it is to be lengthened then limit it to 8,500 feet. This length will satisfy those wanting direct flights to the mainland and will discourage international flights. The only reason for the proposed 9,600 feet is to satisfy the Maui Visitors Bureau so they can expand their visitor markets. Maui has done well with its current markets.

3. Internationalization. Though this aspect is down-played by those advocating the longer runway, we all know that international flights will receive automatic approval at the federal level because of current world economics. Overseas flight will be devastating to the Spreckelsville community without strict curfew requirements. History shows us that curfew is a bad word when related to Kahului Airport and probably would not happen.

4. Parallel runway. It is refreshing to see that the State is finally talking openly about their plans to develop a parallel runway instead of telling us, "This is just an idea we're kicking around". A parallel runway must not be constructed. The State E.I.S. admits that this runway would require the State's condemning 17 acres of Spreckelsville residential land and sound attenuating the rest. This action would destroy one of Maui's most desirable communities featuring quality homes, sandy beaches, water recreation and a favorite place for local residents.
The D.O.T. attempts to ease resident concerns regarding excessive noise resulting from this runway by stating it will only be used for landings. This is not true. During Kona conditions airplanes would be forced to takeoff on that runway and the noise would be shattering in this community. I would be happy to discuss the rational for this Kona statement if anyone questions it. This runway would also require the State re-aligning Hana Highway at great taxpayer expense. Is this a high priority when considering all other State needs?

5. Maui's Infrastructure. Every airport hearing reiterates the need for roads, water, sewers, housing, emergency services, etc. on this island. The cry seems to be heard then put aside. It is general practice that before business or residential developments are approved, there is an agreement that roads and other services will meet a certain standard. This should also apply before airport development is approved and allowed to function. Before expanding the airport we should make those necessary infrastructure improvements so Maui residents are not further inconvenienced by unwise development.

6. Safety. Finally, it is hoped that the emotional testimony about the unsafe 7000 foot runway will be given no credibility. That issue was long ago put to rest except for the non-thinking Chamber of Commerce.

Mahalo for this opportunity to express the concerns of this fine community.

Jack Thompson, President
Spreckelsville Community Association
204 Kealakai Pl.
Paia, Hawaii 96779

Tel. 877-5749
Fax 877-3310

Copies to:
Owen Miyamoto
Airports Division, Department of Transportation
Honolulu, Hawaii

FAA Asst. Administrator for Airports
Federal Aviation Administration, Washington D.C.

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANU HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.226

AUG 16 1994

Mr. Jack Thompson, President
Spreckelsville Community Association
204 Kealakai Place
Paia, Maui, Hawaii 96779

Dear Mr. Thompson:

Subject: Kahului Airport State and Federal
Environmental Impact Statement (EIS)
State Project No. AM1011-07

Thank you for your comments on the proposed improvements to Kahului Airport. As requested, you will be a consulting party as provided under Hawaii Revised Statutes, Chapter 343 to this Environmental Impact Statment.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

SR 93
Ha'iku, Hawai'i 96708
June 17, 1994

RECEIVED
JUN 23 1994
EDWARD K. NODA & ASSOCIATES

Governor, State of Hawai'i
c/o OEQC
220 S. King St., Suite 400
Honolulu, Hawai'i 96813

I wish to be a [redacted] for the preparation of the Joint Environmental Impact Statement (EIS) for proposed "improvements" at Kahului Airport. Please send me a copy of the Draft Joint EIS immediately as well as copies of the Final Joint EIS when it is available, and any other applicable documents.

Thank you .

Sincerely,

Elaine S. Wender

cc: DOT/FAA/Noda

JOHN WAIHEE
GOVERNOR

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANA HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.227

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

AUG 16 1994

Ms. Elaine S. Wender
S.R. 93
Haiku, Maui, Hawaii 96708

Dear Ms. Wender:

Subject: Kahului Airport State and Federal
Environmental Impact Statement
State Project No. AM1011-07

As requested, you will be a consulting party as provided under the Hawaii Revised Statutes, Chapter 343 to the Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements to Kahului Airport. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

Valley Farm P.O. Box 485 Ha'ikū, Hawai'i 96708 808-572-1609

6-17-94

RECEIVED
JUN 23 1994
EDWARD K. NODA & ASSOCIATES

Governor John Waihee
State of Hawaii
Office of Environmental Quality Control
220 S. King St. Suite 400
Honolulu, Hawaii 96813

Re: Preparation of the Joint Environmental Impact Statement for Kahului Airport, Maui, Hawaii.

Dear Governor Waihee:

I am writing to you regarding my participation in the public debate of the State of Hawaii's Department of Transportation's proposed expansion at Kahului Airport on Maui.

I have testified at all public hearings on Maui, submitted comments on the State's EIS, testified before the Land Use Commission on the DOT's request to reclassify land in Kahului for airport expansion, and most recently at the May 19th scoping session for the joint State and Federal EIS.

Please consider this a formal request to be a consulting party in the preparation of the Joint Environmental Impact Statement for the

Valley Farm P.O. Box 485 Ha'iku, Hawai'i 96708 808-572-1609

Proposed expansion at Kahului Airport.
Please send me a copy of the Draft Joint EIS so that I may submit comments on the draft document, as well as a copy of the Final Joint EIS when it is completed.

Thank you,

Gregory Westcott

cc: Owen Miyamoto - DOT Airports Division
FAA Asst. Administrator for Airports,
Brian Ishii, Edward Wada and Associates.

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANI HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.226

AUG 16 1994

Mr. Gregory Westcott
Valley Farm
P. O. Box 485
Haiku, Maui, Hawaii 96708

Dear Mr. Westcott:

Subject: Kahului Airport State and Federal
Environmental Impact Statement (EIS)
State Project No. AM1011-07

Thank you for your comments on the proposed improvements to Kahului Airport. As requested, you will be a consulting party as provided under Hawaii Revised Statutes, Chapter 343 to this Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

MASAKO WESTCOTT
P.O. BOX 485
HAIKŪ, MAUI, HAWAII 96708
(808) 572-1609

June 19, 1994

Governor John Waihee
State of Hawaii
Office of Environmental Quality Control
220 S. King St, Suite 400
Honolulu, Hawaii 96813

Re: Preparation of the Joint Environmental Impact Statement for Kahului Airport, Maui, Hawaii.

Dear Governor Waihee:

I am writing to you regarding my participation in the public debate of the State of Hawaii Department of Transportation's proposed expansion at Kahului Airport on Maui.

I have testified at all public hearings on Maui, submitted comments on the State's EIS, testified before the Land Use Commission on the DOT's request to reclassify land in Kahului for airport expansion, and most recently, at the scoping session for the Joint EIS.

MASAKO WESTCOTT
P.O. BOX 485
HAIKŪ, MAUI, HAWAII 96708
(808) 572-1609

It was at the May 18th Scoping Session that Mr. Bon Schlapak of the State of Hawaii Department of Transportation told me that the list he read at that meeting was not a complete list of all the projects that would be reviewed by the new EIS. He said that other projects may be added later. I question the public's ability to participate fully without this fundamental information. I request that this list be finalized and made available to the public and that the comment period remain open until it may be reviewed.

Please consider this a formal request to be a consulting party for the preparation of the Joint Environmental Impact Statement for the proposed expansion at Kahului Airport. Please send me a copy of the Draft Joint EIS as well as a copy of the Final Joint EIS for my review and comment.

Thank you.

Masako Westcott

cc: Dawn Miyamoto
DOT Airports Division
FAA Assistant Administrator for Airports
Brian Ishii, Edward Roda and Associates

JOHN WAIHEE
GOVERNOR

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHANA HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

IN REPLY REFER TO:

AIR-EN
94.226

AUG 16 1994

Ms. Masako Westcott
P. O. Box 485
Haiku, Maui, Hawaii 96708

Dear Ms. Westcott:

Subject: Kahului Airport State and Federal
Environmental Impact Statement (EIS)
State Project No. AM1011-07

Thank you for your comments on the proposed improvements to Kahului Airport. As requested, you will be a consulting party as provided under Hawaii Revised Statutes, Chapter 343 to this Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

Kahului Airport Environmental Impact Statement Scoping Meeting

JUN 2 6 1994

My ancestry is of native hawaiian origin and I am a student majoring in marine biology. The expansion of the Kahului airport will devastate the unique natural beauty and lifestyle of my island home, Maui. The experts have discussed the many detrimental effects of airport expansion. I would like to specifically address that international flights would allow transit of the "Brown Tree Snake" from Guam to Maui. The brown tree snake has been directly linked to the disappearance and extinction of Guam's wild birds. Like Guam, Hawaii's climate and lack of indigenous predators provides a haven for the brown tree snake. According to biologists today, from it's introduction in Guam 50 years ago there are approximately 10,000 brown tree snakes per square mile in Guam (1). It is evident by facts such as these that Maui would hold a similar future if we extend the airport for international flights.. We must deny the brown tree snake's entry into Maui by not extending the airport for international flights. Oahu's international airport is risk in itself, do not leave our island helpless against the entry of the destroyer, the brown tree snake. I urge you to safeguard Maui's future by learning and experiencing our island. I urge you to research scientific journals with the focus on the brown tree snake. You will then be convinced that Maui's beauty and lifestyle is unparalleled and must be preserved.

Works Cited:

Nicolay, Jeff. May 29-June 4, 1994
Honolulu Advertiser. Page 1

Please include me on the list for consulted parties & send me all relevant documentation including the EIS Sincerely,

Vida Rose Yuhas pl.
[illegible] 96708 (808)573-2307

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1880

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
KAHAAI HOLT
GLENN M. OKIMOTO
JOYCE T. OMINE
CALVIN M. TSUDA

IN REPLY REFER TO:

AIR-EN
94.226

AUG 16 1994

Ms. Vida Rose Yap
2021 W. Leluhuna Place
Haiku, Maui, Hawaii 96708

Dear Ms. Yap:

Subject: Kahului Airport State and Federal
Environmental Impact Statement
State Project No. AH1011-07

Thank you for your comments on the proposed improvements to Kahului Airport. As requested, you will be a consulting party as provided under Hawaii Revised Statutes, Chapter 343 to this Environmental Impact Statement.

Enclosed is a copy of the Environmental Assessment/Determination (EA) for the proposed improvements. If you have any additional comments upon review of the EA, please send them to us by August 29, 1994. We will send you a copy of the Draft and Final Environmental Impact Statements when they become available.

If you have any questions, please contact Mr. Steve Takashima of my planning staff at (808) 838-8810.

Very truly yours,

Owen Miyamoto
Airports Administrator

Enc.

bc: EKNA

Christine Simpson
883½ Fulton St.
S.F, CA 94117

USA 19

Mr. David Welhouse
Regional Coordinator
Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, HI 96850

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MAR 1

The FAA needs to include in the draft Environmental Impact Statement (EIS) for expansion of Kahului Airport an evaluation of

1. the potential risks caused by the introduction of alien species arriving on international flights.
2. special quarantine and inspection process necessary to reduce accidental alien introductions
3. monitoring measures designed for early detection of alien species
4. speculative assessment of the effects alien species might have on native plants and animals in Haleakala NP, with special emphasis on endangered species.

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7118
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Ms. Christine Simpson
883 1/2 Fulton Street
San Francisco, CA 94117

Dear Ms. Simpson:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species
- Section 3.11 BIOTIC COMMUNITIES
- Section 5.0 CUMULATIVE IMPACTS
- Section 6.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

Hendersonville, NC 28792-2831

March 2, 1995

Mr. David Welhouse
Regional Coordinator
F.A.A.
U.S. Department of Transportation
Federal Building
Honolulu, HI

Dear Mr. Welhouse:

This letter is about expanding the airport on Maui and the threat to Haleakala National Park. Mr. Randel and I have visited Maui and Haleakala and we were thrilled with the beauty and uniqueness of the area. I've read that the airport is to be enlarged. For what reason? This will increase the risk of introducing non-native species – both animal and plant, to the island. This will be lethal to the native species. I hope that you will insist that the EIS will include the evaluation of alien species arriving on international flights. It has happened in so many other places to the detriment of the native. The native are lost forever. It can never be replaced. Please don't let this happen here.

Sincerely,
M. Louise Randel
(Mrs. R.)

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Mrs. Louise L. Randel
19 Lark Spur
Henderson, NC 28792-2831

Dear Mrs. Randel:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

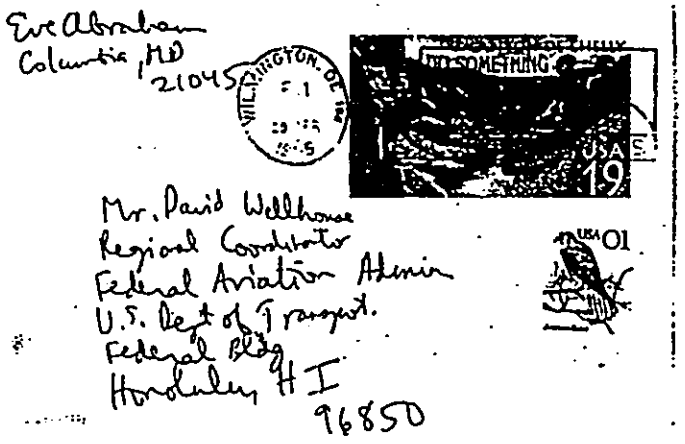
Alien Species
- Section 3.11 BIOTIC COMMUNITIES
- Section 5.0 CUMULATIVE IMPACTS
- Section 8.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka
Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates



Dear Mr. Wellhouse; 4PR 1 : 1 1354/19/95
Please make sure the FAA addresses the following issues:
- the Kahului Airport area environment and its ability to accommodate alien species arriving on int'l flights
- quarantine and inspection processes necessary to reduce accidental alien introductions
- action plan for locating and eradicating alien pests
- speculative assessment of the effects alien species might have on endangered native species.

Thank you,
Eve Abraham

The concerns of Eve Abraham are addressed in the following sections of the EIS.

Alien Species
- Section 3.11 Biotic Communities
- Section 5.0 Cumulative Impacts

Endangered Species
- Section 3.11 Biotic Communities

International Flights
- Section 8.0 Other Related Issues

Judith G. Stetson
261 Quissett Ave.
Falmouth, MA 02540
548-2768

Mr. David Wellhouse, Regional Coordinator
Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, HI 96850

Feb. 28, 1995

Dear Mr. Wellhouse,

I am concerned that wildlife and wildlife habitats in the Haleakala National Park on Maui will be degraded if the Kahului Airport is expanded.

I urge you to include an evaluation of the potential risks to endangered species from various off-island species that may easily arrive on international flights. This has happened at other international airports with disastrous results for native species.

At the very least, please plan for special quarantine and inspection processes to reduce the chances of introducing alien species. Also, please set up monitoring measures to detect as early as possible any alien species that do escape airport inspection before they can devastate native species.

Does the FAA know what effect alien species might have on native plants and animals in Haleakala National Park, especially the endangered species? If not, an assessment should be made.

I also urge you to draw up an action plan for locating and eradicating the brown tee snake and other serious non-native pests. Since we human baings have upset the natural balance of nature, we have a responsibility to help restore it.

Thank you very much for your attention to this important subject.

Sincerely,

Judith G. Stetson

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Ms. Judith G. Stetson
261 Quissett Avenue
Falmouth, MA 02540

Dear Ms. Stetson:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species

Section 3.11	BIOTIC COMMUNITIES
Section 5.0	CUMULATIVE IMPACTS
Section 8.0	OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

February 28, 1995

Mr. David Wellhouse
Regional Coordinator
Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, HI 96850

Dear Mr. Wellhouse,

This letter concerns the expansion of the Kahului Airport. After just returning from a visit to the lovely island of Maui, I am concerned that an area already environmentally impacted be subjected to more hazards.

According to the National Parks and Conservation Association, the FAA has already indicated that the proposed airport expansion on Maui offers no threat to endangered species.

I insist that the draft environmental impact study include and evaluate the potential risks caused by the introduction of alien species. Please address the following topics:

-the Kahului Airport area environment and its ability to accommodate alien species arriving on international flights;
-special quarantine and inspection processes necessary to reduce accidental alien introductions;
-monitoring measures designed for early detection of alien species;
-action plans for locating and eradicating serious pests, such as the brown tree snake;
-speculative assessment of the effects alien species might have on native plants and animals in Haleakala National Park, with special emphasis on endangered species.

Sincerely,

Kathleen H. Wain

Kathleen H. Wain
Twin Houses
211 E. Virginia Ave.
Glendora, CA 91741-2106

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
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Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Ms. Kathleen H. Wain
Twin Houses
211 E. Virginia Avenue
Glendora, CA 91741-2106

Dear Ms. Wain:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species
Section 3.11 BIOTIC COMMUNITIES
Section 5.0 CUMULATIVE IMPACTS
Section 8.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

key
621

David C. Berkshire
9713 Mariposa
Houston, TX 77025-451613
Phone: (713)667-7809
Fax: (713)667-4777
February 28, 1995

Mr. David Wellhouse
Regional Coordinator, Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, HI 96850

I am writing with regard to the proposed expansion of the Kahului Airport on the island of Maui. This expansion poses potential threats to Haleakala National Park, which I believe need to be addressed. As I am sure you are aware, many native Hawaiian species have gone extinct due to the activities of man since the arrival of the Polynesians and through the colonization by Europeans and on to the present day. Currently, many unique species are threatened with extinction, frequently because of the introduction of alien species. For these reasons, the draft EIS must include an evaluation of the potential risks caused by the introduction of alien species. I am asking your department to fully address the following topics in the EIS:

the Kahului Airport area environment and its ability to accommodate alien species arriving on international flights.

special quarantine and inspection processes necessary to reduce accidental alien introductions.

monitoring measures designed for early detection of alien species.

action plans for locating and eradicating serious pests, such as the brown tree snake.

speculative assessment of the effects alien species might have on native plants and animals in Haleakala NP, with special emphasis on endangered and threatened species.

Thank you for your attention to my concerns.

Sincerely,
David C. Berkshire

David C. Berkshire

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Mr. David C. Berkshire
9713 Mariposa
Houston, TX 77025-451613

Dear Mr. Berkshire:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species
Section 3.11 BIOTIC COMMUNITIES
Section 5.0 CUMULATIVE IMPACTS
Section 8.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,
Howard S. Yoshioka
Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

March 7, 1995

Mr. David Wellhouse
Regional Coordinator
Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, Hawaii

Dr. Pamela Murphy
105 Foothill Road
Ojai, California 93023

Dear Mr. Wellhouse,

I have been living between California and Maui for the last 20 years. I have watched Maui go through it's growing stages and unfortunately the delicate environments of the island has suffered severely. I have watched the reefs die off and the waters change.

The only hope for the preservation of these unique ecosystems to continue to be pristine, is for the people of Hawaii to support it's delicate balance. So many native species have gone extinct in the last 20 years. I feel very strongly against the expansion of the Kahului Airport. It is too dangerous and the effects could be irreversible to the environment.

I also insist that the draft Environmental Impact Study that will be done before the expansion of the airport include an evaluation of the potential risks caused by the introduction of alien species. If the airport has already been passed, I ask that you fully address the following topics:

1. The Kahului Airport area environment and its ability to accommodate alien species arriving on all international flights!

2. Special quarantine and inspection processes necessary to reduce accidental alien introductions.

3. Monitoring measures designed for early detection of alien species.

4. Speculative assessment of the effects alien species might have on native plants and animal in Haleakala National Park, with special emphasis on endangered species.

I urge to reconsider the expansion all together..these island will not endure the effects the airport will have on the environment.

Thank you for listening!

Dr. Pamela Murphy

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Dr. Pamela Murphy
105 Foothill Road
Ojai, CA 93023

Dear Dr. Murphy:

Thank you for your letter to Mr. David Wellhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species

Section 3.11	BIOTIC COMMUNITIES
Section 5.0	CUMULATIVE IMPACTS
Section 8.0	OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka
Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

MAR 13 1995 March 5, 1995

Mr. David Wellhouse
U.S. Dept. of Transportation
Federal Bldg.
Honolulu, Hawaii 96850

Dear Mr. Wellhouse:

In regard to the expansion of the Kahului Airport, it seems sensible to have the Federal Aviation Administration draft EIS should include an evaluation of the risks caused by the arrival of alien species. Some aspects of the alien species problem should be studied.

First, an evaluation of the Kahului Airport area and its ability to nurture alien species incoming on international

3. be considered in this evaluation.

Thank you for your careful consideration of all these matters.

Sincerely,
M. Ruth Niswander
622 Barbera
Davis, Ca. 95616

flights.

Second, an evaluation of special quarantine and inspection processes essential to reducing accidental alien introductions is in order.

Third, an evaluation of monitoring measures intended for early detection of alien species should be made.

Fourth, there should be plans for exterminating serious pests.

Fifth, an assessment should be made of the effects of alien species on native flora & fauna in Haleakala National Park. Endangered species should

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
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Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Ms. M. Ruth Niswander
622 Barkera
Davis, CA 95616

Dear Ms. Niswander:

Thank you for your letter to Mr. David Wellhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species
Section 3.11 BIOTIC COMMUNITIES
Section 5.0 CUMULATIVE IMPACTS
Section 8.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

March 7, 1995

Mr. David Wellhouse
Regional Coordinator
Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, Hawaii

Kathleen Marie Poole L.Ac.
ACUPUNCTURIST
820 CAPITOLA ROAD
SANTA CRUZ, CALIF
95062

Dear Mr. Wellhouse,

I have been living between California and Maui for the last 20 years. I have watched Maui go through it's growing stages and unfortunately the delicate environments of the island has suffered severely. I have watched the reefs die off and the waters change.

The only hope for the preservation of these unique ecosystems to continue to be pristine, is for the people of Hawaii to support it's delicate balance. So many native species have gone extinct in the last 20 years. I feel very strongly against the expansion of the Kahului Airport. It is too dangerous and the effects could be irreversible to the environment.

I also insist that the draft Environmental Impact Study that will be done before the expansion of the airport include an evaluation of the potential risks caused by the introduction of alien species. If the airport has already been passed, I ask that you fully address the following topics:

1. The Kahului Airport area environment and its ability to accommodate alien species arriving on all international flights!

2. Special quarantine and inspection processes necessary to reduce accidental alien introductions.

3. Monitoring measures designed for early detection of alien species.

4. Speculative assessment of the effects alien species might have on native plants and animal in Haleakala National Park, with special emphasis on endangered species.

Page 2.

I urge to reconsider the expansion all together..these island will not endure the effects the airport will have on the environment.

Thank you for listening!

Kathleen Poole

U.S. Department
of Transportation
Federal Aviation
Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Ms. Kathleen Maria Pouls
820 Capitola Road
Santa Cruz, CA 95062

Dear Ms. Pouls:

Thank you for your letter to Mr. David Wellhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species

Section 3.11	BIOTIC COMMUNITIES
Section 5.0	CUMULATIVE IMPACTS
Section 8.0	OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Hiyamoto, HDOT
Edward K. Noda & Associates

Mr. Wellhouse

We are writing to you to express concern about the expansion of the Kahului Airport. We hope that when you do an environmental impact statement that you include all the important issues. Please do not overlook the airport area and its ability to accomidate alien species arriving on international flights. Special quarantine and inspection process necessary to reduce alien introduction. Monitoring measures designated for early detection of alien species. An action plan for locating and dealing with serious pests, such as brown tree snakes. Assesment of the effects alien species would have on native plants and animals in Haleakala National Park, with special emphasis on endangered species. Thank you.

Charles & Teresa Burgess

Charles and Teresa Burgess
Compassion for all Beings
2252 Flag Mountain Drive #1
Pierre, SD 57501

MAR 16 1995

Mr. David Wellhouse
Regional Coordinator
FAA, US Dept of Transportation
Federal Building
Honolulu, HI 96850

U.S. Department
of Transportation
Federal Aviation
Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Charles and Teresa Burgess
2252 Flag Mountain Drive #1
Pierre, SD 57501

Dear Mr. and Mrs. Burgess:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species
Section 3.11 BIOTIC COMMUNITIES
Section 5.0 CUMULATIVE IMPACTS
Section 8.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District
Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

March 9, 1995

Dear Mr. Wellhouse,

I recently found out that there are plans to expand Kahului airport. I think that it is important that the federal government prepare a true environmental impact statement. The FAA should fully address the environmental area surrounding the airport. I know from my travels to Honolulu and the out islands that one of the main concerns about airport expansion is the unwanted introduction of non-indigenous species to the area. ie brown tree snakes. Special quarantine and inspection processes as well as monitoring measures designed for the early detection of foreign species are needed. Once a foreign species is found action must be taken to seek and eradicate serious pests.

The closeness of the airport to Haleakala National Park requires that the park be included in the environmental impact assessment and that those species which are indigenous to the area be protected.

Thank you.

Sincerely,

Lisa Chun

LISA R. CHUN, O.D.
8609 SECOND AVENUE
SUITE 405B
SILVER SPRING, MD 20910

U.S. Department
of Transportation
Federal Aviation
Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7118
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Ms. Lisa R. Chun
8609 Second Avenue, Suite 405B
Silver Spring, MD 20910

Dear Ms. Chun:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species
- Section 3.11 BIOTIC COMMUNITIES
- Section 5.0 CUMULATIVE IMPACTS
- Section 8.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

CMD Admin File

DURFEE ELEMENTARY SCHOOL
4220 Durfee Avenue Rm 19 c/o Ms. Kust
El Monte, CA 91732 District

Mr. David Welhouse
Regional Coordinator
Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, HI 96850

MAR 2 8 1995

Dear Mr. David Wellhouse,

We believe that you should not build a larger airport. If people drop things that they bring that don't belong in Haleakala National Park. If the planes are too loud it will scare the animals. The park is a good way for kids to get closer to nature. You should try to preserve the National Park because we might not have it for long. We think there are other ways to build an airport that won't hurt the park.

Lawrence Hanson

From

Stephanie Bañuelos — Pablo Alday JR. — Aaron L.
Isabella Garcia — Sincerely, — Frank
Annette M — Cardaes Picaso
Rm 19 — ISCO
Nate M — Durfee elementary
David M. — Jimmy
Morgan martinez — Brooke — Perez
Rebecca — Jennifer — Turner — Derek Pence

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

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FAX: (808) 541-3462

March 12, 1996

DURFEE ELEMENTARY SCHOOL
c/o Ms. Kust
4220 Durfee Avenue, Room 19
Pico Rivera, CA 90660

Dear Ms. Kust:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

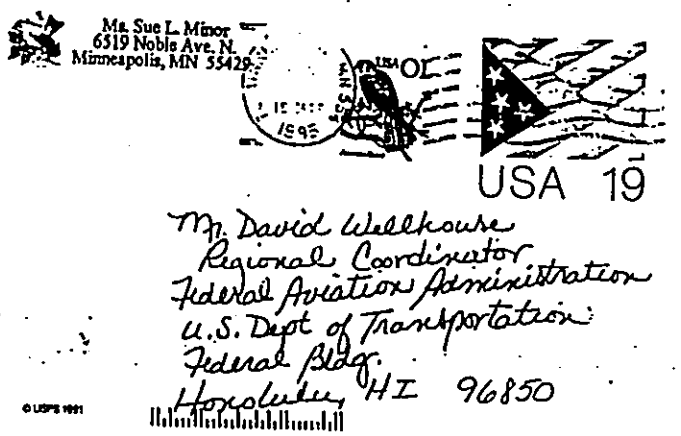
Alien Species
Section 3.11 BIOTIC COMMUNITIES
Section 5.0 CUMULATIVE IMPACTS
Section 8.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka
Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates



Dear Mr. Wellhouse, 3-13-96

Please do whatever you can to protect the fragile ecosystems of Maui from the potential danger of an expanded Kahului Airport.

Alien species arriving on international flights could destroy native species, many of which occur only in the islands.

Please protect the natural beauty & diversity of Maui. Thank you,

Sue L. Minor

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
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FAX: (808) 541-3462

March 12, 1996

Ms. Sue L. Minor
6519 Noble Avenue N.
Minneapolis, MN 55429

Dear Ms. Minor:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species
- Section 3.11 BIOTIC COMMUNITIES
- Section 5.0 CUMULATIVE IMPACTS
- Section 8.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

March 8, 1995

Mr. David Wellhouse
Regional Coordinator
Federal Aviation Admin.
US Dept. of Transportation
Federal Bldg.
Honolulu, HI 96850

Dear Mr. Wellhouse:

It has been very rewarding to know that a few places do exist where endangered species flourish and thus it was with great alarm that I read about the problem on Haleakala National Park - that an airport was about to endanger the area.

Precedent has already been set in other areas of Hawaii, leading way to the dwindling of rare species of animals and plants and creating problems in other national parks. We should learn from the past and I urge you to consider this as you make decisions as to the gratuitous want for this airport as opposed to dire need and when making those decisions to consider the following factors: the draft EIS should include ann evaluation of the potential risks caused by the introduction of alien species into the area.

Please investigate thoroughly the Kahului Airport area environment and its ability to accommodate alien species arriving on international flights;

Should the airport be instituted, arrange for special quarantine and inspection processes necessary to reduce accidental alien introductions;

Are there ways to monitor the area to detect alien species immediately? And, if any are found are there any active plans for locating and eradicating the problem?

It should be considered the effect the alien species may have on the native plants and animals in Haleakala National Park, emphasizing endangered species. Once it is done it cannot be reversed!

Please help to do what is best for the bits of beauty and wonder still left to us.

Regards,

Michele Buster

The concerns of Michele Buster are addressed in the following sections of the EIS.

Alien Species

- Section 3.11 Biotic Communities
- Section 5.0 Cumulative Impacts

Endangered Species

- Section 3.11 Biotic Communities

March 3, 1995

Mr. David Welhouse, Regional Coordinator
Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, Hi. 96850

Dear Mr. Welhouse;

The Hawaiian islands support a variety of native species found nowhere else in the world. Haleakala National Park encompasses both the breathtaking Haleakala Crater and the Kipahulu coastal area which consists of a lush forest containing placid pools connected by spectacular waterfalls. It is estimated that within 10 years, between 75 and 100 species residing on Maui alone will be endangered. Currently, five endangered birds, including nene, the state bird, reside on Maui.

Unfortunately, alien species already represent one of the most significant problems for Hawaii and its national parks. The combination of non-native plants and feral animals have pushed many native species to near extinction and has caused serious impact on the islands' ecosystems. The National Park Service has reported that "potential effect of alien species introductions on Maui's agriculture, native biota, and quality of life is so serious that neglect in imposing preventive measures now will appear gravely irresponsible in hindsight."

The proposed expansion of Kahului Airport, without careful protocols and safeguards, will significantly increase the risk of introducing alien species, having irreversible effects on Haleakala National Park and other ecosystems of the island of Maui. The Second Circuit Court has required the preparation of a federal environmental impact statement concerning the Airport expansion. The FAA needs to address:

- the effects of new alien species on the neighboring area of Kahului Airport, and assessment of their effects on native plants and animals, particularly endangered species, in Haleakala National Park and other ecosystems on Maui;
- implementation of special quarantine and inspection protocols necessary to reduce alien introduction, and monitoring measures designed for early detection of alien species;
- plans of action for locating and eliminating serious pests, such as the brown tree snake amongst others.

It is critical that a Federal Environment Impact Statement be prepared prior to any proposed expansion of Kahului Airport. Since the natural beauty and native biota of the Hawaiian Islands is a major reason why people visit in the first place, prevention of further damage is necessary to maintain a stable ecology and environment and thus continued visitation.

Sincerely,

Thomas Vullo

Thomas Vullo
1534-84th Street
Brooklyn, N.Y. 11228

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
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Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Mr. Thomas Vullo
1534 84th Street
Brooklyn, NY 11228

Dear Mr. Vullo:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species

Section 3.11	BIOTIC COMMUNITIES
Section 5.0	CUMULATIVE IMPACTS
Section 8.0	OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

RR 1, Box 1265
Mapleton Depot, PA 17052
March 2, 1995

Mr. David Wellhouse
Regional Coordinator
Federal Aviation Administration
US Dept of Transportation
Federal Building
Honolulu, HI 96580

Dear Mr. Wellhouse:

We are concerned that the expansion of the Kahului Airport could have serious and irreversible effects on Haleakala National Park.

Non-native species are already a significant problem for the Park. Allowing international air traffic will greatly increase the risk of introducing alien species to the area.

We request that the EIS fully address the ability of the Airport area to accommodate species arriving on international flights, quarantine and inspection procedures to reduce accidental introduction of foreign species, monitoring measures for early detection of non-native species, and plans to eradicate these pests.

The question must be asked: How important is it that the airport be expanded? Is it not more important to protect the native plants and animals, especially those that are endangered and irreplaceable?

Thank you for your consideration.

Very truly yours,

Wm. & Judith Tanner

William & Judith Tanner

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
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FAX: (808) 541-3462

March 12, 1996

William and Judith Tanner
RR 1, Box 1265
Mapleton Depot, PA 17052

Dear Mr. and Mrs. Tanner:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species

Section 3.11	BIOTIC COMMUNITIES
Section 5.0	CUMULATIVE IMPACTS
Section 8.0	OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

N. Susanna Bluestein, D.C.
Doctor of Chiropractic and Craniopathy

Mr. David Wellhouse
Regional Coordinator
Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, Hawaii

Dear Mr. Wellhouse,

I have been living between California and Maui for the last 20 years. I have watched Maui go through its growing stages and unfortunately the delicate environments of the island has suffered severely. I have watched the reefs die off and the waters change.

The only hope for the preservation of these unique ecosystems to continue to be pristine, is for the people of Hawaii to support its delicate balance. So many native species have gone extinct in the last 20 years. I feel very strongly against the expansion of the Kahului Airport. It is too dangerous and the effects could be irreversible to the environment.

I also insist that the draft Environmental Impact Study that will be done before the expansion of the airport include an evaluation of the potential risks caused by the introduction of alien species. If the airport has already been passed, I ask that you fully address the following topics:

1. The Kahului Airport area environment and its ability to accommodate alien species arriving on all international flights!

2. Special quarantine and inspection processes necessary to reduce accidental alien introductions.

3. Monitoring measures designed for early detection of alien species.

4. Speculative assessment of the effects alien species might have on native plants and animals in Haleakala National Park, with special emphasis on endangered species.

I urge you to reconsider the expansion all together..these islands will not endure the effects the airport will have on the environment.

Thank you for listening!

Sincerely yours,

N. Susanna Bluestein, D. C.

904 Masonic Avenue • Albany, California 94706 • (510) 527-1300

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7118
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FAX: (808) 541-3462

March 12, 1996

N. Susanna Bluestein, D.C.
904 Masonic Avenue
Albany, CA 94706

Dear Ms. Bluestein:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species
Section 3.11 BIOTIC COMMUNITIES
Section 5.0 CUMULATIVE IMPACTS
Section 8.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, Airports Administrator
Edward K. Noda & Associates

4/25/95

David Wellhouse
Regional Coordinator
Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, HI 96850

Dear Mr. David Wellhouse

My name is Jennifer Juntado and I am a student at California State University-Sacramento. I am concerned about the effect the proposed expansion of the Kahului Airport on the island of Maui may have on Haleakala National Park.

I believe that everything we do has some effect on the environment. Those that most disturb me are the potential threat our actions pose the various native inhabitants. Hawaii is very special with species of plants and animals that are found no where else. I understand that in expanding the airport accessability to Maui increases, thus benefitting many people, locals and tourists alike. But the down-side is the introduction of alien species that are detrimental to the native plants and animals. I feel the extinction of the native endangered species can only lead to further loss. Hawaii will lose some of its uniqueness and beauty.

I urge you to please be thorough and conduct a study to satisfactorily measure the impact this construction would have on the native plants and animals in Haleakala National Park. Secondly, find measures that would quickly and accurately detect alien species. Preventing alien species from arriving is probably the best measure. And finally, be prepared to eradicate alien species without harming the natives.

Thank you for your time,

Jennifer Juntado
6006 J Street Rm#211A
Sacramento, CA 95819

ing
601

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
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MAIL: Box 50244
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Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Ms. Jennifer Juntado
6006 J Street, Room 211A
Sacramento, CA 95819

Dear Ms. Juntado:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species

Section 3.11	BIOTIC COMMUNITIES
Section 5.0	CUMULATIVE IMPACTS
Section 8.0	OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

Mr. David Wellhouse, Regional Coordinator
Federal Aviation Administration
U.S. Department of Transportation
Federal Building
Honolulu, HI 96850

March 2, 1995

Dear Mr. Wellhouse,

I am worried about the proposed expansion of the Kahului Airport. I am afraid that the construction and use of this airport will threaten native wildlife and native wildlife habitats in Maui's Haleakala National Park.

Off-island species may easily arrive on international flights. Once on the island, these alien plants and animals may well destroy the native plants and animals.

If the expansion is approved, I hope that you will implement quarantines and inspections in order to prevent alien species from entering Maui. Also, please set up monitoring systems to detect escaped alien species early, before they have a chance to spread and multiply throughout the beautiful island as the brown tree snake has already done.

Thank you very much for your attention and consideration.

Sincerely,

Barbara Little

P.S. I've been to Oahu – and specifically Honolulu – visiting the Liljestrands on Tantalus Drive. I loved the whole island and thought you did pretty well at keeping "development" away from some parts of the island. I've not been there since 1973 so I can imagine there's been changes. Anyhow, I hope you'll do your best on the subject above.

B.C.L.

The concerns of Barbara Little are addressed in the following sections of the EIS.

Alien Species
- Section 3.11 Biotic Communities
- Section 5.0 Cumulative Impacts

Endangered Species
- Section 3.11 Biotic Communities

International Flights
- Section 8.0 Other Related Issues

Bruce D. Killips
715 Concord Drive
Woodstock, IL 60098
815-338-4356

April 6, 1995

Mr. David Wellhouse
Regional Coordinator
FAA
US Dept. of Transportation
Federal Bldg.
Honolulu, HI 96850

Dear Mr. Wellhouse,

While I am a Captain with American Airlines and fly into Kahului Airport occassionally, I have to agree with current efforts to either stop, or, at least, limit the expanison of the airport.

In that light I ask the FAA include within its draft Environmental Impact Statement an evaluation of the risks caused by the introduction of alien species to the Haleakala National Park. I know that, in part, the airlines, as well as shipping agencies, in the past have been responsiible for the transportation of alien species. I would like to see the action eliminated, or, at least, slowed significantly.

I would hope the FAA, in co-operation with the State of Hawaii, would at least address, but not limited to, the following areas: spacial quarantine and inspection procedures necessary to reduce accidental alien introductions, monitoring measures designed for the early detection of alien species, and action plans for locating and eradicating, or reducing, serious pests.

Thanks for your time and consideration!

Sincerely
Bruce D. Killips
Bruce D. Killips

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
Honolulu, HI 96813
MAIL: Box 50244
Honolulu, HI 96850-0001
Telephone: (808) 541-1232
FAX: (808) 541-3462

March 12, 1996

Mr. Bruce D. Killips
715 Concord Drive
Woodstock, IL 60098

Dear Mr. Killips:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species

Section 3.11	BIOTIC COMMUNITIES
Section 5.0	CUMULATIVE IMPACTS
Section 8.0	OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

Regional Coordinator
FAA
U.S. Dept. of Transportation
Federal Building
Honolulu, HI 96850

APR 1 ... 600

Dear Mr. Wellhouse, 621

Because Kahului Airport on the island of Maui is less than 15 miles from Haleakala NP, non-native and possibly destructive species have an increased risk of being introduced to the area. Alien species already represent one of the most significant problems for Hawaii and its national parks. Expansion of Kahului Airport has the potential to push many more native species to the brink of extinctio The draft EIS of the expansion mus include an evaluation of potential risks caused by the introduction of alien species. Specifically, please address the following topics:

1) The Kahului Airport area environme and its ability to accomodate alien species arriving on international flights.

2) Special quarantine and inspection processes necessary to reduce accidental alien introductions.

3) Monitoring measures designed for early detection of alien species.
4) Action plans for locating and eradicating serious pests such as the brown tree snake.
5) Speculative assessment of the effects alien species might have on native plants and animals in Haleakala NP, with special emphasis on endangered species.

Please implement these careful protocols and insure that the Hawaiian islands continue to support native species of plants and animals which make the area unique and valuable.

I look forward to hearing from you soon.

Sincerely,

Victor & Kim Flake
1867 Hill Top Ln.
Encinitas, CA
92024-1973

U.S. Department of Transportation
Federal Aviation Administration

Western-Pacific Region
Airports District Office

300 Ala Moana Blvd., Rm. 7116
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FAX: (808) 541-3452

March 12, 1996

Victor and Kim Flake
1867 Hilltop Lane
Encinitas, CA 92024-1973

Dear Mr. and Mrs. Flake:

Thank you for your letter to Mr. David Welhouse with your comments on the Kahului Airport Environmental Impact Statement (EIS). Your comments are addressed in the Draft EIS in the following Sections:

Alien Species
Section 3.11 BIOTIC COMMUNITIES
Section 5.0 CUMULATIVE IMPACTS
Section 8.0 OTHER RELATED ISSUES

If you would like a copy of the Draft EIS, please contact us at the address listed above.

Sincerely,

Howard S. Yoshioka
Manager, Airports District Office

cc: Owen Miyamoto, HDOT
Edward K. Noda & Associates

A.5 TRANSCRIPTS OF SCOPING MEETINGS

This section contains the transcripts of both scoping meetings. In addition, the following summarizes the commentor's concerns and the applicable sections in the EIS in which their concerns are addressed.

Herb Squires

- Funding responsibilities
  - Section 2.5 Project Phasing
- Impacts on Maui's Environment
  - Section 3.0 Affected Environmental, Probable Consequences and Measures.
- Impacts on Infrastructure
  - Section 2.2.15 Infrastructure
  - Section 2.4.8 Proposed Roadway System
  - Section 2.4.9 Proposed Utilities and Drainage Systems
  - Section 3.22 Public Facilities, Services and Aviation Safety
  - Section 4.2 No-action Alternative
  - Section 5.0 Cumulative Impacts
- Impacts on Safety
  - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
  - Section 3.22.9 Aviation Safety
- Noise Impacts
  - Section 3.2 Noise
- Runway Length
  - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
  - Section 2.4.4 Proposed Airfield Developments
  - Section 4.3 Master Plan Alternatives
  - Section 4.4 Other Runway Alternatives
  - Section 4.5 Alternative Runway Construction Phasing
  - Section 6.1 Lengthened Runways

Arleigh B. (Bruce) Hughes

- Forecasts Demand
  - Section 1.8.3 Update of Hawaii Aviation Demand Forecasts
- Runway Length
  - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
  - Section 2.4.4 Proposed Airfield Developments
  - Section 4.3 Master Plan Alternatives
  - Section 4.4 Other Runway Alternatives

  - Section 4.5 Alternative Runway Construction Phasing
  - Section 6.1 Lengthened Runways
- Socio-economics and Growth Impacts
  - Section 3.5 Socio-economic Impacts
  - Section 6.0 Growth Inducing Impacts
- Impacts on Aviation Safety
  - Section 3.22.9 Aviation Safety
- Impacts on Kanaha Pond Wildlife Sanctuary
  - Section 3.3 Land Use
  - Section 3.8 Water Quality
  - Section 3.9 Department of Transportation Act, Section 4(f)
  - Section 3.11 Biotic Communities
  - Section 3.12 Wetlands

Richard (Dick) Mayer

- Forecasts Demand
  - Section 1.8.3 Update of Hawaii Aviation Demand Forecasts
- Runway Length
  - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
  - Section 2.4.4 Proposed Airfield Developments
  - Section 4.3 Master Plan Alternatives
  - Section 4.4 Other Runway Alternatives
  - Section 4.5 Alternative Runway Construction Phasing
  - Section 6.1 Lengthened Runways
- Socio-economic and Growth Impacts
  - Section 3.5 Socio-economic Impacts
  - Section 3.6 Secondary (Induced) Socio-economic Impacts
  - Section 6.0 Growth Inducing Impacts
- Impacts on Infrastructure
  - Section 2.2.15 Infrastructure
  - Section 2.4.8 Proposed Roadway System
  - Section 2.4.9 Proposed Utilities and Drainage System
  - Section 3.22 Public Facilities, Infrastructure and Services and Aviation Safety
  - Section 4.2 No-action Alternatives
  - Section 5.0 Cumulative Impacts
- Impacts on Aviation Safety
  - Section 3.22.9 Aviation Safety
- Hawaiian Sovereignty
  - Section 1.7 Areas of Controversy/Issues to be resolved
- Impacts on Crime
  - Section 3.5 Socio-economic Impacts

Section 3.22 Public Facilities, Infrastructure and Services and Aviation Safety
Section 6.0 Growth Inducing Impacts

- Effects of Internationalization
  - Section 6.0 Growth Inducing Impacts
  - Section 8.0 Other Related Issues

John P. Ortmann (Hawaii Operating Engineers, Industry Stabilization Fund)

- Need for Proposed Projects
  - Section 2.3 Purposes and Needs of the Proposed Project and Statement of Objectives
- Runway Length
  - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
  - Section 2.4.4 Proposed Airfield Developments
  - Section 4.3 Master Plan Alternatives
  - Section 4.4 Other Runway Alternatives
  - Section 4.5 Alternative Runway Construction Phasing
  - Section 6.1 Lengthened Runways
- Socio-Economic Impacts
  - Section 3.5 Socio-economic Impacts

Renate Gassmann-Duval (Hawaii Audubon Society)

- Impacts on Kanaha Pond Wildlife Sanctuary
  - Section 3.3 Land Use
  - Section 3.9 Department of Transportation Act, Section 4(f)
  - Section 3.11 Biotic Communities
  - Section 3.12 Wetlands
- Impacts on Terrestrial Fauna
  - Section 3.11 Biotic Communities
- Alien Species
  - Section 3.11 Biotic Communities
  - Section 5.0 Cumulative Impacts
- Fuel Spills
  - Section 3.20 Solid Waste, Hazardous/Toxic Waste and Waste Wash Water

Don Reeser (Superintendent of Haleakala National Park)

- Alien Species
  - Section 3.11 Biotic Communities
  - Section 5.0 Cumulative Impacts
- Effects of Internationalization
  - Section 8.0 Other Related Issues
- Cooperating Agency

Section 1.3.3 Applicant and Cooperating Agencies

Roger Dubin (Maui Visitor's Bureau and Puco Coalition)

- Tourism Industry
  - Section 3.5 Socio-economic Impacts
  - Section 3.6 Secondary (Induced) Socio-economic Impacts
  - Section 6.0 Growth Inducing Impacts
- Runway Length
  - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
  - Section 2.4.4 Proposed Airfield Developments
  - Section 4.3 Master Plan Alternatives
  - Section 4.4 Other Runway Alternatives
  - Section 4.5 Alternative Runway Construction Phasing
  - Section 6.1 Lengthened Runways

Jan Penney (Activities Owners Association)

- Runway Length
  - Section 2.3.2 Provide Safe, Efficient, Economical and Convenient Air Transportation Facilities
  - Section 2.4.4 Proposed Airfield Developments
  - Section 4.3 Master Plan Alternatives
  - Section 4.4 Other Runway Alternatives
  - Section 4.5 Alternative Runway Construction Phasing
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Isaac Hall (Maui Air Traffic Association, Sierra Club - Maui Group, Mary Evanson, Hui Ala Nui Makena and Dana Naone Hall)

- Airport Planning, State Final EIS and Litigation
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Carolann Guy
- Purpose and Need for Proposed Projects
  - Section 2.3 Purposes and Needs of the Proposed Project and Statement of Objectives
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Gregg Nelson
- Purpose and Need for Proposed Projects
  - Section 2.3 Purposes and Needs of the Proposed Project and Statement of Objectives
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Aleka Grillo
- Purpose and Need for Proposed Projects
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Toni Rust
- Purpose and Need for Proposed Projects
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Bill George
- Purpose and Need for Proposed Projects
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Dana Hall
- Preparation of the EIS
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- Scoping Meetings and Scoping Process
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  - Section 3.0 Affected Environment, Probable Consequences, and Mitigation Measures
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Jack Thompson (Spreckelsville Community Association)
- Socio-economics Impacts
  - Section 3.5 Socio-economic Impacts
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Laurie Chang
- Runway Length

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Wayne Hedani (Maui Chamber of Commerce)

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Terryl Vencl

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Leslie Kulokio

- Participation of the Environmental Protection Agency, Department of Defense and

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Jody Mitchell

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Kenneth Barr (Maui Planning Commission)
- Airport Planning and Litigation
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Patricia Sato-Ortmann
- Purpose and Need for Proposed Projects
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Steven Moser
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Cynthia Litzau for Kaanapali Beach Resort Association
- Purpose and Need for Proposed Projects
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Henry Kauka (Westin Maui)

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Soloman Kapule (Westin Maui Kaanapali)

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Eugene Parra

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Danny Carmichael
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Henry Koja (Maui Farmers Cooperative)
- Need for Air Cargo
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Robert Hoonan (Grand Wailea Resort)
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Kathleen Nohelani Souki (Grand Wailea Resort)
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Linda Shallit
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Kaimi Reyes
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Richard Emery
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Bill Smith
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Len Cowper (American Pacific Air)
- Airfield Capacity
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Mark Hodges
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James Rust (Pueo Coalition)
- Public Consultation
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Charles Kokes
- Forecasts Demand
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Ellen Kraftsow

- Impacts on Solid Waste Disposal
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Nihiki Lananda

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Masko Westcott

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Philip Thomas

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Corrections to Airport Hearing
Public Scoping Meeting
Kahului Airport Environmental Impact Statement

May 18, 1994

PUBLIC SCOPING MEETING AT 10:00 A.M.

1. Cover Sheet, date should read May 18, 1994 and not March 18, 1994.

2. Page 53, Index. The following is the correction to the Index.

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PUBLIC SCOPING MEETING

Taken on behalf of the Federal Aviation Administration, in cooperation with the State of Hawai`i, Department of Transportation, Airports Division, at the Kahului Airport, commencing at 10:00 a.m. and 7:00 p.m. on Wednesday, ~~March 18, 1994~~. * May 18, 1994

QUALITY COMPUTERIZED TRANSCRIPTION
-by-
IWADO COURT REPORTERS, INC.
2233 Vineyard Street, Suite A
Wailuku, Maui, Hawai`i 96793
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REPORTED BY: SUSAN S. HEASSLER, CSR 214

* Corrected by Lorraine M. Noda
Edward K. Noda and Assoc. Inc.

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TRANSCRIPT OF PROCEEDINGS

May ~~17~~, 1994, 10:00 a.m., Public Scoping Meeting

18, *

MR. WELHOUSE: Can you guys hear me in the back? Because we have got so many seats, if you guys wanted to move up, it would be easier. Then I don't have to use the mike. I hate using mikes. In fact, I am much more comfortable walking around, as long as you can hear me in the back.

O.K., good.

My name is David Welhouse; I am with the FAA. I am here for the environmental impact statement public scoping meeting at Kahului Airport.

With me is Ben Schlapak from the Department of Transportation, Airports Division. Today we have a facilitator who will be doing the public information gathering of our meeting, Sue Kiang. We also have John Wilk, who will be assisting Sue as a facilitator of the public part of the meeting, later.

So, O.K. Everybody got a handout? Good.

*** Notes ***

We are going to go ahead with this. In here there is a list of consultants. It has the lead agencies, and it's got the FAA and the DOT, as well as the consultants.

The consultants we have are three separate things listed on here. For the impact statement, the prime is Edward K. Noda, and there's a whole list of subs. I am not going to read them all.

For the Maui GA study, which we are going to have a meeting on that tomorrow, which will be the initial kickoff meeting, the prime on the Maui GA study is P&D Aviation. And we are also going to have the Kahului Airport Part 150 Study, and the prime on that is Belt Collins & Associates.

O.K. In here, in the handouts, we have an agenda. As you can see, my name is right at the top. Everybody knows who I am now. I am not going to ask you to introduce yourselves; that would take too long.

Just kind of follow through here on the second part, I will be doing the second part on the EIS processing; get to that after we go through this. Ben will give a presentation, then, of the master plan and the environmental issues.

Then what we are going to do is, we are going to have a conclusion, and we are actually going to take

a 30-minute break. What that is, is for people to go back to the information tables where we have the consultants set up. These are the experts. If you want to talk to people, if you've got a question, that's the place to ask it.

At this point, what we are here for is to gather information. O.K. When you do that, O.K., it says under the "A" part, you have three options as to how you testify. The first is written testimony. There are some blue sheets like this on the sign-in table and the information tables. If all you wanted to do is send it in to me, you fill out what it is and it comes to me. I am the project manager for the environmental impact statement, so I get all the information.

The second option we have is, if you want to do individual oral testimony before a court reporter, back on the right side we have three court reporters set up, O.K. In this handout you also have a map -- we will follow through here -- we are here at the front part, the presentation. O.K., in the back you can see where it says, individual testimony. And that's where the three court reporters are.

Opposite from that is where the five information tables are. O.K. They will have placards

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on the five different topics that you can go and see. They are listed in here under the agenda, tables one through five. You all -- all you have to do is, whatever topics you want to talk to, go on here, you can ask them the questions.

The third option we have will be after the 30-minute break. We are going to come back. Sue and John are going to facilitate the meeting. I am going to be writing out all of the comments that we get. What we are going to do is, we are going to write down all of the concerns, comments, whatever that you have.

We are here to gather information. A scoping meeting is basically an information gathering meeting. We want to listen to you. We want to find out what we need to put into the master plan, into the environmental impact statement, before we start preparing it.

MR. SQUIRES: One question. Will the court reporters be recording that testimony in detail, as well?

MR. WELHOUSE: Yes. And we will get all the testimony from the court reporters. And that's what we are going to do is, we get all that testimony, and that is used in the preparation of our environmental impact statement.

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MR. THOMPSON: Will there be an opportunity to ask questions? Because we may need some clarification in order to respond to --

MR. WELHOUSE: I am going to get to that. In fact, that's what I was going to get to right now.

The information tables -- that's why I got to the map now. The information tables are set up for a couple reasons. One is to go ask questions. We brought the consultants here, all these subconsultants. They are the experts. I am not an expert in noise, an expert in water quality or any of that kind of thing.

O.K. I represent the FAA. I am the project manager. The only thing I am here as an expert in, according to my boss, is that I can process the environmental impact statement. I can manage the project. The experts -- you go back there and you talk to them. You can talk to me, too. That's fine.

The questions -- basically I would suggest, go talk to those guys for individual, specific concerns. You want to talk about general processing of the environmental impact statement, yeah, come and talk to me. I prefer you doing it during a break, because when we get down to actual doing, receiving the information, what I would like is -- because Sue will be then running the information gathering. I am going to be

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writing. If you wanted to ask questions, we can do it on the side, or maybe -- you know, if it gets too long, we can take a break and you can do it then.

O.K. Hopefully, everybody signed in at the back table, the sign-in table, nobody got by. What we are going to do is make sure that everybody is aware of this project from start to finish.

Also in your handout you have a flow chart like this. Mine here is highlighted. The reason it is highlighted is, this is the third step, the scoping meeting, out of 25. So you can see, we have just started. You are looking at the first two, decision to prepare EIS and notice of intent, which was the notice in the Federal Register. We haven't done a whole lot yet as to actual preparation. We haven't started writing, nothing. We can't write anything; we don't have any information yet. That's what we are here for.

Now, second part here, No. 2 on the agenda we have, is kind of an outline of the environmental impact process. O.K. I am going to refer you to this. Go through this; if you've got questions, ask me during a break, because this is basically how we are going to process the environmental. The first step here is just scoping meeting.

Now, scoping is not one meeting. In this case

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two meetings, one at 10 and one at 7. It is a process. What we do is, we meet continually with all the federal agencies, the state agencies, the county agencies, anybody, general public, everybody, to get a good idea as to what to put in the environmental impact statement. We want to make sure that we have the best EIS possible. We want to make sure that we have got everything in it.

To do that, that's why we have held this meeting, or why we do the scoping process, I should say. The scoping process has four specific limited objectives. O.K. First one is, we identify the affected public and the agency concerns. That's what were are here for, to get your concerns. We want to find out environmentally, alternatives, all kinds of different things that you tell us, because that's what we are looking for.

Second objective we have is to facilitate an effective -- I am sorry, facilitates an efficient EIS preparation process. What we do here is, we get out the concerns early on so that later on we don't find out, oh, we missed something and we've got to go back and start over. It's better to get it right out in the open right away, find out what's going on.

Third is to define the issues and alternatives

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that will be examined in detail. When we do the environmental impact statement, we examine all the alternatives and all the issues, all the impacts. We ask for them in detail. We don't know what they are up front; we can't examine them. That's what we want to do. We want to get them up front.

And the fourth one is to insure that the draft statement adequately addresses relevant issues to reduce the possibility of new comment coming in later. And those comments could cause the statement to be rewritten or supplemented. If we get the information now, early, we can do the statement and we can go through the whole process the way we are supposed to. If all of a sudden, halfway through the process, halfway through this flow chart we find out we missed something, essentially we've got to start over.

We don't want to do that. We want to make sure that we stay on time, on schedule. And we want to make sure we got the best impact statement.

Now, that's why I say it's a process; it's not just a meeting. We will be having several coordination meetings with the other agencies, and we will be coming back here for workshops. So as a matter of – we go through the process. That's why we need to get information, so that we can do the preparation of the

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environmental impact statement.

O.K. I do want to let you know that there is no decisions that have yet been made or preferred alternatives selected in preparation of this EIS. Now, the state may have said, yeah, we want to do this; O.K.

I am the FAA; I am federal. As far as I am concerned, the environmental impact statement, starts from ground zero right now. We don't have any decisions made; there's no selected alternatives, nothing. We go through the process. As you can see on our flow chart, we don't make our recommendation decision until the end; and then the action goes ahead. So the decision is actually made way at the end of the process.

O.K. The other thing is, as I say, we are going to get a lot of alternatives. People are going to suggest different things, different runway lengths, different runways, different airports. We do know that, or we do state that all viable alternatives will be given the same level of analysis. What that means is that if someone says, well, why don't you study a new airport, such and such, O.K., we are going to give that the same analysis, provided that it's a viable alternative.

Now, if somebody says, why don't you fly

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seaplanes into the harbor? O.K., that may or may not be a viable alternative. We go through, and with your help later in the workshops, and we decide, are these alternatives viable or not. All of the viable alternatives will be given the same level of analysis.

Now, that's kind of an overview of the scoping process. Now I would like to call on Ben to give us an overview of the airport master plan and lead into the environmental issues.

MR. SCHLAPAK: Good morning. Welcome; glad you could come, and we need your information.

I am going to talk about the Kahului Airport Master Plan. You have a handout which has extracts from the three phases of recommended development projects. And I will go through and try and point those out, and you can follow along with me. And then I will discuss the environmental and developmental issues that we already know about from past experience in putting together the master plan and going through the state EIS and other processes here.

This master plan is an estimate of expansion and development needed to provide safe, accessible and economical air transportation to the traveling public. It's a guide, not a fixed blueprint. And it is based on estimates into the future which could be off,

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depending on events or forces unknown or beyond our control. The present master plan for Kahului Airport was published in June of 1993, along with an airport layout plan. And it took into account all of the information made available by the state environmental impact statement, the Land Use Commission hearings and various court actions.

We think it is a reasonable baseline which may well change in future updates as forecasts are refined. And we usually try and update these master plans every three to five years. So just because this thing says to the Year 2010 doesn't mean we are going to keep it this way until that time. We will be updating it.

I would like to tell you a little bit about estimated growth and give you a reference framework that this master plan has in it and also give you the 1993 production data from this airport, which is not in the master plan.

This master plan is a forecast which predicts that the resident population of Maui will rise from about 91,000 in 1990 to 145,000 in the Year 2010. And the population, including all visitors, would reach about 216,000 in the Year 2010.

Another key indicator is the number of aircraft based in Kahului. Fixed-wing, general aviation and air

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taxi aircraft are at about 48 now and about 30 helicopters. This master plan anticipates that the number of fixed-wing aircraft would rise to 75 by the Year 2010.

In 1993, accounting year 1993, Kahului Airport handled 5,358,029 passengers, coming and going. This was an increase of 3.4 percent over 1992 and a contrary trend to what is happening in Honolulu and statewide. We are an even slightly downward trend statewide and in Honolulu over the last two or three years. So Maui is still ramping upwards in total passengers at three and a half percent.

Cargo, however, handled at Kahului in 1993 was 35,322 tons, which was a minus 5.6 percent compared to 1992. And we think this is a function of a decrease in the number of aircraft and types – and smaller aircraft, in some cases – being sent in by the major air carriers. But it needs further analysis. But mail was up 5.8 percent in 1993 to 4,815 tons.

Total air operations – that means landings and takeoffs, were 171,265 in 1993, which was a 3.6 percent decrease. The number of passengers handled at peak hour is about 2,00. In 1990 there were 16 scheduled air carrier operations per peak hour, which is expected to grow to 30 in the Year 2010, according to this

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master plan. At present, 20 to 24 wide-bodied aircraft per day in and out is expected to grow to 30 per day in the Year 2010.

The forecasts in the 1993 Kahului Master Plan predict total passengers growing to 9 million per year in the Year 2010, with cargo doubling to 64,000 tons per year and air operations rising to 306,000 in the Year 2010. So that's the framework of reference and the forecast, rough numbers, that this master plan is based on.

Now, in your handouts you have three of these sheets for the three phases of development that are suggested in the 1993 master plan, and I will go through and try and point these out. They are listed in the bottom right-hand corner. They are shown with circled numbers and with diagonal crosshatching and shading -- not bottom right-hand corner, the middle of the right margin.

The first phase development is anticipated to be from the present year through 1996, and it includes, first of all, acquisition of land for the airport access road and interchange shown by the number 1, and also a little sliver of land here, so that we can change the runway landing approach light system.

Second, a navigation easement over this land;

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meaning, it would stay in agriculture, but there would be no vertical obstructions and we would have control over what, basically what happened in that area. That's for the runway protection zone, which is beyond the runway safety zone.

Then one of the two big projects is extending the Runway 220 2,600, hundred feet to the south – here is the north arrow – and put in the associated taxiway and the navigational aids.

No. 4 is strengthening the present pavement so that it can handle wide-body aircraft, more repetitions of wide-body aircraft; probably will involve an overlay of several inches of asphaltic concrete, but there could be other solutions. That's a major project which we will tie together with the runway extension, if we get to do it.

No. 5 is relocation of the very high frequency radar device for the FAA; this is an FAA project. And No. 6 is constructing a cargo facility, air cargo facility, and an access road.

No. 7 is maybe the largest project of all, the access road, grade separation, partial cloverleaf interchange, which has been discussed for many years, of course. Then we have got some work to do for the perimeter road and some fencing. A project that's just

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about finished is the new firefighting station, aircraft rescue firefighting station. And there will be an associated firefighting training area near the present burn pit. But it will lined and constructed in accordance with the present day environmental standards. And the last one shown on the first phase of development is the access road to the postal facility, No. 11.

Then the second phase of development that's shown in the master plan would run from the Year 1997 through the Year 2000, approximately. And at this point we have to think about the future of the airport and its capacity to handle the number of aircraft that we think would be coming in here.

So Item No. 1 is acquiring new land here and here to provide room – probably in the distant future -- to construct a parallel runway to Runway 220. And along with that would be a navigation easement for the runway protection zone. We need a little triangle of land here to enlarge and square off our cargo area.

Item No. 4 would be a cargo facility on the east ramp, along with the hangers for general aviation aircraft and an air tour/air taxi facility. We would relocate a lot of ground handling tugs over to the vicinity of the present air cargo building.

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And No. 9 involves fuel, over here. We presently, of course, fuel with tanker trucks. The Hawai'i Fueling Facility Corporation, which is a combine of about 20 airlines plus Lockheed Air Terminal, Inc. that handles our fuel farm in Honolulu, would build a couple of 4,500-barrel tanks. We would do the site work and provide the road and utility systems. And that fueling area would be linked to existing pipelines under the apron to provide fuel through hydrants to major air carrier aircraft.

Then we have No. 12, which is the long-discussed connection of Alalo Street (phonetic) and Stable Road. We see this as an emergency roadway. It would have a bike path that would be open all the time. And we need to – No. 13, we need to realign the north section of the east ramp access road beyond the fire station and extend it a little bit so they can get at these other lots that we have opened up and extending the perimeter road around and the fencing around the newly acquired land, we hope.

There are some ground transportation facilities here, which are really too close to the end of Runway 5, and we would relocate those on over further away. And then the last project, No. 16 on here, is the expansion of the Kanaha Beach Park, which would be

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facilities that we would build for the county, but we would retain the land.

And the third phase is anticipated to be from the Year 2003 to the Year 2010. And the major project in this phase would be the construction of an 8,500-foot parallel runway, parallel to the present Runway 220 and the associated taxiways and instrumentation. And then Item No. 3 involves additional taxiways here. And Item No. 2 involves additional taxiways here and here.

Associated with this would be widening the present aircraft safety area, runway safety areas on this end of Runway 23 and this end of Runway 220 and the other end of Runway 5.

Then there are construction of additional air cargo facilities over here, where we did some in the first phase, and construction of additional lease lots along Kealani Place, expanding the ground transportation facilities which would be adjacent to Item No. 7, expanding the main terminal parking lot, No. 9, constructing a highway access to the east ramp from Hana Highway, and then a perimeter service road around the expanded airport, rechanneling Alialanui Gulch to take advantage – anticipated from this end of the parallel runway, realigning Hana Highway down here.

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It presently curves inward a little bit, and we can straighten it out. And then providing a lease lot for a flight kitchen. That's the end of Phase 3.

Following those three foldout sheets, there's a page entitled environmental issues and alternatives. These are the things that we have learned in the past by going through the state EIS process and many other meetings here in Maui and, of course, in all the deliberations of the Land Use Commission, before the Planning Commission. And we intend to dig into these further in this federal EIS, but I wanted to run through them.

First has to do with the so-called alien species caper, and we intend to look at that again, involving plants or animals and whatever form of transportation on which they might get here. We don't think they all are coming by air. So that will be looked at again.

Noise from aircraft and highway traffic associated with the airport will be looked at again. And as a part of that, as a part of this EIS process we will also be updating the Part 150 Study on noise and looking at what's necessary for mitigation again.

Impacts on wetlands, wildlife habitation, endangered and threatened species, impact on Maui's

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infrastructure, looking of course at power and water and sewage and roads and firefighting capability and hospital capability. And maybe you need to tell us about some more piece of the infrastructure we need to worry about.

International flight operations will be looked at in the federal EIS, because it's part of a court stipulation. Whether or not we need federal inspection facilities for customs, immigration, public health and federal agriculture will be looked at again. The issue of loss of prime agricultural land – that land that's now in cane out here that is a part of this land that is really part of the airport; some of it's cultivated, some of it isn't. But we have looked at that before, and we will look at it again.

Then this last, the social concerns, which are many, but a big part of it is the cause and effect. Is that airport runway extension going to increase the development or vice versa? We know we looked at that in the state EIS at great length and modified it in the final version, but that's to be looked at again.

The alternatives that we see at this point to all of the projects that are proposed in the master plan are the various different lengths of runways. Runway 220, 7,000 feet; 8,500; 9,600; 10,000. Once

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upon a time, I am told, there was even a plan for 12,000 feet, although I must confess I haven't found it lately. And then the parallel one; admittedly, that is probably way in the distant future, but we have to look at it in terms of what do we need to be able to take the number of air carrier aircraft and general aviation aircraft that will be flying in here around the Year 2010 or so.

Another alternative is relocation of the general aviation to somewhere else on Maui, or just relocation of the helicopters. And many of you know that Puunene has been suggested for reactivation. The County has a plan for Puunene that they are looking at with a study, and we are going to look at it, too.

And that's what the subject of the meeting on tomorrow evening at Sandalwood will be. We have a consultant that will be doing a good look at all of the possibilities for where the small planes could go elsewhere on this island, including all the other airport sites that have been looked at before, look at them again, and whether or not just helicopters ought to go somewhere else. So we see those as the three major alternatives that we will be wrestling with. And of course, the first one has two or three possibilities to it.

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So again, we would like to get information this time that we haven't heard on, a new slant on some of these issues or other issues that we haven't thought of. We don't need to hear the same things again. But that's O.K., too. That's enough for me.

MR. THOMPSON: I have to clarify the question, for the record. Ben, the growth predictions that you gave will hold true whether any of this is done or not; is that correct? Your predictions are based upon what is going to happen, regardless of what happens to the airport.

MR. SCHLAPAK: The forecasting that is in the master plan is a year old now. Well, they are probably more than that, when you get down to when the analysis was really done. And the Office of State Planning and uncle, the O'ahu Metropolitan Planning Office, have worked up a variation of the MK Economic Series, which revises the growth, population growth for O'ahu downward, yet number of jobs upward. And the last that I heard from that organization, they were thinking about how they could provide this refined method to the County for their use.

So we will take that into consideration. We also have a new forecast being done for aviation, totally throughout the state by a separate consultant,

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which we are using for other purposes. What comes out of that can be a part of this federal EIS.

MR. THOMPSON: That isn't exactly clear. I am talking about — not the number of people moving to Maui. I am talking about the number of aircraft operations, number of fixed-wings and helicopters and all of that stuff.

Again, that is going to happen, by your prediction, whether anything happens at the airport or not; is that not correct?

MR. SCHLAPAK: We are going to grow aircraft operations and the number of people that we have to handle, regardless of whether anything is done. And we are going to cope with it, yes. How much it grows is still debatable.

MR. THOMPSON: Thank you.

MR. WELHOUSE: Let me finish this, first. Then we will get to that; O.K.

No. 5 on you agenda is conclusion, testimony and information tables. O.K., I am going to run through real quick, and then I am going to turn it over to Sue here.

There are three ways that we would get your information. The first would be written; write to me. You can do that either through getting one of these

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sheets, the blue sheets, either at the sign-in table, at the information table. Or at the front of the handout is my name and address, Ben's name and address -- god, you even put my phone number on here. You can call me; go ahead. Give us all the information; send it to us. Call, whatever.

The second way is the three court reporters. You can sit down if you don't like talking in front of a group — I hate talking in front of a group — go sit down, talk to them. We will use their testimony, or the testimony that you give to them, we will use that in the preparation of the EIS.

The third way is after the break, what we are doing to come back, and we are going to do the public type information gathering. And I am going to ask Sue to come up, and she is going so run it. So she can tell you how she is going to run it.

MS. KIANG: After the break, myself and John Wilk will be in charge of the meeting, if you will. And it's our job to facilitate the process. So that I would like to again remind you that our goal for today is to identify any issues that you wanted them to look at and address.

Now, certainly if you have a different angle that you would like them to study, please feel free to

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go ahead and come up, because we really are looking to avoid repetitions, in the interest of time.

And it's my job to be the time master; and we have it scientifically monitored with a stop watch. So I am asking you to limit your, this part of your testimony at the mike to three minutes. Now, if we have enough time, you will be invited to come back and conclude your remarks if you are not able to cover it in three minutes. But believe you me, at a microphone, three minutes is a long time.

As we already pointed out, there are three ways to submit the testimony. And during the break and throughout the rest of the meeting, please feel free to go back and ask any of those experts any of your questions. There will be the court reporters on the side that will be taking oral testimony, or your opportunity to write it down. And those need to be done by June 17.

So if would like to do it at the mike after our 30-minute break, we will have sign-up sheets. And I will put – there are three sign-up sheets up here. And what I will be doing is, I will take the first name from each of those sheets, then the second name. And so I will be calling you to the podium. But when you come up, please give your name again. And if you are

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representing a group or a certain point, go ahead and let us know that, as well.

This is the beginning of a long series, and I know that you will have more than just today to make your opinions known. So remember, we are looking at identifying those issues. And if there's – are there any questions about the process –

A VOICE: Mr. Schlapak was kind enough to note some updated statistics in his references and plans for updating the master plan and to be input into the EIS. I am wondering if those statistics might be available for dissemination on a hard-copy form today or later today, or if they are available from Ben.

MR. SCHLAPAK: We haven't published our annual book yet, but I have got a few copies of the '93 major numbers on passengers –

A VOICE: You seemed to have it well summarized, and one page. Could we see that?

MR. SCHLAPAK: I can give you a copy of that.

MS. KIANG: Maybe you could do it over the break.

O.K., any other questions? This is your chance to get up and go around and talk to the different people. I will convene you again at 11:30.

(A short recess was taken.)

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MR. WILK: Has everyone had a chance to sign in if you are going to be providing oral testimony?

My name is John Wilk, and I, with Sue, will be facilitating the oral testimony portion. And let me remind everyone that we are looking, as Ben mentioned, at a new slant. We are going to stay away from evaluating each other's comments. And really, my primary task as the facilitator is to help you as members focus your energy on the major task at hand.

So with that, if you have had a chance to sign in, and Sue has the list, reminding you to stay within that three minutes. And please speak into the microphone.

First person on the list is Herb Squires,

MR. SQUIRES: Hi; my name is Herb Squires. I am a ten-year resident, and I will make this as quick as I can.

Today we are engaged in a classic confrontation between the forces of greed and the forces of need. This confrontation is taking place over all this planet between those who wish to exploit, develop and serve special interests and those who feel compelled to speak out to defend the land, the people and all living things.

Those who push to exploit and develop have

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money as their primary interest. Those who call for balance and sensitive and caring approaches to using the land and consciousness in affecting its people are standing up for sustaining a beauty and quality of life that can only be found on this precious little island in its own unique way.

Maui is unlike the rest of the Hawaiian Islands because of its basically rural and agricultural nature. The natural beauty of this island is what has brought most of us to it. But the pressure to develop this place is increasing, and any changes of a dramatic nature must be considered very carefully and can only be done for the right reasons.

Fact: Maui's infrastructure is bursting at the seams. Roads and highways are jammed, sewage overflows frequently, crime has increased dramatically. On an island of 110,000 people that has no mass transit, it seems ridiculous to bring in more people at a time on larger aircraft, putting more people on the highways in rental cars, degrading the quality of life here even further. This is absurd. The money would be better spent on a mass transit system than a runway.

Safety: There has never been an accident at Kahului Airport because of the current length of the runway. There is no safety problem.

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Noise: Larger aircraft mean more noise. The North Shore of Maui is one of the most beautiful coastlines on this island, with magical beaches and beautiful residential areas. The North Shore is also the windsurfing capital of the world. Windsurfing is a sport that brings in many millions of dollars to the local economy and has revitalized the North Shore communities.

The proposed runway extension runs right through the middle of this area, and the addition of 747s and other large aircraft would destroy the quality of life as well as create a safety problem for the hundreds of thousands of people from all over the world who come here to enjoy the pristine North Shore. The proposed parallel runway would require the acquisition of Spreckelsville beach and Camp One and would effectively destroy the windsurfing industry by forcing thousands to overcrowd Kanaha Beach, since Ho'okipa is too dangerous and difficult for most windsurfing visitors.

As we sit in this incredibly expensive concourse that apparently sits unused, we are reminded how money, that could be used to deal with more pressing problems, is being wasted. It simply makes no sense to lengthen the runway at this time, because all

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of the impacts are negative, irreversible and absurd. To lengthen the runway in the name of jobs and economy is a waste of money and an abuse of government power.

Greed has no limits. All you need to do is go to O'ahu and see what overdevelopment can create. It is left up to those who are to be the protectors of this land and its people. Maui is a very special and magical place. It is not just another place to carve up and sell off. There is only one Maui on this planet.

Many conscious (sic) people live here now and many have seen other special places destroyed. We will no allow that to happen here. We will do the right thing to perpetuate the life of our land.

The runway extension and proposed parallel runway should not be built. The money would be better spend on dealing with our other more serious and pressing problems. Kahului Airport serves our own needs adequately. Projections for increases in visitor traffic may prove to be wrong, and expansion may be totally unnecessarily.

Thank you.

MS. KIANG: Arleigh B. Hughes.

MR. HUGHES: Well, I am generally called Bruce, but anyway, I am here for three reasons. I usually

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support environmental actions in any way I can. But I am also a pilot, and I am also the microbiology expert at Maui Community College.

I would like to take exception to several things that the gentleman that went through before me said. The reason that Maui is changed so dramatically is because we have a lot of hotels built every year and we have a lot of people that want to come to Hawai'i because they get good advertising.

And, you know, changing the airport or not changing the airport is going to have no effect whatsoever on how many tourists we have coming here. The world's economy, availability and cost of rooms on Maui and rental cars and so forth, that's what affects tourists coming in.

We have already had a couple of 747s land on Maui. It will be an international airport whenever the airlines want to make it that way, because when you arrive at Maui you have very little weight left from your fuel. So I am sure they will come in. But the problem is going out, you cannot carry a full load of fuel.

I am going to the Mainland quite soon now, and I had to spend three hours extra on the round trip because I had to be in Honolulu waiting for the flight

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to the Mainland. The airport is going to benefit the majority of the people. A survey has already been run, and we know that people against the airport make up about a third of the total population. So I don't like one-third of the minority to tell the majority what to do.

I am a pilot; I want to see the airport safe, where -- you said the airport was safe. You know, just because there's never been a fatal crash here, that I am aware of, doesn't necessarily mean it's safe. That Aloha Airlines that brought that plane in here that was almost falling out of the air, almost breaking in two, and it was a miracle that it got down.

Now, you think about maybe a 747 damaged or a L-1011 or a DC-10 damaged and trying to come in from the Mainland, they probably would come in from this end, which means that they probably would have wind behind them, which means they would end up over on the highway when they stopped sliding. Now, just because there's never been a fatal crash does not mean it couldn't happen.

You don't realize, we previously had a very good supply of pilots because the military trained them. They trained them all the way up to and including tankers and bombers. And that's not going to

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happen much anymore, because the military is cutting back. We are going to get pilots who are less and less and less trained flying the planes in here.

And I just think that to make the air -- to make the runway safer, it's got to be longer than it is now.

As far as the environmental concerns, because of the nature of the land that's around this airport, anything that they do at the airport is going to have fairly minimal effects on the environment.

You may be concerned about water running into Kanaha Pond. The problem that Kanaha Pond has is that there is not enough water consistently going into the pond. It could use a little more.

MR. WILK: I am sorry; we ran over. I wasn't watching.

MS. KIANG: Dick Mayer.

MR. MAYER: My name is Dick Mayer, and I am an instructor at Maui Community College and have been formerly a member of the County Planning Commission, Chairman of the Mayor's energy committee. I am most recently vicechair of the Upcountry Citizen's Advisory Committee. I am speaking from some of those backgrounds, as well as being an instructor for the last 27 years at Maui Community College.

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I wanted to make a number of general comments, several specific ones. And I will submitting five pages of testimony later on.

The previous EIS I hope is not used as a basis for this one. And I hope the group starts off from scratch. The previous EIS is completely flawed in their basic assumptions that the airport lengthening would cause no growth at all. Once you start from that, everything else that follows in terms of projections -- the socioeconomic data, et cetera -- is fallacious.

It's quite obvious that that's why the tourist industry, why the Maui Business Bureau, Hawai'i construction union, everybody is pushing for it. It is the expectation that the airport will, with the lengthening of the runway, allow direct flights from places like Tokyo, Denver, perhaps Chicago, Vancouver, et cetera, and consequently we will have considerably more growth, as the airlines like Japan Airlines, Korean Airlines and United Airlines advertise in those markets to fly directly into Maui.

So I ask that a different group of assumptions be made and that a completely different group of people be used to design the EIS.

Now, some specific points. I would like to see

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actual projections of the increased visitor count to Maui as a result of this airport, given the fact that there will be considerable advertising done in a number of new markets.

No. 2, I suspect that there will be decreased -- I say decreased -- passenger volume at Honolulu Airport. And that has to be put into the count. Honolulu Airport has many businesses associated with the airport even there, the rent-a-cars, the taxis. Tourists will not be flying into that airport; they will be flying directly into Maui, and consequently, they will be impacting that airport. And that should be part of this EIS, both for the impacts on those businesses as well as on the revenue bonds that were used to finance that airport.

The same, to a lesser degree, would go for the other airports around the state. Tourists will fly directly in to Maui and will not be going over to other islands; but they will take their entire stay here.

No. 4, the socioeconomic impact on the community of this airport construction, it puts pressure on the construction industry, which will give lots of job to the construction industry, without a doubt, but it will also mean higher housing costs for residents of Maui, as construction workers would be

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employed making higher salaries on a state project such as this one than it would be building somebody's guest cottage or rental units.

Fine that they have the jobs, but what will result will be higher housing costs for some of those workers and other members of the community. The result will also be an effect on the family life of Maui, as the higher costs mean more and more people have to take two jobs. Husbands and wives both work; they will have more problems with latchkey children on this island and children who are untended by parents because they are both having to work -- and both having to work, often times, at two jobs.

There are a whole group of infrastructure problems that I am sure the EIS will address, but I want to go on record. Certainly highways, intersections, traffic -- not just in the airport area, but throughout the island will be affected.

A particularly important problem we have got is the electricity costs on the island. When each hotel goes up, it usually generates enough new electricity demand on the island, increasing the airport facilities here, including this building as well as other facilities, which will put higher needs on the electrical utility to provide additional generating

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capacity. What we have to look at is the marginal costs of that extra capacity.

Same thing with Maui Memorial Hospital. To take care of larger planes flying in here, we will have to have a better and bigger emergency room facilities. We also will be increasingly dependent on the tourist industry, as opposed to the balanced situation we have now with agriculture. It will be almost totally a tourist community. We will be really dependent on economic conditions in California, Japan. Water supply issues also should be looked at.

A particular issue is the question of home rule type issues and Hawaiian sovereignty. This airport extension will give much greater control to people off this island and even outside the state, even outside this country, as to who will be able to fly into this airport.

Let me just finish this idea up.

And that is the question, that if this airport is built, United Airlines can decide they are going to fly direct into this airport from Chicago and Denver, and no one on Maui can say no to that. That's it. And that also has implications for Hawaiian sovereignty, as we see more and more decisions be made by people elsewhere, corporations outside of this country, if the

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United States gives Japan Airlines the right to do it.

I have another eight or nine items. And I may reserve time at the end for that.

MS. KIANG: Let me remind any future speaker of a couple of points: That we want to stay away from evaluating points that have been made by previous speakers, one. Two, if you feel that you are at a critical juncture in your talk and you do have more information to share with us, maybe it would be a good idea to watch when the sign for your time limit is up and stop at that point and just come back and speak again for another three minutes.

Thank you.

MS. KIANG: Mr. Ortmann.

MR. ORTMANN: Good morning guests to Maui, Maui residents and officials here. My name is John P. Ortmann, better known as J.P. to some of you. I represent the Hawai'i Operating Engineers Industry Stabilization Fund.

I would like, first of all, to thank the gentleman who is the college's pilot and microbiologist, I believe he said. He made some very good points. The gentleman that spoke right before me, I think if you check into your construction bidding procedures, you will find out that labor is the lowest

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cost factor for any job. Doesn't matter what the job is; labor is the lowest cost factor.

I have two points that I would like to make. Hawai'i itself, as a state, is an unusual item. If you are on the Mainland and living in a given area and the economy drops, you are afforded the ability to be able to say to your wife, take care of the kids, I've got to go to Atlanta and help build the World's Fair. I will be back when I can. Or if you are in Wyoming and they are building a bridge in Indiana, you can pack up your family and go.

Our people here are not afforded that opportunity. We need the work. Now, I will be the first to admit that the expansion of this airport is not going to solve all the woes of the unemployment problems right away. But I do know that, for the people who live here, minus the guests that have not had to go through this, the people that live here and have gone to Honolulu and back or the Big Island and back, we are familiar with that transposition of the planes and how to get where we are going.

If you are coming in from Ohio, Indiana, Kentucky, Tennessee, and you hit Honolulu airport, you have four children, eight bags, and they are throwing you on Aloha Airlines and you are not sure whether you

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are going to the Big Island, you are going to Maui or you are going to Kaua'i, it's can be a pretty unnerving experience.

I think if we have flights that were made by the expansion of the airport to allow the Midwest, long-range flights to come straight here to Maui where the people can pick up their baggage and go to their hotel and start enjoying their vacation, that we would reap the benefits in the long run.

The tourism industry is the largest industry in the islands. We are well aware of that. Maui has plenty of hotels. At present, the Mayor herself says there will be no more building of hotels on the beaches. If people want to build mauka, fine. For those of you who don't know what mauka means, it means inward on the island.

We have the hotels; the time now is to make the hotels accessible to people on a one-shot basis. As for myself, and for a lot of us, I can't pick up my family and lock my door and go to Atlanta for the World's Fair to work. This airport expansion is not only needed, it is something like Frank Fasi said the other day on the television with regards to mass transit. Twenty years from now we are going to be kicking ourselves in the seat of the pants if we don't

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do this and do it right now.
Thank you very much.
MS. KIANG: Renata Gassman-Duvall.
MS. GASSMAN-DUVALL: Good morning. My name is Renata Gassman-Duvall, and today I am speaking on behalf of the Hawai'i Audubon Society as its Maui Representative. We thank you for this opportunity to comment on the Federal Environmental Impact Statement's scope for the planned expansion of the Kahului Airport.
We are most concerned with the effects that the proposed airport expansion and runway lengthening will have on the bird life at the adjacent and very important wetland and wildlife sanctuary, the Kanaha Pond Wildlife Sanctuary. Kanaha Pond Wildlife Sanctuary is currently important essential habitat for three endangered species of Hawaiian water birds, which is the Hawaiian stilt, the Hawaiian coot, and the Hawaiian duck.
The already published environmental impact statement by the State of Hawai'i was not adequate with respect to effects of airport expansion of this Kanaha Pond Wildlife Sanctuary. Important issues that we should like to see addressed by the Federal Environmental Impact Statement are listed below.
Noise disturbance to birds by increased number

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of flights, expansion of facilities and its associated traffic and adjacent development.
Effects of increased light levels caused by aircraft or surrounding development associated with expansion of Kanaha Pond Wildlife Sanctuary's birds, as well as effects on seabird groundings. We have quite a number of seabird groundings each fall. One of them is the dark brown petrel, which is coming from Haleakala National Park down to the ocean. And one is the wedgetail shearwater, which is affected from the lighting.
Effects of increased influx of new alien species such as snakes or new bird-biting mosquito species associated with airport expansion.
Effects of increased predator pressure --such as rats, feral cats, dogs, et cetera -- on birds, on nesting success, et cetera.
We are concerned about risks of increased bird/aircraft air strikes. There are three known aircraft/air strike kills in 1993; four birds were hit by aircraft, and the kill could be, I mean, assured through an airplane or not, but three known aircraft kills. It happened in 1993, and they all affected the Hawaiian endangered stilt.
The other risk we see is a fuel spill from the

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future fuel line, which is shown on your map. I think it's shown in the Phase I. This fuel line will go from the harbor area along the Kanaha Beach Park area. And this is a major concern that indicates a break of such a fuel line shall not severely affect Kanaha Pond.
We are concerned about the taking away of a buffer zone in Keolani Place, which is in -- I think you -- proposed in your Phase III, under Points 7 and 8.
We are already having Kanaha pond surrounded by by major development. I really urge you to take nothing away. O.K.
Finally, we are concerned about methods for rectifying the current contradiction between the Hawaiian Water Birds Recovery Plan, written by the U.S. Fish and Wildlife Service in 1985. And they are mandated to increase the numbers of endangered water birds at Kanaha Pond and the FAA/DOT/DLNR's memorandum of agreement on the management of Kanaha Pond with respect to expansion of the airport and increased air traffic.
Finally, the terrestrial fauna study as prepared for the state environmental impact study was insufficient, since it only focused on effects of runway extension of 5-23. It needs to be redone in

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view of the current airport expansion and development proposal.
Thank you for your attention.
MS. KIANG: Don Reeser.
MR. REESER: My name is Don Reeser. I am Superintendent of Haleakala National Park. I am speaking for the National Park Service, U.S. Department of the Interior.
The Hawai'i Department of Transportation's 1992 environmental impact statement fails to address the impacts airport runway extension and internationalization will have on Haleakala National Park's resources. In accordance with the National Environmental Policy Act, it is imperative that the federal EIS not ignore these impacts, nor the body of law that provides special protection for the national parks and their national natural resources.
So we recommend that the following topics be fully addressed in the federal EIS. No. 1, Kahului Airport area environment and its conduciveness for the survival of introduced alien species arriving aboard aircraft from foreign countries. No. 2, special quarantine and inspection preventive measures necessary to decrease the likelihood of accidental alien introductions contained in baggage and carried by

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passengers.
No. 3, monitoring measures necessary for early detection of introduced species. No. 4, contingency action plans for locating and eradicating serious pests, such as the brown tree snake, should a nucleus population be established.
No. 5, speculative assessment of the impacts alien species arriving from foreign countries might have on the native Hawaiian plants and animals in Haleakala National Park, with special emphasis on endangered species.
The airport expansion project proposal is a federal action which could have serious and irreversible adverse effects on public values and the natural integrity of Haleakala National Park.
Therefore, on September 7, 1993 the National Park Service requested to be a cooperating agency in the preparation of the federal environmental impact statement for the expansion of for Kahului Airport. I am enclosing copies of the exchange of letter between the FAA and the National Park Service and requests made to FAA by the office of the Environmental Policy and Compliance, U.S. Department of the Interior.
It is our understanding --I don't have documentation yet -- that the U.S. Environmental

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Protection Agency also supports our request.
Thank you for the opportunity to comment.
MS. KIANG: Roger Dubin.
MR. DUBIN: I am Roger Dubin with the Maui Visitor's Bureau, and I am also with the Maui Pueo Coalition.
A lot of the objections to the runway have to do with projections of growth. From the point of view of the visitor industry, the runway has absolutely nothing to do with growth; it has to do with survival of the visitor industry.
We live in a drastically altered world. As the recent study by Cooper & Lybrand showed, there are hundreds of destinations around the world that have awakened to the gold mine of tourism. What concerns me in the master plan projections is that they are made by people who are not conversant with the realities of the visitors today or with the realities of the global competition that has exploded over the last few years.
There used to be seven or eight natural competitors, warm-weather competitors to Hawai'i. Now there are dozens upon dozens and more coming on line every day. The onslaught of competition is a very real threat to the healthy sustainability of our visitor industry, especially since virtually every place has

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easier access than Maui does. And ease of access is a more and more critical factor in vacation and business travel decisions.
A 9,600-foot runway will help us counter the onslaught, enabling us to reach out to new markets domestically and internationally; the point is, making the accommodation inventory we have today economically viable. This has nothing to do with growth or increase in the visitor industry.
There are now lots of controls in the general plan, including a hotel building moratorium. The people in the visitor industry are the last people who want to see more hotels come on line, when they are already struggling to survive with room rates that have been depressed 30 percent over the last three years and occupancy levels that are only right now looking reasonably healthy.
Nevertheless, when you have 80 percent occupancy and a low room rate, you can't pay your mortgage, you can't hire your people, you have to lay people off. We do not have a healthy visitor industry right now.
The runway is about enabling us to have a tool to survive in a drastically changed visitor industry world. I urge the people that are preparing the EIS to

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educate themselves on the true nature of the global competition that we face. Destinations are spending 20 to 50 times more money than Maui is in their marketing.
They are all natural destinations, competing destinations for us in terms of being warm-weather destinations with beauty, with palm trees, with blue water, white sands. And it's a very, very difficult situation for us. Over the next 20, 30 years our ability to compete will be based upon having some flexibility to pull the occasional flight in from markets that are different from our traditional West Coast base.
Thank you.
MS. KIANG: Jan Penney.
MS. PENNEY: My name is Jan Penney, and I am the executive director of the Activities Owners Association. I represent over 100 businesses on Maui that depend directly on the tourism industry for their livelihood. And as such, we have concerns about the long-range perspective of this airport infrastructure that we are talking about today.
It's 1994; we have been give figures all the way up to the Year 2010. That's 16 years. And for us to make decisions based on educated or very educated guesses as to what's really going to be happening 16

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years from now is something we all really have to be aware of and to look at.

The numbers that we are looking at may or may not be there. And as Roger just said, this infrastructure of the airport is simply a tool; it's not necessarily something that's going to guarantee us more flights.

But I think today we have a wonderful opportunity; every one of us sitting here has been able to watch this runway, what we are actually talking about. And if any of you have watched some of the landings, as some of us have — the United Airlines flight, the charter flight that came in — that were a little larger than our interisland flights used up every bit of available space over this runway. If anything had gone wrong, they had nowhere else to go. And some them kind of had to edge their way around the back side here.

So if nothing else, just the pure safety factor of watching these aircraft land hour after hour and seeing basically what has to happen for them to make a successful landing. Someone mentioned earlier the Aloha Airlines flight that came in. And the only reason that did not go off the end of the runway is because of a freak accident; the brakes locked. It

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wasn't pilots who were able to stop it; the brakes just simply locked and that was — it's sort of like a miracle. That's why they call it the miracle flight, Flight 207.

At any rate, the further internationalization and the fear of this particular element to expansion of the runway in actual fact has many obstacles to having that happen. FAA routes are given very sparingly, and for Maui to suddenly accrue many of these extra international routes is virtually impossible.

Also, we would also probably ask that this internationalization be really looked at carefully, because in order to facilitate that done right, there does have to be additional adequate facilities, like customs facilities, that would really take this ability to use this new airport tool. And I guess we can look around here today and see people movers and this new tunnel that if we are not careful might never even be used.

Thank you.

MS. KIANG: Isaac Hall.

MR. HALL: Good morning. My name is Isaac Hall. I represent the Maui Air Traffic Association, the Maui group of the Sierra Club, Mary Evanson, Hui Ala Nui O Makena, and Dana Naone Hall.

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I have written a rather lengthy letter, which I will give to the FAA and DOT after this, but I won't read it all.

First, there was some talk about starting over and starting with a clean slate. To do that legally, the state final EIS has to be withdrawn, the acceptance has to be withdrawn, and the prep notices, which were joint, have to be withdrawn. Otherwise, we are not starting over again.

Secondly, both DOT and the FAA have said there is no public commitment to any of the projects yet. The record before the Land Use Commission will show that's totally false. Both the FAA representatives and the DOT were totally committed to a 9,600-foot runway.

For us to be starting over, the DOT needs to publicly stand up and withdraw this commitment, withdraw all of its existing applications, withdraw all of its commitments, including but not limited to newspaper — they have talked about, they have already gone ahead and designed a 9,600-foot runway. They have already purchased some of the property for the extended runway.

For us to start over as a matter of law, all these commitments need to be wiped from the record.

Politics should not be allowed to influence the

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EIS process. During the preparation of the last EIS, politics were allowed to supersede and distort the environmental process. The primary consultant, Belt Collins, met regularly with both DOT and the subconsultants preparing studies for the EIS to determine what DOT wished to do and to orchestrate and coordinate studies to advocate the DOT's positions and to obscure important environmental issues and to try to argue against those whom they had already decided were opponents.

This cannot be let happen again. Unfortunately, we see that it has started again. E.K. Noda, the primary consultant, appeared at the Land Use Commission proceedings, were paid to help advise DOT advocate the 9,600-foot runway. Secondly, DOT and the FAA scheduled a private, separate meeting with the Puco Coalition yesterday morning.

I asked if I could come and was told I could not attend; that it was private and only for Puco Coalition. They said that they were going to schedule a separate meeting with others in the afternoon if I so wished. But this is not — you cannot do this. Separate but equal or unequal does not work under NEPA's requirements for public informational meetings.

I agree with the notion of incorporating the

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Part 150 aviation and endangered species studies into the EIS process. I hope all of those are completed before the draft EIS is published.

This EIS should actually develop mitigation measures that solve some of the difficult environmental problems that have been raised. This is an opportunity to actually implement and operate a noise abatement program. I think if a noise abatement program that works is in place before any runways are extended, you might find more acceptance of this in the community.

Secondly, I think Mr. Reeser talked about this, but the prevention of the introduction of alien species -- this EIS should be used as an opportunity to actually develop a program that's going to work. That might help. Protection of endangered species -- Renata Duvall mentioned it -- there are birds being killed, endangered species killed by aircraft right now. They were never discussed in the old EIS. That needs to be dealt with, you know, what we are going to do about the killing of endangered species by aircraft.

And the infrastructural deficit, that needs to be dealt with; at a minimum bringing up the major roadway arteries to the tourist destination areas so that they are capable of handling increased traffic generated by the airport.

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I agree that aviation demand calculations need to be revised as well as project costs. Finally, it must be frankly acknowledged that the Kahului Airport was originally placed in a sensitive environmental area. It is surrounded by habitats for endangered species, park lands, significant coastal resources and residential areas. The Kahului Airport cannot expand unless and until it is made compatible with its surrounding environment.

Thank you.

MS. KIANG: Carolann Guy.

MS. GUY: Greetings. My name is Carolann Guy, and although I am the outgoing chair of the Chamber of Commerce, I appear before you as a private citizen.

I am concerned that the failure to move forward decisively and expeditiously with the Kahului Airport runway extension adversely impacts Maui's economic well-being. You will have to excuse me; I have to breathe for two sometimes. Therefore I ask that the EIS process move decisively, expeditiously and thoroughly to a sound resolution.

I am 38 years old, a part of Maui's work force, and God willing, expect to continue for the next 25 to 30 years. And yes, like many others, I also expect to retire on Maui.

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However, at his precise moment, together with my husband, we await the arrival of our first child any time soon. You ask what in the world has this got to do with the local economy's health and Maui's needs for a longer runway?

Well, I can speak to you about the significance of tourism and maintaining this major industry's vitality in meeting the foreign competition or extending our hospitality to inner America through direct routes and the economic efficiency for airlines if this runway is completed quickly. We have already witnessed flight services reduced to and from Maui. Or perhaps the 43,000 jobs linked to this single industry through direct or emerging opportunities.

And many of these careers are agriculturally related, agriculture that provides green beltways, reasonably priced fresh produce and flowers, and protects us from unbridled development.

Or, I can speak to you about the possibilities that exist for diversification, reliably and affordably efficient transportation hubs offers to Maui's future. We have also witnessed the impacts that reduce this area of welcome growth.

However, I invite you to extend your attention to another area of measurable shrinkage. My

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mother-in-law has waited 80 years for this birth. Although she has several other grandchildren, this grandchild will be the first to be born here in Hawai'i or even on Maui.

You see, the rest of her children did not return from college. 20-plus years ago, Maui lacked the economic opportunities and diversity to offer any foreseeable economic stability or the possibility that would attract her children back to Maui's shores.

As a result, we have lost the vigor of that generation, the influence of their education and the emotional anchor of intergenerational family life. And this is not isolated. So many of Maui's tutus and tutu kanes must travel regularly to participate in their grandchildren's milestone events; baptisms, communions, graduations, weddings. You can think of the number of opportunities.

Have we considered what a community built without young adults will become? The common term: Brain drain. Have we considered that this single phenomena is likely responsible for diminishing the Hawaiian culture? When you have no youth to whom we may have pass the traditional culture, does it not die with the elders?

My husband and I thought we understood what his

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parents and my parents feel. And that was 20 years ago. It's 20 years later, and my husband and I look towards 20 years from now. Will we, too, face the same dying choice; sending our child to college with the bleak prospect that she will not return?

Will she decide in the Year 2016 that Maui lacks the will to offer her economic mobility, opportunity and stability because of what we failed to do here today? We sincerely hope not.

Please consider preserving the future by preserving Maui's economic viability. Thank you very much.

MS. KIANG: Gregg Nelson. That will be a hard act to follow.

MR. NELSON: You are right; that is a very tough act to follow.

My name is Gregg Nelson. I am the general manager for the Stouffer Wailea Beach property. And I will be also submitting a written document, but I did want to state just a few short comments here.

Like many of you, Maui is very, very special to me. I started visiting Maui in the late '60s, and I moved here in 1978. Off and on I have lived here for the past, well, about 13 years total. When I got here in 1978, it was still a very special place.

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In the 1980s I remember at this very airport there was a loft of concern about DC-10s from the Mainland coming in, about the environmental impacts that it would have, the economic impact that it would have, and how it would change the quality of life here on Maui. I think it did. I think it did change a lot of things here on Maui; I think for the good.

The 1980s were very good economic times for us. I left Maui in 1989-1990 and moved to the Mainland for three years. But when I came back about a year or so ago, I was surprised to see the amount of hotel development that had gone on. And as many people have already testified here, we do have too many hotel rooms.

What that has done is, it has severely impacted the overall occupancy level of all the hotels. In the last year of so, my hotel has suffered an occupancy shortfall of about 20 to 30 percent. And I have had to make that very, very difficult decision, because I have the responsibility as general manager, of laying people off, or basically terminating individuals from their chance to make a livelihood.

Those individuals, over the last year or so, have had to find, hopefully, other ways of making their mortgage payments, other ways of feeding their

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families. This has been a very, very difficult time for the tourism business here on Maui. And I think it has been a difficult time economically for a lot of people on Maui.

Make no mistake about it; we are all a part of tourism and tourism is a part of us. I hope that we can get this runway extension so that we can get back to being a viable economic industry for the Island of Maui. Without it, we are definitely falling behind, not only other areas in Hawai'i, but as I think Roger Dubin said, other areas throughout the world. We have got to get back our got to remain competitive. We have got to get back our market share. It is not a matter of being an excessive amounts of tourists; it is a matter of getting back the share that we had enjoyed back in the '80's.

Thank you.

MS. KIANG: Aleka Grillo.

MS. GRILLO: Good afternoon everyone. I am a citizen like everybody else; I live here, but I also work for Stouffer Wailea Beach Resort. As you heard my general manager say about the people of Maui and how well we stand up to what we are up to right now.

Economically speaking, we are all having a problem of how to keep, like alive, survive. And building, or making a longer runway doesn't in any way,

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shape or form make us any richer. It doesn't. The main thing is, we don't know, but we not know, already knew, this building is here for a purpose. And because it is here, a runway will be built, will be extended, whether you like or not, whether I like or I don't like it. Simple as that.

Environmentally speaking, I myself know for a fact, I have animals, I have birds, they are all around me, because I work in the hotel and I have birds there, too. But in the airport such as this here, the birds did not know that we were going to have an airport built here a long time ago. But they survived, and they will survive even more.

I know you must be saying to yourselves, she doesn't know what she is talking about. But I tell you one thing, God knows. God knows. We all need to progress; but along with progress, you have problems. You will have obstacles. And that's what we have right now. We are facing obstacles.

Either way you look at it today, you are going to go home feeling like you didn't accomplish anything today. But believe you me, we will victoriously come about with an extended runway. And it's going to be for all our benefits, honey. Let me tell you folks today; it's will be to all our benefits. Because you

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cannot fly an aircraft out of here one after another like you do a car, like cars on a freeway. They all have certain designated times that they can go and come.

And I do want to say one thing for work. My children are all apprentice electricians; and they are now on the bench. And it has nothing to do with the airlines or with the runway. But extending the runway will give them some opportunities. Thank about it.

MS. KIANG: Let's try to move along without applause. Toni Rust. We appreciate your comments, for sure.

MS. RUST: Aloha. I feel like I am living proof of the prior testimony of kids feeling like they have to go away. My name is Toni Rust, and I am 23 years old. I graduated from St. Anthony in 1988, and I have lived on Maui all my life.

I attended the University of the Hawai'i at Hilo because there isn't enough job opportunities to work here without a higher education. Four days ago, I graduated with my Bachelor of Arts in political science and my Bachelor of Arts in administration of justice. Now that I have got my degree, there are still no adequate job opportunities. Therefore, I must go away again, this time to the Mainland.

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I am here today in support of the expedient expansion of this airport's runway, because I believe it is vital as insurance for better economic situation upon my return from school. I also support the Maui Pueo Coalition statement.

In addition, I was fortunate enough to receive education about this issue to be able to make – to participate in decisions that will affect my future. I believe that if other young people were also educated about this issue, they, too, would be in full support.

I was born and raised here. One day I hope to raise my own ohana here, too. I hope that young people will feel the same way I feel.

Thank you for the opportunity to present to you.

MS. KIANG: Bill George.

MR. GEORGE: My name is Bill George. Thank you for letting me speak today. I have worked in both the construction industries and presently in the hotel industry. I am speaking for myself.

In the last two years I have had to look at my fellow employees and actually tell some of them that we don't have enough work for them, knowingly that we do have the work, but we can't afford it anymore. I don't think the runway is going to bring us immediate

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tourists, like a lot of people have projected that adding the runway is going to bring in big bucks and tourists. I don't think that's going to happen. I think what it will do is just give us an advantage to getting more business for our hotels, getting more work for our employees, for our people that live here on Maui.

I think there are problems involved with it, and I think there's environmental problems. I don't think that they are not solvable. I think we can solve them. I think with all the mind power that we can muster on this island, we can solve these problems.

I am for the runway extension. I have children who are in the college years right now; one of them just left Friday because opportunities here aren't as good, so she is living in Honolulu now. One son just finished his first year of college, but he already is looking at going to the Mainland, also. That is a problem.

That is just one of the problems we have got to try and solve with this problem that we are trying to solve. Thank you for you time. I am kind of nervous, but thank you.

MS. KIANG: Dana Hall.

MS. HALL: I appreciate Ben Schlapak's remarks

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to the extent that they appear to reveal a continuing attitude on the part of DOT that what critics of Kahului Airport expansion have said in the past is irrelevant to the EIS process.

If this is indeed the case, then we are engaged in a process that is violative of Hawai'i as well as national environmental laws. And this would be an unfortunate wasting of everyone's time and will likely result in unnecessary delays.

May I remind DOT and the FAA that Mr. Schlapak's comments that DOT wants information that it hasn't heard before or that a new slant on the issues exactly expresses the spirit that informed the earlier prepared EIS from DOT, which was the subject of a lawsuit and a stipulated agreement that reaffirmed the necessity of preparing a joint federal/state EIS.

A primary reason for challenging the earlier state EIS was that the document failed to address significant issues, and as a result -- identified by public and governmental comments and as a result, also failed to identify or use all practical means to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of the proposed actions on the quality of the human environment.

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That was the subject of the lawsuit. Now for everybody's information, those who consider themselves as opponents of the runway expansion, as well as those who consider themselves to be critics of it, it will be useful to go over what NEPA entails and the Environmental Policy Act, which governs the preparation of an EIS, since it wasn't given to us today by either the FAA or DOT.

NEPA contains an action forcing provision. NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. Public scrutiny is essential to implementing NEPA, so everyone can be welcome to this process, technically. Ultimately, it is not documents but better decisions that count. That's important in order to foster what NEPA calls excellent action.

Federal agencies are directed by NEPA to apply NEPA early in the process to insure that planning and decisions reflect environmental values, to avoid delays later in the process and, importantly, to head off potential conflicts. As we find ourselves in a room where conflicts are being exacerbated today, we have to understand that already the federal lead agency and the state lead agency are not doing what NEPA requires,

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which is to head off potential conflicts.

Why are they doing it? Because they fail to listen to what significant issues are raised by people who criticize this airport expansion. Scoping, which is what we are engaged in today, should be early and open. So I, too, object to the holding of the meetings with special interest groups that are out of sight of the public.

I want to hear what people have to say, even if it is repetitious. I think it's important to have an open forum. I think it's important to have transcripts of any private or closed meetings available to the public for review afterwards, even if the public, members of the public are not allowed to be present at the actual meeting.

Now, what is the purpose of the environmental impact statement, according to NEPA? It shall provide full and fair discussion of significant environmental impacts and shall inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.

An environmental impact statement is more than just a disclosure document. You don't just get to present information. It shall be used – and this is

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its important aspect – this information shall be used by federal officials in conjuction with other relevant material to plan actions and make decisions.

So I think, you know, this – having this meeting in this particular area of the airport, in an used portion of this airport terminal, is eloquent testimony to the fact that none of this happened under NEPA.

So, why are we coming here today? We want some assurance that what allowed this particular facility to be built in the manner we are sitting, in what is otherwise an empty concourse, is not allowed to continue.

Agencies shall not commit resources prejudicing selection of alternatives before making a final decision. Environmental impact statements shall serve as a means of assessing the environmental impacts of proposed agency actions rather than justifying actions and decisions already made. O.K.

We find ourselves in a very curious point in time. And to return – finally, I would like to return briefly to the point that was made earlier regarding the necessary and essential inclusion of the public, meaning all members of the public, and their participation in this process.

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As lead agencies, both FAA and DOT must invite the participation of affected federal, state and local agencies and any affected Indian tribes, the proponent of the action, which in this case is the State DOT, and other interested persons – and this is important – including those who might not be in accord with the action on environmental grounds.

Notice, NEPA does not call anyone who may be a critic or not in accord with the proposed action an opponent. And it's exactly the kind of rhetoric and dialog that has allowed to be continued over the course of this controversial issue that has resulted in this divided feeling within the community.

I can tell you that as one of the critics of this proposed expansion, I am interested in what other people have to say. But I think it is the duty of the FAA and DOT to go beyond the campism that is allowed to arise over this issue and to do a full and fair and mutual analysis of the significant issued involved.

Those issues go beyond finding jobs, the provision of jobs. And they know it.

MR. WILK: Let me remind the speaker that you have exceeded your three minutes.

MS. HALL: And the speaker is concluded. And the speaker hopes that there won't be a deaf-ear

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1 syndrome on the part of these agencies.
2 MS. KIANG: Jack Thompson.
3 MR. THOMPSON: I am Jack Thompson. I am the
4 president of the Spreckelsville Community Association,
5 and I have been involved in these discussions for a
6 long time. It's nice to see all of us back together
7 again.
8 This discussion today is not just about
9 lengthening a runway; it's about the whole economic
10 structure around this development of the airports in
11 the state. And so I wanted to put into the records, I
12 think, a different point of view that appeared in the
13 newspaper in the Advertiser the other day from Bruce
14 Nobles, who is the president and chairman of the board
15 of Hawaiian Airlines.
16 So I would like to read this statement to you,
17 because I think it has some socioeconomic parts to it
18 that haven't been touched on thus far in our EIS
19 process.
20 Now you can start the time. There's been a lot
21 of — I am quoting now. "There's been a lot of
22 discussion lately about disputes between airlines and
23 airports authorities over the reasonableness of rents,
24 landing fees and other charges levied at various
25 airports around the country. Some airports are

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1 proposing to raise these fees by significant amounts.
2 However, the focus of the debate is misplaced.
3 "The dispute over rents and landing fees is not
4 one between the airports and the airlines; it's between
5 the airports and the traveling public. Airlines are
6 capital and labor-intensive businesses.
7 Multi-million-dollar aircraft and large work forces
8 must be maintained, whether flights are full or empty.
9 "For this reason, airlines operate with the
10 slimmest of profit margins. In order to survive the
11 economic challenge of the past couple of years, the
12 nation's airlines have undergone wrenching change.
13 However, just as these measures are beginning to help
14 put this industry out of the economic morass, these
15 efforts are being thwarted by sharp increases in all
16 manner of government-instituted charges and fees.
17 "The Hawai'i State Department of Transportation
18 has embarked on an ambitious $2 billion capital
19 spending program for Hawai'i's airports, more than half
20 of which has already been spent; this against the
21 consistent objections of the airlines that serve
22 Hawai'i.
23 "The new interisland terminal in Honolulu is
24 one interesting example of this capital program. The
25 terminal cost approximately $150 million, has nearly

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1 600,000 square feet of space, but only eight gates to
2 handle up to a dozen simultaneous aircraft operations
3 of Hawai'i's two major interisland airlines. We
4 seriously doubt that one additional visitor has
5 traveled to Hawai'i as a result of building this new
6 terminal, nor can we imagine that a single local
7 resident has taken an interisland trip who would not
8 have otherwise.
9 "Therefore, there is no additional airline
10 revenues generated by this new terminal; not one
11 dollar. Yet, the state wants the airlines to pay for
12 this and other airport projects through increased rents
13 and other charges. In the absence of any additional
14 passenger revenues, the only solution available to the
15 airlines is to pass on the higher cost to customers in
16 the form of higher fares.
17 "However, much the same way lowering fares
18 attracts customers, we believe that increasing fares
19 discourages them. It is clear that if we increase the
20 cost of traveling to Hawai'i and between the islands,
21 we will decrease the number of visitors to our
22 beautiful state and create a situation where fewer of
23 our local residents will be able to afford to travel.
24 "Consequently, this debate about increasing
25 airport fees is not so much a dispute between the

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1 airports and the airlines as it is an issue that
2 concerns every resident, visitor and business in
3 Hawai'i. Over the last year, the State of Hawai'i has
4 expended great amounts of energy and taxpayer dollars
5 trying to coax visitors back to Hawai'i. Raising the
6 price of Hawai'i travel by way of increased airport
7 costs is destined to counteract these efforts."
8 Thank you.
9 MS. KIANG: Laurie Chang.
10 MS. CHANG: This is quite high, but that's O.K.
11 We have been asked not to repeat testimony, and
12 this is quite difficult for me, because my husband is a
13 farmer. We live down in Makena, in a resort area, and
14 we have a little papaya farm. And of course, so my
15 interest really is in the insects.
16 But also, during the last three years that I
17 have been hearing testimony and going to these
18 hearings, something always stuck into my mind. And
19 that is: If the future planes are to be smaller and
20 more fuel efficient, be more efficient in fuel, why do
21 we still need to have a longer runway? I don't see
22 anything on 8,500 feet. I think a study should be made
23 in that area. Maybe then I can accept some of the
24 other things that you are talking about.
25 But right now, it's very difficult for me,

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because I am afraid of the insects and the pests that comes into the islands, because we are surrounded by it. I mean, when you come back and you try farming, and you find out there's five to six flies, melon flies around, and then you have to make nighttime inspections to see what's eating your crops, that's something to worry about.

Then you hear a friend who tells you that she was working for the experimental station in Kula, almost breaking through what is wrong with the tomato virus, and then this project is cut off because budget gets cut off. I mean, that is, to me, almost stupid. Yes.

That's worrisome, because today there's very little tomatoes grown on the island. That's something to worry about. What other crop next? They are talking about the papaya virus, and if we don't to something about it within five years, the papaya industry is going to be wiped out.

And yet I see in the paper the other day that, where Pauuilo might start up a papaya farm because of the closing of the plantation. So things go round and round, and it bothers me. It worries me. It worries me; the social impact worries me. Living in Orange County in the '50s and '60s, I seen Orange County

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become destroyed because of construction, over construction. And then to come home to Maui in the '80s and find this thing is happening here.

And all this social impacts, families breaking up, all of these things happening, I have something to worry about. And so do you. Now, for many of my friends, they are backyard farmers, just a little, just to, you know, enough to help with family food at night. Now, you have something to worry about if you don't take care of the insects.

So I say, slow down. If the planes are going to be smaller, let's slow down. Look into 8,500 feet and maybe solve some of these problems. And I know it's hard on you people in the industry and the construction industry, and I know what's going on there, too, because we went through that.

But I say, let's take care of the insects first, because that is survival here on Maui. Thank you.

MS. KIANG: Wayne Hedani.

MR. HEDANI: Thank you. My name is Wayne Hedani, and I am speaking as president of the Maui Chamber of Commerce, an organization of 1,200 businesses on Maui.

Maui's runway is currently only at minimum FAA

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standards for existing aircraft and passenger demands. This level of safety can and should be improved to handle current and future levels of usage. FAA standards are developed through testing on new aircraft.

Aloha Flight 243 proved that we are not delinquent in new aircraft. FAA standards do not take into account Kahului Airport's wind shear and crosswind factors or the possibility of multiple malfunctions in takeoff or landing or blown tires, which have happened on landings at Kahului, which extends required stopping distances.

Records will show that an interisland jet with passengers on board slid off the end of the runway at Kahului Airport due to wet runway conditions on December 10, 1970. In May of 1991 a wide-bodied jet aborted a landing when they could not get their wing flaps down on final approach.

These incidents alone are cause enough to extend the runway. I can give you more. March 30, 1993, a Northwest Airlines DC-10 aborted takeoff from the reef runway in Honolulu and blew five tires in the process of coming to an emergency stop at the end of the 11,000-foot reef runway. None of the 150 passengers aboard were hurt.

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If this same emergency had occurred at Kahului Airport, I believe that the story would have read as a tragedy and would be on Page 1 versus Page 3. The aircraft would probably have come to a stop somewhere in the water outside of Spreckelsville Beach. Right out there. With the local runway, the incident of March 30 was merely an issue of inconvenience to the 150 passengers. With our short runway, it would have been tragic.

Will the people protesting the extension be n a position to cover the liability costs which the state or the FAA may inherit? The first settlement with a passenger of the Aloha Airlines Flight 243 amounted to $800,000. There were 61 passengers injured in that case. The first lawsuit was filed within five days of the accident. If all the settlements were identical, the total cost would exceed $48 million.

Wouldn't it be more prudent to improve safety and help construction jobs now rather than pay for tragic negligence in settlements later?

I also provide an article from the June 27, 1993 issue of the Maui News. This article points out the reason for extending the runway in the interests of safety of our residents and visitors of Maui. The title of the article is, "Time taking its toll on

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airline safety." The subtitle reads, "Pool of well-qualified will run out soon." And I will leave this for the FAA to consider.

We have already heard from pilots like Ken Flornoy, the Hawai'i regional safety coordinator for the 40,000 members of ALPA, and Len Cooper, owner and flight training instructor of American Pacific Air, who will be testifying tonight. They testified that Kahului Airport is a difficult airport, at best, under ideal conditions. In their previous testimony, they indicated that Kahului airport, with its wind shear, crosswinds and 7,000-foot runway, leaves no room for mistakes.

Now, these articles point out that many of our country's most experienced airline pilots will be retiring and leaving the industry within the next several years, leaving the skies to those with less experience. Our planning process should anticipate the changes that the future holds for us with less experienced pilots.

An airport which leaves no room for mistakes is not good planning, and it's not good policy. We should optimize our safety at Kahului Airport and spend the dollars to do so. And to do otherwise would not be prudent or responsible.

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Please act expeditiously and allow these important infrastructure improvements to be put in place by 1996. And our Chamber also supports the Puco Coalition statements that have been filed with the FAA.

Thank you.

MS. KIANG: Terryl Vencl.

MS. VENCYL: My name is Terryl Vencl, and I am the executive director of the Maui Hotel Association. I would like to present a new reality, a new awareness on an old issue; and that is jobs.

In an industry that empoyes over 40,000, at least indirectly, from the standpoint of the hotels alone, I can tell you that we employ between 12- and 15,000 people. And I can tell you that of those people, 10 to 15 percent of those folks have lost their jobs -- that's some 5,000 people -- in the last couple, three years. And in addition to that, some 35 to 40 percent of those folks have either lost one of their jobs or have been cut back in hours.

That's a reality of an issue that we have talked about for five years in this ongoing debate. It's happened to us. I think there's an acute awareness at this point in time of how important this industry is and how important this extension may well be to us. These people that we are talking about are

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people who now may have problems or probably will have problems making their mortgage payments or their car payments, feeding their families.

I ask you to take those kinds of things and those kinds of statistic into consideration when you rewrite this EIS or begin this new process or whatever we want to call it today. I think we need to -- I think we could probably all in this room agree that we all want an adquate EIS, and we all want our concerns addressed.

That's my plea today is, let's do it, and in the right way this time. Mahalo.

MS. KIANG: Les Kulolo'io, and then Jody.

MR. KULOLO'IO: I would like to start off in thanking the process that is happening here in the seeking of the impact statements or something that's happening now, whatever this definition going to be that Maui faces and the job that -- and the role that you all face to complete.

I've been still asking a lot of questions about my participation for or against any improvements here on Maui, and the extension is one of them. I just got impacted the other day on Sunday by a rich man's pickup service car, kind of service thing. Those the guys downstairs that wearing those black T-shirts with brown

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Bermuda shorts.

If you are a millionaire, you can have the kind service to just use state facilities here, but that's O.K. if you get a ticket. As a rich man you can that have that ticket, that services. Please check on that, state. The security give them a ticket. I couldn't leave my car over there, even though I am in a rush; they tow it away. That service out there is an impact.

My girlfriend's car, they entered the car just Sunday evening when I return from O'ahu. That's an impact. That service is rendered, and the users. It was jobs, but that guy with a job almost illegally taken away my girlfriend's car by entering, illegal entry into the car. I almost pound his face. Thank God we come from Hawai'i.

I like to see in these resource studies the marine and ocean resource inclusion for the FAA. Flights do have an impact on Hawaiian practitioners in the use of the ocean on your eastern, northeastern part of the runway, called the Inaska Reefs (phonetic). If you can't do that study, then you wasting my time as Hawaiian practitioners.

So I am a diver, I am a fisherman. We fought hard for the past 20 years for the return of Kaho'olawe with the federal government, and we still need to do

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more studies on the island. We beginning to find a lot of endangered species.

We found that in 1976 there were more birds on the island of Kaho`olawe; because of bombs and noises there's no birds now the island of Kaho`olawe. On its direct flights from Kaho`olawe, Kealia Pond in Kihei, on to the Kanaha Sanctuary. No birds. They taking a different flight. Why; they don't know. That's why they taking that impact study is all about.

The marine and fishermen, we need those sea birds that comes in from the ocean to land. So far you won't find those gulls or the fish birds surrounding outside in the Kahului Harbor all the way out to by the buoy, the red buoy, outside there. Why? Because of your flights and increase of your flights.

That is what I call more studies, the environment impacts that affected us all, especially here. There's being more increase of noise and all of those vibrations. I would like to invite the environmental protection agency to be part of this monitoring process at the federal level to check noise and vibrations in the Kahului community, inspecting the six-increment area.

And also, with modern technology, we should be studying all the pollutants coming up on the aircraft,

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cars, concentrating in the six-increment area, which is in Kahului, the old plantation, the first phase area. Thinking about seniors, I believe are now having problems with their breathing apparatuses and they having hard time to breathe at ages 65 to 75. Is it because of the planes? This studies should include that.

I believe that you should correct that situation on the infrastructure right down here. You know, where you drop off the baggage claim? I been get all my past two months now, and can you just imagine those red lights holding up an emergency? All the red lights are holding up an emergency, five red lights right here as you crossing from the parking lot across.

And coming to this corner around here where it's all bombarded, where it says baggage claim. Can you put ten cars right in there in less than 20 seconds? That's an impact. That's an impact. Try and just go around the corner when you leave here today. That's what we talking simplicities. That's an impact. That's an impact. Bad planning.

How would I get my family on the wheelchair during an emergency during an earthquake situation? What exit I do use in here? That's an impact. If you can't facilitate that with federal and state monies,

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that's an impact.

The job is not the issue. Job has nothing to do with what's happening here. We know the true story. Unions are paying too high wages, so let's get it straight.

What I just wanted to say as a Native Hawaiian, someday that we can make Maui the best place. When I entered into here, this place here, I am against that the hearing is held in that airport giving me a common ground to say my piece. I am walking into the church for the religious order that you telling me is to come fight for my rights under the corridor that looks like the state, federal aviation church yard.

Why couldn't we have this hearing in the, down the Maui Community Center, where it's common ground. I come here, see blue hats. Could I bring in my signs as a political propaganda statement? I not wearing a blue hat. Am I to be someone to talking about spirituality, culture resources, Hawaiian issues, the environment where you choose it to be?

I am against this public hearing setting here. As a matter of fact, I don't accept it, because there's been too many fighting grounds here. Let's pick a common ground. And you won't find Hawaiians making statements up here.

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I refuse to have them come up here. We playing your game and not our game.

Mahalo.

MS. KIANG: Jody Mitchell.

MS. MITCHELL: Aloha. My name is Jody Mitchell. I have a question. My question is, shouldn't this meeting have been held before any of this was built? Isn't that the whole purpose of an EIS?

With that in mind, I am hoping that the new document will be fair and not weighted in favor of the state, who has already made clear their desire for runway expansion of 9,600 feet. I ask that you do not incorporate any part of DOT's final EIS, as it is flawed as well as swayed in favor of a longer runway.

This document should by prepared without prior commitments to any particular alternatives. I beg you to please study in detail the impacts this project will have environmentally as well as socially. Please study secondary impacts as well as primary impacts, as they are very important and have a way of sneaking up on us when are least expecting them and we are therefore not prepared to handle them.

And finally, this jobs issues. We all know that the building boom of the '80s brought in a large

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amount of transient and immigrant employees to work in the hotel, construction and agricultural industries. How many of these people have remained here on Maui and are currently unemployed, thus putting a strain on our welfare and unemployment support systems.

I am equally concerned with the jobs issue because I am employed in the visitor industry. I ask that you study equally and fairly not only the jobs concerned, but other equally important environmental and social impacts that affect everyone, employed as well as unemployed.

Thank you.

MS. KIANG: Kenneth Barr.

MR. BARR: My name is Kenneth Barr, and I have a taxi business on Maui. And I am a -- I guess I am a minority member of the Maui Planning Commission, so I have heard all of the testimony there is to hear in our hearings and our workshops.

And what I wanted to address is the airport access road in this process that we were -- the other members of the Planning Commission have approved any and every project that has come up before us between here and the intersection of Puunene Avenue and Dairy Road, which is a one-lane road. And just recently we have approved, or they have approved, a Sam's Club, a

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new club here.

And I don't have a problem with this, except I have a problem with all this development going in on a one-lane road. They have proposed to A&B, which is the landowner in the area, has proposed road improvements which will help alleviate the problem. And it will certainly be needed for the normal local traffic in the Year 2000. But it's not at all addressing the, I think, 60 or 62 percent of traffic that's coming to the airport.

And for that, we really need the access road. So what I am asking you is to do is either of two things in this impact statement. One, to either divest the access road, the study, and have it be constructed separately or before anything is done. And the other thing is, if that can't be done, if there is legal problems with that or whatever, the bottom line, the human part of that that really needs to be here -- it needed to be here ten years ago.

So we are talking about a road that was needed before all of the hotels were built were in Wailea and so on. And now we are stuck with it and the further growth of the airport. To have further growth of the airport and not address this beforehand was bad planning. It's backwards. It's wrong.

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And the other solution, I would say, is that if you want to go ahead and keep it as part of your EIS, that in your findings, that you make it very clear that because of this lack of planning in the past, that the airport access roads be put in first, be developed, designed, developed, built. And whoever wants to take credit for it, picture of them on the front page cutting the ribbon, that's O.K. The bottom line is that that needs to be completed first.

And then the next day, if you are going to go ahead with the airport expansion, then go ahead. But that nothing takes place until that road is built and open for the public, for what's been a failing in the past.

Thank you.

MS. KIANG: George Kokes.

MR. KOKES: Good afternoon, everyone. My name is Charles Kokes, and I speak to you as someone representing myself. I have been educated as a biologist, and I have worked for the federal government for nine years intermittently as an ecologist and oceanographer. I currently work in the visitor industry as an employee and consultant. And I have also taught school, high school, for five years.

I would like to address three separate items

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here. The first being the nearshore waters and bottom regions on the reef here, off the airport here and the airport area as it stands as wetlands.

Now, because of drainage that has been built in, much of the airport doesn't exist as wetlands. But in the nearshore area -- and I am sure all of you have taken some opportunity to look past the speakers, as you may do right now, and see this beautiful view behind me here. And we need to have a study which assesses impacts from noise as well as overflight shadow into the entire region affected, on shore and offshore, by noise levels of 60 decibels or greater at the surface.

And in the offshore area, that study should extend down to a depth of at least 30 meters. Mr. Kulolo`io's messages that, remarks reflect that concern and the impact that the aircraft noise has on that environment.

Secondly, I would like to address the impact on the visitor industry. We all here recognize that the visitor industry is vital in the state and especially in this county. But what often arises is that shortsighted expression, driven and motivated by profit and sustenance. And we don't look at the sustaining features that bring to us and sustain the visitor

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industry as a whole.
If we take a look out here and see and appreciate this view, we have some appreciation for why people come here from all over the world. We have some appreciation why Maui exists as a very unique feature on the surface of the planet that cannot be impaired. People come here because we have less. People don't come here to see a string of beautiful hotels. As one of the previous speakers mentioned that now manages a hotel, he was shocked at the development of hotels along the beach.
We have lost a great deal of Kihei, virtually most of Kihei in the past decade or so. People are disappointed now that come back, because there is so much development. What we are going to do, offer them more development?
I see that my three minutes here are up initially. If I may, I would like to continue my remarks. But I think we need to evaluate strongly the long-term assessment of what is the deep reason that people come here and the fallacy presented that we need a longer airport and this extensive development that we see associated in the master plan, Phase I through III.
Thank you very much.
MS. KIANG: Mr. Mayer and Mr. Hughes will

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return to the mike now.
Mr. Mayer.
MR. MAYER: Thanks for letting me come back I would like to conclude with a few of the items that I didn't get to say the first time.
The first couple questions that I was concluding with, namely Hawaiian sovereignty and self rule, I would hope the EIS thoroughly examines that issue, because I think that the people of Maui need to know as they review the EIS what are the implications of having planes flying in here and decisions being made elsewhere, from elsewhere, that will greatly impact that community.
We will lose control, as far as I understand it, with FAA regulations, that we cannot as a community stop flights from coming in. If the federal government negotiates a treaty with Japan to allow Japan Airlines to fly in here, we have no say whether it's one flight a day or 20 flights a day, what time of day. Those decisions are all made by the federal government.
The key will be the longer runway. If the runway is built, they will come.
In the last EIS, the reference was made to the fact that an increased runway would allow for planes to come in more easily from far away places, and we may

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lose control over certain drug inflows into this island and perhaps even criminal activities from outside the country.
It was mentioned that the police think they could handle the issue, but no mention was made of the costs of that. And I think the costs of increased criminal control, drug control, on the Maui Police and the Maui County taxpayers, should be indicated.
As regards commercial operations at the airport, I think there should be a study made to indicate the feasibility of the utilizing of a separate all-cargo carrier to transport produce, vegetables, pineapple, flowers, et cetera, to the Mainland or to wherever, to Tokyo, or wherever it might go on a regularly scheduled basis.
For example, there might be a Monday and Thursday flight to Maui of an all-cargo plane that would be able to take off from this runway, as do the bigger planes today, that would carry things to the Mainland and back, and other days from Hilo or from Kona or from Kaua'i.
The impact when internationalization takes place of a duty-free store must be included in the study. If a duty-free store is put in here, it could devastate many of the local retail and wholesale

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establishments that we now have on the island, since many of the international travelers will not be purchasing from local stores, but will be using the airport to do the bulk of their purchasing.
I also could visualize the direct flights could threaten rather than help the local vegetable growers in the sense that produce would now be flown in directly from places like California, the Philippines, perhaps from Mexico, coming in nonstop coming in here. And with the local labor costs and land costs in those places, a local vegetable grower in Kula and diversified agriculture on Maui could be wiped out. That should be indicated.
I would also like to see the EIS consider what the impact would be on two other airlines, Hawaiian and Aloha Airlines, and now Discovery -- and I think that this not been mentioned up to date -- but certainly is the implied threat that with direct flights there would much less interisland traffic. And with Hawaiian already trying to struggle, coming out of bankruptcy, et cetera, we may see one, two or three of these airlines put into great financial trouble. Certainly that should be included in the study.
And lastly, the Chamber of Commerce previously stated that the planes landing on this runway may be

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landing under unsafe conditions. I think it's incumbent upon those who know or profess to know that if the present planes are landing under unsafe conditions, that an immediate moratorium on direct flights or any plane that is landing under unsafe conditions be made, prior to writing the EIS.

We should not wait for the EIS to talk about this. At this time, if those planes are landing under shear factors or whatever, that should be considered by the federal government in their study. But more important, according to the pilots, we on Maui should say to those planes, we do not want the risk. If it's public knowledge, perhaps the county may be liable, the state Airports Division may be liable, and we should stop those planes flying in today.

If then if an airport extension is built and makes it safe for those planes, then perhaps they will come in again. We certainly shouldn't be allowing unsafe situations to be occurring.

Thank you.

MR. HUGHES: I am Bruce Hughes, and thank you for listening to me again. But what I am going to talk about is totally different.

As I have said, I am really an environmentalist. But the trouble with most

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environmentalists is that they don't understand what they are talking about. I am sure there's lot of ecology that I do not understand. But somebody referred to the possibility that they may have fuel lines running close to Kealia Pond.

This gets into my area of expertise, because there are suggestions that, well, maybe there is going to be a fuel spill into Kealia Pond. Maybe there will be runoff from the airport into Kealia Pond. Maybe in some way or other what we are doing is going to damage Kealia Pond.

I am going to suggest something that's maybe revolutionary, or maybe somebody brought it up before. The problem with -- I am sorry Kanaha Pond is the pond over here. The problem with Kanaha and Kealia and the other ponds in the state is that at one time of the year we have a lot of rainfall; another time there's no rainfall for weeks or months at a time.

The problem with Kanaha and Kealia both is that for a long period of time there's no inflow of nutrients. And so as a result, the birds don't have a constant supply of food. What we really need to do is close down Kanaha Pond and double or triple the size of Kealia and increase the size of other ponds in the state.

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But, what is most important is there should be a constant very small inflow of water 24 hours a day that carries a little bit of nutrients. If too many nutrients come in, you get can get an algae bloom problem, which is bad or worse than having no food supply. Runoff in nature normally has a very, very low level of nitrates and phosphates.

Now, I know some of you maybe didn't take chemistry. Some of you may be terribly bored by chemistry. But the fact is that the birds depend on chemistry. What happens at Kanaha Pond is that very, very small amounts of nitrates and phosphates go in there that feeds the algae population. The algae population feeds the small animals; bigger animals feed on the small animals.

And it finally ends up after several layers of something eating something else, that you get up to something big enough for the birds to eat. The present situation with Kanaha is that there's no birds there a lot of the time because there's no food there. So they don't have the food supply because they don't have rain coming in.

We need to close the pond down and put a reliable water source at Kealia and other places.

Thank you.

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MS. KIANG: Well, thank you all for your patience. Thank you for giving your testimony in the back. And I will hand it back to David.

MR. WELBOUSE: Thank you for this first of two meetings. The other one is at 7 o'clock. If you have friends who want to testify, hopefully we can get them. And we want to thank you.

I wrote down specifically what were all the environmental impacts, and Ben has been taking notes. And when we get the testimony transcribed, then we are going to take a look at everything. And in the preparation of the EIS everything that's been said will be considered.

Thank you all for coming this morning or this afternoon. Now we can eat lunch.

(The deposition was concluded at 1:25 p.m.)

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*** Notes ***

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Edward K. Noda and Assoc. Inc.

CERTIFICATE

STATE OF HAWAI'I)
) ss.
COUNTY OF MAUI)

I, SUSAN S. HEASSLER, C.S.R. 214, Notary Public, in and for the State of Hawai'i, do hereby certify:

That on March 18, 1994, at 10:00 a.m., appeared before me the participants in the public scoping meeting contained herein;

That the meeting was taken down by me in machine shorthand and was thereafter reduced to print under my supervision by means of computer-assisted transcription; that the foregoing represents a true and correct transcript of the proceedings had in the foregoing matter.

I further certify that I am not attorney for any of the parties hereto nor in any way interested in the outcome of the cause named in the caption.

Dated:_____

SUSAN S. HEASSLER, C.S.R. 214
Notary Public, State of Hawai'i
My Commission expires: Jan. 1, 1995

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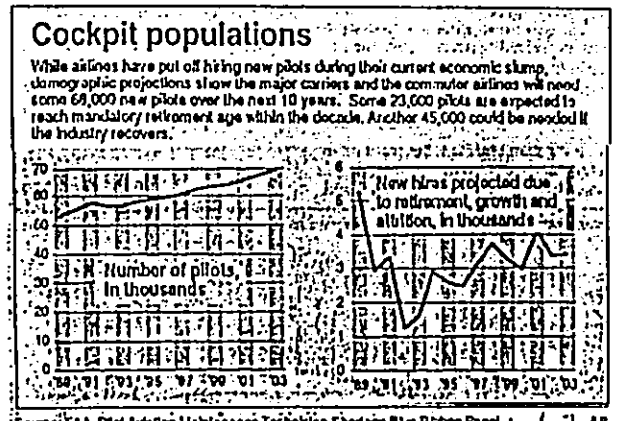
Is time taking its toll on airline safety?



Pool of well-qualified fliers will run out soon

By FRED BAYLES
AP National Writer

Many U.S. airlines have placed a hold on the hiring and training of new pilots. It makes economic sense in an industry retrenching after several years of multimillion-dollar losses.

But those watching the hard-and-fast demographics see an entirely different picture.

According to numbers collected by a congressionally mandated panel looking into projected shortages of pilots, the cutbacks will come back to haunt the industry.

"There will be a crunch in the next three to five years where we're going to run out of well-experienced, qualified pilots," said John Sheehan, vice president of a Washington aviation consulting firm advising the panel.

"Now that the industry has shut down hiring, it's going to discourage people from going on to pursue a career in aviation," Sheehan said.

With the mandatory retirement age of 60 in effect, an average of 2,400 airline pilots — a total of 23,000 by the year 2003 — are expected to retire or quit each year through the next decade. Most of these pilots will have to be replaced.

If the industry climbs out of its current doldrums, another 45,000 new pilots will be needed by both the big commercial carriers and the commuter airlines.

Counting the projected needs of all jet crew, agriculture pilots and flight instructors, about 160,000 new commercial pilots will be needed by the year 2004.

> "Now that the industry has shut down hiring it's going to discourage people from going on to pursue a career in aviation."
>
> —John Sheehan, aviation consultant

But the traditional pathways of flight training are narrowing. The shrinking of the military means 25 percent fewer pilots will be available for the civilian sector. Today's dismal job prospects in commercial aviation have cut enrollment at aeronautic schools. The number of pilot certificates granted by the Federal Aviation Administration is off 20 percent.

The FAA now issues 75,000 student pilot certificates annually; less than half complete the training to qualify as private pilots. Of that figure, about 14,000 receive commercial licenses annually.

"There will never be a shortage of properly certificated pilots, but those certificates reflect minimum standards set out by the FAA," he said.

Carriers face inexperienced crop of new flight crews

Over the next decade, 23,000 airline pilots — nearly a third of those now flying — will retire. With the military no longer a breeding ground, questions of training, experience and safety loom before the industry. Who will take over America's cockpits?

By FRED BAYLES
AP National Writer

Passengers aboard United Flight 232 could hardly consider themselves lucky. An engine explosion had knocked out the jumbo jet's flight controls; it drifted through the sky like a rudderless boat.

But there was one bit of good fortune aboard the crippled DC-10: a seasoned crew with 70 years of combined military and civilian flight experience.

Using what pilots call "air sense" gained over thousands of flight hours, the crew improvised, using engine controls to wrestle the plane to a crash landing in Sioux City, Iowa.

While 112 died in the 1989 crash, another 184 lived. The National Transportation Safety Board credited the flight crew's "exquisite" performance with saving lives.

But the flight experience seen that day is fading fast in U.S. airline cockpits.

In one of the biggest transitions in U.S. civil aviation history, some 23,000 airline pilots — nearly a third of those now flying — will retire over the next 10 years. Another 4,500 new pilots could be needed each year, when the industry climbs out of its current slump.

The huge turnover is further complicated by another factor: The military — once a major supplier of experienced pilots — no longer is training the numbers needed.

AP photo

Capt. Al Haynes, of TWA's ill-fated Flight 232, which crashed in 1989 in Sioux City, Iowa, talks to reporters shortly after the crash. Haynes and his experienced flight crew were credited with saving the lives of 184 people aboard the aircraft.

Where the new pilots will come from and what type of training they will receive is the question now looming before industry and government officials.

"The airlines have been spoiled," said John Sheehan, vice president of Phaneuf Associates Inc., a Washington-based aviation consulting firm.

"They've had all these great trained people coming to them," Sheehan said. "Come 1996 or 1997, the things that caused them to be spoiled — experienced pilots — will go away."

Sheehan's firm advises a special panel mandated by Congress to look into the anticipated shortage of pilots and aircraft technicians. The collection of military, government and industry representatives is set to submit proposals next month.

The group faces some daunting roadblocks: a rapidly diminishing pool of military-trained fliers, a new generation of younger pilots with a myriad of training backgrounds, a drop in flight experience among commercial crews, and new technologies that require pilots be more computer nerd and less Top Gun.

"We have to take a good look at how we train and how we put experience on the pilots in the future," said Kenneth Tallman, a former Air Force general who heads the panel. "It would have been nice if we thought of it way far back, but there was no pressure on the airlines to get serious about it."

Even today, there seems little incentive to worry. The failure of Eastern, Pan Am and Midway airlines, combined with cutbacks at other carriers, left some 7,000 experienced pilots looking for work.

But the inevitable march of demographics is taking hold.

The huge cohort of post-Korea and Vietnam-era pilots that joined the commercial ranks in the 1960s as airlines expanded rapidly into jetliners now is bumping into the mandatory retirement age of 60.

Over the next 10 years, an average of 2,400 airline pilots will retire or quit each year.

As the rate of retirement escalates, the percentage of military-trained pilots drops rapidly. A few years ago, 85 percent of airline crews learned how to fly in the military; by decade's end, only a third will have that claim.

While civilian flight schools produce enough pilots to fill the spots, a military background offers bonuses — a rigorous selection process, $1 million worth of training, and experi-

See NEW PILOTS on the next page

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28
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New pilots lacking in experience, critics fear

Continued from Page D1

ence averaging 3,000 hours flight time.

Today's commercial pilot candidate is typically a commuter airline pilot with 1,500 flight hours, a mix of experience earned over a longer period of time for a variety of employers.

Airline executives see this system of private instruction and internship with a commuter airline as an economical way of harvesting pilots.

The tradeoff, however, will be pilots with less experience.

"The number of flight hours will start ... shrinking," concedes John Kern, vice president for Northwest's flight operations. "The old school would say if you don't have the seasoning, you're probably not a good risk. But as we recognize we're getting high-quality people, the value of flight hours will diminish."

Not everyone feels comfortable with the trend.

"The question is not whether there will be enough bodies out there, but will we have the ability to train this raw material properly and get them to the requisite level of experience?" Sheehan said.

Gaps in experience and training have been key factors in several fatal air accidents investigated by the NTSB.

78 ■ In the Jan. 13, 1982, crash of an Air Florida airliner during a snowstorm in Washington, D.C., board investigators blamed inexperience for the crew's failure to follow through on crucial de-icing procedures. Seventy-eight people died.

2 ■ Two people died on Sept. 20, 1989, when an aborted takeoff sent USAir 5050 skidding into the water at New York's LaGuardia Airport. The captain had 140 hours commanding a Boeing 737; the first officer had only nine hours in the aircraft, with just two takeoffs and landings. Investigators blamed miscues between the two for the accident.

28 ■ In the 1987 crash of a Continental DC-9 during a snowstorm at Denver's Stapleton Airport, investigators found the newly hired co-pilot's takeoff was too steep, worsening an icing problem. Twenty-eight people died. The 26-year-old co-pilot had only 36 hours experience in the DC-9, the pilot just 136 hours. Investigators discovered the co-pilot was fired by a Houston air carrier for failing flight tests before he joined Continental.

These and similar incidents led to a NTSB recommendation that airlines pay closer attention to the combined level of crew experience.

"Repeated accidents over several years have shown current federal regulations on air carrier crew operating experience to be inadequate," the board said in one report. The Federal Aviation Administration is considering a rule that would require a higher number of combined flight hours for crews.

Similar problems are catalogued in the Aviation Safety Reporting System, a NASA-run hot line for commercial aviation. Over the past five years, the system has received 1,200 reports of lags in experience and training.

While many involve little more than minor technical glitches and procedural goofs, some describe dangerous situations. To assure anonymity, the safety system omits specifics from its reports, including names, times and specific dates:

■ The pilot of a trans-Pacific flight reported a wild landing at Los Angeles International when confusion sent his plane meandering between the glide paths of two different runways. He blamed glare, confused instructions and his co-pilot's limited experience in landing the big jet.

"Assign new pilots to one month of line training to build experience," he wrote. "The 180 hours and three landings this pilot was able to get isn't good."

1 ■ A cockpit computer on a large jet leaving Orange County, Calif., lost routing information, requiring the captain to fly a noise abatement route using landmarks. In the confusion, he took the plane out of its assigned altitude. Both crew members had less than 60 hours experience in the aircraft.

"Although I don't know if this was contributing factor, perhaps a more experienced crew could have reacted faster," wrote the co-pilot, who noted the captain had told schedulers about the lack of cockpit experience.

"He was assured it was legal," the co-pilot wrote, "but in my opinion it was not safe."

■ Approaching Denver's Stapleton Airport, a captain noticed his new co-pilot's "shaky" flying skills. She failed to respond to his commands to correct too sharp an approach and brought the plane down hard on the runway.

The pilot noted that new co-pilots get good training of complex aircraft systems and emergency procedures, but added, "I believe our training of inexperienced first officers (new to) large jets is inadequate. Too little time is spent on basic physical flying skills, with zero training in a real aircraft until initial operating experience."

Corrections to Airport Hearing
Public Scoping Meeting
Kahului Airport Environmental Impact Statement

May 18, 1994

PUBLIC SCOPING MEETING AT 10:00 A.M.

1. Page 1, date should read May 18, 1994 and not March 18, 1994.

2. Page 2, Index. The following is the correction to the Index.

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PUBLIC SCOPING MEETING

Taken on behalf of the Federal Aviation Administration, in cooperation with the State of Hawaii, Department of Transportation, Airports Division, at the Kahului Airport, commencing at 10:00 a.m. and 7:00 p.m. on Wednesday, March 16, 1994.

QUALITY COMPUTERIZED TRANSCRIPTION
by
INADO COURT REPORTERS, INC.
2233 Vineyard Street, Suite A
Wailuku, Maui, Hawaii 96793
(808) 244-9300

REPORTED BY: JEANNETTE M. INADO, RPR/CSR #135

INDEX

PUBLIC TESTIMONY

MR. ROBERT MONDEN: One of the concerns I have is, the recent legislative session passed this agricultural development, corporation development bill. I believe that was Senate Bill 3045. What that bill does is allows these so-called plantation lands that become vacant because of the failure of sugar or pineapple, and they are going to be let out to people who would like to go and farm these lands, whether it be ranching or flower growing or veg crops.

Right now on Maui there are no such lands. The so-called bill that addresses the 75,000 acres of potentially vacant lands is primarily on Oahu and the Big Island. But in time, Maui will have those vacant lands.

So our concern is going to be, it's bad enough that we are going to have competition in Oahu because of these new farm lands. So more and more, the existing farmers, or for that matter, the new farmers who come into these plantation lands, need to have new market. That would have to be export.

So in places like Canada or the Pacific Rim basin, even the continental United States, where California would be very protective of even produce or flowers being landed. And to bypass that state, I think the need for direct flights is essential for the existence of the present farmers.

Even the ranchers, because they do fly young calves

to, like, Oregon and pen feed that cattle to be ready for market to Canada or some of these places.

On the other side of the coin, the concern I have is, when these flights come in, that we may bring in a whole bunch of new pests and diseases that may affect the crops. But then again, there has to be some stringent controls of that. And as far as today's presentation, it was brought to light that, well, it's not only the aircraft that bring in these bugs and so forth, it could be some of the ships that come in.

So weighing those things, I think it's essential that the runway -- development of the runway extension be allowed. We're looking at the year 2010. It may not be too early to start thinking, because this ADC bill, once it gets going -- and I don't think it's going to take ten years -- it's going to create problems and some of the farmers may go bankrupt. So we would need to be able to -- especially the perishable items, to immediately be able to have it flown by air.

That's all I have to say.

* * *

PATRICIA SATO ORTMANN: I am in favor of the airport extension to enable Maui's future growth that will touch everyone's lives, even those that are opposed to it, and to give people more access in times of emergency or leisure. Just whatever makes the world go round.

STEVEN M. MOSER, M.D.: I just wanted to add some comments to my written testimony concerning different forms of pollution that occurred to me after I wrote the main article.

The first is light pollution. Currently, the airport, as viewed from the rest of the island, is the brightest area visible and creates in the sky a very broad area of increased light. And it is, essentially, the brightest area on Maui because of the airport lights, runway lights, and these lights do stay on all night. They're never turned off.

This may have some impact on some of the flora -- I mean, some of the fauna, such as birds, migratory birds and endemic birds and fish. But I don't know what that impact might be. It certainly destroys some of the ambiance by having a brightly lit sky that is orange all the time in the clouds that overhang Kahului.

The addition of two new runways and much more parking and much more infrastructure will obviously enhance this, maybe five- to ten-fold, and I would be very concerned about light pollution, increasing more than it is now, when it is already so bad.

Second problem is that of noise pollution. If the premise that I suggest in the body of my written testimony is correct, then there will be additional noise to what we now experience.

More flights, both interisland and international,

will increase the noise pollution for the whole island, because larger airplanes make more noise for longer distances. It may not be the high-pitched noise of a smaller airplane, but it can be the lower more resounding noise of a larger airplane taking off, a wide body, for instance.

This will have implications because flights will most likely be going all times of the day or night, so that the people who live in the Central Maui area will be exposed to noise pollution at all times of the day and night because of the almost impossibility -- near impossibility of limiting flights that are coming from distant areas.

Their takeoff times are going to be not necessarily the most convenient for our landing times. So that it is doubtful whether we'd be able to control their landing times in the future once this became an internationalized airport.

This will disturb sleep patterns in local population. Tourists will be spared because most of the tourist areas are in the areas away from the airport. But people who live on Maui, especially in the Central Maui area, will be profoundly affected, and nobody knows what kind of problems this may create, being awakened at all times of the night.

The final thing is just odor pollution. Anybody who has been around a large international airport, such as Los Angeles airport or Honolulu airport knows that there is a

distinct smell from exhaust from jet airplanes and also from jet fuel.

As this becomes the fourth or fifth largest international airport on the west coast and Hawaii -- which it will become if we increase the size of it, because it's already now number six in size for the west coast -- that problem wit.. odors in Kahului and even Wailuku will become worse so that this will become an undesirable place to live.

That's basically all I want to say.

* * *

CYNTHIA LITZAU: Basically, I wanted to come today to voice support for the coalition's existence. I also feel that the government here supported the initial building of quite a few new properties, hotel properties on the island, an that they have a further position and need to support that building by letting the runway expansion go through.

I also have had the occasion to speak to many line employees at the properties who are holding down two and sometimes three jobs in order to stay here, long-time residents. And I think we have all seen in the last year or so what will happen if those folks lose their jobs.

And I think the runway expansion will have a positive impact and perhaps not having those folks have to carry so many jobs. And I hope that those folks are taken into consideration.

That's pretty much what I wanted to say.

* * *

HENRY KAUKA: I'm for the coalition, and the reason is because better jobs, better for the hotel, the better for jobs, as far as business, bringing more jobs for the hotels and stuff. And I feel that it will help out the people more in the future.

And that's about it.

* * *

SOLOMAN KAPULE: I'm for the runway, and I think, you know, without it, we would have less tourists coming into Hawaii, and we depend on the tourists in our hotels. Not only for me but for our families.

And I figure the extension of the runway would really bring in the tourist, which would kind of build up our economy, especially the hotels.

And without the runway, you know, we need more tourists to come to Maui and to Hawaii for our benefit, for my family's benefit. And I just want to say I'm in support of the runway.

That's all. That's how I feel.

* * *

RICHARD MAYER: I would like to enter this five-page letter into the record, which incorporates a lot of my concerns regarding the preparation for the EIS. I hope that these

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issues are taken seriously in the draft -- the final EIS.

That's all. Please incorporate my speech into the record.

• • •

KENNETH BARR: My name is Kenneth Bar, I own a taxi business on Maui, and I am a member of the Maui Planning Commission, albeit a minority member.

I would like to thank the FAA for holding this meeting and having another perspective for people to present their views on this.

Being a planning commissioner on Maui, I sadly have to admit that all planning on Maui, and I mean just about all, seems to be done with, not really values of planning, but who is going to get jobs, who owns the land, and all of these things that are completely irrelevant to the impacts of planning.

And it's a very frustrating position to be in the planning commission to realize that, and to see the majority of my cohorts seem to approve every single project based on those things.

So with that said, I would like to say that I would like to speak on the airport access road in relationship to the EIS. My feelings about this whole system here is that this airport access road should have been built when the last part of the airport expanse took place.

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It's something that every single person on this island, whether they are in favor of this airport expansion or not, feels is a number one necessity. I feel it's the number one road that needs to be built. And this has nothing to do with future planning, this has to do with the growth that's gone on here in the last 15 years.

I have attended and I have heard all the testimony, through the planning commission, on all of these airport hearings, and I have also been involved in workshops with the DOT. And at our last workshop, they told us to keep in mind that they plan on the airport access road being built in conjunction with the airport extension.

And what I would like to say is that I feel that the access road should be built before any construction is built, any more expansion is done at the airport. If it means that it should be separated from this EIS and addressed separately, then fine.

But if it is going to stay in conjunction with this EIS, I urge you and plead with you for everybody on Maui that it be made very clear that the airport access road be started, completed, and the ribbons cut by whoever wants to take credit for it, and then at that point can any more construction start in expanding the airport.

As far as the infrastructure problems involved in this, I know it's been mentioned in some of the testimony

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today, that we have one-lane roads leading to all our resorts, and along with this airport expansion is -- obviously, the intent of it is to bring in more people. These other things need to be taken care of.

That has to do with planning, that's the impacts of development, and it's been severely neglected. Whether the State doesn't have the money to do it or whatever the story is, it needs to be addressed.

And I hope that in your evaluation of all the testimony you are going to hear that, you also take that into account, that it needs to be dealt with.

And if you need to honestly come out in your assessment and say that it doesn't make sense to bring in bigger planes when you still have the same one-lane roads from the 1960's, to get this amount of tourists being brought in on the bigger planes, it just doesn't make any sense at all.

I'd like to quote an article, or a couple of paragraphs from an article that I submitted to the Planning Commission, fellow members, having to do with the development, of Sam's, which is part of a continuing expansion of the industrial and commercial area on the existing airport road.

This road, for those of you who are reading this who don't understand where it is, it's a road where the resorts of West Maui and the resorts of South Maui all meet at a one-lane road. And this road, there is also more plans to put more

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commercial expansion on the east side of the road as well as what is already there.

I want to say that, along with the approval for Sam's, the A&B company that owns most of this land has provided new roadway improvements. And I feel that these improvements will help the matter, and they certainly will be needed after the year 2000, anyway. Whether the airport access road -- even if the airport access road is built, this will take care of the future growth. But it certainly doesn't supersede the need, the necessity for the access road.

In that discussion for Sam's, my intent of submitting this article to the planning commissioners is that they also realize that they just cannot keep approving more of these projects on this local area to get to the airport, and that we need to defer -- and I say defer, not deny, but defer any more growth in that area until this airport access road is built.

And that's the gist of my testimony here, how important this road is, before anything else is done.

So I'd like to quote just a couple of paragraphs. The article was written by Richard Leone, the chairman of the Port Authority of New York and New Jersey, and it ran in the Honolulu Advertisor on March 4, 1994, the editorial page. Just a few paragraphs here.

"The airlines have criticized airports for taking

on problems like homeless people on their premises, traffic congestion near the airport," and et cetera.

Another paragraph. "Airports -- and the local economy -- will suffer if waiting-room seats are taken up by sleeping homeless people, if fliers can't get to airports easily because of clogged local roads, or if local support is undercut by noise complaints."

And finally, another paragraph at the end of his story, he says, "The way traffic moves around the airport is also important. So is travel to and from the airport. The most efficient, friendliest airport in the world isn't much good if you can't get there."

And I'm saying now, as a taxi driver, that it's just continually, over the years, become a nightmare to get to this airport with the one-lane road and with all the left turns on it.

And when the new development that our Planning Commission has already approved on that one-lane road, even with the road improvements, it's going to continue to be a very uncomfortable and unpleasant and unsafe ride to the airport, and out of the airport, for the people that are coming in here now

And to enlarge the airport to accommodate more people without taking into account all of these other problems, I feel, is derelict, and I hope that your EIS will take this

into account and address this major issue.

And lastly, the survey that they keep relating to in the Maui News where 54 percent favor this expansion out of 400 people, it's a survey and it can -- you know, you can take it for whatever it's worth.

But in the public testimony at all the hearings that we have had as a planning commissioner, the testimony seemed to be the other way around. And it seemed to be in a more -- the people who were opposed to it seemed to be opposed to it for more sensible reasons.

The people who support it, they want -- their position is that they're going to make money from it. Well, I, as a taxi person, would make money from it, too. But I also value my lifestyle on Maui, and I feel that we need to go slower in this matter.

And thank you for your time in reading my testimony.

Just to add, having to do with the testimony, that it's continually -- has been continually brought forth over this airport issue, the main thing seems to be about the construction for jobs. Like I said earlier, you can't base planning on that.

Now, we have a very unfortunate situation in Maui where construction in the mideighties, considering the three major hotels in Wailea, along with more condominiums in Kihei, along with the airport terminal expansion being done all at one time, created a severe influx of construction workers from the mainland, whether it's hundreds or thousands. I don't know the number.

But I do know that we have a small island here, and the accepted position from, say, the Council of the Planning Commission that we are required to provide jobs for thousands of workers on a small island in one industry, I think, is wrong.

And it's not an attitude that "these people should go back to where they came from," it's a matter, if they want to stay here, they have to realize that it is a small island and they may need to change their way of making an income.

That if you take an area, a suburb of New York or Philadelphia, there is the matter of expanding your suburbs for 80 or 90 miles between New York and Philadelphia and creating a suburban area. And on Maui, we don't have that option, we just have a limited space.

And I just -- it's not that I resent the testimony, it's just that I wish that they would understand that, because they will end up having another Waikiki in a much shorter period of time than even Waikiki became Waikiki.

So I hope that, again, that you will listen to -- understand what I am saying here and not use the idea that, well, we have got to provide jobs and we have got to spend

money as the reasoning for doing this.

If there is a reason that the infrastructure and the environmental impacts are taken care of, then so be it.

Thank you.

* * *

EUGENE PARRA: I feel that the runway, at this point, is an issue that many people on Maui are torn between a rock and a hard place, and therefore, have not come out to speak. And I am one of those people.

I belong to the Operating Engineers Local 3, and, therefore, I am supposed to side with the issue of the airport. But that is not truly the way I feel.

I feel the island is not ready yet for such an expansion due to the fact of the reef that borders the airport hasn't been studied. And I am an avid paddler, and I see what results the noise has on the habitat and recreational usage of Kanaha.

Also, the people in Spreckelsville have to listen to the planes during the daytime and into the night. If the airport is expanded and JAL can come in whenever they want, I don't see people getting any sleep during the night to go to their jobs the next day, at least not a peaceful one.

Even I live in Pukalani and can hear the jets at the elevation of 1,000 feet, and I never used to be able to hear them before.

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The Keahia Pond issue, with the fact that the birds are not staying where we think they should be due to no food in the area because of the drainage problems that may be associated with the airport, we are not taking care of the wildlife as we are supposed to, as caretakers of nature here on Maui, and instead, seem to be just doing things still at a rate that we aren't supposed to be doing things.

I have built bird sanctuaries in Kihei and have seen the result of overexpansion in Kihei in giving the birds a small area in which to live. And now we are going to run a major highway right through the bird sanctuary, and the same thing will occur there, no peace for the animals.

So where are the birds stopping to on their way to Mexico or wherever they fly to if they're not stopping at the places they're supposed to be?

I also am a scuba diver, I'm an instructor, and I have seen what the runoff does to the reefs from drainages from development, such as smothering the coral. I see the cane fire smothering the reefs, though most people don't because they don't dive in the places I have dove. I have seen the ash settle on the reef, and I know that it contains poisonous, toxic substances.

I know that the emissions from these jets is also not just being blown away in the tradewinds, but is also settling. And you can get a good whiff of them as you approach

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the airport, and it is quite strong.

The people in Kahului must get some fallout from this, as was talked about earlier by Mr. Kulolio, the Hawaiian. And I know that this fallout, such as the fallout from the Maui Electric plant -- which you can smell rather easily at the boat harbor -- must settle on the increment he mentioned, one of the first parcels of populated land in Kahului.

And though it cannot be detected by most people, I'm sure the older people do feel the effects, as he stated, and I think that a study should be done about that as well, if bigger planes are to land here.

My understanding is that they have built planes or jets now that can land in 7,000 feet and take off with no problems. If these international or bigger planes are allowed to come, what will happen to the smaller innerisland companies? Will they go out of business?

If direct flights are brought to Maui, will that lay off further people in the business of island business?

When it's actually helping the construction workers and the hotel people, what happens to our Hawaiian Airlines, Aloha Airlines, Discovery Airlines?

So there's a lot of unanswered questions, I think, that should be studied and reviewed before you just go ahead with the okay on this plan, though the big money is behind it.

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And, yes, this is my fourth month of unemployment.

But I know that I can talk and work with people and do other things besides running heavy equipment and such. And I have lived on Maui 20 years, and that's why I am a boat captain as well, and a scuba instructor and a Japanese shuttle bus driver and an operating engineer and equipment mechanic.

So I have gotten to see a lot of both sides. And I know that most of the men whose jobs are endangered in the construction industry may not want to work in the hotel business and work in the tour companies as such.

But we have to be resourceful and do different things, even when you think you can't do them. And you have to bend with whatever happens on this island. But I have a chance to speak my mind, and so I feel better that I have. And I hope that you do seek answers to these questions I have brought up, since I know, talking to people, that what I have told you is also a lot on -- what is on the public's mind.

Thank you.

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BRUCE FERNANDES: Bruce Fernandes. Here is my list of new ideas. We have got to confirm the figures of growth that is projected by the State in their presentation to make sure that they're accurate.

We have to determine how 50,000 people living on Maui will effect an expanded airport when we're already

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handling the intake of visitors in the millions with the current facilities we have right now.

And I do not believe that the current economic world situation will substantiate the needed funds for the construction of the airport.

So one thing that bothers me the most is that, recently, the Kanaha Beach access was closed off, which has been opened for generations, to fishermen, families who enjoyed that beach, as well as Kamehameha I, which is still currently open, Spreckelsville, which is still currently open, but it's under threat with this proposed development.

The state and the federal government want to take over the beach access from autos except on other beaches, such as Olowalu, Maalaea mudflats, Spreckelsville, Makena. So why now is Kanaha Beach closed off to car access, when the development of the airport, according to the State, will not be completed until another 19 years from now?

So why is it that we always have to pave over paradise? Why not redirect our jobs and our money into infrastructure development that is badly needed right now, as opposed to throwing away millions, perhaps -- who knows how long the bucket of money will last, at an airport that isn't going to be completed for 19 years?

We could use the money for jobs to such things as sewage development treatment plants in Lahaina, Kihei, and

Kahului, which are currently in dire straits of assistance and new technology. Injection wells are destroying our reefs.

We must petition our state and federal and local government for more money for this serious cause, as opposed to a dream in the sky of sunny times in Hawaii.

The proposed airport development, is this a good idea? It's only a good idea for Hawaiian Cement and asphalt contractors, but it's an idea that is far into the future.

Let's slow down growth. Our own hotels are going to hang onto their occupancy rates for at least another five years. I do not perceive them increasing over a 90-percent full capacity.

Another point is, with this increased air traffic, how is that going to effect Aloha and Hawaiian Airlines, which are locally owned corporations and employ many island residents? How is international air flight going to effect those passengers and those people that work there?

Another project that we can redirect the money into is nursing home facilities and senior care facilities for our older people, local people who live here their whole lives and have fought in wars and died for this country. And we could do joint projects with private companies to encourage senior citizen relocation and development through upclass scale senior citizen care projects.

Another idea where we could use the money is to

develop solar wind energy power as an alternative source of energy. Why is it that the oil and gas companies are currently running all our electric power?

The answer I am going to give you is because it's money, pure and simple. They control the whole market, and any wind technology is a threat to their industry. Therefore, they are out to make affordable energy wind systems unworkable or not viable.

I recently heard a story where one of the wind energy tunnels that they had set up in Maalaea fell off and the wind chopper fell and killed somebody and they sued for millions of dollars. That's the reason why I was explained that there is no more wind energy.

I think this is only out for one reason, that's because we don't want competition. And the reason I'm saying all this is because I hope that we can envision a Maui that -- one that has not only natural beauty, but has common sense in our government and the people have aloha.

Let's keep Maui a place of opportunity, provide jobs, and redirect money where it has to go, and not sacrifice any more of our aina to the asphalt god of false hope, dreams, and jobs.

That's it.

(Whereupon the testimony was concluded.)

C E R T I F I C A T I O N

I, JEANNETTE N. IWADO, Notary Public for the State of Hawaii, certify:

That on the aforementioned date and time the meeting that is contained herein was taken by me in machine shorthand and was thereafter produced in transcript form under my supervision; that the foregoing represents, to the best of my ability, a true and accurate transcript of the proceedings had in the foregoing matter.

I further certify that I am neither attorney for any of the parties hereto nor in any way concerned with the cause.

Dated this 25th day of May, 1994.

NOTARY PUBLIC, State of Hawaii
My commission expires 2/5/96

* * *

COURT REPORTER: Could you state your name and your address?

MR. CARMICHAEL: My name is Danny Carmichael with the Laborers' Union, Local 368. Business agent 1464, Lower Main Street, Wailuku, Maui.

THE COURT REPORTER: This is the Union address?

MR. CARMICHAEL: Yes, ma'am.

What I want to say is for safety reasons why we should have this extension on this airport.

In case we have another Iniki, we can have the planes land over here for safety reasons. It will provide work for us, the Laborers' Union and all the other unions and tourists. That's it.

* * *

THE COURT REPORTER: I need your name and address.

MR. KOJA: My name is Henry Koja, K-O-J-A. 970-B Lower Main Street, Wailuku 96793.

I represent the Maui Farmers Cooperative Exchange. My concern right now is, as I think we stated before, is the air cargo capacity out of Kahului to the mainland. This has been addressed many times, but I don't think the issue on incoming consumer goods by air has been

ever discussed especially on fresh fruits and/or produce.

A lot of times they are being bumped in L.A. or San Francisco and might come in — bumped off the direct flight to Kahului, and produce is brought to Honolulu and then transferred to Maui. Sometimes it will miss the evening flight and then not be available for another 24 hours.

And by the time it gets here, some of the products may not be in a useable, saleable condition, and losses are absorbed by the importers. The buyers. I guess that's my point that I support the expansion of the airport.

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THE COURT REPORTER: I need to get your name and address.

A. Kathleen Nohelani Souki. Address 140 Uwapo Road, Apartment 7206, Kihei.

I'm representing the Grand Wailea Resort, and I am in support of the extension of the airport runway. I feel that it's necessary to continue a viable visitor industry for the island of Maui and the jobs and rooms that need to be filled.

The present hotel room situation that we have would necessitate the extended runway which would continue access for visitors to the island of Maui. That's it.

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THE COURT REPORTER: May I get your name and address?

MR. HOOKAN: My name is Robert Hoonan, H-O-O-N-A-N. Address is 19 Hoaaula Place, Haiku.

I simply wanted — first of all, I wanted to say on behalf of the Grand Wailea Hotel that I support the runway extension.

I feel that we need to continue moderate growth. I do not feel that this extension will in any way damage Maui; instead, it will help us.

Our industry employs 15,000 people directly. We also indirectly affect about 45,000 jobs on the island. We, as an industry, encourage growth in moderation and with good quality; instead of unrestricted growth, which would bring poor quality.

What we do need to do in this County, having lived here 22 years, I feel we need to diversify. If we do not diversify, we will not have a viable economic base.

We also need to have this airport so that we can have an outlet for our diversification to continue. If we go into different types of agriculture, we need to get our agricultural products out to the world. This airport extension would simply help that.

We also need to bring more people in and have

them see what Maui really is about. Given the economic situation nowadays, we would be in trouble if we lose this industry or any of our industries at all. This extension will keep us viable as a County.

We also wanted to point out -- I would point out that our transient accommodation tax base about 16 to 22 million dollars per year, and we need to support the hotel industry by allowing people to come in, so that we can continue this tax base.

I feel that without this type of airport and extension, we are talking about -- we will not be able to do this.

Again, I do not speak as somebody that's just a transient here. I've lived here 22 years, and I love Maui. I'm very heavily involved in the community, and I want to see it remain healthy.

* * *

MR. CARMICHAEL: I'm Danny Carmichael. It will help farmers to get produce out faster. Easier to travel to the mainland.

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THE COURT REPORTER: Can I get your name and address?

MR. ARMITAGE: Nelson Armitage, A-R-M-I-T-A-G-E.

THE COURT REPORTER: Your address?

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MR. ARMITAGE: P.O. Box 67, Puunene. Zip code is 96784.

Basically, what I want to say is just that we do need a safer runway. The safety of the people is depending on the FAA to really put the runway up to adequacy.

I used to work for United Airlines, and when our DC-8's used to come in the stretch outside, each pilot that flew the planes were terrified to land the planes because the runway is too short.

My concern is the safety and security of the people's lives here on the islands. And as far as the runway being endangered and stuff by pesticides, that's why we have experts. We let the experts do the work concerning a safe and environmentally sound area.

I guess that's it.

* * *

THE COURT REPORTER: Can I a get your name and address?

MS. SHALLIT: Linda Shallit, S-H-A-L-L-I-T, business address 45 Kai Ala Street, K-A-I, second word, A-L-A Drive, Lahaina, 96761.

I support the Pueo Coalition to lengthen the runway. I feel very strongly that local government allowed a number of major hotels to be built in the last few years

such as the Four Seasons, the Grand Wailea, the Kea Lani and the Ritz Carlton; and because of that, I feel they have a responsibility to support tourism and to help bring tourists to fill those hotels. And I feel that it will be a real detriment to tourism and to the people that work in tourism if the runway is not lengthened.

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THE COURT REPORTER: Can I get your name?

MR. REYES: My name is Kaimi Reyes.

THE COURT REPORTER: Can I get your address?

MR. REYES: 3676 Lower Honoapiilani, Apartment A-102, Lahaina, 96761.

I work for the Western Maui, and I'm a supporter of the extension of the runway. It will keep our jobs and create more jobs for many of the people that are not working. So I'm in support of that.

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THE COURT REPORTER: Can I get your name?

MR.KULOLOIO: First name is Leslie Kuloloio, K-U-L-O-L-O-I-O, Box 469, Maalo Street, M-A-A-L-O Street, Kahului, Maui, zip code 96732.

In reviewing the place where this testimony is being held, I figure it's quite unusual to find where the hearing is being held in the airport premises. I think it's fair where it should have been held on a common ground

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area. I disagree with this hearing being held at the airport because of the issue itself.

Number one, as a Hawaiian, it's hard for us to explain ourselves especially in an environment they call airport facilities. When things of spirituality, culture, resources, socio-economic issues can be addressed, it's hard to be enclosed and empowered and surrounded by airport facilities and personnel.

Too many times local or Hawaiian's have been encroached in this kind of environment. And that is, I think, a major mistake that this hearing is being held here. It should have been held somewhere in a common ground like the open stadium or a place at the Maui Comminity College. It only shows more suspicion that both the State and the Federal could have facilitated this meeting at a different place.

Again, my involvement of the no extension to the runway remains the same. There are a lot of factors that many of us here in Maui and throughout the State will have to, number one, rearrange, re-evaluate a true review of what kind of changes Maui will see in the next 40 years.

I believe that I am suspicious against the consultants that have been picked to do the EIS for the Kahului airport environmental impact statement. These are

the same names which I questioned from time to time in my past 20 years in dealing with development here in Hawaii.

I believe the Federal Aviation Administration and the State of Hawaii should have picked other companies throughout the U.S. Mainland to become consultants in the writing up of this EIS reports. I have been involved in cultural resources, Hawaiian studies studying the fish, ocean resources here for Maui, for the Department of Energy. And this is what I'm saying is that sometimes we need to even ask the qualifications of these consultants that will be doing the EIS. Many of them, I believe, have political interests in the system itself.

I believe what's missing, besides prime consultants -- I'm quite interested in the area called air quality.

Since 1960, many of the plantation workers have moved into the Kahului area, changing their quality in life. Many homes have been built in the Kahului area. Also, throughout that time, we have seen a lot of changes in our airport control, airport design and planning, and the increase of aircrafts that has been flying and coming to Maui time and time again.

I believe that the consultants should have hired a modern technology in monitoring the pollution that's happening now in the Kahului towns especially in the

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residential area. This air quality can be felt on all the cars plus the aircraft that will be on the increase, especially those landing.

The northeast tradewinds do bring it into the Kahului area time and time again, especially during the hours from 6 to 4 in the afternoon.

My concern is, have there been any studies on pollutants that destroy life in the next 20 years of residence in the Kahului area. This is a primary concern of mine. My mom's house sits in the Kahului area that receive an air current pollutant that comes into the home from 6:30 to 4:30 in the afternoon. Morning and afternoon.

These are the kinds of impacts that I'm worrying about as we increase the traffic, not the extension. The impacts of more aircraft into the Kahului area.

How will they do it? Will the consultants do a review, a monitoring system throughout the Kahului town Wailuku town? Go ask for oral testimony on seniors from 65 to 85 years old and age groups of their corner that they deal with health and air quality control.

I'm looking at the botanical consultant area. The botanical consultant area is one that will affect us all. Just recently a swarm of bees was passed through the

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U.S. Postal Service unit where these bees also could come inside in a container on the aircraft. If it's not monitored and corrected immediately or a system to detect and destroy immediately these foreign insects, animals, or whatever it is -- so the botanical area I'm also concerned about. And plants do deal with wild life. It's a two-way process. And so I would be questioning the type of studies that have been made.

There haven't been any information on who Community Resources, Inc. are. I would like to see their resume, but I think it's so interesting when we talk about people giving various interpretations of socio-economic changes. How they feel, explain it, or what they believe it to be.

There needs to be ample time where these consultants should be questioned and asked if they do qualify for a job such as this major impact issue that surrounds us.

It is no time to bring in the boy scouts. We need to have top experienced Ph.D. people that have worked world wide situations dealing with international airports, and they need to be questioned on the system. Either you got the degree and experience or don't hire them to do this kind of a job. Because we're talking about people's lives. That impact us all.

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I don't know what quality assurance means. As a local, the quality insurance needs to be defined in its political arena type of a definition. What I'm saying is I don't know what they mean by quality assurance. There's no such thing as quality assurances that's going to make things better for us in the next 20 years. Things will get worse. That's why we need more controls.

When it comes to archeological sites, I believe the State of Hawaii and the Federal government are one of the worst destroyers when it comes to archeological sites.

I speak that with confidence because I worked 20 years in the return of the island of Kahoolawe back to the State of Hawaii. And being the archeological monitoring person for the islands to protect Kahoolawe. It took us 20 years, and it's going to take us another 40 years to find out everything about the birds, bees, and insects that is still in pristine stage on the island of Kahoolawe. I don't think there's any consulting company that can likewise say there will be no danger to Maui's environment.

Noise. It's been Maui's history that everytime an issue such as the an airport has been constructed here, it's more than just common sense. We have increased the noise level more so in the Kahului area. I live in the country northeast of the airport. I find that the noise

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can be heard time and time again.

More so, as we increase more planes to fit the needs of flight schedules here on Maui, it's constantly being heard in the air. So whether there's a noise act to protect us from noise, I think we'll only see there will be more increasing noise here on Maui.

Maui should separate itself from issues and sometimes we should not compare ourselves through the type of impacts that the people of Oahu go through. Maui should protect its lifestyle separate from the island of Oahu.

On Oahu the island have become a victim in the past 80 years accepting the western way of life. And living.

For Maui, it needs to control its own vicinity, and the airport will be an international intersection, a junction where everybody will meet here or pass by bringing in more social and economic problems here for the islands of Maui.

It's a rich man's game. Those who afford to pay to fly will fly. Our cost of living will increase, and cost of living studies should be part of this environmental impact studies that affect native Hawaiians here in Hawaii. We do have a study that I hope this Federal Aviation Administration will look into. A study of demographics, taking in account of native Hawaiian children

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done by the Liliuokalani Trust.

I would like to have the Federal Aviation Administration look into the latest survey of Hawaiian people in different categories of ages, job, community, drugs, education, labor, all of which will affect Hawaiian children in the future. This should be part of the study as an ethnic group.

The wild life. The wild life at the Kanaha Park. I believe the study should reflect and go back into the period of how the Kanaha Pond or wild life sanctuary were originally situated at and its boundaries used during ancient Hawaiian legend and pre-contact time and its uses by western influence.

The parameters and boundaries of the wetlands have never been detailed by meets and bounds. Both the State and federal government needs to identify these areas. The pond area as shown prehistorically and historically was much larger than what it shows now.

There's been a lot of selling by the State of Hawaii to private owners that now surround the sanctuary itself for contractual uses. So this should be part of the environmental impact statement kind of thing. Changes that affect us all.

I believe that there will be less and less wild life as we see an increase of more traffic and larger

planes that will be running parallel running towards the ocean or coming in from the southwestern part of Maui landing and taking off near this zone area of this wild life sanctuary. I have seen there's been so much restoration and preservation from protecting the wild life here on Maui, and we have seen a lot of help being given by many of us here on Maui to the certain endangered species or species that will become endangered. And they have increased in its birth rate.

However, as you increase air traffic over the sanctuary, these birds are, I believe, in the same kind of criss-cross pattern flight pattern like the approaching planes. And many of the studies should include these birds, how often do they fly out in the evening or in the morning out into the ocean and back again to the land.

I'm a diver. I'm a good diver. I dove on the northern part of the runway reef area. And as we were diving, there's an increase in the overpass of large jets or even props at times at intervals -- whether it's 5, 10 minute or 20-minute intervals. Takeoff flights over a diver in the water, you can hear the vibrations under the water.

We need to re-evaluate and escalate our understanding of environmental issues and impacts here in Hawaii. Others throughout the United States are way ahead

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of us. Yet, here in paradise we just become ignorant if not isolated islanders not willing to see the changes affecting us all.

In the study, I fully believe there should be a marine and ocean resources study. That's been missing in here. That's what I mean by environmental impact statements. And basically to study the impacts that covers the reef area on the northeast part of the runway from Kahului harbor all the way up to Paia community. And this should be constantly monitored by the Federal government in the state. It's their responsibility. They are accountable. They are accountable.

We need to also do a good study on the number of aircrafts, whether it's small, large, prop type, that we'll be using or is already being used here in Kahului. Every aircraft gives off pollution. Let's not separate. The philosophy and the twiddling of man's minds and limiting the larger essence of the big picture that encroaches this issue of the extension of the runway here.

I do hate politics. I believe it's wrong when people come in this airport wearing blue hats. Those blue hats that say 96 for 96. I could have worn my political sign in opposition for this. The 96 is just for the extension, but I walk proudly not wearing a blue hat and just my own gauze shirt on the State and Federal land.

Those that wear the blue hats, they have just broken or just a part of the system. They don't know how to play the game. It makes me very uncomfortable walking with those wearing the blue hat for the extension of the runway. It's just like saying it's a political sign. A political statement.

I find no justice and fairness in the system. The opposition wear no hat. Just ourselves and our voice. We were limited of even bringing signs here, and those blue hats are political propaganda sign. So help me god.

I wish one of the impacts that affected me just the other day was a new service rendered here at the airport. And this involves a rich man's pickup and delivery of vehicles at the front of the airport.

On Sunday evening, as I came in from Oahu on my truck, couple gentlemen jumped into my car thinking that it was a vehicle with the same identification who belonged to a millionaire where another car that was in front of mine stayed there for 15 minutes, and they jumped into my car almost trying to take my car to a certain designated area because of services rendered.

I asked them, what are you doing in my car. And it really disgusted me to see that rich people had the right to drop their cars off on the limited area where it says no parking and using the system because they are rich

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where another person would just pick it up. Please check on this. That's what I call the first impact. I guess they call that chauffers services.

You have the bucks. You can just drop your car off. The hell with the parking limitations that we all have to abide with. And so that's the first impact. And the State are ready -- the Department of Transportation and Airport Division are ready and failed their first impact that I've seen here.

They should check it out, those guys with the black shirt and brown Bermuda shirts at the entry. Can we drop our cars off here and have my son pick it up if I'm late to catch my flight and not get a ticket?

So what is this whole airport going to serve, the rich or the poor? Or, if they got the money to pay for a license, then you can get away with it.

It took us 20 years to bring back the island of Kahoolawe. It's going to take us another 20 years to learn what is involved. And this process needs to slow down. The Federal Aviation Administration needs to be monitored by the Environmental Protection Agency, and I think that in fairness to everything, the Environmental Protection Agency should be part of this monitoring system. That's the request that I'm requesting.

I think this study needs to include the

Department of Defense and the Department of Energy participation here in this extension of the airport.

I've asked the question many times, where is the military picture or role in this Maui's extension of this airport? Every place I been, whether it's Kahoolawe or on top of Haleakala or the uses of this airport, we need to find out where the military will -- it's future use for evacuation of people in case we have a disaster here on Maui. All of this should be included as part of the environmental impact statement.

I disagree with the Pueo Coalition who have implemented the use of these blue hats. I feel very strong on that.

This is a political issue. And again, the facilitators that's running this hearing should have set some kind of rules so that all parties involved for or against would have been comfortable. If we can't be comfortable, and if the statements of wearing blue hats here at this open Federal and State testimonial here -- what it is can be worked together, then you won't have the right kind of public participants here from grass roots people like myself. I think it's total propaganda what's happening here.

What hat do I wear? I ask this committee, what hat do I wear? Thank you.

*** Notes ***

C E R T I F I C A T I O N

I, GLORIA T. TAVARES, Notary Public for the State of Hawaii, certify:

That the hearing contained herein was taken by me in machine shorthand and was thereafter produced in transcript form under my supervision; that the foregoing represents, to the best of my ability, a true and accurate transcript of the proceedings had in the foregoing matter.

I further certify that I am neither attorney for any of the parties hereto nor in any way concerned with the cause.

Dated this 30th day of May, 1994.

Gloria T. Tavares

NOTARY PUBLIC, State of Hawaii
My commission expires 1/18/96

*** Notes ***

Page 1

MR. GOMES: My name is Rocky Gomes, G-o-m-e-s. My home phone is 572-5171. I live up in Haiku, 189 Hunawi Place, Haiku, 96708.

As far as this airport issue, I think like you look at this building right here, it's almost half a mile long and it's not even being used and stacks of money are being spent and not being used. That's one of the reasons why I'm for the airport expansion.

Furthermore, it creates a lot of work for a lot of people. It creates work for the manufacturers as far as building supplies and all that. It creates works for the operators, the Local 3. It creates work for the carpenters. And flights going in and out so it creates jobs for other people, for the hotels, people coming in and out. You get -- it's a lot of -- it brings a lot of plus and very little negative.

So that's all I want to say, actually, is just that I'm for it and it's more pluses than negatives, so I'm for the airport expansion. And I represent the Carpenters Union II. I'm a field rep. We have 1200 members here and we have about 500 out of work. So I'm speaking for them, also. Thank you.

MR. EMERY: Richard Emery, 28 Nonohe Place, Paia, Hawaii 96779. Phone number, 871-9421.

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My greatest concern is the Department of Transportation's list of priorities. Most of the safety factors come after the runway is already in place.

In particular, it seems to me the first priority should be the new entrance to the airport, since the traffic is already impacted and comes to a standstill because of KMart and now Sam's Club is going to go in and the complete airport triangle.

Number one priority before they extend any runway should be alleviating that traffic pattern. This is also true -- the road to Kihei and the road to West Maui, both are inadequate. And if they put in the longer runway and jets come in internationally and increase jets from the Midwest and the East Coast, then that will increase traffic and we will have bottle necks. So those things should go in first.

The other one I would like to talk about is the safety road, the extension of Alamaha Road, which is needed also now. And the reason for that is if there were a crash and Hana Highway was blocked, it would completely cut off East Maui from any access to the hospital and the other emergency facilities. So that's another situation -- I believe that's in Phase

Page 3

II or Phase III, and it should go in before the large jets start coming in.

Same is true, the hospital needs to be adequately improved so that in the event of a major catastrophe, a jet crash, for instance, as it is now, we simply could not handle the number of patients.

The other problem is the hospital is state-run. If a strike were occurring, as we had a couple weeks ago, and people were out and we had an air crash, we would be in a terrible situation.

Another major concern of mine is run-off into the ocean. We already are having a problem over in West Maui because of actual drainage into the ocean which brings the fertilizers and so forth and increases the amount of algae bloom. Without an Environmental Impact Statement, a large ditch was already built which in a major rainstorm pulls in drainage from the airport area which includes fertilizers from the cane field and is wiping out any reef activity in that area.

There is a proposal if a second runway goes in, the original plan I saw is going to empty, again with a big concrete culvert, into the ocean again. What I would like to see is a study on the best ways to take run-off, put it into a silt basin rather than

Page 4

dump it into the ocean. That needs to be addressed in the environmental impact study.

The other thing that needs to be addressed is the major airlines need to be contacted. Delta, Hawaiian, American, United, Sun Trips, which is running in wide-bodied planes all the time. There is a Canadian airline coming in. What are their projections for future aircraft? If they are headed toward 757, these are not wide-bodied. And if that's what they would be running in from the Mainland, do we really need to extend the runway?

My other concern is the noise and relocation of people who live in Spreckelsville. If a second runway goes in, what is going to happen to those people? The Environmental Impact Statement should address where they can go to live an equal quality of life along the ocean. 'And that needs to be addressed not only in the impact statement, but also by the state. The state has not really addressed that, other than making those people walled in their homes with insulation, which is not the way anyone wants to live in Hawaii.

Along with that line of thinking, I would like to see a real study of how to get international visitors into Maui. And I think that we're not

Page 5

utilizing -- if the state is not going to make four-lane roads from the airport into West Maui and into Kihei/Wailea before the runway goes in, then I think we should investigate how to get passengers from Honolulu where the international facilities are, into those large resort areas. As it is now, we bring them in to Kahului and they must be transported all the way. Do we need a monorail? Do we need to bring them by boat from Honolulu? Do we need to construct a small feeder airport on the other side of Wailea, say in the Makena area, so that people can very easily get to those hotels from Honolulu?

The other thing that needs to be investigated is, as it is now, all of those giant planes from the Orient, the 747's, come in during the night. It is an overnight flight. And they unload all their passengers at Honolulu where, true, they're over-taxed as far as the number of people coming in. And so they have to wait in line. The same thing would happen here. But the nice thing about that is some of those people go to Lanai, some go to Molokai, others come to Hawaii or Maui, and so they're spread out through the day and they come primarily on Hawaiian, Aloha, and now Mahalo. And so that gives a livelihood to those feeder airlines and also provides

Page 6

a consistent service to the people of the outer islands from getting back and forth to Honolulu.

If we bring international jets in here, we're going to have the impact of all those planes unloading in the early morning hours at the same time that the residents of Maui are trying to get to work. And most of the residents in Central Maui work over in Kihei or they work over in West Maui. And so our highways are going to not only be impacted with the visitors coming in, but the people who work as well. Therefore we really need to address the transportation problem before we lengthen the runway, not after the runway is lengthened.

The other thing that really puzzles me is we are lacking beach space and the very last thing that the DOT has put on their list for expansion after Phase III is extension of Kahului Beach Park. And we need that. Or Kahana Beach Park. And we need that now, not at the very tail end of things as sort of a carrot to offer the people if they put up with lengthening the runway.

One more thing I would like to state and that is let's really study if we need additional cargo space. In county testimony, people talked about getting their fresh goods to market as this being a

Page 7

problem. I'm not really sure it's a problem. I think it's a one industry thing and I think it's fresh pineapple getting to a market. And they are able to do it when they have excess baggage. Is pineapple going to be around by 2010? That's something we really need to investigate. Okay. I think that's it.

I belong to the Paia Main Street, Spreckelsville Community Association, and Maui Tomorrow.

It would seem to me that it would be really imperative to get helicopter flights located as closely as possible to the audience that wants to do them. It's a complete waste to have to drive people from West Maui or Wailea all the way to Kahului Airport. And I can remember in 1980 that Papillon Helicopters operated from the top of Pineapple Hill for Kaanapali tours to view Molokai and the things along the north shore. And it seems to me we need to return to that kind of close utilization of what a helicopter is all about. A helicopter can land in a very small spot. Therefore they should be as close as possible to where the tourists are staying to go on a helicopter tour. Business aircraft cooperate very nicely from Puunene and if helicopter tours --

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helicopter operations and business tours were out of Kahului Airport, it would certainly negate having a parallel runway.

(WHEREUPON, the proceedings were concluded.)

ATTENDANCE SHEET

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
10:00 a.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
JESSICA YAMASHITA	DFS HAWAII	2435 Kaanapali Pkwy, Lahaina Bldg C	667-5111
Suzanne Hills	Maui Inc. Mag.	P.O. Box 357 Kula 96790	878-2500
ELDON K. KERR	Good Fellow Bros	262 W. Kuua St. Kahului 96732	871-2555
Robert L Pang	State	560 Pili Loko Paia 96779	
HIDEO KAWAHARA	A&B PROPERTIES, INC.	PO Box 156 Kahului 96732	877-5523
ABBY JANIS	AVIS RENT A CAR	884 W. Mokuea Pl. Kahului 96732	871-1517
STEVEN MOYER	—	1883 MILL ST WAILUKU	244-3783
Steve Nunes	PUEO	P.O. Box 6251 Lah.	
Cynthia A. Rand	Pueo Coalition	P.O. Box 6257 Lah.	572-3857
Hank Squire	citizen	Box 666 Makawao	878-2756
Don Schneider	Maui County Planning	250 S. High	243-7735
Peter D'Colmain	Four Seasons Resort	3900 Wailea Alanui Kihei	874-8000
Solomon KaPuhi	Westin Hotel & Resort	PO Box 1162 Kihei, HI 96748	553-5410
Adrian Kadiakea	LOCAL 3	929 Alakaiki Wailuku	242-6172

ATTENDANCE SHEET

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
10:00 a.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
Judi S. Wolfe	OGG ATCT	Kahului Airport	877-0725
Vern Otto	Western Maui	Kihei	879-4217
Albert Saiki	R.T. Tanaka Engr	Wailuku, Hi	242686J
Kenneth Barr	—	P.O.Box 1637, Kihei, 96753	879-6450
Rocky Gomes	Carpenters Union Local 745	330 Hookahi St. 96708	242689J
Edward Alexander	State	124 Ohukai Rd. 96753	879-6148
Dale Turner	Carpenters Union 745	286 w Lanai 96732	871-5710
Richard Emery	Paia Main Street	28 Nonohe Pl. Paia 96779	871-9421
Joy Meredith	United Airlines	Kahului Airport	
Charles Kokes	Self	P.O. Box 1413, Paia 96779	579-9119
Linda Morgan	Ritz-Carlton Hotel Co	One Ritz-Carlton Dr	6696200
Jaimi Reyes	Westin Maui	3676 L Hipilani	669-0273
Stanton Enomoto	ECNA	615 Piikoi #1000	591-8553
Gordon Miyabe	ELEA consultants	POBox 17929 HNLH	8454256

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
10:00 a.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
Vince Mestre	Mestre Greve Associates	Newport Beach CA	714 760 0881
Don Reeser	Haleakala Nat'l Park	Box 369 Makawao 96768	572-9306
JOHN WILT	Mr Platum Surveyor of Maui	794 Onaplio St. Wailuku	242-1208
Mike Singlehurst	Maui Chamber	P.O. Box 2114 Kahului	8776541
DANNY CARMICHAEL	LABORER'S UNION #368	1464 Lower Main ST 96793	244-7076
Renate Grossmann-Durell	Hawaii Audubon Soc.	534 Olinda Rd Mak.	572-1684
Ben Cabanting	Local #3	256 Hanalani St.	572 0420
Jack Thompson	Spreckelsville Comm Assoc.	204 Keolaloa, Paia 96779	877-5749
Girleigh B Hughes	interested party	158 Haulani Pukalani	572-8864
Terry L VENCL	Maui Hotel Assoc	1325 L. Main Wailuku	244-8625
J.P. ORTMANN	HI. OPER. ENGRS. STAB. FUND	1464 LOWER MAIN Wailuku	242-9410
Tim Johnson	DOT-Airports	Kahului Airport	872-3816
NICK CASUMPANG, JR	ILWU	896 LOWER MAIN ST	244-9191
Brian Perry	The Maui News	100 Mahalani St.	242-6343

ATTENDANCE SHEET

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
10:00 a.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
Paula Arcena	Community Resources, Inc.	130 Merchant St Ste 1001 Honolulu HI 96813	528-2211
Gene Dashiell	Planning Services	1219 Kaaaumana St #200 Honolulu 96814	445-3132
Jim Durham	Edward K. Noda & Assoc.	615 Piikoi St #1000 96814	596-8553
Steve Allison	P & D Aviation	1100 Town & Country Rd. Orange CA 92668	(714) 835-4447
Wayne Hedani	Maui Chamber of Commerce	26 North Puunene Ave.	871-7711
TERRY BROTHERS	WILBUR SMITH ASSOCIATES	1778 ALA MOANA BLVD 96815	949-7334
Patricia Sakamura	Operating Engineers	360 Wakea St #5	877-5138
Henry K. Kosa	Maui Farmers Coop	970-B Lower Main St	242-9867
Wm. CAMPS	OPER ENGRS	293 OHINA PL	8749245
W J Nelson	Oper. Eng		242 8133
David J. Welch	Int'l Archaeological Res Inst	949 McCully St. #5, Honolulu	946-2548
Brad Kaplan	AVIS RAC	884 W/Mokuea	877-2417
Nelson Ami	KEENA MAUI	P.O. Box 571 Hailey, HI	575-9807
James R. Rapp	Puko Coalition	Chamber of Commerce	879-9866

ATTENDANCE SHEET

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
10:00 a.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
ROBERT MONDEN	MAUI COUNTY FARM BUREAU	P.O. BOX 148 KULA, HI 96790	878-2917
Lori Ballance	Gatzke, Mispagel + Dillon	Carlsbad, CA 92009	(619)431-9501
Mike Gatzke	" "	" "	" "
GRANT LAY	Local 3		
Aaron CK Brown Jr	" "	775 Kokomo Rd 96708	572-7772
Ed Taji	[illegible]	P.O. Box 443 Haiku	575-2259
BARRY NEAL	B.D. NEAL + ASSOC.	POB 1512 Wailuku	244-4980
[illegible]	ACTIVITY OWNERS ASSOC	P.O. Box 6239 CAPT. COOK HI	929-9317
ROGER DUBIN	MAUI VISITORS BUREAU	355 HUKILIKE STE 202	871-7947
Eugene Shikuma	JTB HAWAII, INC.	BOX 580 WAILUKU	244 3530
[illegible] Jr.	Local 3	871 KOLU ST. #102 WAILUKU	242 6810
LEONARD NAGATA	Project Managers Hawaii	140 WEST PAPA AVE	871 6120
[illegible]	[illegible]	KAHULUI AIRPORT	871 6997
[illegible]	ILWU		244-9191
			244-9191

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
10:00 a.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
E. Michael DePonte	Operator Engr. #3	P.O. Box 164 Kahului	871-7655
Elaine Baker	County of Maui	200 S High, Wailuku	243-7875
Isaac Hall	Mata, Sierra Club Hawn	2087 Wells St #4 Wailuku HI 96793	244-5017
Randall Moore	Haw'n Comm & Sugar Co.	Po Box 266 Puunene HI	877-6868
T. Rust.	Puco Coalition	P.O. Box 6251	572-3855
K. Stabenow		107 E. Kuula St, Kahului	877-4650
Brian Miskae	Maui Planning Department	250 S. High Street	243-7735
Nick Pechin	Century Aviation	E. Kahului Ops	877-7059
Hank Kauka.	Westin Maui	Po Box 1508 Kihei 96753	553-5723
Captain Tim Flournoy	Airline Pilots Assoc.	P.O. Box 30026 Hnl. 96820	488-2164
Bruce Fernandes	Prudential	Po Box 714 Paia, Hi	871-8423
Elaine Tamayo	Edward E Noda Assoc.		
Kandall Morikawa	Carpenters	12 Alii St.	
Brian IS Hi	EKNA	615 Piikoi St #1000	591-8553

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
10:00 a.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
WILLIAM SHAW	MAUI PRESS NEWSPAPER	BOX 1049 WAILUKU HI	244-8880
Normale D. Martin Sr.	Carpenters Union 745	572 Maoi Pl Wailuku 96793	242-6821
Kelvin Dang	PUEO	P.O. Box 1692, Kah.	244-7283
William Casco	Local 3	854 Makahale St. Wailuku	244-5203
Dick Mayer		RR1 Box 518 Kula 96790	878-1874
Jody L. Mitchell		P.O. Box 1041	
Gregg Nelson	Stouffer Wailea Beach	3550 Wailea Alanui Dr.	879-4900
Kathleen Souki	Grand Wailea	3850 Wailea Alanui	875-1234
Charl Ann Nakanishi	Stouffer Wailea Beach	3550 Wailea Alanui	879-4900
Alekz Carrillo	" " "	3" " "	" "
Larry Nishikawa	Four Seasons	3900 " "	874-8000
Linda Sholit	Kaanapali Beach Resort Assn	45 Kai Ala Dr. Lahaina	661-3271

ATTENDANCE SHEET

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
10:00 a.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
Mamoru Yamasaki	Retired State Senator	P O Box 1516 Kahului 96732	877-6333
Lee Hunter	ABC Trucking	11 Noholani Haiku	575-9955
John Kirkpatrick	Community Resources, Inc	130 Merchant #1001 96813	528-7211
Willie Authoni	[illegible]	2739 Ainakoa Dr. [illegible] 96768	572-4315
Lyons K. Naone III	U.S. Customs	P.O. Box 1458 Kahului, HI	877-6013
Jon [illegible]	DOT-A	Kahului Airport	872-3808
[illegible]	Goodfellow Bros.	Haiku	575-2406
[illegible]	A&B Properties Inc	33 Lono Ave Suite 400	877-5523
Rolando Anatalo	Stouffer Hotel	—	879-4900
David Chevalier	Hawaii Helicopter Oper Assn	Kahului Heliport 108	871-8844
Leslie Kuloloio	Maalo St Kahului		871-4001
Lesley Bruce	P.O. Box 3 Paia		572 9211

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
10:00 a.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
Rob Hoonan	Grand Wailea	19 Hekahaka Pl. Wailea Maui	572-9203
Bill George	Stouffer Wailea Beach Resort	Wailea	879-4900
Cynthia Metzger	Kaanapali Beach Resort Assn.	45 Kaiola Dr. Lahaina	661-3271
Kili Naman 'w		115 Pea Pl. Kula	878-3001

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KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
10:00 a.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
Steven Suyat	Hawaii Carpenter's Union Local 745	330 Hookahi St.	242-6871
Jane Thompson		204 Kealakai Paia	877-5749

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Corrections to Airport Hearing
Public Scoping Meeting
Kahului Airport Environmental Impact Statement

May 18, 1994

PUBLIC SCOPING MEETING AT 7:00 P.M.

1. Page 3, Index. The following is the corrections to the Index.

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STATE OF HAWAII

PUBLIC SCOPING MEETING)
KAHULUI AIRPORT)
ENVIRONMENTAL IMPACT)
STATEMENT)
)
)

A public meeting was held at the Kahului Airport on Wednesday, May 18, 1994, commencing at 7:00 p.m.

QUALITY COMPUTERIZED TRANSCRIPTION
-by-
IWADO COURT REPORTERS, INC.
2233 Vineyard Street, Suite A
Wailuku, Maui, Hawaii 96793
(808) 244-9300

REPORTED BY: GLORIA T. TAVARES, RPR/CSR #262

APPEARANCES

For the Federal Aviation Administration:

David Welhouse
P.O. Box 50244
Honolulu, Hawaii 96850

For the State of Hawaii Department of Transportation Airport Division:

Ben Schlapak
400 Rodgers Blvd. Suite 700
Honolulu, Hawaii 96819-1898

Meeting Facilitators:

Susan Kang
Bonnie Newman

INDEX

PROCEEDINGS

MR. WELHOUSE: My name is David Welhouse. I'm with the FAA, Federal Aviation Administration. Welcome to my scope meeting -- it's our scope meeting. It's the FAA and the State Department of Transportation. I'll introduce myself and Ben Schlapak who's with the State of Hawaii Department of Transportation Airports Division. He will be doing part of the presentation tonight, specifically on the master plan.

Everybody got, when you came in, a handout like this. If not, we'll get you some.

In here my name is on the front, Ben's name is on the front, address, phone number. At the end, we'll ask for comments. If you don't want to give us comments tonight, you want to send it to us or call us later, that's what it's for.

Also, in the handout, there's a list. It says, lead agencies and consultants. It lists the FAA and the state and federal government DOT. It also lists the consultants who are working on the environmental impact statement. Edward Noda is the prime consultant, and they have a list of subconsultants here. We also listed the consultants for the Maui General Aviation Study plus the 150 Noise Compatibility Study, which is a noise study that we're doing.

Another thing that's in here is we have an agenda that we're going to go through just to kind of keep us on track. I'm going to be doing the EIS process and Ben will do

Page 5

the master plan and environmental issues.

When we get to the testimony, we'll take a short 15-minute break. You can look at the charts. We've got the consultants set up on information tables. You may go down and talk to them, ask the questions. We brought them here with a specific idea that they are the experts on what they do: noise, air, water quality. Whatever they do, they are the experts.

I'm from federal government. I'm not an expert on that. That's why we hired consultants. We brought them here, so you can talk to them and ask them the questions, so that you can get that kind of information.

After the short break, then we'll come back, and you can have -- there's three different types of testimony or information gathering that we'll have tonight.

First would be written. There are blue sheets on the sign-in table and information table just like this. It's got my name and address on the back. You can put your comments on here and send it to me.

Second one would be in the handout. There's also a map of what we're doing here tonight. On the side it talks about individual testimony. What that is, is we have two court reporters sitting on the side. If you don't want to come up and talk to us, or if you don't want to send it in, you want to talk to somebody, you can do that on a one-on-one basis. You

Page 6

find a lot of people, me included, who hate to stand up in front of a group of people and talk.

In fact, that's the number one fear. Number two is dying.

Okay. We can do that -- you can do that.

The third option is, after the break, we'll come back and people can come up here and give testimony. I'm going to write down a list of the environmental impact categories. We're transcribing the whole thing, so that what we do, when we get back, we'll go through kind of the headings -- this is what we took this morning, two sheets on the right -- all we do is write a general category. Then we go back through the testimony and pick out all that stuff, so that we have the right information, everything we need so we can prepare the environmental impact statement. Those are the three options.

Also in your handout, there's a flow chart that looks like this. I highlighted my third box here, and that's because that's where the scoping meeting is.

There's 25 boxes in here in the processing of an environmental impact statement. You can see -- because we are the third one, we're early in the decision making, which is -- actually, the decision is made in the last box. That's where the approval comes.

Everything else leads to how we process an environmental impact statement. That's good information for

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you guys to know. It does say, we'll come back at least twice to go through some more of the process with you.

Scoping is a process, and that's what we are here for. It's not a meeting. It's not one specific meeting, even though we call it a scoping meeting. It's a process that takes place over a certain amount of time, so that we can get the information we need, so we can prepare an environmental statement.

We want to be able to get all the concerns, all the information, all the alternatives, all the impact. That's what we are here for: to gather the information, so we can put together the right documents. We want to have one that is correct.

We don't want to get to the end and find out we missed something.

A scoping process has four specific limited objectives.

The first one identifies the effect of public and agency concerns. We know some of them. We don't know them all. That's why we are here: to find out what the rest of them are.

Second one is to facilitate an efficient EIS preparation process. In the handout, it's got the flow chart. What we want to do is start it out right and follow that process correctly, so that we can get it done just the way it's

Page 8

supposed to be.

The third one is to define the issues and alternatives that will be examined in detail. We came here to find out what are the issues, what are the alternatives. We want to make sure we get them on the table. We don't want to miss it.

The fourth one is to make sure that the draft statement adequately addresses relevant issues. To reduce the possibility of new comments coming in later. We don't want to have to find out at the very end we missed something. We want to find out now. Because if somebody comes up at the end saying, wait a minute, you missed something, we say, well, why didn't you tell us at the beginning, because then we could have done it right all the way through.

Because what happens is if we find out something at the end -- we know sometimes that happens -- something pops up that nobody knew about, all of a sudden -- or if a situation changes, then what we end up doing is rewriting or supplementing the document. That's not something we want to do. We want it right the first time.

I do want to say no decisions will be made or preferred alternatives selected in this EIS. In the preparation of this EIS, we start from ground zero.

As you can see on my flow chart, we're starting from the beginning. No decisions are going to be made. I know you

heard the State has done certain things, the County has done certain things, and they made certain decisions. From the Federal side, we started -- we start from ground zero.

I also want to say that all the viable alternatives -- we will look at issues, alternatives, and concerns. All the viable ones will be given the same level of analysis.

What we do is we go through all the alternatives. We put together a whole package of alternatives. We go through and take out those that are not available. We keep the ones that are. We explain, as we drop out the nonviable alternatives, why they are not available. We discuss that -- one of the workshops we come back for is to discuss it at point; but then the viable ones get that same level of analysis. So they are pretty much the same.

That's the end of my scoping process works. What I want to do is turn it over to Ben, and he is going to discuss the Kahului Airport Master Plan, and then into the environmental issues.

A VOICE: When do we get to ask questions?

MR. WELHOUSE: At the break, come and ask me about questions.

A VOICE: How about asking in front of everybody? Is there an opportunity to do that?

MR. WELHOUSE: Specifically, no. I don't want to waste a lot of people's time with questions. Come at the break

-- but we'll see.

A VOICE: Are they on record, these questions?

MR. WELHOUSE: Yes.

A VOICE: We meet you on break, that goes on record?

MR. WELHOUSE: No. Let me explain that at the break, then I'll show you what I mean.

MR. SCHLAPAK: Good evening, ladies and gentlemen. Thank you for coming.

We need your input into this process. I would like to give you a short briefing on our Kahului Airport Master Plan. I would like to stress that this master plan is an estimate of the expansion and development needed to provide safe, accessible, and economical air transportation to the traveling public.

It is a guide. It is not a fixed blueprint. And it is based on estimates into the future which could be off depending on events or forces unknown or beyond our control.

Again, a master plan is a guide, and it needs updating every three to five years. So our master plan, which was finished last June, is not going to stay the way it is until the year 2010.

It was published in this form and will accompany airport layout plan, and it took into account the information that was made available during the state environmental impact statement on several projects for the Kahului airport and also

the information that came from the Land Use Commission hearings and other discussions before the County Council and the County Planning Commission.

We think the present master plan is a reasonable baseline which may well change in the future updates as forecasts are refined.

I would like to give you a little bit of a framework of numbers that this master plan is based on. This master plan uses a forecast which predicts that the resident population of Maui will rise from 91,361 in 1990 to 145,200 in the year 2010. And the total population, including all visitors, would reach around 216,000 in the year 2010.

Another key indicator is number of aircrafts based in Kahului, which at the present time is about 48, general aviation fixed-wing, plus air taxi aircraft, plus about 30 helicopters. The number of fixed-wing aircraft is expected to rise to 75 by the year 2010.

I have the production figures for this airport for 1993, and I will let you know what they are now.

Counting the year 1993, Kahului airport handled 5,358,039 passengers. That's coming in plus going out. This was an increase of 3.4 percent over 1992 and is opposite the trend statewide and in Honolulu. That's good news for Maui.

Cargo in 1993 was 35,322 tons, which was a decrease of 5.6 percent, compared to 1992 and probably due to the

reduction in major air carrier flights to a degree; but we would have to look at that further.

Mail was up 5.8 percent to 4,815 tons. Total air operations; that is, landings and takeoffs, including helicopters, were 172,265 which was a 3.6 percent decrease. Number of passengers handled at peak hour here is approximately 2,000.

In 1990, there was 16 scheduled air carrier operations per peak hour, which is expected to grow to 30 per peak hour in the year 2010.

Forecasts, are at present approximately 20 wide-bodied aircraft per day in and out is expected to grow to 30 in the year 2010.

Forecasts in the 1993 Kahului master plan predict total passengers growing to 9 million per year in the year 2010, and cargo doubling to 64,000 tons a year, and air operations rising to 306,000 in the year 2010. That's kind of the basis from which the master plan was put together.

Now, I'd like to explain the three phases of development that are in your handout. In the foldout sheets -- it looks like this. Phase I is anticipated to be the year 1994 through 1996. And just to orient you, you are on the northern end of the terminal building, which is shown here in black. You are here at gate 39. This is the direction north, and the projects are shown on your handout in a shaded diagnoal

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line configuration with a number.
The first project has to do with acquiring land with access road in this general vicinity, and that land has been acquired.
It also involves a small piece of land here for the runway approach lights for an extended runway, and a navigation easement over this land out here on the end of the runway two, for a runway protection zone.
A navigation easement simply means there would be no obstructions put on that land. It could remain an agriculture, but we would have control over what happened out there.
And the major project is number 3, which is to extend runway 2-20 2,600 feet to the south. Applied with that, shown by number 4, is the strengthening project to, by overlay or other means, bring the pavement strength up to where there could be more repetition by wide-bodied aircraft well into the future.
Relocating the very high frequency radar device of the FAA, shown in number 5, that's the bowling pin that you see out beyond us here before it got dark, will go further out to the north.
Number 6 involves construction of cargo handling facilities and an access road.
And number 7 is the major project, the largest of any of them probably, the great separation access road,

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semi-clover leaf interchange to improve the traffic situation to bring it directly into the airport from Hana Highway.
And we have some work to do on the perimeter road and associated fencing and have a fire fighting station, aircraft rescue and fire fighting station, which is number 10, which is just about finished and will be dedicated this month, and associated training facility at number 9 vicinity of the existing fire training pit, but upgraded so that it's lined without any danger of environmental contamination.
The last project in Phase I, is a road from aircraft parking apron to the vicinity of the postal facility.
The second phase is intended be done and generally recommended to be done in the period 1997 through the year 2002 and involves acquiring land here and here for a new parallel runway which would be parallel to runway 2-20. Associated navigation easements for the runway protection zone would be necessary for that runway.
Another little piece of land for additional cargo building expansion is shown in number 3, and then we have some recommendations for projects involving new cargo facility on the east ramp, T-hangars, and commercial aviation least lots. Also a facility for an air taxi operation.
Number 9 involves fuel storage, the Hawaii Fueling Facilities Corporation is a consortium of airlines and Lockheed Terminal, Inc. they operate our fuel farm in Oahu. They intend

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to build two 4,500 parallel tanks at this site, so the fuel does not have to be trucked to major air carrier aircraft that need it here.
There's a partial hydrant system already in the apron, another project would link the fuel farm or the fuel tanks with the apron hydrant system by underground pipeline.
Number 12 is the project linking Alahao Street and Old Stable Road. In our minds, this is an emergency road which would be two lanes paved with a bike path that would be open full time, and then more work on the east ramp access road that's extending it on down past the fire station.
We also have to extend the perimeter service road and the fencing around the newly acquired land intended for parallel runway, and there are some ground transportation facilities located here a little too close to the end of runway 5 for the latest required distances. So we would move those on down into this vicinity.
And the last project in the second phase would be the expansion of the Kanaha Beach Park, which would involve constructing bathrooms, parking lots, and picnic tables, and that sort of thing for the County. It would be managed by the County as an extension of their parks system; but we would retain the ownership of the land.
Phase 3 is recommended to be between the years 2003 and 2010 and the first major project is the 8,500 foot parallel

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runway; but I see this toward the end of the period, not towards the beginning of the period. It happens to be the first one listed here.
Associated with that would be additional taxi ways that would be needed here and here and also here. Now the project would widen the aircraft safety areas at the end of runway 23, runway 20, and runway 5.
Additional cargo facilities, cargo handling warehouses would be constructed at number 6. And we see additional lease lots possible down adjacent to Keolani Place and Kanaha Pond.
A VOICE: what are lease lots?
MR. SCHLAPAK: These are pieces of ground that we grade off and put in utilities such as power and water and roadway, and then a business that does work associated with the airport would lease it and build a structure there and work out of it.
Number 9 is an enlargement of main terminal parking lot.
Number 10 involves an east ramp access road connection with Hana Highway.
And number 11 rerouting the perimeter road around the land needed for safety area adjacent to the new parallel runway.
Number 12 a little bit of realigning of Kalialinui

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gulch to take storm water runoff associated with the southern end of the new parallel runway.

And then Hana Highway would need to be realigned a little bit down in this vicinity. It presently comes in like this, and this would be straightened out a little bit.

And then lastly, providing a lease lot here for a flight kitchen.

Those are all the projects that are recommended in this master plan of 1993.

Next page in your handout has to do with the environmental and developmental issues which we see as needing to be re-examined in this environmental impact statement. And I'll just go down them and elaborate a little bit.

The alien plants and animals issue involves importation of unwanted plants or animals that could do damage to agriculture or flowers or endangered species at Haleakala and so on.

We looked at that before, and we'll look at it again. We don't think they all come in by air, so other forms of transportation will probably be looked at. And we think we are doing some more work with the State Department of Agriculture that is interested in improving the program.

Noise from aircraft and noise from highway access will be looked at again.

Impacts on wetlands and wildlife habitats,

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archeologically significant areas and endangered species.

Impacts on Maui's infrastructure in terms of the strain that it would put on the electric power system, water, sewage, road system, fire fighting, and medical capabilities. And if there are more pieces of the infrastructure we need to look at, please tell us.

International flight operations and weather. We need a Federal inspection service contingent of customs, immigration, public health, and federal agriculture. Loss of agricultural land, social impacts, particularly the cause and effect discussion of whether the airport causes growth or growth pushes the airport and associated secondary social impacts.

The alternatives that we see to all the proposed projects that have been listed in past environmental efforts and in this one are the first. The several different possible lengths of runway 2-20 either maintaining present 7,000 feet going to 8,500 or 9,600 or 10,500. And I'm told way back when there was a 12,000 foot version that was proposed, but of course that's not possible with Hana Highway where it is. So those would be looked at again.

Secondly, whether a parallel runway is necessary or evaluated as an alternative to an extension of runway 2-20.

And lastly, relocating general aviation to some place else on Maui and/or the helicopters somewhere else on

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Maui. That's a separate study as a subcontract of this particular effort. We have a meeting on that tomorrow night at the Sandalwood to introduce the study team and kick it off. We'll look at other airports on Maui and other places where airports were proposed in the past, of course, including Puunene.

Dave mentioned that we are also doing a part 150 noise study as a part of this environmental impact statement. It's an update.

I would like to stress again that our master plan is a guide. It's not a fixed blueprint. It will probably change over time. And as the forecasts change, we need your feedback. We have a lot of talent assembled here. I hope you will ask them questions. Thank you.

MR. WELHOUSE: Now what we have done, according to the agenda, is we moved on to 5 at the conclusion, which means at the conclusion of the presentations, we'll move into the testimony and information tables.

One of the things is we'll take a short break. But first, what I want to do is explain there are three ways we can get information from you.

One was the blue sheets that explain -- fill it out, mail it to me. And the next was we do have the cour reporters in the back. Third was to come up, after we take a short break, is to give it to us here at the front table. And

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one of the things I forgot to do before was to introduce our facilitator Sue Kang who will lead that part of it. And it's so we don't get into a lot of cross discussion. I would like to bring Sue up now and kind of turn the meeting over to her. She can explain how that will be run.

MS. KANG: Thank you. I'm Sue Kang with Mediation Services, and I'll be assisted by Bonnie Newman. It's our task to facilitate the meetings. So I would like to again remind you of our purpose tonight and know that it's just the beginning of a long process.

So tonight our goal is for you to help identify the full range of issues for the environmental impact statement, and those are the three categories to look at. And we're not here necessarily to take a vote or to influence but to surface information.

So part of our job will be to minimize repetition as much as possible.

Now, if you have a topic that's been mentioned before, and you slant to that, we welcome you to come forward. And as has been pointed out, the three ways to get information to these gentlemen are the written testimony, and that will be due June 17, the oral testimony in the back, and then the oral testimony at the mike.

And I will be timing that for you to prove to you that we have a timer. Our reporter has asked if you can speak

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from the microphone. So we'll be limiting those comments to three minutes.

And when we take the break, there will be three sign-up sheets up here, and I'll take the first person from each sheet, the second one from each sheet, and we'll go down until everybody has had a chance for their three minutes. And if you have more to say, you are welcome to come back to the podium after everyone has had an initial opportunity to speak.

And as I call you forward, I will be calling two names: the one who will be speaking at the mike and the other sitting here ready to come forward. I am a real time master, and that's my job, and that's what I'll be doing tonight. And Bonnie will be keeping you on task.

So in answer to where do you have your questions answered. During this break, there are -- each of the consultants and experts back at their tables, and the tables are identified. So if you have specific questions, go back during these 15 minutes and get them answered. You can start doing testimony to the court reporters.

And if there are groups of people here to convey a particular message, you might go ahead and take this time to come together to decide who might be 1, 2, 3 of your spokespeople, and we'll be sure that they have an opportunity to speak.

We would like to hear from everyone before it's

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over, but we want to do it in a timely manner.

So are there any questions before I let you go for 15 minutes?

A VOICE: when you ask a question of these so-called experts and you get an inadequate answer, where are we?

MS. KANG: This is just the beginning. There's no decisions that have been made. And hopefully by posing that question and having it on record in any of these forums will allow them the time for them to really look at it in depth.

I'll reconvene you at 10 after 8, and the sign-up sheets are up here for the oral testimony at the mike.

MS. NEWMAN: This is a chance to surface your concerns. It's not a debate. This is not a court of law. No one is going to make a decision or rule on whether it's right or wrong or should be one way or the other. It's just to flush out information and in particular your concerns.

We're going to keep to time. Sue here has her handy dandy one-minute sign. You have one minute left, and then she has her sign please stop. And then we'll have the guy with the cane that gets you off the stage come down from the ceiling or something. We don't know how that will be, but we'll ask that you do restrict yourself to three minutes.

And then if you have more to say and you feel that that was not adequate, there will be time after everyone, who has signed up, has spoken to speak again. But it's not for

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rebuttal. If someone has said something you don't particularly like, it's not for you to rebut. It's to put out your own concerns.

Any questions about procedure before we begin? Let's begin.

MS. KANG: First will be Mr. Brian Miskae. Greg Westcott will be waiting here in the corner. We'll move it along that much faster.

MR. MISKAE: My name is Brian Miskae, and I'm Director of Planning for the County of Maui. I will be following up my testimony today with written comments, but I wanted to make a few points in this allotted three minutes.

As this scoping session is by its nature preliminary, the county reserves the right to make further testimony as the process continues.

Our first point is to support immediate construction of the new airport entrance road. This road was promised to the county over five years ago. Airport traffic has impacted the county road system in the vicinity of the airport to the extent that the development on lands abutting the airport may have to wait pending construction of the proposed entrance road. Again, it is imperative this facility be given top priority.

Our second point deals with the 20 year plan to construct a parallel runway to 2-20. The need for such a

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facility is created by impacts on the capacity of the existing runway facilities. It has been pointed out that the 1993 air traffic movements decreased by some four percent. I think you will find that data you used in the original creation of the master plan, including your methods of funding, may now be quite flawed.

In other words, the need for the parallel runway does not need to be in your 20 year plan.

Additionally, by removing general aviation and helicopters, and thus traffic created by these generators, capacity of existing runways will be extended far into the future.

Our third point is one relating to the importation of alien species. As I testified at the Land Use Commission hearings, we seemed to be keenly interested in what leaves here by subjecting everyone and everything to inspection. Why is it that the reverse cannot be true? A little inconvenience maybe, but at least we can be sure that inbound passengers are not carrying plant or animal species that would be harmful to our environment. As to inbound aircraft inspection, I am sure with the application of a little creativity we could insure the aircraft itself was clean.

Our fourth point deals with night flights. The commercial passenger aircraft utilizing Kahului 22:00 to 07:00 are generally large body and are equipped with the new

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generation engines. Noise generation seems to come from older 737-200 cargo aircraft operated by Aloha Airlines. I see no reason why Aloha cannot schedule its quieter 737-300 and 400 cargo aircraft to serve Kahului during these hours.

Our final point at this time is to firmly support the lengthening of runway 2-20 from 7,000 to 9,600 feet. The Maui County Council has removed language from its general plan that previously impeded this project. The community plan covering this area supports the runway extension. The recently completed community plan revision process involving a good cross section of citizens resident in the area also supported this project. Airports do not in of themselves create growth. They are only one of the tools. The county is responsible for how these tools are used. We need all the tools.

Thank you for this opportunity.

MS. KANG: After Greg Westcott will be Bill Smith.

MR. WESCOTT: My name is Greg Westcott. I'm a farmer and I live in Haiku, and I've been involved in this process for quite awhile.

I would like to give a brief history of this that I've seen. The reason the Department of Transportation is here involved in this environmental impact statement process, is that they were forced to be here by court judgment.

They were forced to prepare their first EIS because of court judgment. They did 24 major acts of development on

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the airport without getting any -- doing any kind of environmental assessment or EIS. so they are here because they have to be here.

To recommend by way of -- what I would like to see in this EIS is I would like to go over a few of the findings in the previous EIS that the State prepared.

Fundamentally, the EIS prepared by the State DOT was a non-EIS. Basically there are no impacts. No major impacts: environmentally, socially, economically.

The natural environment -- in terms of the natural environment, they examined only the impacts of the airport property.

Impacts from this development in their estimation did not extend beyond the airport environment. They said there was no impact on Kanaha Pond wildlife refuge, even though there are all kinds of development, including according to Mr. Schlapak, a giant fuel storage area that will be built next to the pond.

This is one of the only homes of the rare Hawaiian stilt, and it's already surrounded by industrial activity. And this would only accentuate it. And to say it will have no impact is absurd.

The department of -- in their EIS, the DOT said that approximately 75 percent of new alien species come by way of air.

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I'm particularly concerned because I deal with this problem on a daily basis on my farm.

I've got all kind of problems new ones showing up every year.

The current situation is untenable. This new improvement would only exacerbate the situation. We need to examine how this problem will be solved or be dealt with if this development is undertaken. And Kahului airport is extremely sensitive. It is much more sensitive to introduce species that is in Honolulu airport which is a paved over leeward side of the island where a pest can be detected and destroyed much easier than our windward agricultural side of the island where Kahului airport is situated.

We have the impacts on our native flower and fauna that were not dealt with at all.

The brown tree snake is one example of the problems that are facing us, and the State's attempt to deal with the problem have been entirely inadequate. And my time is up. Thank you.

MS. KANG: After Bill Smith will be Len Cowper.

MR. SMITH: My name is Bill Smith. I would like to second what Brian said. I was surprised to see him, in fact. Thank you for saying it.

The change in the circumstances, from the time that the first EIS was started, betrays the premises of the first

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EIS that a second parallel runway is needed.

In fact, I agree with Brian completely that the capacity of the runway that exists to accommodate travel activity will be extended far into the future by the statistics that are actual in terms of arriving number of visitors. As opposed to the statistics that were predicted as justification to accommodating travel activity.

I think it's important because that was the purpose of the airport master plan, according to its term, was to accommodate increased travel activity.

However, I would like to take exception to Brian's, I think it was his fourth point. I agree with your second point that the parallel runway is not needed.

I think the same facts compel the conclusion that the 9,600 foot runway is not needed, if, in fact, as the master plan said, the purpose is to accommodate travel activity.

If you take the statistics that were projected to justify the need by 2010 for the 9,600 foot runway, the same reason, in terms of travel activity, apply. The existing runway, its ability to serve travel activity, has extended far into the future beyond the year 2010.

And so I think what's happened is that the reason -- the purpose for supporting the 9,600 foot runway has by political process become different from the purpose that was stated in the master plan. It's not to accommodate increased

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travel activity. It's to increase travel activity. In other words, as Brian said, the airport doesn't cause increased tourism, but gives us the facility, so that we can use it to facilitate increased tourism.

If that's the purpose, and I think it is, then I think it's disingenuous to say the purpose is something else. And being a citizen of the state that's paying the taxes to provide the money to pay the consultants to do the report, I would feel comfortable if my money was spent for a purpose that's genuine.

So I think the airport EIS should begin from the premise that has been denied repeatly in the past and disclaimed in number of times by DOT, but apparently by no one else, that the purpose of the 9,600 foot runway is to increase tourism on Maui.

And if that's the intent, if the intent is to increase the -- to strengthen the tourist industry on Maui, whether you like it or not, if that's the intent, then the EIS should address the intent and address the results of the intent.

As a technicality, I think the EIS should address the safety question. Safety has been argued in terms of landing an aircraft on the 9,600 foot runway as opposed to the existing runway. I'm not an expert. I don't know this, but my understanding is that the stack at the Puunene mill makes only

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the existing amount of pavement available for landing.

In other words, the Puunene mill stack would have to be removed in order for the landing pattern to use the additional 2,600 feet. If that's true, I hope the safety issue is also addressed.

Where is the guy with the hook? She's telling me to get out of here. Thank you.

MS. KANG: Len Cowper followed by Jeffrey Parker.

MR. COWPER: my name is Len Cowper together with my wife Wendy. We own and operate American Pacific Air. I'm an active pilot and have been since I was a pilot in World War II. I fly every day -- pretty much every day. I flew four hours today. We own the operation here. We're the largest land aircraft fixed operated in the state. We have 12 aircrafts.

Our purpose here is to train local people to fly, rent aircrafts to local people, rent aircrafts to tourists who want to fly, and we do tours around Maui.

Under the chapter of the FAA, they say they will promote and foster the growth of aviation. They also say that on a federally funded airport, such as Maui such as Kahului, every aircraft operator will have equal access to the airport. Meaning, that whether it's United Airlines, whether it's a 747, or Cessna 150, we should have equal access to the airport.

In the eyes of an air traffic controller, a

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movement, aircraft movements, whether it's a Cessna 150 or 747, is still a movement by virtue of the fact that only one aircraft can occupy the runway at any one time.

We have -- today we did five hours of training and in touch and go landing, teaching people to fly, we average eight landings and tackoffs in an hour, so that's 48 landings and takeoffs we did today, which far exceeds -- which brings it up to the level of Hawaiian or Aloha or beyond that.

Three times within the last 60 days we have been told by the air traffic controllers that we had to vacate the runway because they could not handle the volume of traffic.

That was illegal because in a federally funded airport every operator has equal access, whether we be an air carrier operation or touch and go landing.

The bottom line is this aircraft is reaching saturation now. And as an air traffic controller told me last week, on one hour alone, just with helicopters, they had 153 movements of helicopters in one hour. That's better than two a minute.

And that also means that -- the law says that 50 percent of the activity of the airport is helicopters. In our own operation -- the point being that when the time comes when we are told we have to vacate the runway, that is illegal.

I'm personally prepared to file an injunction until we have an alternative place to do our training. There's no

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other place. It's an uncontrolled air field. It's no place for a student pilot to do training. Thank you.

MS. KANG: Jeffrey Parker then Mark Hodges.

MR. PARKER: My name is Jeffrey Parker. Thank you for the opportunity to give you my input regarding the proposed EIS. I have five pages written. I did not know I had do to it in three minutes. I will try to thumb through it.

I'm the owner/operator of the Tropical Orchid Farm in Haiku. My company has a distinction of being the largest exporter of live orchid plants. As such, we are concerned about several aspects.

Personally, the previously prepared State EIS has been questioned and condemned by many members of the community. In my opinion, the biggest reason for this condemnation is the disingenuous way that the State DOT sought to avoid scrutiny of international arrivals in its EIS.

Initially, the State, as well as supporters of the expansion, admitted publicly one of the purposes of the expansion was to encourage international flights.

As DOT officials became aware of public opposition to direct international arrivals, they simply changed their position to, quote, we have no plans to internationalize Kahului airport.

As we all now know, the DOT was fully aware that the only obstacles to the international arrivals would be the short

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runway length at the Kahului airport.
I'll skip down to the point which is treating the expansion as a potential international arrival facility would also restore some of the public's confidence in the EIS process.
My farm -- one of our biggest concerns is the introduction of new alien pest species.
In the last five years we had to do with battle with several new pests including a new slug which can do incredible damage to our plants in a single night.
I will skip all that. I'm not going to tell you about the thrips and the orbatid mites and the bulbuls. All the things that we're doing battle with.
These are serious problems facing us. You can see that our concern is that soon us farmers may be spending so much of our time and resources fighting new arrivals, that we will not have time or money left to take care of the other aspects of our businesses.
Many supporters of the airport expansion, as well the old EIS itself, seem to take the position that, quote, if the pests reach Oahu via international arrival, then it is only a matter of time before that pest reaches Maui anyway. Therefore, we should not be concerned about internationalizing Kahului, on quote.
This was refuted in sworn testimony by Haleakala

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National Park biologist Art Medeiros, as well as many others.
Okay, I'm running out of time. I want to talk about the brown tree snake. You know how terrible it is. I can't tell you about the 500 eggs that it carries up to five years that are fertile. But with that serious threat to our economy and quality of life, our state legislature could bring itself to appropriate only $100,000 to combat the threat of this introduction.
Later, when hard times hit our economy, the $100,000 is cut down to $60,000. I find it ridiculous that our representatives would see fit to come up with only 60,000 for such a serious problem when recently Governor Waihee spent 80,000 on five-day junket to Japan.
Something is seriously wrong with our priorities with the State.
I will skip to the very end. I have some points which I -- Ben, in order to get the airport expansion underway and to avoid more litigation in the courts, the Federal EIS must do the following:
Number one, stop pretending that the expansion is not intended to internationalize Kahului airport, so that a real review of likely impacts can take place.
Number two, include input from representatives of Maui's scientific community especially Haleakala park biologists and officials.

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Number three, provide for funding of the mitigation measures before the EIS can be accepted.
Number four, provide for new and reinvigorated quarantine program, drawing on expertise of Maui's scientists and those of us in the plant and animal industries.
Thank you very much.
MS. KANG: Mark Hodges followed Bruce Fernandez.
MR. HODGES: My name is Mark Hodges. I'm a wildlife biologist, I specialize in population ecology and population genetics. My research focuses on the Hawaiian stream life, native Hawaiian stream life in Hawaii.
I've worked for the National Marine Fishery Service, The Nature Conservancy of Hawaii, and the National Park Services and the Research Corporation of the University of Hawaii as a professional biologist.
I cannot emphasize too much how important the threat of alien species are to the persistence of native communities of Hawaii. The primary threat, aside from man, to the persistence of these communities are alien species, as has been pointed out by a number of experts in the field as well as the state environmental impact process, that aircrafts are the source of 75 percent of our alien pests and alien species introduction to establishments in Hawaii.
Basically, if we internationalize the airport, we increase traffic volume, we'll see the increase in the number

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of types of species arriving here in Maui county and farmers before me have spoken about the impacts of species on agriculture.
I will stick to my relm of expertise, and that is the impact of these species on native communities. We will have tremendous impact and certainly a great bulk of research and control efforts, which are done now or funding that's spent in the field by the various natural resource agencies, is spent to control and to learn how to control alien species.
I'm personally curious as to when the air carriers and the Department of Transportation and the FAA become liable for our cost to research and control alien species on public lands.
I know they are liable for the cost to agriculture, private agriculture interest for their damage to crops, and the other opportunity costs that are caused by these alien species.
So an interesting question to raise, I think, might be included there the public cost of litigation directed against the FAA and the DOT resulting from increased alien species -- I have 49 seconds.
I know its impact on native communities, but we need to look at the administrative and financial cost of litigation directed by possibly private agricultural interests and other natural resource management institutions. Thank you.

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MS. KANG: After Bruce Fernandez will be James Russ.

MR. FERNANDEZ: My name is Bruce Fernandez, and I have a few new ideas for the State.

First of all, I think we should confirm the figures that we have heard recently on the projection of growth and how an extra 50,000 population growth -- why do we need an international airport to support that.

We already have millions of tourists coming to Hawaii. The nation right now is in a recession, but we're pulling out of it. We do know the boom times are ahead because we're going to spend a lot of money on this airport.

I feel that not only there's an environmental concern, there's also the -- you know, the wildlife refuge. I can't understand why we're building an airport when we have a wildlife refuge there. We have a sewage treatment plant there, and that's another bizzare thing about what's going on here.

I feel that the state and the federal government right now are in cahoots with the County and some major contractors like HC&S and Hawaii Cement -- that's the only people that will benefit from this deal. It's a land deal, and it's big money, and it's going to affect everybody if it happens.

We have an airport that's sufficient enough. You look down here -- I've never been here, but this is a long

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addition that was just recently completed, and I don't see it crowded here.

So is the economy going to boom? Are they going to make more planes? We don't know. Why are we going to sacrifice our tax dollars to disrupt the lifestyle that generations and generations enjoyed which is primarily access to Kanaha Beach, which recently has been shut down by, I don't know, the airport, I guess, or the county.

People were fishing for years at Kanaha Beach, going there enjoying the local aina, going on the beach, packing your fishing rod, going fishing, going surfing, doing whatever, enjoying it. Right now that's been closed.

I suspected it was going to be closed down because of an airport. It will come up again, and of course, it came up again. That's why I'm here.

What bothers me the most is that this is a hypocritical stance by the County, because they allow people to drive on the beach whether it's mud flats, Oluwalu, Spreckelsville, Camp One, you name it. We're still on the beach.

Is that going to go next because of this precedence? We have to look into -- redirect our money into nursing, home care, affordable housing, other projects like sewage treatment system plants. We're developing hotels. Great. But right now, we have 85 percent capacity peak time.

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How long is that going to last? Is it going to grow? We got hotels. Let's make houses. Let's put money to senior citizen care. Let's get creative with our government and stop thinking about money.

Someone once said power corrupts -- absolute power corrupts. Absolutely. We must act locally together to petition the federal government our local county to give us back our beaches, our lifestyle, and our destiny.

For too long people have been trampled over by the interest of development, need, and greed. Our reefs are dying, our wildlife is stressed out, and the aina is crying for justice.

There's nothing wrong with development which helps create jobs which improves our lifestyle, which we need. However, development that is unrestricted and harmful to our current lifestyle, we have a problem.

I propose we lobby our government, our state and federal government create a master plan to improve our schools, save our reef, develop alternate energy resources like solar wind power -- Oh, somebody got sued before so they stopped that. Yeah, right.

Thank you.

MS. KANG: James Rust.

MR. RUST: Good evening, my name is Jimmy Rust. I'm the chairman of the Pueo Coalition. I just need to clear up a

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few statements that were made this morning and this evening about meetings with the FAA and the DOT with the coalition. The meetings were held because we asked for the meetings to be held.

I imagine that any other organization out there wanted to meet with them, I believe they would meet with you. It was nothing secret about the meetings. The Pueo Coalition asked to have the meeting to get an update what was going on, and we were given the meeting.

And again, like I said, I imagine if any other organization out there would want to meet with them, they would.

Thank you.

MR. KOKUS: Good evening, I'm Charles Kokus, and I wanted to address the aspect of the airport and the visitor industry.

Since the beginning of the year, the visitor industry has logged a significant recovery with respect to the percentage of hotel rooms that have been occupied. This recovery is extensive enough so that it matches the peak recorded periods in the visitor industry on the island of Maui.

Occupancies have been at between 83 to 93 percent since the beginning of the year. Some of the hotels have actually expressed concern in print media that because their

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occupancy rates have been around 95 percent that they have had trouble maintaining their operations.

So, although Mr. Schlapak was kind enough to provide us with some statistics from 1993, and I believe they are in comparison to the previous year '92, where we have had some fall-off in cargo, and we have seen some genuine concern from the visitor industry about having to have laid off people over the previous three years. We see a very significant and a very quantifiable improvement in the visitor industry.

Now this has all been done with the airport that we have intact. This has all been done with the facilities that we have intact without using this extra facility in which we are sitting right now.

There have been may offhanded comments and testimony about the wasted effort and tax dollars that have gone into the facilities here at the airport. In that line of reasoning, I would suggest that I, too, concur with most of Mr. Miskae's testimony. However, I would take exception to the idea that the county needs to lengthen the runway.

Certainly there are aspects of the airport that can be enhanced, and Maui will always be a quality, if not the highest quality, destination on the face of the planet. This is really important to remember.

People don't come here to experience something that they can experience in Cancun or Florida. They come here to

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experience the last garden spot accessible, safe, civil, on the face of the planet. They don't come here because we have more. They come here because we have less and because it is cultivated in a neat and orderly fashion. It is civil, and it is safe for their families, and it is an enriching experience.

Do a survey on the westbound customers, at least one thousand samples that are acceptable. Do a survey on the opposite direction customers, at least one thousand samples that are acceptable. And you will find that people do not want to be received by more concrete and asphalt. They want the greenery, the lushness, the aloha that has defined Maui as the epitome of a garden aisle on this garden planet. Thank you.

MS. NEWMAN: Thank you, everybody.

Is there anyone who has given testimony that needs a minute or two or three more for something new to be added, or anyone who has not spoken that would like to add something?

A VOICE: I don't want to testify. I want to be sure your list of things you are evaluating that you include an analysis of --

THE COURT REPORTER: I can't hear you.

MS. KRAFTSOW: My name is Ellen Kraftsow. I just wanted to mention -- I did not see it on any of these lists, but make sure that your analysis include a look at solid waste disposal impacts, if you are still considering an incinerator for this facility and also an analysis of both criteria and

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non-criteria air quality contaminants that could be be emitted and secondary impacts from airport associated operations, air toxins, secondary impacts. That's all.

MR. PARKER: If you would indulge me for a few more minutes. I would like to elaborate on a couple of points that we were talking about.

MS. KANG: Please identify yourself again.

MR. PARKER: Jeffrey Parker again. There was that thing about supporters of the expansion who believe that if the pests reach Oahu via international arrivals, and it's only a matter of time before that pest reaches Maui anyway; therefore, we should not be concerned about it.

Haleakala Park biologist Art Medeiros refuted that in his sworn testimony. He gave many examples of cases where a particular new introduction was identified on Oahu first which gave DOA scientists time to develop bio-controls or eliminate the problem through other methods before the pests could make its way to Maui or other outer islands.

He pointed out that Oahu's urban environment surrounding the airport makes it far easier to spot and isolate these new pests than if they were being introduced to the relatively rural environment of Maui and particularly to the cane field surrounding Kahului airport.

For example, a brown tree stake falling out of the

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landing gear on the approach to you Kahului would have a greater chance of going undetected than a tree snake falling over urban Oahu.

In fact, nests of these horrible snakes have been found on military bases near Honolulu airport.

That brings me to the tree snake issue. The fact they're coming in from Guam are shocking. The number of brown tree snakes per square mile have reached 20,000 snakes. The native bird population has been almost completely decimated, people do not go out walking through the brush at night, damage to Guam's electrical system due to shorts caused by snakes have been estimated to go as high as $120,000,000 a year.

The species are particularly threatening because of its breeding and life cycle. One female snake can carry hundreds of fertile eggs. The eggs remain fertile for up to five years. So it is not necessary to introduce both a male and female. One fertilized female is enough to start an epidemic.

Recently, according to a press release by Tish Uehara from the government and federal government Department of Agriculture, a live brown tree snake was discovered in a crate that had been shipped from Guam to Texas. The crate had been in strage in Texas for over a year indicating that this species is capable of living without food or water for very long periods of time.

Then I brought up that thing about funding and our

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priorities with funding. Historically, our state government -- one minute left or one minute down? Our state government has been reluctant to appropriate funds for things like pest interdiction.

In the previous EIS, for example, the mitigation measures given to deal with alien species problem were suggestions like, quote, providing additional resource staff or providing additional inspectors for increased inspection coverage, and then the questionable measure number 5, which was various procedures, public awareness efforts, and a stricter enforcement program.

No where in the document does it specify how many additional personnel would be enough or most importantly how these positions would be funded.

In the new Federal EIS, will the mitigation measures be a wish list or should the acceptance of the document be subject to, as I believe, the funding mitigation measure already being appropriated.

Could I go a second longer on the quarantine thing? I think that's an important issue.

Another problem in controlling introduced alien species centers on the State's failure to construct and operate adequate quarantine facilities.

Small diversified agriculture has been denoted by the State itself as, quote, the fastest growing sector of the

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economy, on quote. It is absolutely crucial to any new or existing ag venture to be abe to import new breeding stock. This holds true for the ornamental nursery industry as well as for food-producing farms. The quarantine facility on Maui has almost ceased to exist. It is in a state of disrepair and persons wishing to import new material are practically discouraged from doing so, by the lack of quarantine space as well as the poorly designed building itself. Temperatures can sore above the 95 degree mark. Most of the time resulting in the death or injury to valuable breeding stock.

Until recently, it was impossible to reserve a quarantine room because unscrupulous growers were allowed to reserve rooms on a continual basis, just in case they wanted to import something. If they had nothing to import at that time, they would simply give the reservation to one of their friends.

If you can bear with me another second. The system we have now of threatening people with fines, if they are caught importing a plant or animal, only encourage people to break the law.

What we really need is a large, quote, world class quarantine station which makes it easy for people to import plants and animals. This way plants and animals can be scrutinized by the Department of Agriculture official for possible dangerous pests s rather than having people think of

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ways to smuggle the creatures in.

For example, I would like to see a quarantine program capable of handling the following scenario. An unknowledgeable passenger boards a plane in Los Angeles or Nagoya with a restricted plant in his luggage. When the plane arrives on Maui, instead of scaring people with the threat of fines, et cetera, the Department of Agriculture representatives offer the passengers an easy affordable quarantine for any restricted item they may be carrying.

In this way, people are encouraged to work with inspectors, instead of encouraging them to smuggle the items. Yes, this would cost money, but I'm convinced that a course of action would enable us to begin to get a handle on the alien introductions problem, rather than the inadequate approach currently being used.

Thank you very much.

MS. NEWMAN: You want to add something.

THE COURT REPORTER: Please state your name again.

MR. FERNANDEZ: Bruce Fernandez. Solar power and how a lot of this -- you can look -- let's go off that. Excuse me for a minute.

You look at the back board. There's a list of all the problems. What it comes down to is basic politics and money. It's a power game that's going on right now in the County with the corporations. I'm not against the County, I'm

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not against the corporation, but what I'm suggesting is that the County buy back Kanaha from the airport, that they let go or leave it the way it is, get some good liability insurance, so that we can protect ourselves, if liability is a problem, because that's why they closed it down in the beginning, but now they got a paved asphalt parking lot there. And they're going to give us that token asphalt bike path. Oh boy, who wants to just drive by and look at a 747 come blasting off in front of your head.

Another point. What about the residents that live in Spreckiesville? How do they feel about it? I would not want to live there with jets going over my head. What about sea turtles that go here? What about the fish? I recently heard a Pink Floyd concert sold out that it killed fish. It could happen with the jets. We don't know really.

What I'm saying is we got to act because there's an election coming up right now, and people are getting deceived. They are getting misled, and politics is just -- it's hypocritical. And they are spending money in the wrong direction. It's going into a few people's pockets for temporary jobs that a dream may not even happen. It's like a 20-year project.

I say they open up the beach now until they finish the airport. Why shut it down now? For 20 years we're not going to be able to go there again? It's ridiculous. Forget

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asphalt. Just leave it grass and dirt.
Thank you very much.
MS. NEWMAN: Any others? Would you like to speak.
MR. LANANDA: I'm Nihki Lananda. I'm representing myself, though many you of you know me as the chair of the Maui County Green Party. I apologize for coming late. Unfortunately, I was watching about a dozen of my students from Job Corps. graduate and get their GED and their high school equivalency diploma, and it touched me because that's why a lot of us come to Maui.
Those who have stayed here or born here and have stayed here is that we're here because of Maui being special. And just in the few minutes I've sat here and listened to Bruce and Mark and some of the other people talk, they said things better than I could, speaking from their heart, and about how stupid and absurd to internationalize the airport.
I have never been down to this end. It took me 15 minutes from when I arrived to wander my way around to get over here. And, you know, the airport already is overbuilt. We all know who will benefit, as the speaker before me testified. Who will benefit from the continued destruction of the aina and the overbuilding of this airport and the internationalizing of this airport.
The people who have spoken whose job it is, biologists and researchers, know the destruction that will

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happen to the land and the plants and the animals here, if we internationalize and bring foreign pests to Maui.
I really could not speak anymore passionately or any stronger to encourage those people of anything to do with stopping this insanity in internationalizing this airport.
It's already sufficient and oversufficient for many, many years. The testimony is always put forth about how those of us who want intelligent development and alternative energy sources to be developed. We need to be building airports, and we need to be building more hotel rooms. There's plenty to be done here.
I also had the privilege of serving on the mayor's task force on higher education. And we have a four-year college that will be here maybe in 10 years. The research park in Kihei. There is so much for the construction industry to be involved in roads, resurfacing, et cetera.
So to talk about internationalizing the airport and these poor people be thrown out of work is another, as somebody said, a political ploy. If anybody has anything to do with stopping this, waking up, keeping the quality of life on Maui of what it is and maintaining that, at least in the foreseeable future, I beg of you to wake up.
Thank you.
MRS. WESTCOTT: Good evening, my name is Masako Westcott. Earlier Mr. Schlapak went through fairly quickly a

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long list of projects in three phases that would be covered in the EIS. And during the break, I asked him if all of the projects covered by this EIS were listed. He admitted they were not, and I'm stunned because in simplest terms, what we are doing -- this process has do with being informed, so we can make wise decisions. We need to know in detail and completely what we are talking about here. What we are dealing about, what we're looking at.
I'm making a formal request for myself and all others who continue to be involved in this to have that complete list of all the projects which would be covered. And I hope that we can have that before the next public meeting.
Would that be possible, Mr. Schlapak?
It seems a like a very common sense request. I mean, very fundamental simple request to have all the projects listed in complete form.
I guess can you help me, Mr. Welhouse.
MR. WELHOUSE: I got a problem with you saying -- I don't understand what you mean by --.
MRS. WESTCOTT: well, in this public announcement about this meeting this evening, it says that the proposed improvements at Kahului airport include but are not limited to, and then there's a list of the items some of which were covered tonight. So that intrigued me, and I asked Mr. Schlapak, may we have a complete list of all the projects covered. He said

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what we spoke of tonight was not a complete list. I think we all need that.
MR. WELHOUSE: I understand what you mean. You are right. It would have been too lengthy to list everything.
MRS. WESTCOTT: How do we proceed? How do we inform ourselves if we don't know what we are talking about?
MS. KANG: Maybe we could address these questions after the meeting.
At this point, the purpose is to surface additional items for the impact statement.
MRS. WESTCOTT: I cannot respond to items that we don't know are being considered.
All right, so we'll leave it at that. I hope all of us who are involved in this will get a complete listing, perhaps some descriptions of the projects rather than just names.
MR. WELHOUSE: I want to talk to you.
MRS. WESTCOTT: I think people would be concerned about this. I do have some other preliminaryary comments. I understand we'll be having other public meetings where these things can be developed further.
Mr. Schlapak also said we would be -- that the EIS would be considering items such as jobs, and I think we should examine things like if this proposed airport development would increase jobs, which is what many people hope, then what kind

of jobs would be provided? Who would get them? Would people be imported for such jobs? Would they be transient people? What would the social effects of this increase be?

I'm also concerned about the -- this would be a two-way street. What would the effects of increased importation of fresh produce be?

I would also like to see us examine the effects of raising landing fees both on potential loss of state revenues because of airlines choosing to bypass Hawaii's high cost and also the ever increasing inter-island rates to pay for DOT's extravigant projects.

Thank you.

MR. THOMAS: My name is Philip Thomas. I did not come here with any intention to testify, but there are a couple of things which I would like to second in a way but another way couple things that have not been addressed.

This is really quick. The first thing is specifically Kanaha pond. That's been mentioned, but I think we need to make sure that a realistic assessment of the risks, which are associated with airport expansion, is really taken into consideration, as far as the fuel pipeline and the additional fuel storage.

In speaking with some of the consultants, I'm not completely satisfied that it's taken one hundred percent seriously about the risks. We have one chance. One small

chance to save what little is left of some of our very rare special native species. It's not you can't move them somewhere. You can't put them in a zoo, which is another interesting issue, but not related to the airport.

But you can't do it. They are either here, they are in Kanaha pond, they are in Kealia pond where four-wheelers are, and things like that, where the power diesel generating plant is. We have one chance. The sites that they still exist in, they are all in jeopardy. Let's not make this one worse.

The next thing is is a question about the intent of the expansion. One is safety. I'm not sure about -- I can't speak about airport safety because that's not my specialty. Basically, I'm a computer person and a biologist.

But a lot of the things in this, like increased fuel capacity, bringing fuel in from the harbor straight over here, what does that have to do with the safety of certainly existing people? I'm not really sure if that addresses the safety issue. I don't think it does.

And so the question -- the next question is well, what is the reason for that?

Another thing is if we do have increased population, tourists or otherwise, one question is how much expansion is good on Maui. This has been addressed a bit.

What is good? How many people do you want here? Do you want a million? No, you don't. Do you want 500,000? No.

Do you want 100,000? Who knows?

But if we do, there's other social impacts which need to be addressed, one of which is we need to make sure that we have adequate medical facilities on Maui to handle an increase in population.

Thank you.

MS. NEWMAN: Mark Hodges over here.

MR. SHEPARD: My name is Glen Shepard. We spoke in here tonight about an international airport. In fact, it already is. We get flights from Edmonton, Calgary, over the ocean in 767's.

I have information here from Boeing aircraft which indicates that the 777's, the 80-340 air bus, and the MC-111 all have the capability of flying from Chicago to Maui, Tokyo to Maui. They are coming off the line, 777's just recently delivered.

It indicates that it may be redundant to extend an aircraft runway of this nature because these aircraft are designed to fly into air fields that are in the order of magnitude of 7,000 feet, and they are located in many parts of the world.

So this is something I think they have got to address. This certainly is not a comprehensive looks, but it needs to be looked at, because it may just turn out that this is going to be another big scam perpetrated on the people of

this state for reasons which become rather ethereal, and let your imagination run wild. But certainly, they have got to look at this situation.

MR. HODGES: My name is Mark Hodges. I'm speaking for the second time. I just wanted to point out in the documents that we received as members of the public attending this hearing entitled Kahului Airport Environmental Scoping Meeting. The handout we got with the diagram of the EIS decision process and the list of alternative actions under the heading Environmental Issues and Alternatives.

I was interested to see that, although the Hawaii Environmental Policy Act and the National Environmental Policy Act requires no action to be considered in every instance, there is no alternative action on this document in either of the instances where it should be.

This seems to indicate that the FAA already is really going through the motion in a situation where there's already a foregone conclusion it has no intention of choosing a no action alternative. Although it should consider it equally among other alternatives.

For example, here on the very informative diagram explaining the EIS process where we reached the box identify selected alternative. We move immediately to develop final mitigation package instead of having some bifurcation where we would choose the no-action alternative. Very, very curious.

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And again, the environmental issues and alternatives page, we have the issues listed in the alternatives, runway aircraft, parallel runway relocation of general aviation, helicopters, but there's no action alternative which is required by both the state and federal law.

I'm not sure what the FAA's real position is, but it's a cause for concern. Let the record reflect that apparently according to the document, the FAA is not considering the no-action alternative. As a member of the public, this is my first experience with the FAA EIS process. I could see from their document that they are not going to consider the no-action alternative required by HEPA and NEPA, the state and federal law is applicable.

Thank you.

MS. NEWMAN: Has everyone had an opportunity to be heard?

MR. WELHOUSE: In conclusion -- first of all, I got to answer that part. There's a no-action alternative. We're required by NEPA to do it. Just because it's not listed does not mean we're not going to do it.

The other part is about the flow chart. You say it's not on there. During the break, I explained I would have put everything on here that the flow chart -- that we have. It would require a piece of paper about twice the size, and I just kind of hit the high points.

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When we get to the point that says identify selected alternative, if we hit the no-action alternative, there's no action, we stop there.

What I did in this place was, say, these are all the steps that we're going to take. So, but you are right. We do not list, quote on quote, no-action alternative, but it was in the notice of intent. I did not put together this list of issues and alternatives -- wherever I put it -- but you can be assured we will study the no-action alternative. It will be one of the alternatives we have to study.

A VOICE: What is your name?

MR. WELHOUSE: Dave Welhouse.

A VOICE: You are with the FAA. As a member of the public, we don't mind being inconvenienced by large pieces of paper --

MR. WELHOUSE: That's why we provide the handout so everyone could get on the same ground here.

I forgot your name, Masako.

Well, when Ben did the presentation on the master plan, it lists all the projects. We're trying to figure out what it was -- the notice of intent did not list all the projects, because in the Federal register we try to keep it down to the major projects more or less.

In Ben's presentation, the master plan, when he went through phase I, phase II, phase III, that listed all the

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projects that will be covered by the EIS.

A VOICE: Nothing additionally will be added during this process?

MR. WELHOUSE: Things may not be added? The master plan, all the stuff that's listed in the notice of intent on the master plan, that is the project to be studied by the EIS.

The State does not have to do those projects. I mean, if they don't want to fund it, they don't want to build it later on, fine. We're going to study it under the EIS.

Let me close here to say that I'm glad everybody came to get all the stuff on the table now because we want to make sure we do it right. We do have these. Send it to me, call me. My name is listed on the handout. Send me the sheets with more comments, more issues, whatever. These are preprinted mailers. They come to me. There's the deadline for extending for June 17. That's indicated in the notice of intent, which was listed in the Federal register.

If you have any other questions, I'll be around until whenever. Thank you for coming.

* * *

(The following testimony was taken after the meeting was adjourned.)

PHILIP THOMAS: I have a question about whether or not the agencies which are involved in the funding of these projects are subject to the federal and state Endangered

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Species Act. If they are, any direct or indirect impact on listed species must be taken into account. And basically my understanding is that the law is that they must get an exception permit, if any action they do will be impacted, any species will be impacted by their actions. That's basically it. Thank you.

(The meeting concluded at 9:30 p.m.)

CERTIFICATION

I, GLORIA T. TAVARES, Notary Public for the State of Hawaii, certify:

That the hearing contained herein was taken by me in machine shorthand and was thereafter produced in transcript form under my supervision; that the foregoing represents, to the best of my ability, a true and accurate transcript of the proceedings had in the foregoing matter.

I further certify that I am neither attorney for any of the parties hereto nor in any way concerned with the cause.

Dated this 30th day of May, 1994.

GLORIA T. TAVARES
COURT REPORTER
NOTARY PUBLIC, State of Hawaii
My commission expires 1/18/96

ATTENDANCE SHEET
(Please Print) Page 1 of _____

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
7:00 p.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
John Kirkpatrick	Community Resources Inc	130 Merchant St #1001 Hnl 96813	528-224
SUSAN SODERBERG	FUJADO COURT REPORTERS	250 KAIAHA ST. MAUI	573-0910
Vince Mostic	Mostic Const. Associates	Newport Beach CA	714 760-0891
WENDY COOPER	AMERICAN PACIFIC AIR. INC.	POB 1505 KAHULUI HI	871-8115
Mary Evanson	Sierra Club	PO Box 69H Makawao 96768	572-9724
Robt Tanaka	Tanaka Engineers	871 Kolu St.	242-6861
Ellen Kraftsow	Maui Recycling Group	1040 E. Kuiaha Rd Haiku	572-9336
SHIRLEY SHEPHERD	—	477 S. ALU Rd WAIL	244-T224
Masako Westcott		PO Box Q Haiku	
Richard Rice	COT (Commissioner of transportation)	56 Liholiho St, Wke	244-5298
Emmanuel Angel	Stouffer Wailea Beach	3550 Wailea Alanui	879-4900
Wayne L. Hoops	Pipkin Barnstormers	52 Lower Kula Kula	878-2860
Vida R. Yap	—	2021 W. Lehua Pl. Haiku	575-2309
Ron Dayak	CALIFORNIA	470 Northgate Ct TRACY	209 833-9310

ATTENDANCE SHEET

(Please Print) Page 2 of _____

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
7:00 p.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
Sue Kiang	Mediation Svcs.	95 Mahalani Wailuku	244-5744
BONNIE NEWMAN	" "	" "	"
Jim Dionne	OEA	605 Pi'ikoi St 8th Floor	591-8553
Ron Ahlbeck	P+D Aviation	1100 Town+Country Rd, Orange CA	(714)835-4447
Steve Allison	"	"	"
Lori Ballance	Gatzke, Hirpagel & Dillon	Carlsbad, CA 92009	(619)431-9501
BRIAN MISKAE	PLANNING DIRECTOR - MAUI COUNTY	250 S. HIGH STREET	243-7735
JEFFREY PARKER	TROPICAL ORCHID FARM	P.O. BOX H, HAIKU, HI. 96708	572-8569
PHILIP THOMAS	N/A	POBox 1272, Puunene	572-1983
PATRICIA REGAN		180 KAUPEA ST, MAKAWAO	572 7210
GLENN L. SHEPHERD		477 So. ALU RD WAILUKU	244-7224
GREG WESTCOTT	—	Box Q Haiku	572-1609
STEVE NITT	Maui AIRTRAFFIC.	PO Box T PAIA	871 8689
KAREN DAYAK		470 Northgate Ct. Tracy CA	209 833-9310

ATTENDANCE SHEET
(Please Print)

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
7:00 p.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
DAVID LEESE		2695 Li'ili HAIKU 96708	572-5198
Gene Dashiell	Planning Services	1219 Kaeaula Honolulu 1st St 96720	945.3132
ELAINE TAMAYE	EDWARD K. NODA ASSOC.	615 PIIKOI SUITE 1000	591-8833
GLORIA TAVARES	Iwado CT Reporters	2233 VINEYARD ST	244-9300
Jeannette Iwado	Iwado CT Reporters	2233 Vineyard St.	244-9300
LEN COWPER	AMERICAN PACIFIC AIR INC	P.O. Box 1505, KAHULUI	871-8115
DAN REGAN	R+R Freight Service	246 PAPA PL KAHULUI	877-7997
TERRY BROTHERS	WILBUR SMITH ASSOCIATES	1778 ALA MOANA BLVD #2902 96815	949-7334
RICK SENDER	—	20501 VENTURA BLVD.	876-0111
Shigeki Ichinose	American Pacific Air Inc	P.O. Box 1505 Kahului	871-8115
James P. Lusto	Pwco Coalition	Chamber of Commerce	879-8818
David J. Welch	Int'l Archeological Res. Inst.	949 McCully St., #5, Hono.	946-2548
Mark Hodges MARC HODGES		103 KOKOMO RD HAIKU	575-2840
CharlAnn Nakanishi	Stouffer Wailea Beach	3550 Wailea Alanui	879 4900

ATTENDANCE SHEET

(Please Print) Page 4 of _____

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
7:00 p.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
Gregg Nelson	Stouffer Wailea Beach	3550 Wailea Alanui Dr.	879-4900
Richard DeCoite	DeCoite Trucking	387 Kahekili st.	871-7481
W. D. Smith		PO Box 927 Wailuku 96793	828-6776
Charles Rose			
Charles Rose		564 Piilani Rd	572-2365
M. Stephens		680 Ala Moana Blvd	521-5361
Charles Kokes	P.O. Box 1413, Paia	Self	579-9119
Terry L Vencl	Maui Hotel Assoc.	1325 L. Main	244-8628
Brian Perry	Maui News	100 Mahalani St	242-3480
Lesley Ann Bruce Maalaea Community Assn.		RR BOX 388 Wailuku HI 96793	

ATTENDANCE SHEET

(Please Print) Page 5 of _____

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
7:00 p.m.

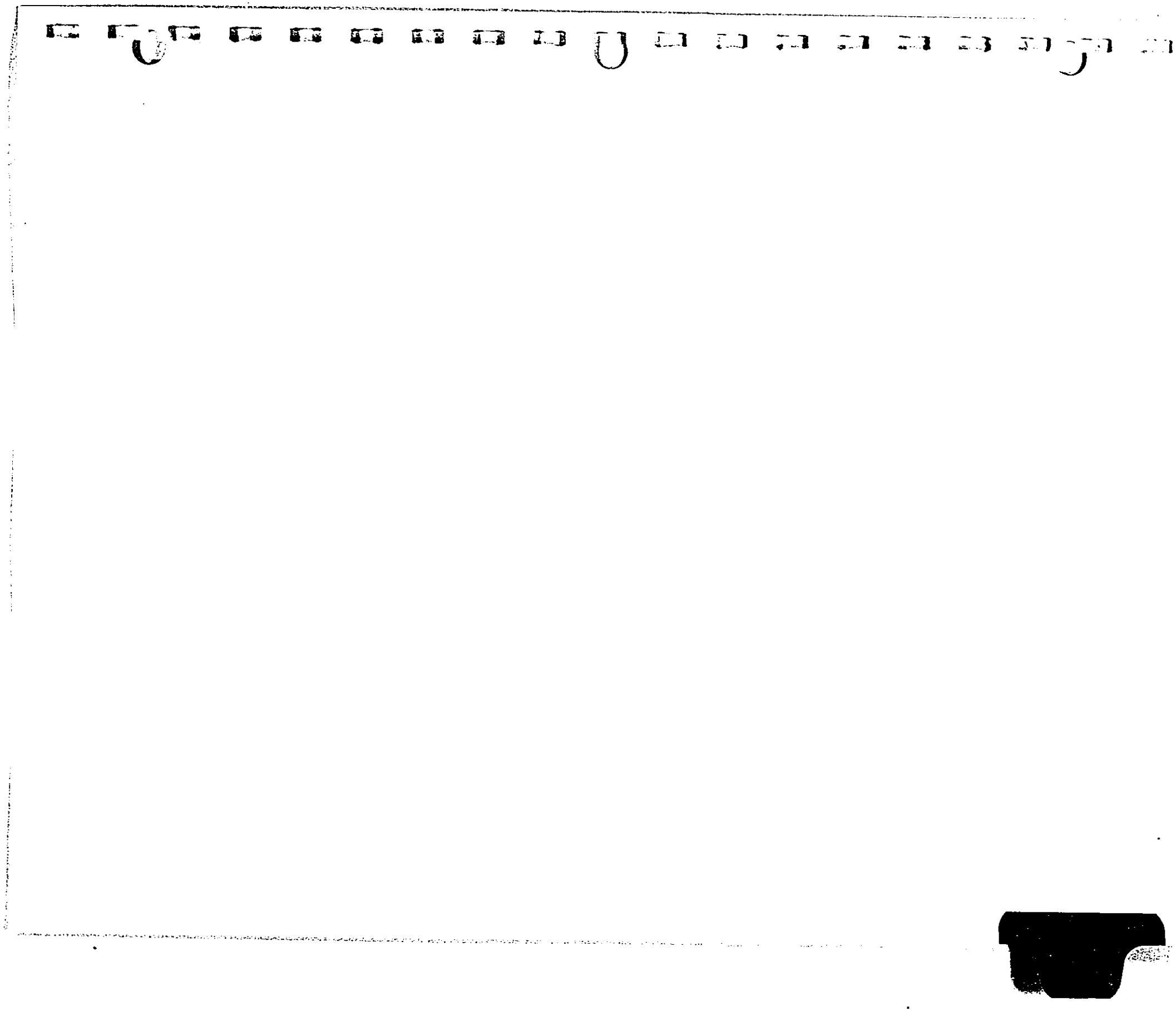
NAME	ORGANIZATION	ADDRESS	PHONE NO.
ROGER ABANA	MAUI TRUCKING, INC	P.O. BOX 1170 WAILUKU, HI 96793	244-9305

ATTENDANCE SHEET
(Please Print)

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT
SCOPING MEETING

Wednesday, May 18, 1994
7:00 p.m.

NAME	ORGANIZATION	ADDRESS	PHONE NO.
ORLANDO TAGUCDA	—	255 MIKOHU LP. KAHULUI	244-9567
BRUCE FERNANDES		514 KAINALU	242-7984
NIKHILANANDA	MAUI COUNTY GREEN PARTY	P.O. Box 1704 MAKAWAO	572-8287
CHARLENE CUARESMA	PVT. INDIV., DBA A WORK OF HEART	3432B KALIHI ST.	847-6001



APPENDIX B

LEGAL DOCUMENTS

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Sierra Club Legal Defense Fund, Inc.
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Honolulu, HI 96813
Telephone: (808) 599-2436

ISAAC HALL 2238
2087 Wells Street
Wailuku, HI 96793
Telephone: (808) 244-9017

Attorneys for Plaintiffs

IN THE CIRCUIT COURT OF THE SECOND CIRCUIT

STATE OF HAWAII

SIERRA CLUB, et al., Plaintiffs, vs. JOHN WAIHEE, et al., Defendants.	Civil No. 92-0698(1) (Declaratory Relief) ORDERS ON (1) PLAINTIFFS' RENEWED MOTION TO ENFORCE COURT ORDER; (2) THE DOT DEFENDANTS' MOTION FOR DETERMINATION THAT PROCEEDING IS AN ADMINISTRATIVE APPEAL; (3) PLAINTIFF'S MOTION FOR EXPEDITED TRIAL AND (4) PLAINTIFFS' MOTION FOR PARTIAL SUMMARY JUDGMENT ON COUNT III Hearing Date: 3/19/93 Time: 8:30 a.m. Judge: E. John McConnell

ORDERS ON (1) PLAINTIFFS' RENEWED MOTION TO ENFORCE COURT ORDER; (2) THE DOT DEFENDANTS' MOTION FOR DETERMINATION THAT PROCEEDING IS AN ADMINISTRATIVE APPEAL; (3) PLAINTIFFS' MOTION FOR EXPEDITED TRIAL AND (4) PLAINTIFFS' MOTION FOR PARTIAL SUMMARY JUDGMENT ON COUNT III

Plaintiffs' Renewed Motion to Enforce Court Order; the Department of Transportation ("DOT") Defendants' Motion for Determination that Proceeding is an Administrative Appeal; Plaintiffs' Motion for Expedited Trial and Plaintiffs' Motion for Partial Summary Judgment on Count III all came on for hearing at 8:30 a.m. on Friday, March 19, 1993 in the Second Circuit Court before the Honorable E. John McConnell. Plaintiffs were represented by Paul P. Spaulding, III, Esq. of the Sierra Club Legal Defense Fund, Inc. and Isaac Hall, Esq. Defendants Waihee, the Department of Transportation and Rex D. Johnson were represented by Deputy Attorney General Lane T. Ishida, Esq. The State Land Use Commission Defendants were represented by Marvyn M. Kotake, Esq. Based upon the arguments of counsel, the record and file to date, and good cause appearing,

IT IS HEREBY ORDERED, ADJUDGED AND DECREED as follows:

A: Order Granting Plaintiff's Renewed Motion to Enforce Court Order

1. The Department of Transportation ("DOT" Defendants, through their approval of the Stipulated Court Order ("SCO") entered on March 12, 1991 in Sierra Club et al. v. DOT et al., Civ. No. 89-0336(1), were required to prepare an Environmental Impact Statement ("EIS") in compliance with the terms and conditions contained in that Stipulated Court Order.

2. Among the terms and conditions contained in that Stipulated Court Order which are relevant to this Motion are the terms and conditions that:

(a) The DOT Defendants shall prepare an EIS, in accordance with the procedural, format and content requirements set forth in H.R.S. section 343, the Hawaii Environmental Policy Act ("HEPA"), and 42 U.S.C. sections 4321 et seq., the National Environmental Policy Act ("NEPA"), including the rules and regulations thereunder, (SCO, Par. 1);

(b) The DOT Defendants shall investigate, in the EIS ... the feasibility of reactivating the Puunene Airport on a permanent basis for general aviation, as a reliever airport and for night cargo operations (SCO, Par. 7);

(c) The DOT Defendants shall investigate in the EIS a recreational area/beach park on airport lands adjoining the County Kanaha Beach Park (SCO, Par. 9); and

(d) The DOT Defendants shall investigate in the EIS realigning, widening and improving Alahao Street and extending it northeast to Hana Highway as a road which shall be open for public use providing through traffic along the coastal side of the Kahului Airport (SCO, Par. 8).

3. The DOT Defendants published a Final State EIS in July 1992 which was accepted by Defendant Waihee on August 5, 1992. It is this Final State EIS which is the subject of this litigation.

4. This Final State EIS prepared by the DOT Defendants and accepted by Defendant Waihee contravenes the terms of the SCO because it is not a single EIS prepared pursuant to the procedural, format and content requirements of HEPA and NEPA, and because the discussion in this Final State EIS of the matters set forth in Paragraph A.2 above is insufficient. Accordingly, the Court hereby declares this Final State EIS does not comply with, and thereby violates, the terms and conditions listed in paragraph A.2. above; accordingly, to this extent, Plaintiff's renewed motion to enforce Court Order is hereby granted.

B. Order Denying the DOT Defendants' Motions for Determination that Proceeding is an Administrative Appeal, Plaintiffs' Motion for Expedited Trial and Plaintiffs' Motion for Partial Summary Judgment on Count III

1. The Court finds that this proceeding is not an administrative appeal from a decision after a contested case hearing held pursuant to Chapter 91 of the Hawaii Revised Statutes. Rather, except for the count seeking enforcement of the SCO, it is an original proceeding that challenges, on adequacy grounds, the acceptance by Defendant Waihee of the Final State EIS.

2. The Hawaii Supreme Court's holding in McGlone v. Inaba, 64 Haw. 27, 636 P.2d 158 (1981) appears to be that an original proceeding may not be brought under the authority of HRS section 343-7. Defendants, however, have made no motion to dismiss under the authority of McGlone. Because McGlone raises substantial unresolved issues regarding the Court's jurisdiction, the Court will deny Plaintiff's motions insofar as they request an expedited trial date or relief with respect to Count III of the Complaint.

3. At this time, for reasons given in paragraphs B.1. and 2. above, (a) the DOT Defendants' Motion for Determination that Proceeding is an Administrative Appeal is hereby denied; (b) Plaintiffs' Motion for Expedited Trial de novo is denied; and (c) Plaintiffs' Motion for Partial Summary Judgment on Count III is also denied.

Dated: Wailuku, Maui, Hawaii JUN 02 1993

APPROVED AND SO ORDERED:

JUDGE OF THE ABOVE-ENTITLED COURT

Sierra Club et al. v. John Waihee et al., Civ. No. 91-0698(1); Orders on (1) Plaintiffs' Renewed Motion to Enforce Court Order; (2) DOT Defendants' Motion for Determination that Proceeding is an Administrative Appeal; (3) Plaintiffs' Motion for Expedited Trial and (4) Plaintiffs' Motion for Partial summary Judgment on Count III

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing was duly served on JUN 02 1993 via U. S. mail, postage prepaid, upon the following:

Paul P. Spaulding, III
Denise E. Antolini
Sierra Club Legal Defense Fund, Inc.
212 Merchant Street, Suite 202
Honolulu, HI 96813

Isaac Hall
2087 Wells Street
Wailuku, HI 96793

Attorneys for Plaintiffs

Lane T. Ishida
Derwin Hayashi
Deputy Attorney General
Room 300, Kekuanao'a Building
465 South King Street
Honolulu, HI 96813

Attorneys for Defendants Waihee, Department of Transportation, and Rex D. Johnson

Mervyn M. Kotake
Charles R. Kendall Building
888 Mililani Street, Eighth Floor
Honolulu, HI 96813-2918

Attorney for the State Land Use Commission Defendants

DATED: JUN 02 1993

Dawn Orlacchio
Law Clerk

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ROBERT A. MARKS 2163
Attorney General of Hawaii

LANE T. ISHIDA 3691
Deputy Attorney General
Department of the Attorney
General, State of Hawaii
300 Kekuanao'a Building
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Phone: (808) 587-2990

Attorneys for Plaintiff

IN THE CIRCUIT COURT OF THE SECOND CIRCUIT

STATE OF HAWAII

SIERRA CLUB, a California non-profit corporation; et al., Plaintiffs, vs. JOHN WAIHEE, in his capacity as Governor of the State of Hawaii; et al., Defendants.	CIVIL NO. 92-0698(1) (DECLARATORY RELIEF) STIPULATION AND ORDER

10599

STIPULATION AND ORDER

Plaintiffs SIERRA CLUB; MARY EVANSON; MAUI AIR TRAFFIC ASSOCIATION, INC.; STEPHEN PITT; JAMES BENDON; HUI ALANUI O MAKENA; DANA NAONE HALL; and NATIONAL AUDUBON SOCIETY ("Plaintiffs"); Defendants JOHN WAIHEE; DEPARTMENT OF TRANSPORTATION, STATE OF HAWAII; REX D. JOHNSON ("DOT Defendants"); and Defendants STATE LAND USE COMMISSION, STATE OF HAWAII; and RENTON L. K. NIP ("SLUC Defendants"), through their respective undersigned counsel, have reached a Stipulated Agreement resolving some of the issues raised in this case which these parties request that this Court enter as the Stipulated Order which follows:

WHEREAS, Plaintiffs filed the above-captioned lawsuit which asserts three Claims for Relief: (1) Count I, inter alia, alleges that the Final Environmental Impact Statement ("current EIS") prepared by DOT Defendants is not legally adequate under HRS Chapter 343 and the acceptance of the EIS by Defendant Waihee must therefore be voided; (2) Count II, inter alia, alleges that the EIS was not prepared in accordance with the Stipulated Order entered by this Court on March 12, 1991, in Sierra Club v. DOT, Civil No. 89-0336(1); and (3) Count III, inter alia, alleges that because the EIS is inadequate, DOT Defendants are forbidden from implementing the project, including through seeking governmental permits or approvals from the State Land Use Commission and other approving entities;

WHEREAS, this Court has already entered an Order in this case on June 2, 1993, requiring, among other matters, DOT Defendants to prepare a single or joint EIS with the Federal Aviation Administration in accordance with the procedural, format and content requirements set forth in the National Environmental Policy Act ("NEPA"), 42 U.S.C. §4332 et seq. and the Hawaii Environmental Policy Act ("HEPA"), HRS Chapter 343, and the regulations respectively promulgated thereunder;

WHEREAS, the DOT Defendants have begun preparing the single or joint EIS referenced above;

WHEREAS, trial is not scheduled in this case for the week of January 18, 1994; and

WHEREAS, all parties are in agreement that to forward the policies in favor of increasing judicial economy, decreasing the costs of litigation and encouraging settlement, the following Stipulated Order should be entered and, upon approval by this Court, is effective:

IT IS HEREBY ORDERED, ADJUDGED AND DECREED:

1. The DOT Defendants shall file a Motion in Docket No. A92-684 before the State Land Use Commission, in time to have the Motion heard on January 27, 1994, seeking a continuance of these proceedings pending (a) the completion, acceptance and issuance of a Record of Decision for the single or joint EIS prepared in accordance with this Court's prior orders, NEPA and HEPA and the regulations promulgated thereunder, and (b) the delivery of the single or joint EIS, the acceptance letter and Record of Decision to all parties. The SLUC Defendants shall hear and act upon this Motion before proceeding further with the Intervenors' case. A continunace may be conditioned upon Intervenors' completion of its case in chief on the proposed projects, as currently described, and the current EIS.

2. DOT Defendants shall take no further actions, within the meaning of NEPA and HRS Chapter 343, to implement the Kahului Airport Master Plan dated June 1993, including but not limited to, the filing or further processing of any

applications for governmental permits or approvals, such as the change in zoning application before the Maui County Council, until (a) the single or joint EIS is prepared in accordance with this Court's prior orders, NEPA and HEPA and the regulations promulgated thereunder and accepted and a Record of Decision is issued, and (b) the single or joint EIS, the acceptance letter and Record of Decision are delivered to all parties. The DOT Defendants shall instruct all permitting entities before whom applications are now pending to cease processing these applications until further order of this Court. Once the acceptance and Record of Decision are issued, Plaintiffs are free to pursue any legal actions or remedies which they deem to be appropriate.

3. Upon the resumption of the evidentiary hearings in the boundary amendment proceedings referenced above, the single or joint EIS shall be introduced into evidence and, thereafter, the Intervenors shall be permitted to present further evidence which is relevant to: (a) changes in the size, scope, location or timing, among other things, of the actions as described to date in the boundary amendment proceedings and the current EIS; (b) new or different anticipated environmental impacts; (c) changes in proposed mitigation measures; and (d) new circumstances or evidence which bring to light matters not previously discussed to date in the boundary amendment proceedings or the current EIS.

4. Other than those matters explicitly agreed to above, the parties do not waive any of their rights pursuant to NEPA, HRS Chapter 91, Chapter 343 or the orders of this Court.

5. This Court shall retain continuing jurisdiction to review compliance with this Order and, upon satisfactory performance by all parties, may consider the dismissal of this lawsuit.

DATED: Honolulu, Hawaii, _____.

Lane T. Ishida
Deputy Attorney General

Attorney for DOT Defendants

Benjamin Matsubara
Mervyn M. Kotake

Attorneys for SLUC Defendants

DATED: Wailuku, Hawaii, 1-13-94

Paul P. Spaulding, III
Isaac Hall

Attorneys for Plaintiffs

APPROVED AND SO ORDERED:

JUDGE OF THE ABOVE-ENTITLED COURT

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ISAAC HALL 2238
2087 Wells Street
Wailuku, Maui, Hawaii 96793
Telephone: 808-244-9017

Attorney for Plaintiffs

IN THE CIRCUIT COURT OF THE SECOND CIRCUIT

STATE OF HAWAII

STEPHEN PITT, JAMES BENDON, and BILLIE STROTHER on behalf of themselves and on behalf of other landowners in areas adversely affected by the Kahului Airport, Plaintiffs, vs. EDWARD Y. HIRATA, in his official capacity as Director of the State of Hawaii Department of Transportation; et al., Defendants.	CIVIL NO. 89-0048(1) (Non-Motor Vehicle Tort) STIPULATION BETWEEN THE PARTIES FOR STAY OF PROCEEDINGS; ORDER

STIPULATION BETWEEN THE PARTIES FOR STAY OF PROCEEDINGS

WHEREAS, Congress has enacted the Airport Noise and Capacity Act of 1990 ("Act") which adopts a national "Aviation Noise Policy" and generally addresses the procedures to be followed by airport proprietors in adopting airport noise and access restrictions; and

WHEREAS, said Act envisions mandating the use of Stage III aircraft by the year 2000; and

WHEREAS, an alternative to litigation is the adoption of administrative rules by the State of Hawaii Department of Transportation ("DOT") regulating night-time operations at Kahului Airport prior to the year 2000; and

WHEREAS, the Act requires that a Cost/Benefit Analysis be prepared and published prior to the implementation of airport noise or access restrictions involving Stage II aircraft before the year 2000; and

WHEREAS, the State of Hawaii is willing to incur the expense of the Cost/Benefit Analysis for such a regulation; and

WHEREAS, the parties desire to find an amicable resolution to this lawsuit,

NOW, THEREFORE, it is hereby stipulated and agreed as follows:

1. The State of Hawaii, in its capacity as airport proprietor, envisages mandating the use of Stage III aircraft at the Kahului Airport according to the deadlines established in the Act, and therefore agrees to prepare a Cost/Benefit Analysis on or by September 30, 1994. If that Cost/Benefit Analysis warrants such a restriction, DOT agrees to initiate a rule-making process on or by January 1, 1995 to restrict access to the Kahului Airport by all Stage II aircraft in accordance with the schedule established in the Act for the phaseout of Stage II airplanes operating in the forty-eight (48) contiguous United States.

2. The parties agree to consider implementing Stage II aircraft restrictions at night at the Kahului Airport prior to the year 2000.

3. Restrictions involving Stage II aircraft must be accompanied by a "Cost/Benefit Analysis" which is comprised of (1) an analysis of anticipated or actual costs and benefits of the restrictions; (2) a description of alternative restrictions and (3) a description of non-aircraft restriction alternatives considered, with the costs/benefits of such alternatives compared to those of the proposed restriction.

4. Said Cost/Benefit Analysis shall be prepared by an impartial, unbiased private consultant without conflicts of interest and shall be completed by January 31, 1992.

5. One of the purposes of the Cost/Benefit Analysis shall be to devise and select, if warranted, an aircraft restriction on night-time noise or access to the Kahului Airport which (a) is cost/ beneficial and (b) reduces nighttime aircraft noise to the Stage III noise level.

6. A variety of aircraft restrictions shall be considered and analyzed such as those listed in 14 CFR Part 150 §B150.7(b)(3)-(7) and funding sources for all noise abatement measures shall be identified.

7. The analysis of Costs and Benefits shall be fair and impartial and shall take into consideration aircraft restrictions contained in the Federal Department of Transportation's "Advisory Circular 150/5020-1" Noise Control and Compatibility Planning for Airports," dated August 5, 1981 and the final rules promulgated pursuant to §9308 and

9309 of the Act. The sources for all information regarding costs and benefits shall be stated and, to the maximum extent feasible, materials relied upon shall either be available to the general public or made available by attaching relevant portions in appendices to this Analysis. Estimates of costs and benefits for goods and/or services shall, to the maximum extent feasible, be obtained from the direct providers of the goods or services (e.g. costs of hush-kits should be obtained from the manufacturer; costs of soundproofing should be obtained from a contractor). Environmental and social costs and benefits shall be weighed even if difficult to quantify. The effects of the current and anticipated noise environment and the benefits which would be derived through imposing an aircraft restriction shall also be analyzed in terms of minimizing (i) risks of community complaints or annoyance, (ii) speech interference and (iii) sleep interference.

8. Plaintiffs believe that it is necessary to address certain issues in the Cost/Benefit Analysis and request that the private consultant preparing the Cost/Benefit Analysis take these issues into consideration, as follows:

(a) The relevant time period for the analysis of the costs of and benefits to be derived from a proposed aircraft restriction is between the present and the date upon which DOT anticipates the phase-out or non-addition of all Stage II aircraft at the Kahului Airport pursuant to paragraph 1 above. Anticipated changes at the Kahului Airport

and in its noise environment during this period of time should be analyzed.

(b) Impacts resulting from the acceleration of the compliance date for the phaseout and/or non-addition of Stage II aircraft, as provided in paragraph 1 above, to alternative proposed implementation dates between 1992 and 1995 should be analyzed.

(c) Impacts with respect to anticipated growth and changes at the Kahului Airport between 1992 and 2000 with respect to (i) aircraft types, weight and noise; (ii) the nighttime air cargo industry, including but not limited to air carriers phasing out or entering the industry and the experience of other airports implementing similar restrictions; (iii) the amounts and types of air cargo moved at night at the Kahului Airport now and as projected between 1992-1995 and in the year 2000, segregating out those amounts and types which can only be moved at night, noting when at night these items must be moved, and those items which could reasonably be carried at other times, as well as the aircraft and technology currently available and the aircraft and technology reasonably anticipated to be available, along with purchase and installation costs between 1992 - 1995 and in the year 2000, which could reduce aircraft noise to the Stage III level should be analyzed, to the maximum extent possible.

9. The costs necessary to insulate surrounding homes from airport noise shall be estimated (i) such that the

interior peak Single Event Noise Level ("SENEL") caused by aircraft operations will not exceed the peak SENEL level which would be experienced within an uninsulated home by the operation of Stage III aircraft exclusively utilizing Runway 2-20 only.

10. It is agreed that SENEL will give the most accurate picture of the nighttime noise environment because of the relatively few numbers of takeoffs during nighttime hours at the Kahului Airport and that noise and access restrictions will be studied and expressed in SENEL in addition to the cumulative metric system. If necessary, data will be collected from the same stations used for the "Part 150" study for the Kahului Airport.

11. A copy of the Cost/Benefit Analysis shall be provided to Plaintiffs upon its completion.

12. The State of Hawaii shall review the results of the Cost/Benefit Analysis, accept comments thereon until March 31, 1992, and make the restrictions available for public comment at least six months before their effective date.

13. The parties agree that (a) neither the Secretary of the Department of Transportation nor the Federal Aviation Administration ("FAA") are required to find that substantial evidence supports the selected restrictions; and (b) neither the Federal Department of Transportation nor the FAA are required to approve of the selected restrictions; however the comments of the FAA will be given weight in this process.

14. The State shall initiate rule promulgation procedures pursuant to Chapter 91, Hawaii Revised Statutes, by April 30, 1992 to implement operational restrictions which are (a) cost/beneficial and (b) reduce nighttime aircraft noise to Stage III levels.

15. These proceedings shall be stayed until (a) DOT decides not to initiate rule-making procedures or (b) DOT decides to initiate the rulemaking procedures but never implements an aircraft restriction which reduces nighttime noise to Stage III levels, at which times the stay shall be lifted.

16.. The Plaintiffs may proceed, at their own expense, to have their homes soundproofed according to standards provided by DOT's expert consultants to insulate them from the adverse noise impacts resulting from the expansion of the Kahului Airport as proposed in the Kahului Master Plan Update. Should DOT decide not to initiate the rulemaking process or not to implement a noise abatement measure which reduces aircraft noise to the peak SENEL which would be experienced in an uninsulated home by the operation of Stage III aircraft exclusively using Runway 2-20 only, DOT shall, within thirty days of either of these decisions, reimburse the Plaintiffs for all costs and expenses incurred to soundproof their homes to date and shall pay, within a reasonable time, all amounts necessary for any work remaining to be done at that time for soundproofing according to the

standards provided by DOT's expert consultants. Upon reimbursement, Plaintiffs agree to dismiss this lawsuit with prejudice, each party to bear its own costs with respect to the nuisance and trespass alleged in the Complaint generated by the types and frequencies of aircraft operations, the airport layout, the flight patterns and the number of nighttime operations at the Kahului Airport at the time the "Noise Exposure Map" prepared by DOT pursuant to its FAR Part 150 study was submitted to the Regional Director of the FAA. This dismissal shall be without prejudice with respect to any significant changes with respect to the four factors set forth above, individually or cumulatively, or significant increases in nighttime flights or significant increases in nighttime airport noise experienced by Plaintiffs due to the use of runways other than 2-20 or otherwise.

17. If the State implements (i.e., the effective date of the Rules) night-time operational noise abatement measures which reduce aircraft noise to Stage III levels, Plaintiffs shall dismiss this lawsuit with prejudice as provided above, each party to bear its own costs; so long as there is no significant change with respect to the factors set forth in paragraph 16 above, individually or cumulatively.

18. The DOT has declared that it will commence a five month project to repair Runway 2-20. This work will be undertaken at night such that all aircraft landing and taking off at Kahului Airport at night may be required to use Runway

5-23. Plaintiffs are not barred by any provision of this Stipulation from asserting any claims which they may have with respect to this project.

DATED: Wailuku, Maui, Hawaii 9/11/91

Isaac Hall
Attorney for Plaintiffs

Stephen Pitt
Plaintiff

James Bendon
Plaintiff

Billie Strother
Plaintiff

DATED: Honolulu, Hawaii September 3, 1991.

Wesley F. Fong
Lane T. Ishida
Attorneys for Defendants

APPROVED AND SO ORDERED:

Sgd./E. John McConnell (Seal)
Judge of the Above-Entitled Court

In the Circuit Court of the Second Circuit, State of Hawaii; Stephen Pitt et al. v. Edward Y. Hirata et al.; Civil No. 89-0048(1); Stipulation Between the Parties for Stay of Proceedings.

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Attorneys for Plaintiffs

IN THE CIRCUIT COURT OF THE SECOND CIRCUIT

STATE OF HAWAII

SIERRA CLUB, a California non-profit corporation, et al., Plaintiffs, vs. DEPARTMENT OF TRANSPORTATION STATE OF HAWAII, et al., Defendants.	Civil No. 89-0336(1) STIPULATION BETWEEN PLAINTIFFS AND DEFENDANTS TO PREPARE ENVIRONMENTAL IMPACT STATEMENT AND TO DISMISS COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF AND ORDER

STIPULATION BETWEEN PLAINTIFFS AND DEFENDANTS TO PREPARE ENVIRONMENTAL IMPACT STATEMENT AND TO DISMISS COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF AND ORDER

WHEREAS, the Hawaii Department of Transportation ("DOT") prepared a Kahului Airport Development Plan, including Revisions thereto ("Plan"), describing in said Plan those projects which are to be undertaken in connection with: (1) a Short-Term Development Plan, and (2) a Long-Term Development Plan for the Kahului Airport at Kahului, Haui, Hawaii ("Airport"), pursuant to which Plan the Airport will be expanded; and

EXHIBIT "A"

WHEREAS, state and federal funds have been and will be expended on, and state land has been and will be allocated for use by, the projects described in the Plan; and

WHEREAS, the DOT prepared an Environmental Assessment ("EA") addressing the projects described in the Short-Term Development Plan; and

WHEREAS, Defendants published on May 23, 1989 a Negative Declaration for the projects described in the EA for the Short-Term Development Plan; and

WHEREAS, Defendants began to implement several of the projects described in said EA, through the expenditure of state funds and use of state lands; and

WHEREAS, Plaintiffs filed on August 5, 1989 a Complaint for Declaratory and Injunctive Relief in the above-entitled action seeking, inter alia, the (1) withdrawal of the Negative Declaration; (2) publication of an Environmental Impact Statement ("EIS") Preparation Notice; (3) preparation of an EIS addressing the projects described in the EA for the Short-Term Development Plan; and (4) cessation by Defendants of the expenditure of state funds and use of state lands to implement the projects described in said EA, pending acceptance of said EIS pursuant to the provisions set forth in Chapter 343, HRS; and

WHEREAS Defendants agree and acknowledge that, when viewed together as a whole, some projects described in the Short-Term and Long-Term Development Plans may have a

significant effect on the environment within the meaning of Chapter 343, HRS; and

WHEREAS, the Kahului Airport Master Plan Update EIS Preparation Notice was filed with the OEQC on July 8, 1990. A 30-day review period to provide comments or request "consulted party" status ensued. Additionally, two (2) scoping meetings were held on October 4, 1990 to further allow interested and affected individuals and organizations an opportunity to present their concerns and identify issues relevant to the EIS preparation. These issues and concerns will be incorporated and addresssed in the Draft EIS (DEIS) document. Plaintiffs agree that Defendants have complied with Preparation Notice and scoping requirements so long as the issues raised during the scoping sessions and in this Stipulation are among the subjects of the EIS and consultation concerning these issues actually takes place.

WHEREAS, Defendants have agreed to prepare an EIS which will address: (1) the Long-Term Development Plan projects; (2) the Short-Term Development Plan projects described in the EA, except as stipulated to herein; and (3) certain other projects enumerated in paragraph 1, below:

NOW THEREFORE, Plaintiffs and Defendants stipulate and agree that:

1. Defendants shall prepare, in accordance with the procedural, format and content requirements set forth in HRS §343, the Hawaii Environmental Policy Act, and 42 U.S.C.

§4332 et seq., the National Environmental Policy Act, including the rules and regulations thereunder, (1) an EIS covering both the Long-Term Development Plan projects and (2) the following Short-Term Development Plan and other enumerated projects for the Kahului Airport:

A. Development of the commercial development area east of Runway 5-23 (H-H);

B. Construction of the transient aircraft parking apron on the west side of Runway 5-23 (K);

C. Construction of the access or ramp service road connecting the transient aircraft parking apron with the new passenger terminal and the east ramp (K);

D. Development of new lease sites in the ground transportation subdivision area across Kalialinui Gulch (J);

E. Construction of a new general cargo facility (G);

F. Construction of a new hold cargo facility (L);

G. Provision of a lease site on Airport property for the development of a flight kitchen facility (R);

H. Provision of a lease site and pipeline right-of-way for the development of the bulk fuel storage facility (Q,U,V);

I. Construction or implementation of a new general aviation facility (G);

J. Construction or implementation of the long term phase of the helicopter facility (E);

K. Expansion or improvement of utility and drainage systems on the East Ramp to service airport facility development ( );

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, Department of Transportation; however, excluding approximately 126 acres of land which is necessary for the development of the terminal access roadway, for the widening of Keolani Place from the Kahului Airport boundary to Dairy Road, and for the widening of Hana Highway;

M. Construction of the runway pavement strengthening project for Runway 2-20 and the taxiways overlay, not to include emergency repairs necessary to keep the runway open ( );

N. Construction of Phase II of the new passenger terminal building, a long term project identified in the March 1989 Kahului Airport Development Plan (Revision 1) and shown as part of the Long-Term Development Plan on Figure 6.1 (Revision 1)(A);

O. Improvement of terminal facilities for Air Scenic Tour passengers (F); and

P. Construction of the Helicopter/Scenic Tour connector taxiways (B-B);

Q. Construction of the Airport passenger terminal access road (X-Y);

2. Plaintiffs shall waive any objections to the lack of an EIS covering the following Short-Term Development Plan projects for the Kahului Airport which are either complete or substantially complete, and/or for which a prior negative declaration has been issued:

A. Construction of the Kalialinui Gulch improvements ( );

B. Construction of Phase I of the new passenger terminal building as identified in the 1981 Environmental Assessment for said project and the March 1989 Kahului Airport Development Plan (Revision 1) as part of the Short-Term Development Plan in Figure 6.2 (Revision 1)(A);

C. Construction of the circulation roadways and vehicular parking facilities at the Airport (A);

D. Construction of the 1,000 foot runway safety area at the southern end of Runway 2-20, including the perimeter access road (A-A); however, this provision shall be subject to the terms of paragraph 13 herein;

E. Widening of Keolani Place from the western boundary of the Airport to Dairy Road ( ); and

F. Relocation of the Traffic Control Tower and VORTAC installations (N,T);

3. Plaintiffs shall waive any objections to the lack of an EIS covering the following Short-Term Development and other enumerated projects for the Kahului Airport, due to their public benefit and/or lack of adverse impact:

A. Construction of a security fence around the Airport perimeter, subject to later relocation (H);

B. Construction of the post office and access ramp (C-C), provided that, should the Puunene Airport be reopened on a temporary or long-term basis, one alternative to be studied in the EIS is the location or relocation of the Post Office to Puunene;

C. Development of the Maui County baseyard at the airport ( );

D. Construction of a new crash fire rescue station and training facility (D,P);

E. Acquisition of approximately 126 acres of land for the development of the Airport passenger terminal access road, for the widening of Kaolani Place from the Airport boundary to Dairy Road, and for the widening of Hana Highway ( );

F. Construction of ramp or service "perimeter" roadway (I-I);

G. New terminal access road connecting airline support facilities with passenger terminal apron (G-G);

H. Construction of a fourth lane to widen Hana Highway (X); and

I. Proposed Pulehu/Hansen Road realignment;

4. Defendants shall keep Koeheke Street open to public use at least until the Alahao Street bypass road is open to public use;

5. Defendants shall keep the perimeter road around the Runway 2-20 safety area and Haleakala Highway open to public use at least until the Hana Highway widening project is completed and the additional lanes are open to public use;

6. Defendants shall analyze the traffic impacts at the Dairy Road and Puunene Avenue intersection as part of the above-referenced EIS;

7. Defendants shall investigate, in the EIS and otherwise, the feasibility of reactivating the Puunene Airport on a permanent basis for general aviation, as a reliever airport and for night cargo operations. Defendants recognize that the implementation of the Runway 2-20 pavement strengthening project referenced to in paragraph 1.M. above could indirectly impose adverse impacts upon surrounding landowners. To mitigate these impacts, Defendants will also consider 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. If Defendants determine that the Puunene Airport will be developed as a general aviation and reliever airport, either

on a temporary or long-term basis, Plaintiffs and Defendants stipulate and agree that upon the opening of the Puunene Airport on at least a temporary basis for night use by commercial cargo aircraft, the Runway 2-20 pavement strengthening project referred to in paragraph 1.H. and the temporary reopening of the Puunene Airport need not be included within the scope of the above-referenced EIS. Should Defendants determine that the Puunene Airport will be opened on a long term basis the Kahului Airport land bank project referred to in paragraph 1.L. above need not be included within the scope of the above-referenced EIS;

8. 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 the Kahului Airport.

9. DOT shall investigate in the EIS a recreational area/beach park on airport lands adjoining the County Kanaha Beach Park.

10. Plaintiffs and Defendants stipulate and agree that for any other and further projects, including but not limited to those described in the Long Term Development Plan and any revisions to the Kahului Airport Development Plan (June 1988), or substantial or major modifications to projects enumerated in paragraphs 1 through 3 above, for which negative declarations have been published, Defendants shall

comply with applicable laws to determine whether they should be included within the scope of the above-referenced EIS or should be the subject of a supplemental EIS;

11. Defendants affirm that all projects or operations which are in planning, design or construction at the Kahului Airport have been disclosed in the Kahului Airport Development Plan (June 1988); Revision 1 to the Kahului Airport Development Plan (March 1989) and the International Flights Facilities Requirements Study, Kahului Airport (January 1989). Defendants shall provide to Plaintiffs, through their counsel, all further planning documents, environmental assessments and/or studies for revised, modified or additional projects or operations planned for the Kahului Airport, which would substantially increase beyond current levels the number or type of aircraft operations; the number of passengers using Kahului Airport, the number of vehicles using airport roadways and/or the amount of noise generated through aircraft operations.

12. 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;

13. No runways at the Kahului Airport shall be constructed, strengthened or extended in a fashion necessary to facilitate increased aircraft operations, the landing or taking off of aircraft carrying heavier loads or increased passenger operations until the impacts of these increased operations are fully analyzed in the EIS to be prepared by DOT, except that DOT may conduct emergency repairs necessary to keep runways open;

14. The findings, alternatives and recommendations contained in the FAR Part 150 Noise Study currently being undertaken for the Kahului Airport shall be investigated in the EIS. No final decisions shall be made by Defendants on the location of new facilities which are the subject of the Part 150 Noise Study and the EIS at the Kahului Airport whose positioning may have a bearing on noise impacts imposed upon surrounding lands until the completion of the Part 150 Noise Study and its submittal to the Federal Aviation Administration.

15. Except as provided in paragraph 16 below, the Complaint for Declaratory and Injunctive Relief filed herein shall be dismissed with prejudice upon compliance with the terms and conditions above and the publication of an Amended Preparation Notice consistent with the above in the OEQC Bulletin pursuant to Section 11-200-15(b), Haw. Admin. Rules; and

16. Dismissal of this case shall be without prejudice to Plaintiffs' right to seek recovery of attorney fees and other expenses herein and should be without prejudice to the rights of either party to enforce the terms of this Stipulated Order. Any provision in this Stipulation shall not be used as a basis for recovery of attorney's fees or costs.

DATED: Wailuku, Maui, Hawaii MAR 11 1991

APPROVED AS TO FORM:

Isaac Hall
Co-counsel for Plaintiffs

Arnold L. Lum
Co-counsel for Plaintiffs

Keith Tanaka
Counsel for Defendants

APPROVED AND SO ORDERED:

Sgd./E. John McConnell (Seal)
Judge of the above-entitled court

Sierra Club et al. v. Department of Transportation, State of Hawaii, et al.; Civil No. 89-0336(1); Stipulation Between Plaintiffs and Defendants to Prepare Environmental Impact Statement and Dismiss Complaint for Declaratory and Injunctive Relief and Order

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IN THE CIRCUIT COURT OF THE SECOND CIRCUIT

STATE OF HAWAII

SIERRA CLUB, a California non-profit corporation, MARY EVANSON; MAUI AIR TRAFFIC ASSOCIATION, INC., a Hawaii non-profit corporation; STEPHEN PITT; JAMES BENDON; HUI ALANUI O MAKENA, a Hawaii non-profit corporation; DANA NAONE HALL; and NATIONAL AUDUBON SOCIETY, a New York non-profit corporation; Plaintiffs, vs. JOHN WAIHEE, in his capacity as Governor of the State of Hawaii; DEPARTMENT OF TRANSPORTATION, STATE OF HAWAII; REX P. JOHNSON, in his capacity as Director of the Department of Transportation, State of Hawaii; THE LAND USE COMMISSION, STATE OF HAWAII; RENTON L.K. NIP, in his capacity as Chairperson of the Land Use Commission, State of Hawaii, Defendants.	Civil No. 92-0672(1) (Declaratory Relief) COMPLAINT TO ENFORCE COURT ORDER AND FOR DECLARATORY AND INJUNCTIVE RELIEF; EXHIBIT "A"; SUMMONS

by the Honorable E. John McConnell in Sierra Club v. DOT; Civil No. 89-0336(1) in the Second Circuit Court regarding the required contents of the EIS for the Kahului Airport Master Plan Update. This Stipulated Court Order is attached hereto as Exhibit "A" and is hereby incorporated by reference.

II.

JURISDICTION AND VENUE

2. The Court has subject matter jurisdiction over the claims for Relief in this action pursuant to HRS §343-7(C), HRS §603-21.5, HRS §§632-1, et seq., and Article XI, Section 9 of the Constitution of the State of Hawaii.

3. Venue is properly laid in this judicial circuit pursuant to HRS §603-36(5) because the Claims for Relief arose here and all of the Defendants are domiciled here.

III.

PARTIES

A. Plaintiffs

4. Plaintiff SIERRA CLUB is a national, non-profit membership corporation, registered to do business in the State of Hawaii, which is dedicated to the exploration, enjoyment, enhancement and protection of the lands, waters, wildlife, wilderness and other natural and scenic resources of the United States, including the terrestrial ecosystems and marine environments of the Hawaiian Islands. SIERRA CLUB

has approximately 640,000 members nationwide, of whom over 4,100 reside in Hawaii. The Maui Group of Sierra Club has over 300 members.

5. Plaintiff MARY EVANSON is a resident of the County of Maui, State of Hawaii. She is a member of the Maui Group of the Hawaii Chapter of the Sierra Club. She, along with other members of the Maui Group, protest at the Kahului Airport, the expansion, without proper environmental analysis, of the Kahului Airport.

6. Plaintiff MAUI AIR TRAFFIC ASSOCIATION, INC. is a Hawaii non-profit corporation whose purpose is to monitor the expansion of airport facilities on Maui to assure that the operation of Maui's airports is based upon sound air traffic principles, and to ensure that the Kahului Airport is operated in such a manner as to mitigate adverse noise impacts.

7. Plaintiff STEPHEN PITT is a resident of the County of Maui, State of Hawaii. He is an officer of the Maui Air Traffic Association. He promotes the reactivation of the Puunene Airport on Maui, and has taken every step within his power to convince or require the DOT to abate the negative environmental impacts due to the operation of the Kahului Airport.

8. Plaintiff JAMES BENDON is a resident of the County of Maui, State of Hawaii. He is an officer of the Maui Air Traffic Association. He promotes the reactivation of the

Puunene Airport on Maui, and has taken every step within his power to convince or require the DOT to abate the negative environmental impacts due to the operation of the Kahului Airport.

9. Plaintiff HUI ALANUI O MAKENA is a Hawaii non-profit corporation whose principal place of business is on Maui, and whose purpose is to protect native Hawaiian interests.

10. Plaintiff DANA NAONE HALL is a member of Hui Alanui o Makena. She objects to the expansion, without adequate final Federal and State EISs, of the Kahului Airport because of the adverse consequences to native Hawaiian archaeological, historic, cultural and natural resources, including the native Hawaiian burial sites which are known to be located on or near the Airport.

11. Plaintiff NATIONAL AUDUBON SOCIETY ("NATIONAL AUDUBON") is a non-profit conservation organization with over 570,000 members in the United States and several foreign countries, approximately 2,000 of whom live in Hawaii. NATIONAL AUDUBON is dedicated to the protection of the environment and the wise use and conservation of natural resources. NATIONAL AUDUBON is incorporated under the laws of the State of New York, and has offices in fourteen states, including Hawaii and the District of Columbia. NATIONAL AUDUBON'S headquarters are at 950 Third Avenue, New York, New York.

with the responsibility for declaring applications complete, processing applications and scheduling hearings on applications only when they are accompanied by an adequate EIS if required.

16. Defendant RENTON L.K. NIP is sued herein in his capacity as the Chairperson of the SLUC.

IV.

STANDING

17. Plaintiffs have been harmed by Defendants' failure to prepare an adequate EIS because some of the Plaintiffs reside near the airport and the adverse noise impacts that will be generated by the proposed airport expansion will be imposed on these Plaintiffs; some are residents who will be harmed or inconvenienced because the necessary physical infrastructure is not available to accommodate the additional people, cars and traffic, for example, that will be facilitated by the airport expansion; some are doctors, health care givers and educators who are aware of the inadequate social infrastructure and existing deficiencies in the delivery of social services that would be exacerbated by increases in the visitor and resident population that will result from airport expansion; some are farmers whose agricultural products will be harmed by the pests introduced through the expansion of the airport; others, concerned with protecting endangered plants and species will have more difficulty accomplishing this purpose

with the increased introduction of pests resulting from expanded airport operations; and Plaintiffs also include users of shoreline, ocean and recreational areas surrounding the airport, whose uses of these areas will be negatively affected by DOT's airport expansion project.

18. Further, members of some of the Plaintiff organizations live immediately adjacent to the Kahului Airport and will be directly, adversely and immediately affected by any expansion of the airport. These types of direct impacts will inevitably occur over an even broader area.

19. Since June 1990, SIERRA CLUB'S activities with respect to the proposed Airport Expansion Project have included investigation, public education, legislative monitoring, advocacy and litigation. SIERRA CLUB, together with its Hawaii Chapter, have adopted policies that include the protection of the land, water, and ocean resources of Hawaii from environmentally damaging and other inappropriate uses, and the support of actions that will ensure public access to wilderness, coastal and nearshore recreation areas of Hawaii. SIERRA CLUB strongly supports actions that will preserve the character and the atmosphere of rural, scenic and historic areas of Hawaii.

20. NATIONAL AUDUBON was founded to protect wild birds from slaughter to provide feathers for the millinery trade. NATIONAL AUDUBON has retained its interest in

preserving wildlife, and the habitat upon which it depends, from unnecessary destruction by mankind. NATIONAL AUDUBON is particularly interested in the protection and enhancement of endangered species, including the Hawaiian Stilt and Hawaiian Coot, and in the integrity of the Endangered Species Act and its implementation by those agencies with whom Congress has entrusted the Act's enforcement. This interest is reflected in NATIONAL AUDUBON's public education, scientific research and litigation programs, and in its ownership and management of over 200,000 acres of wildlife sanctuaries.

21. For a number of years, NATIONAL AUDUBON has focused on the problems facing Hawaii's unique native plant and animal species. NATIONAL AUDUBON has been a party in the successful federal court lawsuits regarding the Palila and the Hawaiian Crow. NATIONAL AUDUBON opened its Hawaii Office in January 1989 to help sustain, enhance and protect the natural resources unique to Hawaii, including the State's endangered species.

22. Protection of Hawaii's wetlands, endangered Hawaiian species, and control of introduced pests have been high priority concerns for NATIONAL AUDUBON'S Hawaii Office. NATIONAL AUDUBON initiated the first public education program on the impacts of alien species in Hawaii -- the Alien Species Alert Program, or "ASAP" -- in late 1990. This successful, intensive multi-media effort is scheduled to conclude at the end of 1992. In addition, NATIONAL AUDUBON

organizational interests, and their members' use and enjoyment of the land, air and waters will be impaired.

26. The failure of the EIS to comply with Chapter 343 and NEPA makes the EIS so inadequate that decision-makers cannot expect to have the full consideration and analysis needed to make decisions. Accordingly, should the decision-makers, including but not limited to the Maui County Council, the Maui Planning Commission and the State Land Use Commission, decide to expand the Kahului Airport in any fashion, based on this document, their decision to do so will be uninformed and will adversely affect the Plaintiffs whose protectable interests, within the scope of the law, are described above.

27. The inadequacies of the EIS create a risk that serious environmental impacts will be overlooked.

28. The deficiencies in the EIS adversely affect Plaintiffs' public participation rights in that Plaintiffs have been and will be frustrated in their ability to participate in the debate and decision-making over whether to expand the airport because the data and analyses in the EIS are flawed and inadequate.

V.

CLAIMS FOR RELIEF

COUNT I: Failure to Prepare an Adequate EIS

29. The Hawaii Environmental Policy Act ("HEPA"), HRS §§343-1, et seq., is the cornerstone of this State's laws

for protection of the environment. HEPA requires agencies of the State and its counties to prepare an Environmental Assessment ("EA") for certain categories of state and county agency and applicant actions. HRS §343-5. If the EA determines that the proposed action "may have a significant effect on the environment," the state or county agency must order the preparation of an Environmental Impact Statement ("EIS"). HRS §343-5(b) and (c).

30. The categories of proposed actions for which an EA must be prepared include actions that propose use of state lands, or propose the use of any lands within a shoreline area, historic site, or conservation district. HRS §343-5(a).

31. Pursuant to HRS §343-6, the Environmental Council promulgated rules that specify the procedures for preparation of EAs and EISs, the contents of such documents, and the criteria and definitions that all agencies must follow in interpreting HEPA. See Hawaii Administrative Rules ("HAR") §§11-200-1, et seq. The rules are mandatory and binding on all state agencies.

32. An EIS is a detailed informational document discussing, among other things: the environmental effects of the proposed action, effects on the social welfare of the county and state, measures proposed to minimize adverse effects, and alternatives to the proposed action and their environmental effects. HRS §343-2.

33. The purpose of HEPA is to establish a system of environmental review which will ensure that appropriate consideration is given to environmental factors along with economic and technical considerations in decision-making. HRS §343-1. In enacting HEPA, the Legislature explicitly recognized that early review of environmental effects is desirable because awareness of environmental consequences is enhanced, cooperation and coordination are encouraged, and public participation during the review process benefits all parties involved and society as a whole. Id.

34. HEPA dictates that an EIS is a "condition precedent" to implementation of a proposed state or county action. HRS §343-5(b). The Hawaii Administrative Rules further explain that: "An EIS is meaningless without the conscientious application of the EIS process as a whole, and shall not be merely a self-serving recitation of benefits and a rationalization of the proposed action." HAR §11-200-14. Thus, an EIS must be prepared "at the earliest opportunity in the planning and decision-making process," so that it "shall assure an early open forum for discussion of adverse effects and available alternatives and that the decision-makers will be enlightened to any environmental consequences of the proposed action." HAR §11-200-14.

35. On July 8, 1990, Defendants filed an EIS Preparation Notice for the Airport Expansion Project with the State Office of Environmental Quality Control. Defendants

also held two scoping meetings on October 4, 1990 to further allow interested individuals and organizations an opportunity to present their concerns and identify issues relevant to the EIS preparation.

36. In September 1991, Defendants filed a Draft EIS and thereafter received many comments from interested individuals and organizations. In July 1992, a final EIS was published.

37. No particular alternative may be selected by the Defendants until an adequate EIS is prepared.

38. The EIS prepared by Defendants is grossly inadequate as a matter of law and fact.

39. The Defendants DOT and Johnson submitted an EIS for acceptance by Defendant Waihee which was grossly inadequate as a matter of fact and law.

40. On August 5, 1992, Defendant Waihee accepted an EIS which is grossly inadequate as a matter of fact and law.

41. The Defendants caused to be published in the OEQC Bulletin, Volume 9, Number 15, dated August 8, 1992, notice of the acceptance of the EIS by the Governor of the State of Hawaii.

42. This judicial proceeding regarding the acceptance of an EIS has been timely initiated within 60 days after the public has been informed by the OEQC periodic

bulletin of the acceptance of the statement, pursuant to HRS §343-7(c).

43. Plaintiffs provided written comment to this EIS during the designated review period and are therefore adjudged aggrieved parties for the purpose of bringing this judicial action as a matter of law pursuant to HRS 343-7(c).

44. An EIS is only acceptable if it fulfills the definition of an EIS and adequately discloses and describes all identifiable and environmental impacts and satisfactorily responds to review comments. See HAR §11-200-23(a).

45. This EIS is not an informational instrument which fulfills the definition of an EIS; it does not adequately disclose and describe all identifiable environmental impacts and it does not satisfactorily respond to review comments.

46. An EIS is only acceptable if all three of the criteria enumerated in §11-200-23(b) of the Rules are satisfied. This EIS does not satisfy any of the three criteria.

47. The procedures for assessment, consultation process, the review responsive to comments, and the preparation and submission of the statement, have not been completed satisfactorily for reasons including but not limited to the following:

(a) The Defendants failed to prepare a joint, tiered EIS with the applicable federal agencies;

(b) The Defendants are attempting to select particular alternatives without having prepared an adequate EIS; and

(c) Other procedural violations to be proven at trial.

48. The content requirements have not been satisfied for reasons including but not limited to the following:

(a) The EIS does not analyze all known alternative actions, such as runways of different lengths; it only studies a 9,600 foot runway and no action;

(b) The EIS does not study the secondary impacts resulting from airport expansion including population and growth impacts, traffic impacts and myriad other impacts which may result from the expansion;

(c) The EIS does not analyze the impact on Haleakala National Park of increased alien species introductions that will occur as a result of the Airport Expansion Project;

(d) The EIS does not analyze the impact of the Airport Expansion Project on the Kanaha Pond Wildlife Refuge;

(e) The EIS does not describe the project adequately, sometimes referring to the enumerated projects and at other times only referring to those for which FAA approval will be sought within the next five years;

attach hereto as Exhibit "A" a true and correct copy of this Order.

54. By paragraph 16 of this Court Order, the parties reserved the right to enforce the terms of the Stipulated Order. The Court Order is a contract between the Plaintiffs and the Defendants. This action is filed to enforce the terms of that contract.

55. The Defendants have violated the terms of that Stipulated Court Order and contract as set forth below.

56. Through paragraph 1 of the Stipulated Court Order Defendants contracted with Plaintiffs, and were ordered to prepare an EIS covering specifically enumerated projects for the Kahului Airport "in accordance with the procedural, format and content requirements set forth in HRS §343, the Hawaii Environmental Policy Act, and 42 U.S.C. §4332 et seq., the National Environmental Policy Act ("NEPA"), including the Rules and Regulations thereunder."

57. The Defendants failed and refused to prepare an EIS in accordance with these state and federal laws.

58. An EIS is required by state law and by federal law because the enumerated projects constitute a major federal action.

59. HRS §343-5(f) requires that, whenever an action is subject to NEPA and Chapter 343, the agencies involved shall cooperate with federal agencies to the fullest extent possible to reduce duplication between federal and

state requirements including, but not limited to, preparing a joint Environmental Impact Statement with concurrent public review and processing at both levels of government.

60. The Administrative Rules promulgated by the Environmental Council of the State of Hawaii implementing Chapter 343 reiterate these requirements. See HAR §11-200-25.

61. Administrative Rules promulgated by the Council of Environmental Quality implementing NEPA similarly require the preparation of joint Environmental Impact Statements, once EISs are required by state and federal law, "unless the agencies are specifically barred from doing so by some other law." This provision also requires joint planning processes, joint environmental research and studies, and joint public hearings. See 40 CFR §1506.2. ("Federal EIS Rules")

62. Pursuant to these provisions, the Defendants met and, in order to cooperate to the fullest extent possible and reduce duplication, agreed to prepare a joint EIS, to conduct joint planning processes, joint environmental research and studies, and joint public hearings.

63. The Federal Aviation Administration, U.S. Department of Transportation ("FAA") is the lead federal agency with respect to this matter.

64. The DOT is the lead state agency with respect to this matter.

65. DOT and FAA agreed to be joint lead agencies with respect to this matter.

66. The DOT and FAA both published notices of their intent to prepare an EIS for the enumerated projects.

67. The DOT and FAA conducted a joint scoping session to aid in the preparation of the joint EIS.

68. The DOT and FAA met, agreed upon and publicly announced the agreed-upon joint process for preparing a single joint EIS as follows:

(a) The State would prepare a Draft EIS ("SDEIS");

(b) The SDEIS would be considered, on the federal level, a Preliminary EIS ("PEIS") which would be reviewed and modified by the various divisions within the FAA and become the federal Draft EIS ("FDEIS");

(c) The FDEIS would be reviewed by all federal agencies and the public after which it would become the federal Final EIS ("FFEIS") and the state Final EIS ("SFEIS").

69. The Defendants submitted the SDEIS to the FAA. The FAA reviewed the document as a PEIS, identified many serious deficiencies and strongly urged the DOT to address these deficiencies, otherwise the PEIS would not satisfy substantive NEPA requirements.

70. The DOT, on information and belief, decided that it did not want to take the time to prepare an EIS which

74. The SFEIS does not investigate the findings, alternatives, and recommendations contained in the FAR Part 150 Noise Study.

75. The Part 150 Noise Study has not been completed and has not been submitted to the FAA. Neither the Noise Exposure Maps nor the Noise Mitigation Plan have received final FAA approval.

76. The DOT has made a decision on the location of a new facility, the extension of Runway 2-20 to 9,600 feet, and is pursuing this alternative, without completing the Part 150 Noise Study.

C. Failure to Restrict International Flights

77. By paragraph 12 of the Stipulated Court Order, DOT contracted with Plaintiffs not to allow regularly scheduled international flights to land or take off at the Kahului Airport until that subject matter is fully analyzed in the EIS.

78. The EIS does not analyze the subject of international flight operations.

79. DOT has encouraged, and is facilitating and permitting regularly scheduled international flights to land and/or take off at Kahului Airport in violation of this Order.

D. Reactivation of the Puunene Airport

80. By paragraph 7 of the Stipulated Court Order, DOT contracted with Plaintiffs to investigate, in the EIS and

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

81. The SFEIS does not investigate the feasibility of reactivating the Puunene Airport on a temporary or permanent basis for general aviation, as a reliever airport or for night cargo operations.

E. Recreation Area/Beach Park/Coastal Road

82. By paragraph 9 of the Stipulated Court Order, the Defendants contracted with Plaintiffs to investigate in the EIS a Recreational Area/Beach Park on airport lands adjoining the county-maintained Kanaha Beach Park.

83. By paragraph 8 of the Stipulated Court Order, the Defendants contracted with Plaintiffs to investigate in the EIS a coastal road connecting Alahao Street and Hana Highway.

84. The SFEIS does not investigate a Recreational Area/Beach Park on airport lands adjoining the county-maintained Kanaha Beach Park or the coastal roadway.

F. Other violations of the Stipulated Court Order

85. The Defendants have also violated other terms and conditions of the Stipulated Court Order as will be proven at trial.

86. Both Chapter 343 and NEPA require that no action be taken concerning any proposed project which would

have an adverse environmental impact or limit the choice of reasonable alternatives before adequate EISs are prepared.

87. The DOT is taking actions which have an adverse environmental impact and/or limit the choice of reasonable alternatives by:

(a) Requesting that the Maui Planning Commission and the Maui County Council delete the General Plan policy that limits runway lengths at Kahului Airport to 7,000 feet so that the Defendants may pursue the particular alternative of extending Runway 2-20 to 9,600 feet;

(b) Filing a petition for a boundary amendment on September 18, 1992 with the State Land Use Commission to reclassify approximately 210 acres from agricultural to urban in order to pursue the particular alternative of extending Runway 2-20 to 9,600 feet and

(c) Planning to file an application with the Maui Planning Commission and the Maui County Council to rezone these same 210 acres to the Airport District in order to pursue the particular alternative of extending Runway 2-20 to 9,600 feet; all of the foregoing without an EIS that is acceptable pursuant to Chapter 343 and NEPA.

COUNT III: Processing an Incomplete Application

88. Plaintiffs hereby reallege and incorporate the allegations contained in this Complaint in paragraphs 1 through 87.

1. For a declaratory judgment that: (A) the SFEIS prepared and accepted by the Defendants is inadequate by reason of its violations of the procedure, form and content requirements of HEPA; (B) the SFEIS is inadequate because Defendants have not complied with their obligation to respond fully to comments to the SDEIS; (C) the Defendants have violated the March 12, 1991 Court Order through preparation of an SFEIS that does not comply with the terms and conditions prescribed by that Order; and (D) that any actions taken by the Defendants pursuant to the inadequate SFEIS are null and void;

2. For a mandatory injunction that orders the Defendants, and his or its employees, agents, servants, and representatives, and any other persons acting in concert with them, either to abandon the proposed project or to prepare an Environmental Impact Statement that complies fully with HEPA and the terms of the Order;

3. For issuance of a temporary restraining order, preliminary injunction, and permanent injunction against the Defendants, and his or its employees, agents, servants, and representatives, and any other persons acting in concert with them, as follows:

a. Restraining the Defendants from proceeding with the proposed Airport Expansion Project or from expending any state funds or utilizing any state lands or from selecting any alternative studies or filing or pursuing

applications for approvals, until full compliance with the Stipulated Court Order is achieved and an acceptable EIS under HEPA and NEPA is prepared;

b. Restraining the Defendants SLUC and Nip from processing or holding hearings on the application of Defendant DOT for a boundary amendment for the Airport Expansion Project;

c. Should other permits or approvals be sought from other governmental entities later named as parties, that relief be afforded against them as well;

4. For the Court to grant Plaintiffs' expenses and costs of suit, including reasonable expert witness and attorneys' fees;

5. For the Court to retain continuing jurisdiction to review the Defendants' compliance with all judgments and orders issued herein;

6. For such additional judicial determinations as are necessary to effectuate the foregoing; and

7. For such other and further relief as the Court shall deem just and proper.

DATED: Wailuku, Maui, Hawaii, October 6, 1992.

Paul P. Spaulding, III
Denise E. Antolini
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Attorneys for Plaintiffs

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IN THE CIRCUIT COURT OF THE SECOND CIRCUIT

STATE OF HAWAII

SIERRA CLUB, a California non-profit corporation, et al., Plaintiffs, vs. DEPARTMENT OF TRANSPORTATION STATE OF HAWAII, et al., Defendants.	Civil No. 89-0336(1) STIPULATION BETWEEN PLAINTIFFS AND DEFENDANTS TO PREPARE ENVIRONMENTAL IMPACT STATEMENT AND TO DISMISS COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF AND ORDER

STIPULATION BETWEEN PLAINTIFFS AND DEFENDANTS TO PREPARE ENVIRONMENTAL IMPACT STATEMENT AND TO DISMISS COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF AND ORDER

WHEREAS, the Hawaii Department of Transportation ("DOT") prepared a Kahului Airport Development Plan, including Revisions thereto ("Plan"), describing in said Plan those projects which are to be undertaken in connection with: (1) a Short-Term Development Plan, and (2) a Long-Term Development Plan for the Kahului Airport at Kahului, Maui, Hawaii ("Airport"), pursuant to which Plan the Airport will be expanded; and

EXHIBIT "A"

WHEREAS, state and federal funds have been and will be expended on, and state land has been and will be allocated for use by, the projects described in the Plan; and

WHEREAS, the DOT prepared an Environmental Assessment ("EA") addressing the projects described in the Short-Term Development Plan; and

WHEREAS, Defendants published on May 23, 1989 a Negative Declaration for the projects described in the EA for the Short-Term Development Plan; and

WHEREAS, Defendants began to implement several of the projects described in said EA, through the expenditure of state funds and use of state lands; and

WHEREAS, Plaintiffs filed on August 5, 1989 a Complaint for Declaratory and Injunctive Relief in the above-entitled action seeking, inter alia, the (1) withdrawal of the Negative Declaration; (2) publication of an Environmental Impact Statement ("EIS") Preparation Notice; (3) preparation of an EIS addressing the projects described in the EA for the Short-Term Development Plan; and (4) cessation by Defendants of the expenditure of state funds and use of state lands to implement the projects described in said EA, pending acceptance of said EIS pursuant to the provisions set forth in Chapter 343, HRS; and

WHEREAS Defendants agree and acknowledge that, when viewed together as a whole, some projects described in the Short-Term and Long-Term Development Plans may have a

significant effect on the environment within the meaning of Chapter 343, HRS; and

WHEREAS, the Kahului Airport Master Plan Update EIS Preparation Notice was filed with the OEQC on July 8, 1990. A 30-day review period to provide comments or request "consulted party" status ensued. Additionally, two (2) scoping meetings were held on October 4, 1990 to further allow interested and affected individuals and organizations an opportunity to present their concerns and identify issues relevant to the EIS preparation. These issues and concerns will be incorporated and addresssed in the Draft EIS (DEIS) document. Plaintiffs agree that Defendants have complied with Preparation Notice and scoping requirements so long as the issues raised during the scoping sessions and in this Stipulation are among the subjects of the EIS and consultation concerning these issues actually takes place.

WHEREAS, Defendants have agreed to prepare an EIS which will address: (1) the Long-Term Development Plan projects; (2) the Short-Term Development Plan projects described in the EA, except as stipulated to herein; and (3) certain other projects enumerated in paragraph 1, below:

NOW THEREFORE, Plaintiffs and Defendants stipulate and agree that:

1. Defendants shall prepare, in accordance with the procedural, format and content requirements set forth in HRS §343, the Hawaii Environmental Policy Act, and 42 U.S.C.

§4332 et seq., the National Environmental Policy Act, including the rules and regulations thereunder, (1) an EIS covering both the Long-Term Development Plan projects and (2) the following Short-Term Development Plan and other enumerated projects for the Kahului Airport:

A. Development of the commercial development area east of Runway 5-23 (H-H);

B. Construction of the transient aircraft parking apron on the west side of Runway 5-23 (K);

C. Construction of the access or ramp service road connecting the transient aircraft parking apron with the new passenger terminal and the east ramp (K);

D. Development of new lease sites in the ground transportation subdivision area across Kalialinui Gulch (J);

E. Construction of a new general cargo facility (G);

F. Construction of a new hold cargo facility (L);

G. Provision of a lease site on Airport property for the development of a flight kitchen facility (R);

H. Provision of a lease site and pipeline right-of-way for the development of the bulk fuel storage facility (Q,U,V);

I. Construction or implementation of a new general aviation facility (G);

J. Construction or implementation of the long term phase of the helicopter facility (E);

K. Expansion or improvement of utility and drainage systems on the East Ramp to service airport facility development ( );

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, Department of Transportation; however, excluding approximately 126 acres of land which is necessary for the development of the terminal access roadway, for the widening of Keolani Place from the Kahului Airport boundary to Dairy Road, and for the widening of Hana Highway;

H. Construction of the runway pavement strengthening project for Runway 2-20 and the taxiways overlay, not to include emergency repairs necessary to keep the runway open ( );

N. Construction of Phase II of the new passenger terminal building, a long term project identified in the March 1989 Kahului Airport Development Plan (Revision 1) and shown as part of the Long-Term Development Plan on Figure 6.1 (Revision 1)(A);

O. Improvement of terminal facilities for Air Scenic Tour passengers (F); and

P. Construction of the Helicopter/Scenic Tour connector taxiways (B-B);

Q. Construction of the Airport passenger terminal access road (X-Y);

2. Plaintiffs shall waive any objections to the lack of an EIS covering the following Short-Term Development Plan projects for the Kahului Airport which are either complete or substantially complete, and/or for which a prior negative declaration has been issued:

A. Construction of the Kalialinui Gulch improvements ( );

B. Construction of Phase I of the new passenger terminal building as identified in the 1981 Environmental Assessment for said project and the March 1989 Kahului Airport Development Plan (Revision 1) as part of the Short-Term Development Plan in Figure 6.2 (Revision 1)(A);

C. Construction of the circulation roadways and vehicular parking facilities at the Airport (A);

D. Construction of the 1,000 foot runway safety area at the southern end of Runway 2-20, including the perimeter access road (A-A); however, this provision shall be subject to the terms of paragraph 13 herein;

E. Widening of Keolani Place from the western boundary of the Airport to Dairy Road ( ); and

F. Relocation of the Traffic Control Tower and VORTAC installations (N,T);

3. Plaintiffs shall waive any objections to the lack of an EIS covering the following Short-Term Development and other enumerated projects for the Kahului Airport, due to their public benefit and/or lack of adverse impact:

A. Construction of a security fence around the Airport perimeter, subject to later relocation (M);

B. Construction of the post office and access ramp (C-C), provided that, should the Puunene Airport be reopened on a temporary or long-term basis, one alternative to be studied in the EIS is the location or relocation of the Post Office to Puunene;

C. Development of the Maui County baseyard at the airport ( );

D. Construction of a new crash fire rescue station and training facility (D,P);

E. Acquisition of approximately 126 acres of land for the development of the Airport passenger terminal access road, for the widening of Keolani Place from the Airport boundary to Dairy Road, and for the widening of Hana Highway ( );

F. Construction of ramp or service "perimeter" roadway (I-I);

G. New terminal access road connecting airline support facilities with passenger terminal apron (G-G);

H. Construction of a fourth lane to widen Hana Highway (X); and

I. Proposed Pulehu/Hansen Road realignment;

4. Defendants shall keep Koeheke Street open to public use at least until the Alahao Street bypass road is open to public use;

5. Defendants shall keep the perimeter road around the Runway 2-20 safety area and Haleakala Highway open to public use at least until the Hana Highway widening project is completed and the additional lanes are open to public use;

6. Defendants shall analyze the traffic impacts at the Dairy Road and Puunene Avenue intersection as part of the above-referenced EIS;

7. Defendants shall investigate, in the EIS and otherwise, the feasibility of reactivating the Puunene Airport on a permanent basis for general aviation, as a reliever airport and for night cargo operations. Defendants recognize that the implementation of the Runway 2-20 pavement strengthening project referenced to in paragraph 1.H. above could indirectly impose adverse impacts upon surrounding landowners. To mitigate these impacts, Defendants will also consider 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. If Defendants determine that the Puunene Airport will be developed as a general aviation and reliever airport, either

on a temporary or long-term basis, Plaintiffs and Defendants stipulate and agree that upon the opening of the Puunene Airport on at least a temporary basis for night use by commercial cargo aircraft, the Runway 2-20 pavement strengthening project referred to in paragraph 1.H. and the temporary reopening of the Puunene Airport need not be included within the scope of the above-referenced EIS. Should Defendants determine that the Puunene Airport will be opened on a long term basis the Kahului Airport land bank project referred to in paragraph 1.L. above need not be included within the scope of the above-referenced EIS;

8. 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 the Kahului Airport.

9. DOT shall investigate in the EIS a recreational area/beach park on airport lands adjoining the County Kanaha Beach Park.

10. Plaintiffs and Defendants stipulate and agree that for any other and further projects, including but not limited to those described in the Long Term Development Plan and any revisions to the Kahului Airport Development Plan (June 1988), or substantial or major modifications to projects enumerated in paragraphs 1 through 3 above, for which negative declarations have been published, Defendants shall

comply with applicable laws to determine whether they should be included within the scope of the above-referenced EIS or should be the subject of a supplemental EIS;

11. Defendants affirm that all projects or operations which are in planning, design or construction at the Kahului Airport have been disclosed in the Kahului Airport Development Plan (June 1988); Revision 1 to the Kahului Airport Development Plan (March 1989) and the International Flights Facilities Requirements Study, Kahului Airport (January 1989). Defendants shall provide to Plaintiffs, through their counsel, all further planning documents, environmental assessments and/or studies for revised, modified or additional projects or operations planned for the Kahului Airport, which would substantially increase beyond current levels the number or type of aircraft operations, the number of passengers using Kahului Airport, the number of vehicles using airport roadways and/or the amount of noise generated through aircraft operations.

12. 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;

13. No runways at the Kahului Airport shall be constructed, strengthened or extended in a fashion necessary to facilitate increased aircraft operations, the landing or taking off of aircraft carrying heavier loads or increased passenger operations until the impacts of these increased operations are fully analyzed in the EIS to be prepared by DOT, except that DOT may conduct emergency repairs necessary to keep runways open;

14. The findings, alternatives and recommendations contained in the FAR Part 150 Noise Study currently being undertaken for the Kahului Airport shall be investigated in the EIS. No final decisions shall be made by Defendants on the location of new facilities which are the subject of the Part 150 Noise Study and the EIS at the Kahului Airport whose positioning may have a bearing on noise impacts imposed upon surrounding lands until the completion of the Part 150 Noise Study and its submittal to the Federal Aviation Administration.

15. Except as provided in paragraph 16 below, the Complaint for Declaratory and Injunctive Relief filed herein shall be dismissed with prejudice upon compliance with the terms and conditions above and the publication of an Amended Preparation Notice consistent with the above in the OEQC Bulletin pursuant to Section 11-200-15(b), Haw. Admin. Rules; and

16. Dismissal of this case shall be without prejudice to Plaintiffs' right to seek recovery of attorney fees and other expenses herein and should be without prejudice to the rights of either party to enforce the terms of this Stipulated Order. Any provision in this Stipulation shall not be used as a basis for recovery of attorney's fees or costs.

DATED: Wailuku, Maui, Hawaii MAR 11 1991

APPROVED AS TO FORM:

Isaac Hall
Co-counsel for Plaintiffs

Arnold L. Lum
Co-counsel for Plaintiffs

Keith Tanaka
Counsel for Defendants

APPROVED AND SO ORDERED:

Sgd./E. John McConnell (Seal)
Judge of the above-entitled court

Sierra Club et al. v. Department of Transportation, State of Hawaii, et al.; Civil No. 89-0336(1); Stipulation Between Plaintiffs and Defendants to Prepare Environmental Impact Statement and Dismiss Complaint for Declaratory and Injunctive Relief and Order

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IN THE CIRCUIT COURT OF THE SECOND CIRCUIT

STATE OF HAWAII

SIERRA CLUB, a California non-profit corporation, MARY EVANSON; MAUI AIR TRAFFIC ASSOCIATION, INC., a Hawaii non-profit corporation; STEPHEN PITT; JAMES BENDON; HUI ALANUI O MAKENA, a Hawaii non-profit corporation; and DANA NAONE HALL; and NATIONAL AUDUBON SOCIETY, a New York non-profit corporation; Plaintiffs, vs. JOHN WAIHEE, in his capacity as Governor of the State of Hawaii; DEPARTMENT OF TRANSPORTATION, STATE OF HAWAII: REX P. JOHNSON, in his capacity as Director of the Department of Transportation, State of Hawaii; THE LAND USE COMMISSION, STATE OF HAWAII; RENTON L.K. NIP, in his capacity as Chairperson of the Land Use Commission, State of Hawaii, Defendants.	Civil No. SUMMONS

SUMMONS

STATE OF HAWAII:

To the above-named Defendants:

You are hereby summoned and required to serve upon Plaintiffs' attorneys Paul P. Spaulding, III and Denise E. Antolini, whose address is 212 Merchant St. #202, Honolulu, HI 96813 and upon Isaac Hall, whose address is 2087 Wells Street, Wailuku, Hawaii 96793, an answer to the Complaint which is herewith served upon you, within 20 days after service of this summons upon you, exclusive of the day of service. If you fail to do so, judgment by default will be taken against you for the relief demanded in the Complaint.

DATED: Wailuku, Maui, Hawaii, October 6, 1992.

(sgd.) J. K[illegible]

Clerk of Court

SEAL

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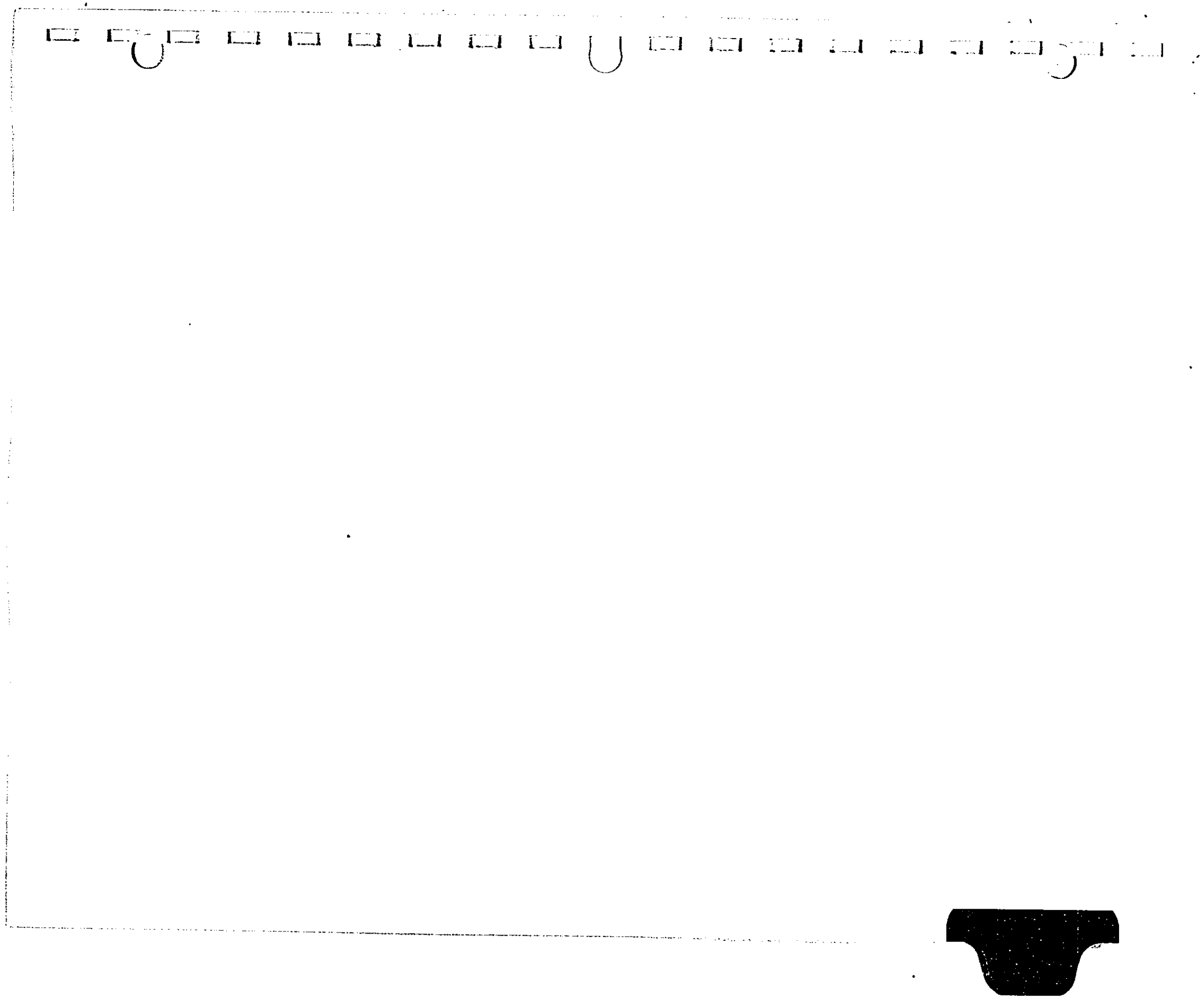

APPENDIX C

NOISE ANALYSIS

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KAHULUI EIS
NOISE ANALYSIS

February 29, 1996
Mestre Greve Associates

Table of Contents

1.0 OUTLINE OF NOISE ANALYSIS

This report is presented in 5 major sections including this introduction. Section 2 presents background information on sound, noise, and how noise affects people. Section 3 describes the methodology used for this study. Section 4 describes the existing noise setting in the environs of Kahului Airport. Section 5 presents a description of potential project impacts.

The analyses presented in this study address both aircraft noise and highway noise.

2.0 BACKGROUND INFORMATION

2.1 Introduction

Noise is often described as unwanted sound, is known to have several adverse effects on people. The purpose of this study is to present background information on the characteristics of noise as it relates to aircraft noise around Kahului Airport in Maui, Hawaii and summarize the methodologies that were used to study the noise environment. This section is intended to give the reader a greater understanding of the noise metrics and methodologies used to assess airport noise impacts. This section is divided into the following sub-sections:

- *Properties of sound that are important for technically describing sound in the airport setting*
- *Acoustic factors in human subjective response to sound that affect its perception*
- *Potential human disturbances and health effects due to sound*
- *Sound rating scales used in this study*
- *Summary of current aircraft noise assessment criteria*

2.2 Characteristics of Sound

Sound Level and Frequency. Sound can be technically described in terms of the sound pressure (amplitude) and frequency (similar to pitch). Sound pressure is a direct measure of the magnitude of a sound without consideration for other factors that may influence its perception.

The range of sound pressures that occur in the environment is so large that it is convenient to express these pressures as sound pressure levels on a logarithmic scale. The standard unit of measurement of the sound is the Decibel (dB). The sound pressure level in decibels is the pressure of a sound relative to a reference pressure of 20 micropascals. The logarithmic scale compresses the wide range in sound pressures to a more usable range of numbers.

The frequency of a sound is expressed as Hertz (Hz) or cycles per second. The normal audible frequency for young adults is 2 Hz to 16,000 Hz. The prominent frequency range for aircraft noise is between 50 Hz and 5,000 Hz. The human ear is not equally sensitive to all frequencies. Some frequencies are judged to be louder for a given signal than others. As a result of this, various methods of frequency weighting have been developed. The most common weighting is the A-weighted noise curve (dBA). The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. In the A-weighted decibel, every day sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Most community noise analyses are based upon the A-weighted decibel scale. Examples of various sound environments, expressed in dBA, are presented in Exhibit 1.

Propagation of Noise. Sound levels decrease as a function of distance from the source, and as a result of wave divergence, atmospheric absorption, and ground attenuation. If sound is radiated from a source in a homogeneous and undisturbed manner, the sound travels as spherical waves. The sound wave form travels away from the source, the sound energy is dispersed over a greater area dispersing the sound power of the wave. Spherical spreading of the sound wave reduces the noise level at a rate of 6 dB per doubling of the distance.

Atmospheric absorption also influences the levels that are received by the observer. The greater the distance traveled, the greater the influence and the resultant fluctuations. Atmospheric absorption becomes important at distances of greater than 1000 feet. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest at high humidity and higher temperatures. Sample atmospheric attenuation graphs are presented in Exhibit 2. Turbulence and gradients of wind, temperature and humidity also play a significant role in determining the degree of attenuation. Certain conditions, such as inversions, can also result in higher noise levels than would result from spherical spreading as a result of channeling the sound waves.

Absorption effects in the atmosphere vary with frequency. The higher frequencies are more readily absorbed than the lower frequencies. Over large distances, the lower frequencies become the dominant frequency as the higher frequencies are attenuated. These factors are an important consideration for assessing aircraft noise on the island of Maui. Given the large distances between the noise source and receiver at many locations around Maui, atmospheric conditions will not only have a significant effect upon sound levels on a day to day basis, but will also influence how these sounds are perceived.

Duration of Sound. The annoyance from a sound rises with increased duration. The "*effective duration*" of a sound is the time between when a sound rises above the background sound level until it drops back below the background level. Psycho-

acoustic studies have determined a relationship between duration and annoyance. These studies determined how much a given sound level, of a given duration, must be reduced to be judged equally annoying as another sound level of greater duration. For example, compared to a given constant sound level lasting 10 seconds, another constant sound level lasting more than 10 seconds would need to be reduced to be considered equally annoying and the studies previously mentioned quantifies this amount. Duration is an important factor in describing the aircraft noise in the airport setting.

The relationship between duration and noise level is the basis of the equivalent energy principal of sound exposure. Reducing the acoustic energy of a sound by one half results in a 3 dB reduction. Doubling the duration of the sound increases the total energy of the event by 3 dB. This equivalent energy principal is based upon the premise that the potential for a noise to impact a person is dependent on the total acoustical energy content of the noise (EPA, 1974). DNL, LEQ and SEL are all based upon the equal energy principle and defined in subsequent sections of this study.

Change in Noise. This concept of change in ambient sound levels can be better understood with an explanation of the hearing mechanism's reaction to sound. The human ear is a far better detector of relative differences in sound levels than absolute values of levels. Under controlled laboratory conditions, listening to a steady unwavering pure tone sound that can be changed to slightly different sound levels, a person can just barely detect a sound level change of approximately one decibel for sounds in the mid-frequency region. When ordinary noises are heard, a young healthy ear can detect changes of two to three decibels. A five decibel change is readily noticeable while a 10 decibel change is judged by most people as a doubling or a halving of the loudness of the sound.

Recruitment of Loudness. Recruitment describes the perception of loudness in situations where the threshold of hearing of a sound is elevated by masking from a background sound. A listener's judgment of the loudness of a sound will vary with different levels of background noise. In low level background situations that are near the threshold of hearing, the loudness level of a sound increases gradually. In these situations, a desired sound, such as music that is a level of 40 to 60 dB above the background, would be judged as comfortable. In loud background settings, a sound that is approximately 20 dB above the masking threshold will be perceived as the same loudness as the sound would have if no masking sound was present.

Masking Effect. A characteristic of sound is the ability of a sound to interfere with the ability of a listener to hear another sound. This is defined as the masking effect. The presence of one sound effectively raises the threshold of audibility for the hearing of a second sound. For a signal to be heard, it must exceed the threshold of hearing for that particular individual and exceed the masking threshold for the background noise.

The masking characteristics of sound is dependent upon many factors, including the

spectral characteristics of the two sounds, the sound pressure levels and the relative start time of the sounds. The masking affect is greatest when the masking frequency is closest to the frequency of the signal. Low frequency sounds can mask higher frequency sounds, however, the reverse is not true.

2.3 Factors Influencing Human Response to Sound

Many factors influence how a sound is perceived and whether or not it is considered annoying to the listener. This includes not only physical characteristics of the sound but also secondary influences such as sociological and external factors. Molino, in the Handbook of Noise Control (Harris, 1979) describes human response to sound in terms of both acoustic and non-acoustic factors. These factors are summarized in Table 1.

Sound rating scales are developed to account for the factors that affect human response to sound. Nearly all of these factors are relevant in describing how aircraft sounds are perceived in airport settings. Many of the non-acoustic parameters play a prominent role in affecting individual response to aircraft noise. Background sound, an additional acoustic factor not specifically listed, is also important in describing aircraft sound in rural settings.

Table 1
Factors that Affect Individual Annoyance to Noise

Primary Acoustic Factors
- Sound Level
- Frequency
- Duration

Secondary Acoustic Factors
- Spectral Complexity
- Fluctuations in Sound Level
- Fluctuations in Frequency
- Rise-time of the Noise
- Localization of Noise Source

Non-acoustic Factors
- Physiology
- Adaptation and Past Experience
- How the Listener's Activity Affects Annoyance
- Predictability of When a Noise will Occur
- Is the Noise Necessary?
- Individual Differences and Personality

Source: C. Harris, 1979

2.4 Health Effects of Noise

Noise, often described as unwanted sound, is known to have several adverse effects on people. From these known adverse effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. These criteria are based on effects of noise on people such as hearing loss (not a factor with community noise), communication interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people is briefly discussed in the following narratives:

- *Hearing Loss* is generally not a concern in community airport noise problems. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry, or very noisy work environments with long term exposure. The Occupational Safety and Health Administration (OSHA) identifies a noise exposure limit of 90 dBA for 8 hours per day to protect from hearing loss. Noise levels in neighborhoods, even in very noisy airport environs near major international airports, are not sufficiently loud to cause hearing loss.

- *Communication Interference* is one of the primary concerns in environmental noise problems. Communication interference includes speech interference and activities such as watching television. Normal conversational speech is in the range of 60 to 65 dBA, and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level. Exhibit 3 shows the relation of quality of speech communication with respect to various noise levels.

- *Sleep Interference* is a major noise concern in aircraft noise assessment and, of course, is most likely to occur during nighttime hours. Sleep disturbance is one of the major causes of annoyance due to community noise. Noise can make it difficult to fall asleep, create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages and cause awakening. Noise may even cause awakening which a person may or may not be able to recall.

  Extensive research has been conducted on the effect of noise on sleep disturbance. Recommended values for desired sound levels in residential bedroom space range from 25 to 45 dBA with 35 to 40 dBA being the norm. The National Association of Noise Control Officials have published data on the probability of sleep disturbance with various single event noise levels. Based on experimental sleep data as related to noise exposure, a 75 dBA interior noise level event will cause noise induced awakening in 30 percent of the cases. A summary of these data is presented in Exhibit 4.

  It is important to note that recent research from England has shown that the probability for sleep disturbance is less than what has been reported from earlier research. This research showed that once a person has fallen asleep, it becomes much more unlikely for that person to be awakened by a noise. The significant difference in the recent English study is the use of actual in home sleep disturbance patterns as opposed to laboratory data that has been historically the basis for predicting sleep disturbance. It is therefore likely that the data shown in Exhibit 4 overestimates the sleep disturbance at a given noise level.

- *Physiological Responses* are those measurable effects of noise on people which are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are a sign of harm. Generally, physiological responses are a reaction to a loud short term noise such as a rifle shot or a very loud jet overflight.

- *Annoyance* is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability. The level of annoyance, of course, depends on the characteristics of the noise (i.e.; loudness, frequency spectra, time, and duration), and how much activity interference (e.g. speech interference and sleep interference) results from the noise. However, the level of annoyance is also a function of the attitude of the receiver. Personal sensitivity to noise varies widely. It has been estimated that 2 to 10 percent of the population is highly susceptible to noise not of their own making, while approximately 20 percent are unaffected by noise. Attitudes are affected by the relationship between the person and the noise source. (Is it our dog barking or the neighbor's dog?) Whether we believe that someone is trying to abate the noise will also affect our level of annoyance.

2.5 Sound Rating Scales

The description, analysis, and reporting of community sound levels from aircraft is made difficult by the complexity of human response to sound and the myriad of sound-rating scales and metrics that have been developed for describing acoustic effects. Various rating scales have been devised to approximate the human subjective assessment to the "loudness" or "noisiness" of a sound. Noise metrics have been developed to account for additional parameters such as duration and cumulative effect of multiple events.

Noise metrics can be categorized as single event metrics and cumulative metrics. Single event metrics describe the noise from individual aircraft events. Cumulative metrics describe the noise in terms of the total noise exposure throughout the day. Noise metrics used in this study are summarized below:

Single Event Metrics

- *Frequency Weighted Contours (dBA).* In order to simplify the measurement and computation of sound loudness levels, frequency weighted networks have obtained wide acceptance. The A-weighting (dBA) scale has become the most prominent of these scales and is widely used in community noise analysis. Its advantages are that it has shown good correlation with community response and is easily measured. The metrics used in this study are all based upon the dBA scale.

- *Maximum Noise Level.* The highest noise level reached during the flyover is, not surprisingly, called the "Maximum Noise Level," or Lmax. As an aircraft approaches, the sound of the aircraft begins to rise above ambient noise levels. The closer the aircraft gets the louder it is until the aircraft is at its closest point. Then as the aircraft passes, the noise level decreases until the sound level again settles to ambient levels. Such a history of a flyover is plotted at the top of Exhibit 5. It is this metric to which people generally instantaneously respond when an aircraft flyover occurs. Speech and sleep interference research can be assessed relative to maximum noise level data.

- *Sound Exposure Level (SEL).* Another metric that is reported for aircraft flyovers is the Sound Exposure Level (SEL). It is computed from dBA sound levels. Referring again to the top of Exhibit 5, the shaded area, or the area within 10 dB of the maximum noise level, is the area from which the Sound Exposure Level is computed. The SEL value is the integration of all the acoustic energy contained within the event.

  This metric takes into account the maximum noise level of the event and the duration of the event. Single event metrics are a convenient method for describing noise from individual aircraft events. This metric is useful in that airport noise models contain aircraft noise curve data based upon the SEL metric. In addition, cumulative noise metrics such as LEQ and DNL can be computed from SEL data.

Cumulative Metrics

- *Equivalent Noise Level (LEQ).* LEQ is the sound level corresponding to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given sample period. LEQ is the "energy" average noise level during the time period of the sample. It is the energy sum of all the sound that occurs during that time period. This is graphically illustrated in the middle graph of Exhibit 5. It is used as a noise metric because the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. LEQ can be measured for any time period, but is typically measured for 15 minutes, 1 hour or 24-hours. Leq for a one hour period is used by the Federal Highway Administration for assessing highway noise impacts.

- *Day Night Noise Level (DNL).* Cumulative noise metrics have been developed to assess community response to noise. They are useful because these scales attempt to include the loudness of each event, the duration of these events, the total number of events and the time of day these events occur into one single number rating scale. They are designed to account for the known health effects of noise on people described earlier. It should be noted that DNL is the current notation for "Day/Night Noise Level" who's former notation was Ldn. These two notations refer to the same noise metric.

  DNL is a 24-hour, time-weighted energy average noise level based on the A-weighted decibel. It is a measure of the overall noise experienced during an entire day. The time-weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized for occurring at these times. In the DNL scale, those events that take place during the night (10 p.m. to 7 a.m.) are penalized by 10 dB. This penalty was selected to attempt to account for the higher sensitivity to noise in the nighttime and the expected decrease in background noise levels that typically occur in the nighttime.

  DNL is graphically illustrated in the bottom of Exhibit 5. Examples of various noise environments in terms of DNL are presented in Exhibit 6. The DNL index is specified by the FAA and the Environmental Protection Agency (EPA) for airport noise assessment.

Supplemental Metrics

- *Time Above (TA).* The FAA has developed the Time Above metric as a second metric for assessing impacts of aircraft noise around airports. The Time Above index refers to the total time in seconds or minutes that aircraft noise exceeds certain dBA noise levels in a 24-hour period. It is typically expressed as Time Above 75 and 85 dBA sound levels. While this index is not widely used, it may be used by the FAA in environmental assessments of airport projects that show a significant increase in noise levels. However, there are no noise and land use standards in terms of the Time Above index which makes this metric of limited use in judging land use compatibility or impact.

- *Percent Noise Level (Ln).* To account for intermittent or fluctuating noise, another method to characterize noise is the Percent Noise Level (Ln). The Percent Noise Level is the level exceeded n% of the time during the measurement period. It is usually measured in the A-weighted decibel, but can be an expression of any noise rating scale. Percent Noise Levels are another method of characterizing ambient noise where, for example, L90 is the noise level exceeded 90 percent of the time, L50 is the level exceeded 50 percent, and L10 is the level exceeded 10 percent of the time. L90 represents the background or minimum noise level, L50 represents the average noise level, and L10 the peak or intrusive noise levels.

- *Detectability*. Cumulative measures of community noise (such as DNL) are less sensitive to low-level sounds that may occur infrequently and thereby do not materially affect integrated energy averages. This situation is predominant in the remote locations, in which otherwise quiet areas are intermittently disturbed by low-level sounds from aircraft overflights. For this reason, a metric that considers both background sound and the relative level from the aircraft overflights may be useful to supplement the DNL analysis in some circumstances.

  Researchers (Fidell & Teffeteller, 1978) have demonstrated that the annoyance of low-level sounds may be predicted through a descriptor known as detectability. The research showed that in low-level sound settings, signal detection or audibility can be the most important factor in predicting annoyance. Detectability provides a method of measuring this level of intrusion.

  Detectability, as it is known today, began with the development of a formal psycho-acoustic theory of detectability in the mid-1960s (Green & Swets, 1966). This concept evolved into an analytical tool through interest in military, industrial, and environmental applications. Emphasis has also been placed on establishing criteria for non-detectability as well. For example, predicting the audibility of acoustic signals from military vehicles in the field is a prime application area (Fidell, Pearsons & Bennett, 1972; Fidell & Bishop, 1974). Detectability is a function of the differential between the 1/3 octave band noise level of the source and the background in the same frequency band. Other factors include the band width in that same frequency band and the efficiency of the listener.

  Detectability is useful in describing when a signal is detectable in various background settings. In addition to these low-level sound applications, more recent work by Fidell, et al. (Fidell & Teffeteller, 1981, Dunholter, 1987, 1988) suggests that the detectability concept may also be applicable to more complex noise environments.

  In summary, the concept of detectability and its relation to annoyance appears to be applicable to low-level sound situations that are common in remote areas. However, it should be noted that the research on detectability was conducted primarily under constrained laboratory conditions. Detectability has not been tested to predict annoyance in an outdoor setting where both the background and source vary with respect to amplitude, frequency and temporal domain. As a result it will not be used as a metric for analysis in this study.

2.6 Noise/Land Use Compatibility Standards and Guidelines

Noise metrics are used in an attempt to quantify community response to various noise exposure levels. The public reaction to different noise levels has been estimated from extensive research on human responses to exposure from different levels of aircraft

noise. Exhibit 7 relates DNL noise levels to community response from one of these surveys. Community noise standards are derived from tradeoffs between community response surveys, such as this, and economic considerations for achieving these levels. These standards generally are in terms of the DNL 24-hour averaging scale that is based upon the A-weighted decibel. Utilizing these metrics and surveys, agencies have developed standards for assessing the compatibility of various land uses with the noise environment.

The purpose of this section is to present information regarding noise and land use criteria that may be useful in the evaluation of noise impacts. With respect to airports, most of the administrative actions are taken by the Federal Aviation Administration. These laws and regulations provide the basis for local development of airport plans, analyses of airport impacts, and the enactment of compatibility policies. A summary of some of the more pertinent regulations and guidelines are presented in the following paragraphs.

Federal Aviation Administration

- *Airport and Airway Development Act of 1970, as amended (Public Laws 91-258 and 94-353).*

  This act establishes the Federal requirements for funding of airport planning under the Planning Grant Program (PGP) and airport development under Airport Development Aid Program (ADAP). An Airport and Airway Trust Fund is created to pay for these programs and operations of the Federal Aviation system. The general types of projects eligible for Federal funding are indicated. Additionally, the Act directs the preparation of a National Airport System Plan (NASP) which lists the location of airports in the national system of airports and the recommended development of each.

  Among the conditions for Federal funding are two requirements involving airport/land use compatibility. As a condition to the receipt of ADAP funds, the airport sponsor (owner) must, among other things, give assurances regarding land uses in the airport environs that:

  > *"The aerial approaches to the airport will be adequately cleared and protected by removing, lowering, relocating, marking, lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards";*
  >
  > *and that: "Appropriate action, including the adoption of zoning laws, has been or will be taken to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft."*

- *Federal Aviation Regulations, Part 36, "Noise Standards: Aircraft Type and Airworthiness Certification".*

  Originally adopted in 1960, FAR Part 36 prescribes noise standards for issuance of new aircraft type certificates. Part 36 prescribes limiting noise levels for certification of new types of propeller-driven, small airplanes as well as for transport category, large airplanes. Subsequent amendments extended the standards to certain newly produced aircraft of older type designs. Other amendments have at various times extended the required compliance dates. Although aircraft meeting Part 36 standards are noticeably quieter than many of the aircraft then and now flying, the regulations make no determination that such aircraft are acceptably quiet for operation at any given airport.

- *U.S. Department of Transportation Aviation Noise Abatement Policy.*

  This policy, adopted in 1976, sets forth the noise abatement authorities and responsibilities of the Federal Government, airport proprietors, State and Local governments, the air carriers, air travelers and shippers, and airport area residents and prospective residents. The basic thrust of the policy is that the FAA's role is primarily one of regulating noise at its source (the aircraft) plus supporting local efforts to develop airport noise abatement plans. The FAA will give high priority in the allocation of ADAP funds to projects designed to ensure compatible use of land near airports, but it is the role of State and Local governments and airport proprietors to undertake the land use and operational actions necessary to promote compatibility.

- *Aviation Safety and Noise Abatement Act of 1979.*

  Further weight was given to the FAA's supporting role in noise compatibility planning by congressional inaction of this legislation. Among the stated purposes of this act is "To provide assistance to airport operators to prepare and carry out noise compatibility programs". The law establishes funding for noise compatibility planning and sets the requirements by which airport operators can apply for funding. The law does not require any airport to develop a noise compatibility program.

- *Federal Aviation Regulations, Part 150, "Air Noise Compatibility Planning".*

  As a means of implementing the Aviation Safety and Noise Abatement Act, 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 Control 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 Aviation Circular 150/5020-1 (dated August 5, 1983) and is reproduced in Exhibit 8. These guidelines represent recommendations to local authorities for determining acceptability and permissibility of land uses. The

guidelines specify a maximum amount of noise exposure (in terms of the cumulative noise metric DNL) 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. Note that residential land use is deemed acceptable for noise exposures up to 65 DNL. Recreational areas are also considered acceptable for noise levels up to 70 DNL (with certain exceptions for outdoor sport activity areas, amusement parks, resorts and camps 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."

- *Federal Aviation Order 5050.4 and Directive 1050.1 for Environmental Analysis of Aircraft Noise Around Airports.*

  The FAA has developed guidelines (Order 5050.4D) for the environmental analysis of airports. Federal requirements now dictate that increases in noise levels in noise sensitive land uses of over 1.5 DNL within the 65 DNL contour are considered significant (1050.1A Directive 12.21.83). The FAA only considers noise impacts that occur at the 65 DNL or greater. No analysis is required beyond the 65 DNL.

- *Airport Noise and Capacity Act of 1990*

  The Airport Noise and Capacity Act of 1990 (PL 101-508, 104 Stat. 1388), also known as ANCA or the Noise Act, established two broad directives to the FAA; (1) establish a method to review aircraft noise, and airport use or access restrictions, imposed by airport proprietors, and (2) institute a program of phase-out Stage II aircraft over 75,000 pounds by December 31, 1999. Stage II aircraft are older, noisier aircraft (B-737-200, B-727 and DC-9); Stage III aircraft are newer, quieter aircraft (B-737-300, B-757, MD80/90). To implement ANCA, FAA amended Part 91 and issued a new Part 161 of the Federal Aviation Regulations. Part 91 addresses the phase-out of large Stage II aircraft and the phase-in of Stage III aircraft. Part 161 establishes a stringent review and approval process for implementing use or access restrictions by airport proprietors.

  Part 91 generally states that all Stage II aircraft, over 75,000 pounds, will be out of the fleet by December 31, 1999. There are a few exceptions, but for the most part, only Stage III aircraft greater than 75,000 pounds will be in the domestic fleet after that date. The airlines have options on how and when to phase-out Stage II aircraft, but it is anticipated that the domestic fleet in the mainland will be all Stage III by the year 2000. The State of Hawaii is exempt from the phase out requirements of Stage II aircraft.

Part 161 sets out the requirements and procedures for implementing new airport use and access restrictions by airport proprietors. Proprietors must use the DNL metric to measure noise effects, and that the Part 150 land use guideline table, including 65 DNL as the threshold contour, be used to determine compatibility, unless there is a locally adopted standard more stringent.

The regulation identifies three types of use restrictions and treats each one differently; negotiated restrictions, Stage II aircraft restrictions and Stage III aircraft restrictions. Generally speaking, any use restriction which affects the number or times of aircraft operations will be considered an access restriction. Even though the Part 91 phase-out does not apply to aircraft under 75,000 pounds, FAA has determined that Part 161 limitations on proprietors' authority applies as well to the smaller aircraft.

Negotiated restrictions are more favorable from the FAA's standpoint, but still require unwieldy procedures for approval and implementation. They must be agreed upon by all airlines, and public notice must be given.

Stage II restrictions are more difficult, as one of the major reasons for ANCA was to discourage local restrictions more stringent that the ANCA's 1999 phase-out. To comply with the regulation and institute n new Stage II restriction, the proprietor must generally do two things. It must prepare a cost/benefit analysis of the proposed restriction and give proper notice. The cost/benefit analysis is extensive and entails considerable evaluation. Stage II restrictions do not require approval by the FAA.

Stage III restrictions are especially difficult to implement. A Stage III restriction involves considerable additional analysis, justification, evaluation and financial discussion. In addition, a Stage III restriction must result in a decrease in noise exposure of the 65 DNL to noise sensitive land uses (residences, schools, churches, parks, etc.). The regulation requires both public notice and FAA approval.

ANCA applies to all local noise restrictions that are proposed after October, 1990. It also applies to amendments to existing restrictions proposed after October, 1990.

The State of Hawaii has conducted hearings on regulations regarding the prohibition of Stage II aircraft at Kahului Airport. If the State were to adopt these regulations, a specific date would be determined from which point on, the use of Stage II aircraft would be prohibited at Kahului Airport. At the time of the writing of this EIS, no decision had been made by the State as to when, or even if, a specific date for prohibiting Stage II aircraft at Kahului Airport would be adopted.

Environmental Protection Agency Noise Assessment Guidelines

- *Environmental Protection Agency, "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety".*

  In March 1974 the EPA published a very important document (EPA, 1974) entitled "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety" (EPA 550/9-74-004). In this document, 55 DNL is described as the requisite level with an adequate margin of safety for areas with outdoor uses, this includes residences, and recreational areas. This document does not constitute EPA regulations or standards. Rather, it is intended to "provide State and Local governments as well as the Federal Government and the private sector with an informational point of departure for the purpose of decision-making". Note that these levels were developed for suburban type uses. In some urban settings, the noise levels will be significantly above this level, while in some wilderness settings, the noise levels will be well below this level. The EPA "levels document" does not constitute a standard, specification or regulation, but identifies safe levels of environmental noise exposure without consideration for economic cost for achieving these levels.

Federal Interagency Committee on Noise (FICON) Report of 1991

- The use of the DNL metric and the 65 DNL criteria has been subject to criticism from various interest groups concerning its usefulness in assessing aircraft noise impacts. As a result, at the direction of the EPA and the FAA, the Federal Interagency Committee On Noise (FICON) was formed to review specific elements of the assessment of airport noise impacts and to make recommendations regarding potential improvements. FICON is composed of representatives from the Departments of Transportation, Defense, Justice, Veterans Affairs, Housing and Urban Development; the Environmental Protection Agency; and the Council on Environmental Quality.

  FICON was formed to review Federal policies which are used in the assessment of airport noise impacts. The FICON review focused primarily on the manner in which noise impacts are determined, including whether aircraft noise impacts are fundamentally different from other transportation noise impacts; the manner in which noise impacts are described; and the extent of impacts outside of Day-Night Average A-Weighted Sound Level (DNL) 65 decibels (dB) that should be reviewed in a National Environmental Policy Act (NEPA) document.

  The committee determined that there are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric. The methodology employing DNL as the noise exposure metric and appropriate dose-response relationships to determine noise impact is considered the

proper one for civil and military aviation scenarios in the general vicinity of airports. The report does support agency discretion in the use of supplemental noise analysis. The report does recommend improvement in public understanding of the DNL, supplemental methodologies and aircraft noise impacts.

The document "Federal Agency Review of Selected Airport Noise Analysis Issues," (August, 1992), prepared by the Federal Interagency Committee on Noise provides a recommendation for the use of 60 or 65 DNL as the critical airport noise exposure level. This recommendation is summarized in "Section 3.4 - Scope of Airport Noise Analysis between DNL 60 dB and 65 dB," on page 3-5 of the document mentioned above and is reproduced below.

> *"RECOMMENDATION: If screening analysis shows that noise-sensitive areas that will be at or above DNL 65 dB would have an increase of DNL 1.5 dB or more, further analysis should be conducted of noise sensitive areas between DNL 60-65 dB having an increase of DNL 3 dB or more due to the proposed airport noise exposure. "*

Federal Highway Administration

- The Federal Highway Administration (FHWA) has adopted and published noise standards for highway construction projects. These standards are published in the "Federal Aid Policy Guide," 23 CFR 772, "Procedures For Abatement of Highway Traffic Noise and Construction Noise," December 9, 1991. The following noise standards are taken from the FHWA guide:

> *"NOISE STANDARDS. The highway traffic noise prediction requirements, noise analyses, noise abatement criteria, and requirements for informing local officials in this directive constitute the noise standards mandated by 23 U.S.C. 109 (i). All highway projects which are developed in conformance with this directive shall be deemed to be in conformance with the Federal Highway Administration (FHWA) noise standards.*

The noise abatement criteria specified by the FHWA are presented in Table 2 in terms of the maximum one hour Equivalent Noise Level (LEQ).

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.

TABLE 2
FHWA NOISE ABATEMENT CRITERIA

ACTIVITY CATEGORY	NOISE ABATEMENT CRITERIA LEVEL -LEQ	DESCRIPTION OF ACTIVITY CATEGORY
A (exterior)	57	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 (exterior)	67	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 (exterior)	72	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 (interior)	52	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Reference: Code of Federal Regulations (23 CFR 772)

Note that the FHWA and FAA use different noise metric for land use/noise compatibility assessment. The FAA uses the 24 hour weighted energy average metric DNL (as recommended by the EPA for aircraft noise), and the FHWA uses the peak one hour energy average noise level Leq. In this EIS, the FAA metric will be used for assessing aircraft noise and the FHWA metric will be used to assess highway noise.

State of Hawaii

- The Airports Division of the Hawaii State Department of Transportation, has determined that an aircraft noise limit of 60 Ldn should be utilized as the noise/land use criteria for noise-sensitive land uses. The Department has developed this recommendation based on a review of available noise compatibility standards and considering that Hawaiian homes normally involve naturally

ventilated structures and may not be as well insulated as mainland structures. The State DOT recommendations are reproduced here in Table 3. Applicable uses are dwellings, and public use structures such as schools, libraries, churches, clinics, and meeting rooms. The State DOT's noise compatibility criteria for these and other uses are about 5 Ldn units lower than the FAR Part 150 criteria (see Exhibit 8).

Table 3
State Department of Transportation Recommendations for Local Land Use Compatibility Expressed in Yearly Day-Night Average Sound Levels (Ldn)

	Yearly Day-Night Average Sound Level					
Type of Land Use	<60	60-65	65-70	70-75	75-80	80-85
RESIDENTIAL:						
Low density residential, resorts & hotels w/ outdoor facilities	Y	N(b)	N	N	N	N
Low density apartment w/ 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	Y	N(b)	N(b)	N	N	N
PUBLIC USE:						
Schools, day care centers, libraries, & clinics	Y	N(c)	N(c)	N(c)	N	N
Hospitals, nursing homes, clinics, and health care facilities	Y	Y(d)	Y(d)	Y(d)	N	N
Indoor auditorium and concert halls	Y(c)	Y(c)	N	N	N	N
Government services and office bldgs. serving the general public	Y	Y	Y(d)	Y(d)	N	N
Transportation and parking facilities	Y	Y	Y(d)	Y(d)	Y(d)	Y(d)
COMMERCIAL AND GOVERNMENT USE:						
Offices, government, business & professional	Y	Y	Y(d)	Y(d)	N	N
Wholesale & Retail: (bldg. materials, hardware and heavy equip.)	Y	Y	Y(d)	Y(d)	Y(d)	Y(d)
Airport businesses-car rental agencies, tours, lei stands	Y	Y	Y(d)	Y(d)	N	N
Retail trade, restaurants, shopping centers, financial institutes, 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 w/o outdoor sets, broadcasting and Production facility	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) & 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

Table 3 Continued:

	Yearly Day-Night Average Sound Level					
Type of Land Use	<60	60-65	65-70	70-75	75-80	80-85
RECREATIONAL USE:						
Outdoor sports arenas & 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	Y	Y	Y	N	N	N
Amusements, parks, resorts & camps	Y	Y	Y	Y	N	N
Public golf courses, riding stables, cemeteries, gardens, etc.	Y	Y	N	N	N	N
Professional sports facility., media event facility., etc.	Y(f)	N	N	N	N	N
Extensive natural wildlife and recreation areas	Y(f)	N	N	N	N	N

Note: Letters in parenthesis refer to the following notes.

(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 should 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, but 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 exterior noise is greater than 65 Ldn.

(f) Impact of amplitude, duration, frequency, and tonal content of aircraft noise events should be evaluated.

Abbreviations:
Y (Yes) = Land Use and related structures compatible without restrictions.
N (No) = Land Use and related structures are not compatible and should be prohibited.

Source: Airports Division, Department of Transportation, State of Hawaii

3.0 METHODOLOGY

3.1 Background

The methodology of the computer noise modeling used to describe the existing noise environment is presented in this section. The noise data from the on site noise measurements made as part of the "Kahului Airport - FAR Part 150 Noise Compatibility Program, Volume II Noise Compatibility Program Report," (September, 1995) by Belt Collins Hawaii and Y. Ebisu & Associates is presented here to supplement the description of the existing noise environment.

The noise environment is commonly depicted in terms of lines of equal noise levels, or noise contours. Generating accurate noise contours is largely dependent upon the use of a reliable noise computer model and the accurate representation of operational data. The details of the computer modeling methodologies will be discussed below.

3.2 Computer Modeling

Contour modeling is a very key element of the noise study. Generating accurate noise contours is largely dependent on the use of a reliable, validated, and updated noise model. It is imperative that these contours be accurate for the meaningful analysis of airport noise impacts. The computer model can then be used to predict the changes to the noise environment as a result of any of the development alternatives under consideration. There are several noise contour computer models in use. The FAA's Integrated Noise Model (INM) was chosen for the aviation noise portion of this study because it is the one most commonly used to model commercial airports. The highway noise analysis was performed using the modeling methodology developed by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December 1978) because it is the most widely used traffic noise prediction model. The "FHWA Highway Traffic Noise Prediction Model" will be discussed in greater detail in the traffic noise analysis report.

The airport noise contours were generated using the INM Version 4.11. The original version was released in 1977. The latest version, INM Version 4.11, was released for use in December 1993. The INM is a large computer program developed to plot noise contours for airports. The program is provided with standard aircraft noise and performance data for over 100 aircraft types that can be tailored to the characteristics of the airport in question. Version 4.11 includes an updated data base that includes some newer aircraft, the ability to include runups in the computations, the ability to include topography in the computations, and the provision to vary aircraft profiles in an automated fashion.

One of the most important factors in generating accurate noise contours is the collection of accurate operational data. The INM program requires the input of the physical and operational characteristics of the airport. Physical characteristics include

runway coordinates, airport altitude, and temperature. Operational characteristics include various types of aircraft data. This includes not only the aircraft types and flight tracks, but also departure procedures, arrival procedures and stage lengths that are specific to the operations at the airport. Aircraft data needed to generate noise contours include:

- Number of aircraft operations by type
- Types of aircraft
- Day/Night time distribution by type
- Flight tracks
- Flight track utilization by type
- Flight profiles
- Typical operational procedures

4.0 EXISTING NOISE ENVIRONMENT

4.1 Aircraft Noise

Noise measurement data were included in the report "Kahului Airport - FAR Part 150 Noise Compatibility Program: Volume II, Noise Compatibility Program Report," (September 1995) prepared by Belt Collins Hawaii Ltd. and Y. Ebisu & Associates and summarized here in Exhibit 9. The data included here include the type of aircraft, the number of aircraft measured, and the noise associated with that aircraft type. The noise measurement sites are shown in Exhibit 10. All the sites, designated by a letter identifier, are those sites selected and analyzed in the FAR Part 150 (September 1995).

The existing noise environment for Kahului Airport was analyzed based upon calendar year 1994 operational conditions. Existing aircraft operational levels are presented in Table 4. These data represent the total number of aircraft operations for the year and is the sum of all departures and arrivals.

Aircraft flight tracks used to model 1994 noise levels are shown in Exhibits 11, 12, and 13 for fixed wing departure, fixed wing approach, and helicopter operations respectively. These tracks include the effects of flight track dispersion and were derived from radar data obtained from the FAA Air Traffic Control in Honolulu. The 1994 DNL noise contours for Kahului Airport are shown in Exhibit 14. The INM input file for these contours are provided in the Appendix. Upon comparison of the 1994 DNL contours shown in Exhibit 14 to the Base Year 1993 DNL contours shown in the FAR Part 150 study by Belt Collins, it was found that the two DNL contours are very similar, both in size and shape.

The noise measurement data can be used to evaluate the aircraft noise data used by the INM computer model. A statistical comparison of measured energy average noise levels computed from the single event data for each aircraft type versus the

Table 4
Existing 1994 Aircraft Operations

AIRCARRIER	
DC10-10	3,540
DC10-30	1,283
L1011-100	1,476
L1011-250	490
B767	78
B757-200	412
B737-200 PAX	16,915
B737-200	5,618
B737300	3,755
B737-400	3,756
DC9-50	19,514
MILITARY	
TURBOPROPS	
C-130	700
P-3	992
C-135	346
C-12	17
C-20	17
C-26	3
HELICOPTERS	
HH-65	371
SH60	138
UH-1	204
CH-53	8
AH-1	171
UH-1N	138
UH-60	334
OH-58	446
CH47	150
COMMUTER	
C-208	912
WACO YMF	974
BRITTAN-NORMAN	2,286
BEECH 18	730
CESSNA 402	3,430
CESSNA 414	1,002
FOKKER F27	1,538
SHORTS 330	510
PA31	1,194
P68	654
TURBOPROP	
ATR42	672
DHC7	192
DC3	538
DHC6	8,032
HELICOPTERS	
AS350	40,190
BELL 206	14,480
H500	9,286
R22	4
GENERAL AVIATION	
GASEPV	16,421
GASEPF	8,088
BEC58P	3,122
CNA441	1,496
CL-60	44
FALCON 50	56
JETSTAR	6
LEAR 35/36	4
WW ASTRA	10
WEASTWIND II	4
HS	4
CITATION	44
G IV	294
FALCON 900	102
HELICOPTERS	3,596

comparable computer predicted noise level based on the observed flight track reported for the measurement data point was computed. The correlation coefficient computed for these data is 0.8. The correlation coefficient is a statistical measure that is used to quantify the relation of one data set to another. In this case the data being evaluated is the relation of the measured noise data to modeled noise data. A correlation coefficient of 1.0 means a perfect one to one relation between the data sets. The closer the correlation coefficient is to 1.0 the more related the data sets are. In this case the, statistics indicate that 80% of the variation shown in the measured data are accounted for by the model. Given the sample size associated with each aircraft at each location, which is small, and the effects of meteorology on sound propagation, this is a very high degree of correlation and indicates that the INM model is providing a reasonable description of aircraft noise levels around Kahului Airport.

The sites in Exhibit 10 identified as "ocean" and "pond" were added for the purposes of analysis in this EIS. The modeled DNL levels for each receptor location are provided in Table 5.

4.2 Highway Noise

The noise models used to compute the roadway noise levels were based on the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December 1978). The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the noise levels. The following section describes the assumptions used in the highway noise modeling efforts.

4.2.1 Highway Noise Modeling Assumptions

The following paragraphs describe the assumptions used in the highway noise modeling analysis.

Vehicle Count - The number of vehicles is an important factor in roadway noise levels. The traffic levels used in this analysis were obtained from the Kahului Airport expansion traffic analysis prepared by Edward K. Noda & Associates.

Vehicle Speed - Vehicle speed is an important input to the noise modeling effort. For all modeling done in this study, traffic speed was obtained from the Kahului Airport expansion traffic analysis prepared by Edward K. Noda & Associates.

Vehicle Mix - The mix of automobiles, medium trucks and heavy trucks has an effect on noise levels. The assumption used to model noise in this study was that medium trucks constitute 2% of the traffic and that heavy trucks constitute 1% of the traffic. This medium and heavy truck mix is a typical truck mix used for arterial roadways in and around Orange County, California. Medium trucks include buses and small delivery trucks (but do not include vans or pickup trucks)

TABLE 5
MODELED DNL NOISE LEVELS AT RECEPTOR LOCATIONS

RECEPTOR LOCATION	1994 EXISTING DNL
Ocean	76.2
Pond	56.3
A	78.1
B	65.9
C	59.3
D	59.6
E	65.3
F	58.8
G	54.4
J	62.4
K	50.2
M	70.6
S	62.0
T	56.4
U	51.8
V	61.8

Table 6
DISTANCE TO EXISTING 67 dB LEQ CONTOURS

ROADWAY	A.M. Peak Hour Volume (Vehicles Per Hour)	Speed (MPH)	Distance to 67 dB Leq (Feet)	P.M. Peak Hour Volume (Vehicles Per Hour)	Distance to 67 dB Leq (Feet)
Harbor Ave.					
Ala Luna to Amala Place	120	30	4	172	5
Amala Place to Kaahumanu Ave.	262	30	6	450	9
Kaahumanu Ave. to Hana Hwy.	150	30	4	232	6
Amala Place					
Harbor Ave. to Alahao Street	178	30	9	300	12
Alahao Street					
Amala Place to Kae St.	77	30	5	222	10
East of Kae St.	31	30	3	228	10
Kaahumanu Ave.					
Ala Luna to Hana Hwy	3225	30	61	2815	55
Hana Hwy. to Harbor Ave.	160	20	5	293	7
Hana Highway					
Kaahumanu Ave. to Harbor Ave.	3074	30	59	3616	66
Harbor Ave. to Halenkala Hwy.	2255	30	48	2500	51
Halenkala Hwy. to Hanakai St.	2533	30	52	2459	51
Hanakai St. to Dairy Road	3490	40	51	2531	52
Dairy Road to Pukalo Road	3352	55	164	3156	157
Puukolo Road to Hansen Road	2552	55	136	3055	154
Hansen Road to Halenkala Hwy.	3450	55	187	3348	184
Halenkala Hwy. to Kala Road	1175	55	81	1397	91
Kala Road to Old Stable Road	1343	55	84	1419	92
East of Old Stable Road	1242	55	84	1419	92
Puunene Avenue					
E. Kaaahumanu Ave. to Dairy Road	1843	30	42	1704	40
South of Dairy Road	1603	55	100	1868	111
Hanakai Street					
South of Hana Hwy.	112	30	6	282	12
Hana Hwy. to Halenkala Hwy.	20	30	2	38	3
Kuhaimi Hwy.					
West of Puunene Ave.	763	55	61	1030	75
Dairy Road					
Puunene Ave. to Hana Hwy.	1471	30	36	1720	40
Hana Hwy. to Halenkala Hwy.	494	30	17	919	26
Kanaal Place					
Halenkala Hwy. to Ashlee St.	902	30	26	1381	43
Halenkala Hwy.					
Hana Hwy. to Kanaal Place	612	30	20	872	25
Kanaal Place to Ashlee Street	138	30	7	182	9
Kala Road to Hana Hwy.	289	30	12	361	14
East of Hana Hwy.	2506	55	135	2372	128
Pukalo Road					
Hana Hwy. to Hansen Road	63	55	12	100	16
South of Hansen Road	125	55	18	162	22
Hansen Road					
West of Pukalo Road	410	55	40	376	38
Pukalo Road to Hana Hwy.	374	55	38	322	34
Kala Road					
Hana Street to Hana Hwy.	68	30	5	26	2
East of Hana Hwy.	0	55	0	5	2
Old Stable Road					
West of Hana Hwy.	94	30	6	94	6

and heavy trucks include large 3 or more axle trucks and heavy construction trucks.

Based on existing traffic data counts for morning and afternoon peak hours, the distance to the 67 Leq contour was computed for numerous roadway links in the study area. The distances to the 67 Leq for existing conditions is shown in Table 6 (distances from centerline in feet). This table also presents the traffic volumes and vehicle speeds used in the traffic noise analysis.

5.0 PROJECT IMPACT ON NOISE LEVELS

5.1 Background

The forecast airport operations data were used to develop airport noise contours for the with and without project case. The cumulative noise levels were determined in terms of DNL.

5.2 Day Night Noise Level, DNL, Noise Contours

Community noise standards and FAA criteria for determining the significance of a change in noise level are expressed in terms of the cumulative noise exposure metrics DNL. Included within DNL are the aircraft single event noise level data which are combined with aircraft operational data to develop cumulative noise exposure levels over the full 24-hours. This combination of data generates the DNL noise level value.

5.2.1 Forecast Year 2010

The forecast annual 2010 noise contours are based on forecast operations for that year. The 2010 forecast operations are shown in Table 7 for the with and without project scenarios. Note that Stage II aircraft are effectively eliminated from the fleet in the Year 2010. In estimating the aircraft fleet in the year 2010, the DC-9 aircraft are replaced with aircraft with MD-80 aircraft noise characteristics and the B737-200 aircraft are replaced with aircraft with B737-300 noise characteristics. Departure and Approach noise levels of various aircraft types are compared in Exhibits 15 and 16 in terms of the maximum noise level as measured at the standard measurement points used in aircraft certification (reference Federal Air Regulation Part 36). It is interesting to note that large is not synonymous with noisier when considering jet aircraft.

The noise contours for the forecast year 2010 are presented in Exhibits 17, 18 and 19 for the with and without project case with no new parallel runway and with and without international operations. Exhibits 20 and 21 show the noise contours with the project, with a new parallel runway, without helicopter operations and with and without international operations.

Table 7
Forecast Year 2010 Operations

	YR 2010 NO ACTION	YR 2010 PROPOSED PROJECT
AIRCARRIER		
B777	1,200	500
DC10-10	2,330	1,050
DC10-30	840	1,110
L1011-100	1,280	1,680
L1011-250	420	560
MD11	530	700
B727	0	0
DC8	0	0
B747	0	2,200
B767	1,970	1,970
B737-200	930	930
B737-200 PAX	0	0
B737-200	0	0
B737300	49,670	42,170
B737-400	0	0
DC9-50	0	0
MD82	30,530	25,930
MILITARY		
TURBOPROPS		
C-130	2,300	2,300
P-3	2,880	2,880
C-135	990	990
C-12	50	50
C-20	50	50
C-26	400	400
HELICOPTERS		
HH 65	1,440	1,440
SH60	400	400
UH-1	600	600
CH-53	30	30
AH-1	0	0
UH-1N	0	0
UH-60	960	960
OH-58	1,150	1,150
CH47	440	440
COMMUTER		
C-152	80	80
C-208	530	530
WACO YMF	1,190	1,190
BRITTAN-NORMAN	3,710	3,710
BEECH 18	1,180	1,180
CESSNA 402	3,560	3,560
CESSNA 414	1,620	1,620
FOKKER F27	2,500	2,500
SHORTS 330	830	830
PA31	1,930	1,930
P68	1,070	1,070
TURBOPROP		
ATR42	8,000	8,000
DHC7	0	0
DC3	0	0
DHC6	2,300	2,300
HELOS		
AS350	52,280	52,280
BELL 206	18,840	18,840
H500	12,060	12,060
R22	0	0
GENERAL AVIATION		
GASEPV	22,310	22,310
GASEPT	10,960	10,960
HUGSP	5,800	5,800
CNA441	1,000	1,000
CE-441	290	290
FALCON 50	370	370
JETSTAR	60	60
LEAR 35/36	50	50
WWASTRA	70	70
WESTWIND II	50	50
HS	30	30
CITATION	290	290
GIV	1,970	1,970
FALCON 900	680	680
HELICOPTERS	5,300	5,300

The following list presents the 5 scenarios examined and the exhibit number for that scenario:

Scenario	Exhibit	Year	Project	New Parallel	Helicopter Ops	International Ops
1	17	2010	without	without	with	with
2	18	2010	with	without	with	with
3	19	2010	with	without	with	without
4	20	2010	with	with	without	with
5	21	2010	with	with	without	without

These exhibits present the 55, 60, 65 and 70 DNL noise contours.

As a means of implementing the Aviation Safety and Noise Abatement Act, the FAA adopted Regulations on Airport Noise Compatibility Planning Programs. The guidelines specify a maximum amount of noise exposure (in terms of the cumulative noise metric DNL) that will be considered acceptable to or compatible with people in living and working areas. Residential land use is deemed acceptable for noise exposures up to 65 DNL. However, the State of Hawaii Department of Transportation has recommended that 60 DNL be used in the State of Hawaii because of the local lifestyle which includes natural ventilation in homes as well as the relatively low sound attenuation in typical homes.

Representative Receptors. The noise modeling results can also be expressed in terms of the DNL noise levels at specific representative locations. The INM version 4.11 was used to determine the noise levels at each of these locations. Table 8 presents the DNL noise level at each of the receptor locations. The representative receptors were shown in Exhibit 10.

Note that the accuracy of the model is reduced at DNL noise levels below 60 dBA.

5.3 Single Event Noise Contours, Existing Runway and Extended Runway

The DNL contours shown in the above section reflect changes in noise patterns associated with the runway extension and the change in fleet mix that will occur between now and the year 2010. It is not easy to identify in the DNL contours that portion of the change due to the runway extension and that portion due to the change in the fleet mix.

A single aircraft event is a single aircraft flying a particular flight path. The single event noise contours are lines of equal SEL due to the single aircraft event. A series of single event noise contours are presented here to clarify the changes in noise level associated with the runway extension. The aircraft chosen for this analysis were the Boeing 737-200, 737-300, DC-9-50, DC10-10, and L1011 model aircraft. These are

Table 8
Year 2010 - Modeled DNL Noise Levels at Representative Receptors Using INM Version 4.11

RECEPTOR LOCATION	SCENARIO 1 DNL	SCENARIO 2 DNL	SCENARIO 3 DNL	SCENARIO 4 DNL	SCENARIO 5 DNL
Ocean	69.0	65.2	65.0	63.1	62.7
Pond	52.8	52.8	52.8	52.6	52.5
A	70.1	69.7	69.5	69.6	69.4
B	58.1	56.1	56.0	60.6	60.5
C	51.7	50.0	49.8	50.6	50.6
D	52.6	50.9	50.8	52.3	52.1
E	64.3	66.3	66.1	54.4	54.2
F	58.2	58.2	58.0	49.3	49.1
G	49.2	50.4	50.3	48.8	48.6
J	57.2	56.1	56.0	55.8	55.8
K	47.0	46.4	46.3	44.6	44.5
M	63.0	64.2	64.1	63.9	63.8
S	57.1	57.0	56.7	63.3	63.1
T	54.1	53.2	53.0	58.9	58.7
U	47.9	48.0	47.8	51.5	51.4
V	55.0	56.0	55.8	60.9	60.7

representative aircraft of the narrow body and wide body jet aircraft that will be affected by the runway extension. The 737-200 and DC-9-50 are older Stage II aircraft with old technology turbofan engines. The 737-300 aircraft is a newer aircraft with new technology high bypass ratio turbofan engines. The aircraft are similar in size and shape, with the 737-300 most notably different in the engine diameter which is much larger than on the 737-200 aircraft. The 737-300 is a typical replacement aircraft for the 737-200. The DC10 and L1011 are representative wide body aircraft that use the airport. The noise levels generated from typical departure operation in trade wind conditions were computed and plotted.

The INM noise model was used to generate the single event noise contours. Exhibits 22, 23, 24, 25, and 26 presents the single event noise contours for each of these aircraft. The exhibit illustrates 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 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.

5.3.1 Effect of Runway Extension on Reverse Thrust Noise

The runway lengthening project will affect the location at which aircraft apply reverse thrust when landing on Runway 02 because the landing threshold will be relocated to the south of the existing landing threshold. Reverse thrust application when landing on Runway 20 will not be affected. In order to determine if this displacement of the landing threshold to the south as the runway is lengthened has a significant impact on noise, single event approach noise was modeled for three representative aircraft. Exhibit 27 shows the 85 dB SEL noise contour for the approach of a DC-9-50 aircraft from the south to Runway 02. Exhibit 28 and Exhibit 29 show similar data for the 737-

300 and DC-10 aircraft respectively. The INM data used to generate these noise contours include the locations and power settings typically used for reverse thrust operations. For example, the DC-9-50 and 737-300 aircraft typically apply reverse thrust at a point approximately 1300 feet from the end of the runway and continue reverse thrust application for a distance of about 3000 feet down the runway. The DC-10 typically applies reverse thrust at a point approximately 1400 feet from the end of the runway and continue reverse thrust application for a distance of about 4000 feet down the runway. The runway lengthening project will not affect these reverse thrust patterns but will displace the point along the runway where these reverse thrust applications are initiated. The displacement of the point where the reverse thrust application is initiated will be commensurate with the length of runway extension. The contours in Exhibits 27, 28, and 29 show that the displacement of the point where the reverse thrust application is initiated will not significantly affect thrust reversal noise on adjacent noise sensitive land uses.

5.4 Change in Cumulative Noise Levels Due to Project

The data provided in Table 8 can be used to show the change in noise level due to the project. The data shown below in Table 9 identify the change in DNL relative to 1994 noise levels for the project and no project cases for the year 2010 and includes the case of with project and with new parallel runway. The data in Table 9 show that for the project cases, Scenario 2 and 3, which include the runway lengthening with and without international operations, there are no receptor locations that show a significant increase in noise, i.e., greater than 1.5 change in DNL. Most receptors show a decrease in noise relative to existing conditions, with location "E" showing an increase of 1 dB DNL. Location "E" is in Puunene near the extended runway centerline. For the Year 2010 case with the new parallel, Scenarios 4 and 5 with and without international operations, 2 locations in the Puunene area and south of Puunene show noise increases of 1.3 and 2.5 dB DNL. These increases area associated with the location of a new parallel runway and are not due to the lengthening of the existing runway. The assessment of the impacts associated with a new runway are not addressed here but shall be addressed when a parallel runway project environmental analysis is completed.

5.4.1 Change in Noise Level Discussion, Kanaha Pond and Offshore Impacts

During the scoping process for this EIS the issues of impacts on birds in Kanaha Pond and impacts on offshore marine life be considered. Specific sites used for this analysis are identified in Exhibit 10 and labeled "ocean" and "pond." Specific analysis of Kanaha Pond are discussed in the biological impact analysis of the EIS. A brief discussion of offshore marine impacts are discussed here.

Table 9
Change in Cumulative Noise Levels Due to Project Relative to 1994 Noise Levels

RECEPTOR LOCATION	Δ DNL SCENARIO 1 TO EXISTING	Δ DNL SCENARIO 2 TO EXISTING	Δ DNL SCENARIO 3 TO EXISTING	Δ DNL SCENARIO 4 TO EXISTING	Δ DNL SCENARIO 5 TO EXISTING
Ocean	-7.2	-11.0	-11.2	-13.1	-13.5
Pond	-3.5	-3.5	-3.5	-3.7	-3.8
A	-8.0	-8.4	-8.6	-8.5	-8.7
B	-7.8	-9.8	-9.9	-5.3	-5.4
C	-7.6	-9.3	-9.5	-8.7	-8.7
D	-7.0	-8.7	-8.8	-7.3	-7.5
E	-1.0	1.0	0.8	-10.9	-11.1
F	-0.6	-0.6	-0.8	-9.5	-9.7
G	-5.2	-4.0	-4.1	-5.6	-5.8
J	-5.2	-6.3	-6.4	-6.6	-6.6
K	-3.2	-3.8	-3.9	-5.6	-5.7
M	-7.6	-6.4	-6.5	-6.7	-6.8
S	-4.9	-5.0	-5.3	1.3	1.1
T	-2.3	-3.2	-3.4	2.5	2.3
U	-3.9	-3.8	-4.0	-0.3	-0.4
V	-6.8	-5.8	-6.0	-0.9	-1.1

The offshore sensitive receptor location "ocean" shows existing noise levels of about 76 DNL. This is the noise level at the surface of the ocean and is very near the runway end. The forecast Year 2010 noise level is 65 DNL with the project and 69 DNL without the project. Noise levels decrease because aircraft will begin their takeoff roll farther south and therefore will cross this location at a higher altitude.

The noise level below the water surface is considerably different than the noise level on the surface. Sound waves traveling in air are not easily converted to sound waves in water. As an aircraft flies over water the sound from the aircraft that reaches the surface of water is either reflected off of the water surface or transmitted into the water. The amount of sound reflected off or transmitted to the water is governed by Snells Law. Only sound coming from a small cone with an included angle of 13° above the water is transmitted to the water. All sound generated outside this cone is reflected. Therefore, at a given point under the water, aircraft noise is only audible for a short time and then only when the aircraft is almost directly overhead. A sample case was calculated to determine the sound level in the water for an aircraft which generates a maximum noise level of 90 dBA at the water surface when the aircraft is directly overhead. Sound pressure levels in dB are described relative to a standard reference pressure. The reference pressure used for airborne sound is different than the pressure reference used for water borne sound waves. For this case of a maximum noise level of 90 dBA at the surface, the sound pressure level just below the water surface is 22 dB (relative to reference pressure of 0.1 Newtons per square meter which equals 1 dyne per square centimeter). At a depth of 30 meters the sound pressure would be -8 dB (the minus sign means the sound pressure level is less than the reference pressure).

To assess the noise level change on offshore marine life, there are 2 considerations, species that surface and are exposed to airborne noise at the surface including whales and marine turtles, and species below the water surface. Research compiled by Richard Fey (Hearing in Vertebrates: A Psychophysics Databook, Richard R. Fey, Hill-Fey Associates, 1988) provides some indication of the hearing threshold of a number of species. Included are audiogram data (minimum sound level audible as a function of the frequency of the sound) for these species. Included are data for 5 cetaceans including several porpoise and whale species. These audiograms are reproduced here as Exhibit 30. Also shown in Exhibit 30 are audiograms for several pinnipeds. Exhibit 31 provided audiograms for 6 species of fish, including the Hawaiian Squirrelfish. Also shown in Exhibit 31 are audiograms for a species of turtle (airborne sound, exact species unknown). For reference purposes audiograms for several mammals including humans are shown in Exhibit 32.

The extent to which these aircraft generated underwater sound levels interfere with marine life can estimated by observing that at a depth of 30 meters the aircraft sound would be barely audible to most species. Further, boat and ship noise would be considerably louder than the aircraft noise underwater. For example, a medium sized submarine, a very quiet type of ship, traveling along the surface of the water would produce noise levels at least 20 dB louder than the aircraft noise at a depth of 30 meters.

A typical ship will produce noise levels 10 to 25 dB louder (note that submarine noise is provided here as an example because this type of ship noise is discussed in literature on underwater acoustics, Fundamentals of Acoustics, Kinsler and Frey, Second Edition, Wiley, 1962).

5.5 Change in Highway Noise Levels Due to Project

5.5.1 Highway Leq Contour Location

The noise model used to compute the Leq noise contour locations for future conditions was the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December 1978). The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the "equivalent noise levels". Table 10 shows the distance to the 67 Leq in feet as measured from the roadway centerline for year 2010 conditions with and without the project.

The Leq noise contour distances shown in Table 10 do not include any shielding or barrier effects. This is because noise barrier effects are not constant for all receptor locations. For example, there are sections of street links that will have line of sight to a receptor area but a building or wall acts as a noise barrier for other receptor areas along the same link. By not including the barriers the conditions shown are worst case noise levels.

5.5.2 Changes in Highway Noise Levels at Sensitive Receptors

In order to determine impacts associated with the project, an analysis was done on individual sensitive receptor sites. A sensitive receptor analysis is done by using the projected traffic levels for each alternative and computing the noise level at the specific receptor locations. Each receptor may be affected by a number of noise sources including multiple roadways. In terms of the Leq analysis only roadway noise sources are included. The sensitive receptors considered in this analysis are residential areas located as shown in Exhibits 33a and 33b. The Leq noise level for 1994 conditions and future year 2010 conditions with and without the project are given in Table 11. The change in noise level is also provided in Table 11.

TABLE 10
Distance to 67 dB LEQ Contour
"No Action" - Year 2010 - A.M. Peak Hour Traffic Volumes

ROADWAY	Peak Hour Volume	Speed	Distance to 67 dB Leq
Harbor Ave.			
Ala Luna to Amala Place	120	20	4
Amala Place to Kaahumanu Ave.	270	20	6
Kaahumanu Ave. to Hana Hwy.	160	20	5
Amala Place			
Harbor Ave. to Alahao Street	170	30	9
Alahao Street			
Amala Place to Kaa St.	75	30	5
East of Kaa St.	20	30	2
Kaahumanu Ave.			
Ala Luna to Hana Hwy	2883	30	56
Hana Hwy. to Harbor Ave.	170	20	5
Hana Highway			
Kaahumanu Ave. to Harbor Ave.	0	30	0
Harbor Ave. to Haleakala Hwy.	2518	30	52
Haleakala Hwy. to Hanakai St.	2519	30	52
Hanakai St. to Dairy Road	2549	30	52
Dairy Road to Pulehu Road	3553	55	170
Pulehu Road to Hansen Road	3504	55	169
Hansen Road to Haleakala Hwy.	3652	55	173
Haleakala Hwy. to Kala Road	1488	55	95
Kala Road to Old Stable Road	1510	55	96
East of Old Stable Road	1510	55	96
Puunene Avenue			
E. Kamehameha Ave. to Dairy Road	1573	30	38
South of Dairy Road	1668	55	103
Hanakai Street			
South of Hana Hwy.	288	30	12
Hana Hwy. to Haleakala Hwy.	78	30	5

TABLE 10 (Continued)
Distance to 67 dB LEQ Contour
"No Action" - Year 2010 - A.M. Peak Hour Traffic Volumes

ROADWAY	Peak Hour Volume	Speed	Distance to 67 dB Leq
Kuihelani Hwy.			
West of Puunene Ave.	3245	55	160
Dairy Road			
Puunene Ave. to Hana Hwy.	4030	30	70
Hana Hwy. to Haleakala Hwy.	1427	30	35
Keolani Place			
Haleakala Hwy. to Aalele St.	2097	30	46
Haleakala Hwy.			
Hana Hwy. to Keolani Place	1024	30	28
Keolani Place to Aalele Street	513	30	18
Kala Road to Hana Hwy.	405	30	15
East of Hana Hwy.	2433	55	132
Pulehu Road			
Hana Hwy. to Hansen Road	141	55	20
South of Hansen Road	206	55	25
Hansen Road			
West of Pulehu Road	220	55	27
Pulehu Road to Hana Hwy.	145	55	20
Kala Road			
Eena Street to Hana Hwy.	37	30	3
East of Hana Hwy.	10	55	3
Old Stable Road			
West of Hana Hwy.	94	30	6

TABLE 10 (Continued)
Distance to 67 dB LEQ Contour
"No Action" - Year 2010 - P.M. Peak Hour Traffic Volumes

ROADWAY	Peak Hour Volume	Speed	Distance to 67 dB Leq
Harbor Ave.			
Ala Luna to Amala Place	172	20	5
Amala Place to Kaahumanu Ave.	453	20	9
Kaahumanu Ave. to Hana Hwy.	245	20	6
Amala Place			
Harbor Ave. to Alahao Street	300	30	12
Alahao Street			
Amala Place to Kaa St.	225	30	10
East of Kaa St.	220	30	10
Kaahumanu Ave.			
Ala Luna to Hana Hwy	2690	30	54
Hana Hwy. to Harbor Ave.	293	20	7
Hana Highway			
Kaahumanu Ave. to Harbor Ave.	0	30	0
Harbor Ave. to Haleakala Hwy.	3051	30	59
Haleakala Hwy. to Hanakai St.	2407	30	50
Hanakai St. to Dairy Road	2536	30	52
Dairy Road to Pulehu Road	3923	55	182
Pulehu Road to Hansen Road	3686	55	174
Hansen Road to Haleakala Hwy.	3824	55	179
Haleakala Hwy. to Kala Road	1449	55	94
Kala Road to Old Stable Road	1449	55	94
East of Old Stable Road	1449	55	94
Puunene Avenue			
E. Kamehameha Ave. to Dairy Road	1817	30	41
South of Dairy Road	2158	55	122
Hanakai Street			
South of Hana Hwy.	413	30	15
Hana Hwy. to Haleakala Hwy.	169	30	9

TABLE 10 (Continued)
Distance to 67 dB LEQ Contour
"No Action" - Year 2010 - P.M. Peak Hour Traffic Volumes

ROADWAY	Peak Hour Volume	Speed	Distance to 67 dB Leq
Kuihelani Hwy.			
West of Puunene Ave.	3849	55	179
Dairy Road			
Puunene Ave. to Hana Hwy.	5186	30	83
Hana Hwy. to Haleakala Hwy.	2275	30	48
Keolani Place			
Haleakala Hwy. to Aalele St.	2177	30	47
Haleakala Hwy.			
Hana Hwy. to Keolani Place	1240	30	32
Keolani Place to Aalele Street	980	30	27
Kala Road to Hana Hwy.	567	30	19
East of Hana Hwy.	2593	55	138
Pulehu Road			
Hana Hwy. to Hansen Road	158	55	21
South of Hansen Road	212	55	26
Hansen Road			
West of Pulehu Road	204	55	25
Pulehu Road to Hana Hwy.	138	55	20
Kala Road			
Eena Street to Hana Hwy.	10	30	1
East of Hana Hwy.	5	55	2
Old Stable Road			
West of Hana Hwy.	94	30	6

TABLE 10 (Continued)
Distance to 67 dB LEQ Contour
Preferred Plan - Year 2010 - A.M. Peak Hour Traffic Volumes

ROADWAY	Peak Hour Volume	Speed	Distance to 67 dB Leq
Harbor Ave.			
Ala Luna to Amala Place	120	20	4
Amala Place to Kaahumanu Ave.	270	20	6
Kaahumanu Ave. to Hana Hwy.	160	20	5
Amala Place			
Harbor Ave. to Alahao Street	170	30	9
Alahao Street			
Amala Place to Kaa St.	75	30	5
East of Kaa St.	20	30	2
Kaahumanu Ave.			
Ala Luna to Hana Hwy	0	30	0
Hana Hwy. to Harbor Ave.	170	20	5
Hana Highway			
Kaahumanu Ave. to Harbor Ave.	0	30	0
Harbor Ave. to Haleakala Hwy.	3443	30	63
Haleakala Hwy. to Hanakai St.	2852	30	56
Hanakai St. to Dairy Road	2862	30	56
Dairy Road to Airport Access Road	3161	55	157
Airport Access Road to Hansen Road	3883	55	180
Hansen Road to Haleakala Hwy.	3873	55	180
Haleakala Hwy. to Old Stable Road	1523	55	97
East of Old Stable Road	1523	55	97
Puunene Avenue			
E. Kamehameha Ave. to Dairy Road	1573	30	38
South of Airport Access Road	1670	55	103
Hanakai Street			
South of Hana Hwy.	408	30	15
Hana Hwy. to Haleakala Hwy.	178	30	9

TABLE 10 (Continued)
Distance to 67 dB LEQ Contour
Preferred Plan - Year 2010 - A.M. Peak Hour Traffic Volumes

ROADWAY	Peak Hour Volume	Speed	Distance to 67 dB Leq
Kuihelani Hwy.			
West of Puunene Ave.	3226	55	160
Dairy Road			
Airport Access Road to Hana Hwy.	1043	30	29
Hana Hwy. to Haleakala Hwy.	562	30	19
Keolani Place			
Haleakala Hwy. to Airport Access Road	939	30	27
Airport Access Road			
Puunene Ave. to Dairy Road	4013	45	133
Dairy Road to Hana Hwy.	3535	45	122
East of Hana Hwy.	1334	30	34
Haleakala Hwy.			
Hana Hwy. to Keolani Place	768	30	23
East of Keolani Place	386	30	15
East of Hana Hwy.	2429	55	132
Pulehu Road			
South of Hansen Road	187	55	24
Hansen Road			
West of Pulehu Road	192	55	24
Pulehu Road to Hana Hwy.	269	55	30
Spine Road			
North of Hana Hwy.	80	30	5
Old Stable Road			
West of Hana Hwy.	94	55	15

TABLE 10 (Continued)
Distance to 67 dB LEQ Contour
Preferred Plan - Year 2010 - P.M. Peak Hour Traffic Volumes

ROADWAY	Peak Hour Volume	Speed	Distance to 67 dB Leq
Harbor Ave.			
Ala Luna to Amala Place	172	20	5
Amala Place to Kaahumanu Ave.	453	20	9
Kaahumanu Ave. to Hana Hwy.	245	20	6
Amala Place			
Harbor Ave. to Alahao Street	300	30	12
Alahao Street			
Amala Place to Kaa St.	225	30	10
East of Kaa St.	220	30	10
Kaahumanu Ave.			
Ala Luna to Hana Hwy	0	30	0
Hana Hwy. to Harbor Ave.	293	20	7
Hana Highway			
Kaahumanu Ave. to Harbor Ave.	0	30	0
Harbor Ave. to Haleakala Hwy.	2468	30	51
Haleakala Hwy. to Hanakai St.	1510	30	37
Hanakai St. to Dairy Road	2839	30	56
Dairy Road to Airport Access Road	3181	55	158
Airport Access Road to Hansen Road	4167	55	189
Hansen Road to Haleakala Hwy.	4007	55	184
Haleakala Hwy. to Old Stable Road	1455	55	94
East of Old Stable Road	1455	55	94
Puunene Avenue			
E. Kamehameha Ave. to Dairy Road	1817	30	41
South of Airport Access Road	2122	55	121
Hanakai Street			
South of Hana Hwy.	413	30	15
Hana Hwy. to Haleakala Hwy.	169	30	9

TABLE 10 (Continued)
Distance to 67 dB LEQ Contour
Preferred Plan - Year 2010 - P.M. Peak Hour Traffic Volumes

ROADWAY	Peak Hour Volume	Speed	Distance to 67 dB Leq
Kuihelani Hwy.			
West of Puunene Ave.	3782	55	177
Dairy Road			
Airport Access Road to Hana Hwy.	1190	30	31
Hana Hwy. to Haleakala Hwy.	1134	30	30
Keolani Place			
Haleakala Hwy. to Airport Access Road	918	30	26
Airport Access Road			
Puunene Ave. to Dairy Road	5083	45	156
Dairy Road to Hana Hwy.	4495	45	143
East of Hana Hwy.	1786	30	41
Haleakala Hwy.			
Hana Hwy. to Keolani Place	874	30	25
East of Keolani Place	722	30	22
East of Hana Hwy.	2587	55	138
Pulehu Road			
South of Hansen Road	183	55	24
Hansen Road			
West of Pulehu Road	183	55	24
Pulehu Road to Hana Hwy.	240	55	28
Spine Road			
North of Hana Hwy.	94	30	6
Old Stable Road			
West of Hana Hwy.	94	55	15

TABLE 11
Noise Sensitive Receptor Analysis - 2010

RECEPTOR #1 Single Family Residential - Kuihelani Hwy. west of Puunene Avenue
RECEPTOR #2 Sugar Cane Factory - Puunene Avenue south of Kuihelani Hwy.
RECEPTOR #3 Low Density Residential - Hana Hwy. east of Old Stable Road

	A.M. PEAK HOUR LEQ NOISE LEVELS			NOISE LEVEL INCREASE	
Site	Existing	Future No Action	Preferred Plan	Preferred re. Existing	Preferred re. No Action
1A	65.8	70.1	70.1	4.3	0.0
1B	65.8	70.1	70.1	4.3	0.0
1C	66.1	70.4	69.8	3.7	-0.6
1D	67.2	71.6	67.6	0.4	-4.0
1E	69.6	74.0	67.5	-2.1	-6.5
1F	73.3	77.7	72.4	-0.9	-5.3
2	58.1	58.3	58.3	0.2	0.0
3	57.0	57.8	57.9	0.9	0.1

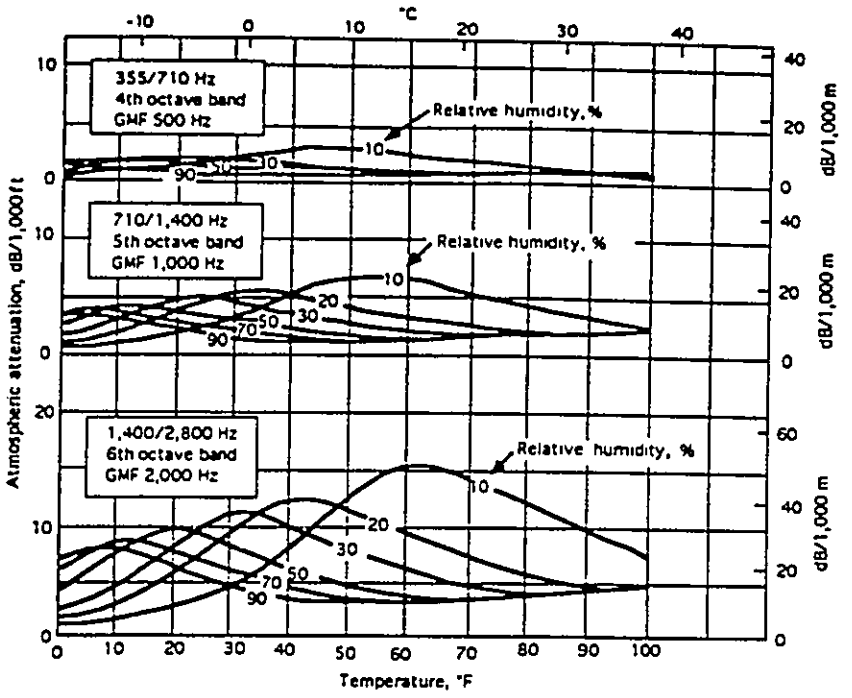
	P.M. PEAK HOUR LEQ NOISE LEVELS			NOISE LEVEL INCREASE	
Site	Existing	Future No Action	Preferred Plan	Preferred re. Existing	Preferred re. No Action
1A	66.4	71.2	71.1	4.7	-0.1
1B	66.4	71.2	71.1	4.7	-0.1
1C	66.7	71.5	70.9	4.2	-0.6
1D	67.9	72.7	68.6	0.7	-4.1
1E	70.3	75.1	68.4	-1.9	-6.7
1F	74.0	78.8	73.0	-1.0	-5.8
2	58.8	59.4	59.3	0.5	-0.1
3	57.6	57.7	57.7	0.1	0.0

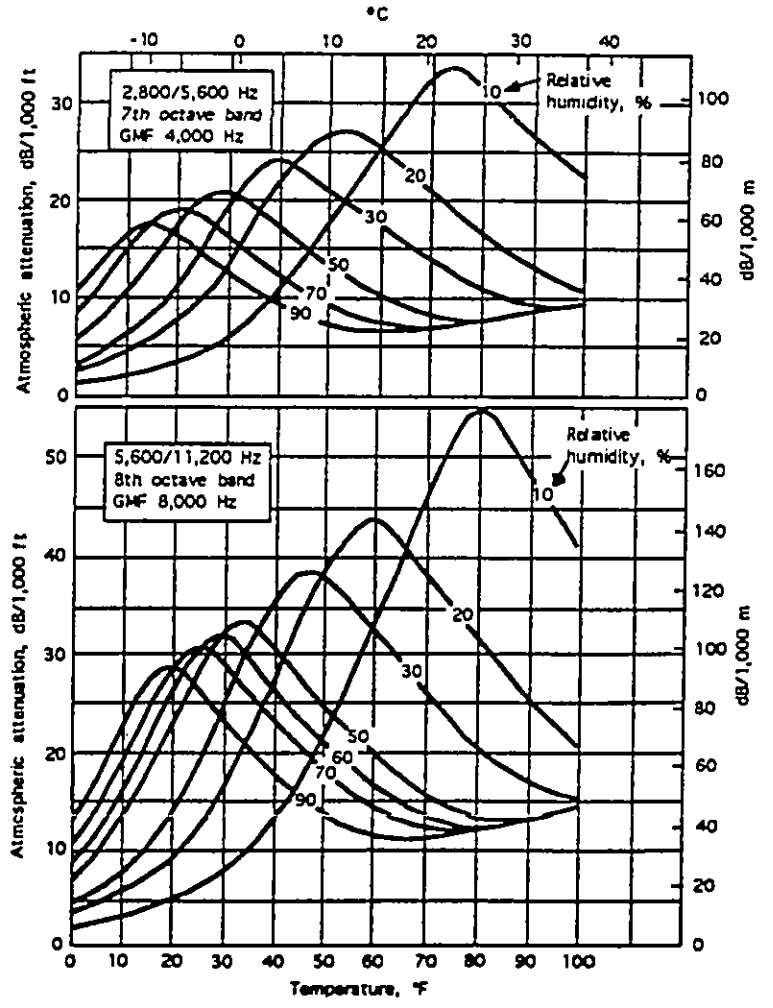
SOUND LEVELS AND LOUDNESS OF ILLUSTRATIVE NOISES IN INDOOR AND OUTDOOR ENVIRONMENTS

(A-Scale Weighted Sound Levels)

dB(A)	OVER-ALL LEVEL Sound Pressure Level Approx. 0.0002 Microbar	COMMUNITY (Outdoor)	HOME OR INDUSTRY	LOUDNESS Human Judgement of Different Sound Levels
130	UNCOMFORTABLY	Mil. Jet Aircraft Take-Off w/ After-burner From Aircraft Carrier @ 50 Ft. (130)	Oxygen Torch (121)	120 dB(A) 32 Times as Loud
120 110	LOUD	Turbo-Fan Aircraft @ Take Off Power @ 200 Ft. (90)	Riveling Machine (110) Rock-N-Roll Band (108-114)	110 dB(A) 16 Times as Loud
100	VERY	Jet Flyover @ 1000 Ft. (103) Boeing 707, DC-8 @ 6080 Ft. Before Landing (106) Bell J-2A Helicopter @ 100 Ft. (100)		100 dB(A) 8 Times as Loud
90	LOUD	Power Mower (96) Boeing 737, DC-9 @ 6080 Ft. Before Landing (97) Motorcycle @25 Ft. (90)	Newspaper Press (97)	90 dB(A) 4 Times as Loud
80		Car Wash @ 20 Ft. (89) Prop. Airplane Flyover @ 1000 Ft. (88) Diesel Truck, 40 MPH @ 50 Ft. (84) Diesel Train, 45 MPH @ 100 Ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	80 dB(A) 2 Times as Loud
70	MODERATELY LOUD	High Urban Ambient Sound (80) Passenger Car, 65 MPH @ 25 Ft. (77) Freeway @ 50 Ft. From Pavement Edge, 10:00 AM (76 +or- 6)	Living Room Music (76) TV-Audio, Vacuum Cleaner	70 dB(A)
60		Air Conditioning Unit @ 100 Ft. (60)	Cash Register @ 10 Ft. (65-70) Electric Typewriter @ 10 Ft. (64) Dishwasher (Rinse) @ 10 Ft. (60) Conversation (60)	60 dB(A) 1/2 as Loud
50	QUIET	Large Transformers @ 100 Ft. (50)		50 dB(A) 1/4 as Loud
40		Bird Calls (44) Lower Limit Urban Ambient Sound (40)		40 dB(A) 1/8 as Loud
	JUST AUDIBLE	(dB[A] Scale Interrupted)		
10	THRESHOLD OF HEARING			

SOURCE: Reproduced from Melville C. Branch and R. Dale Beland, Outdoor Noise in the Metropolitan Environment, Published by the City of Los Angeles, 1970, p.2.



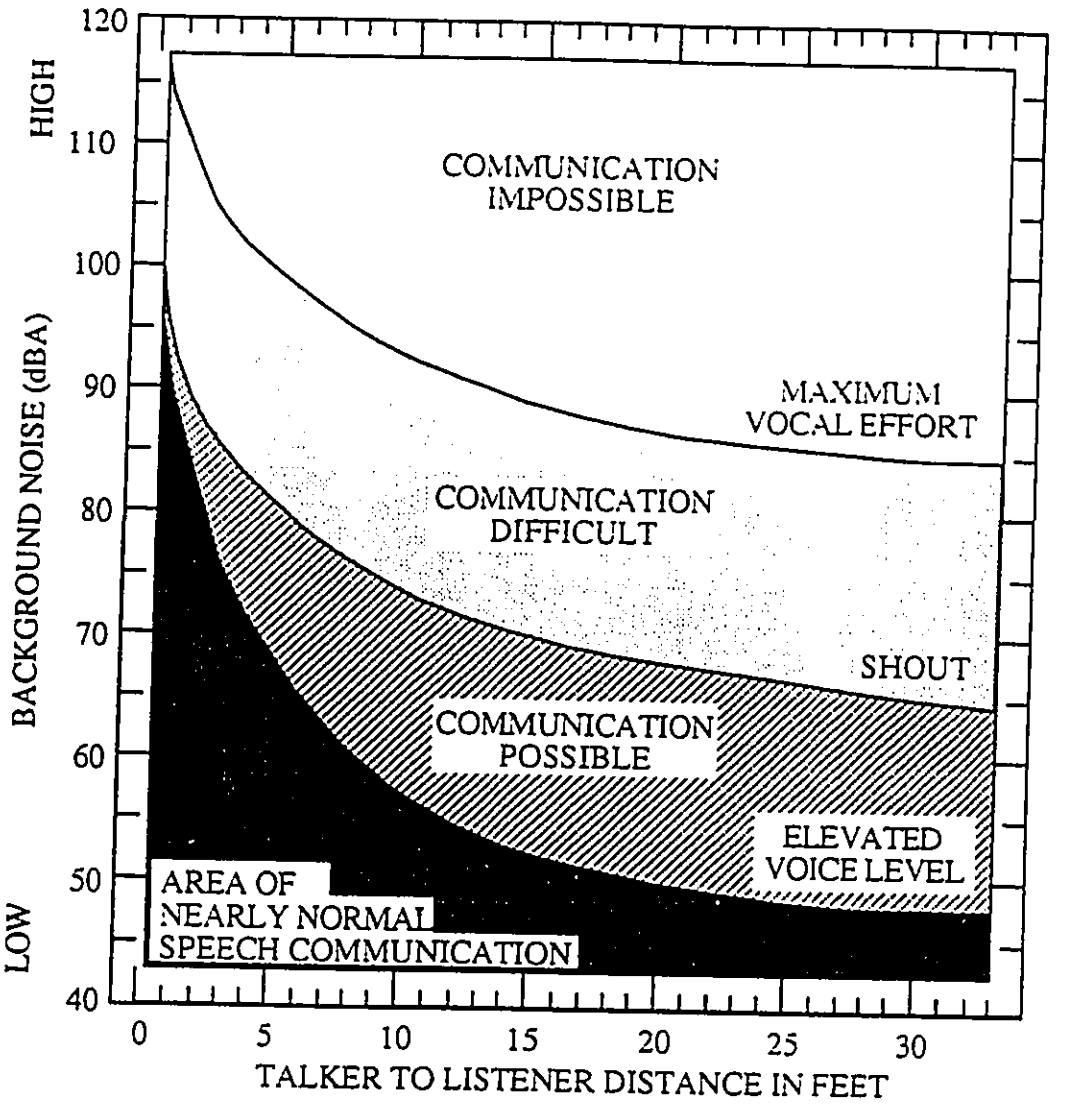


SOURCE: BERANEK, 1981

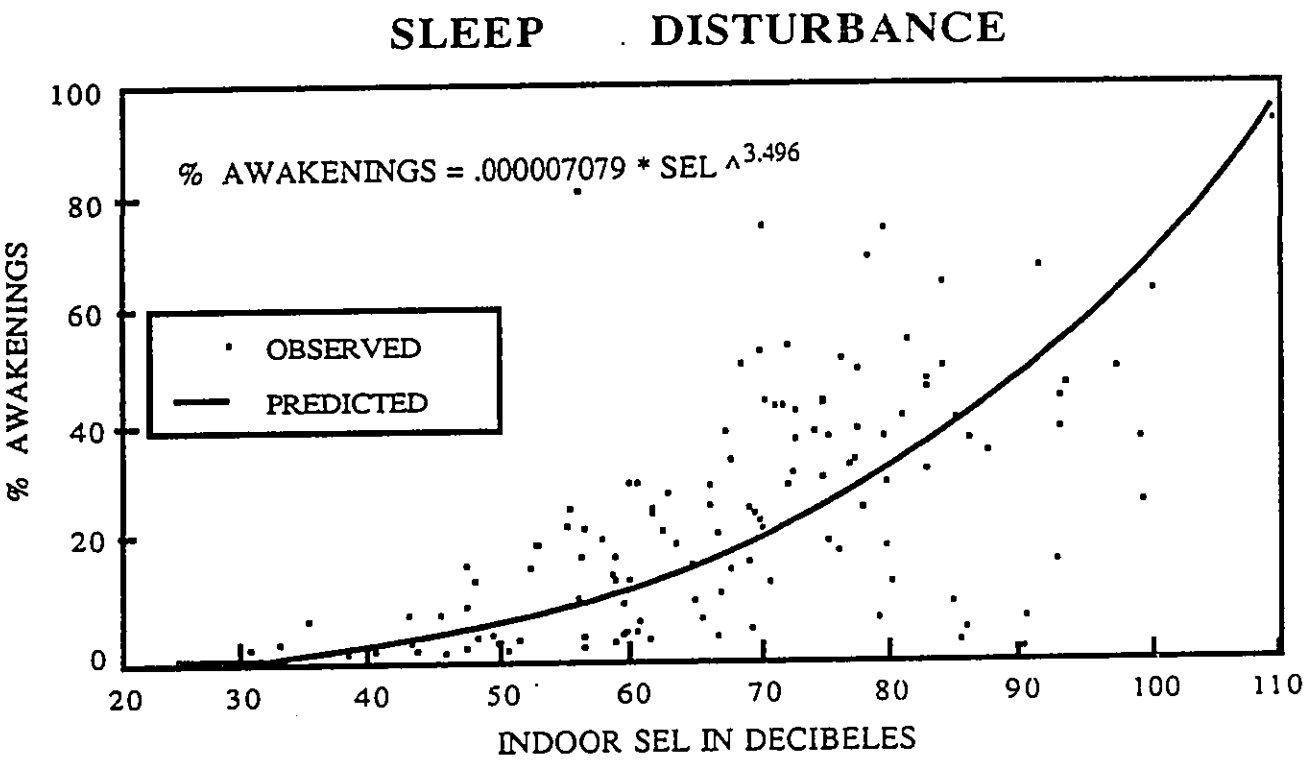
Kahului EIS Noise Analysis **Exhibit 2**

Effects of Atmospheric Absorption on Sound Levels

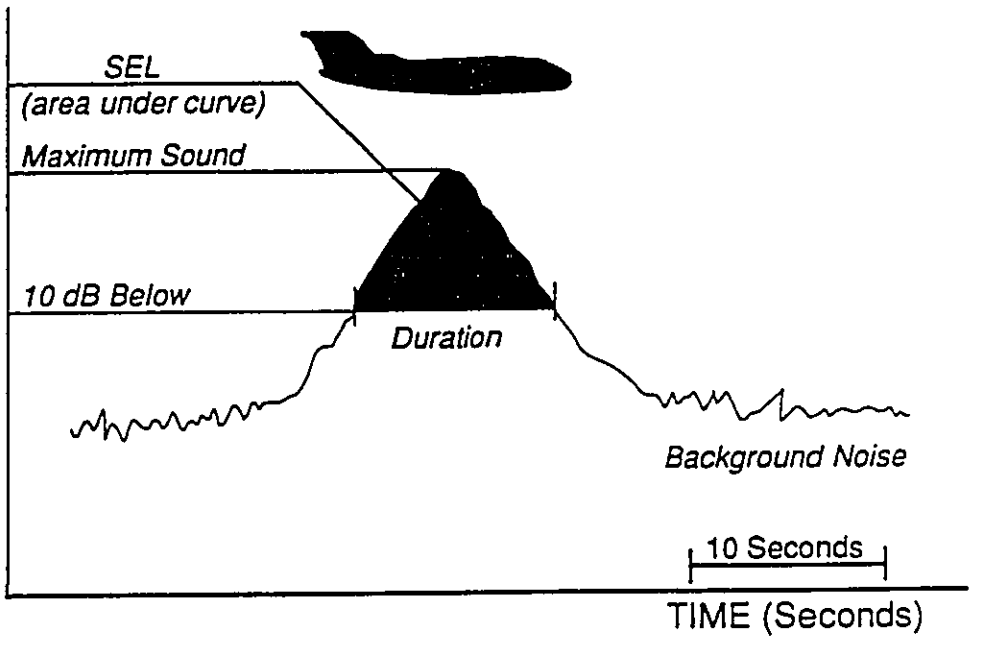
Mestre Greve Associates



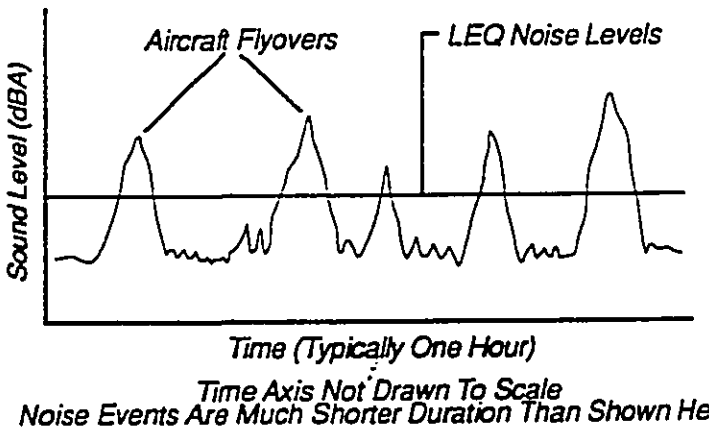
SOURCE: Environmental Impact Analysis Handbook
John G. Rau and David C. Wooten, 1980


SLEEP DISTURBANCE
% AWAKENINGS = .000007079 * SEL ^3.496
OBSERVED
PREDICTED
% AWAKENINGS
100
80
60
40
20
0
20
30
40
50
60
70
80
90
100
110
INDOOR SEL IN DECIBELES

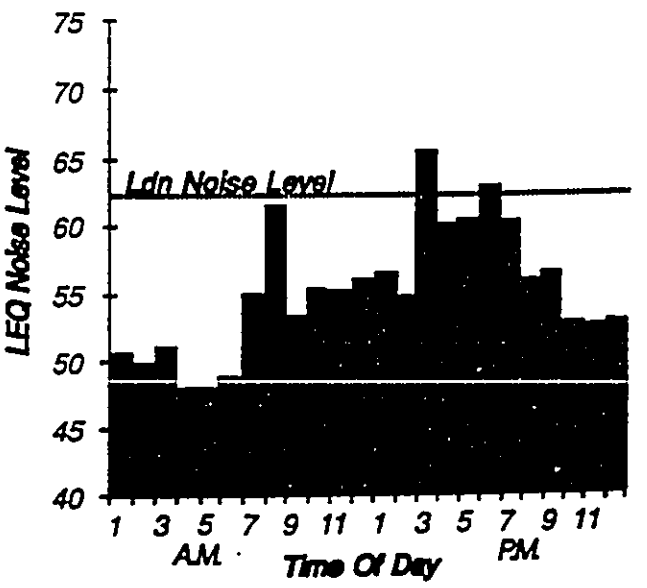
Single Event (SEL)



One Hour of Events(LEQ)



One Day of Events(Ldn)

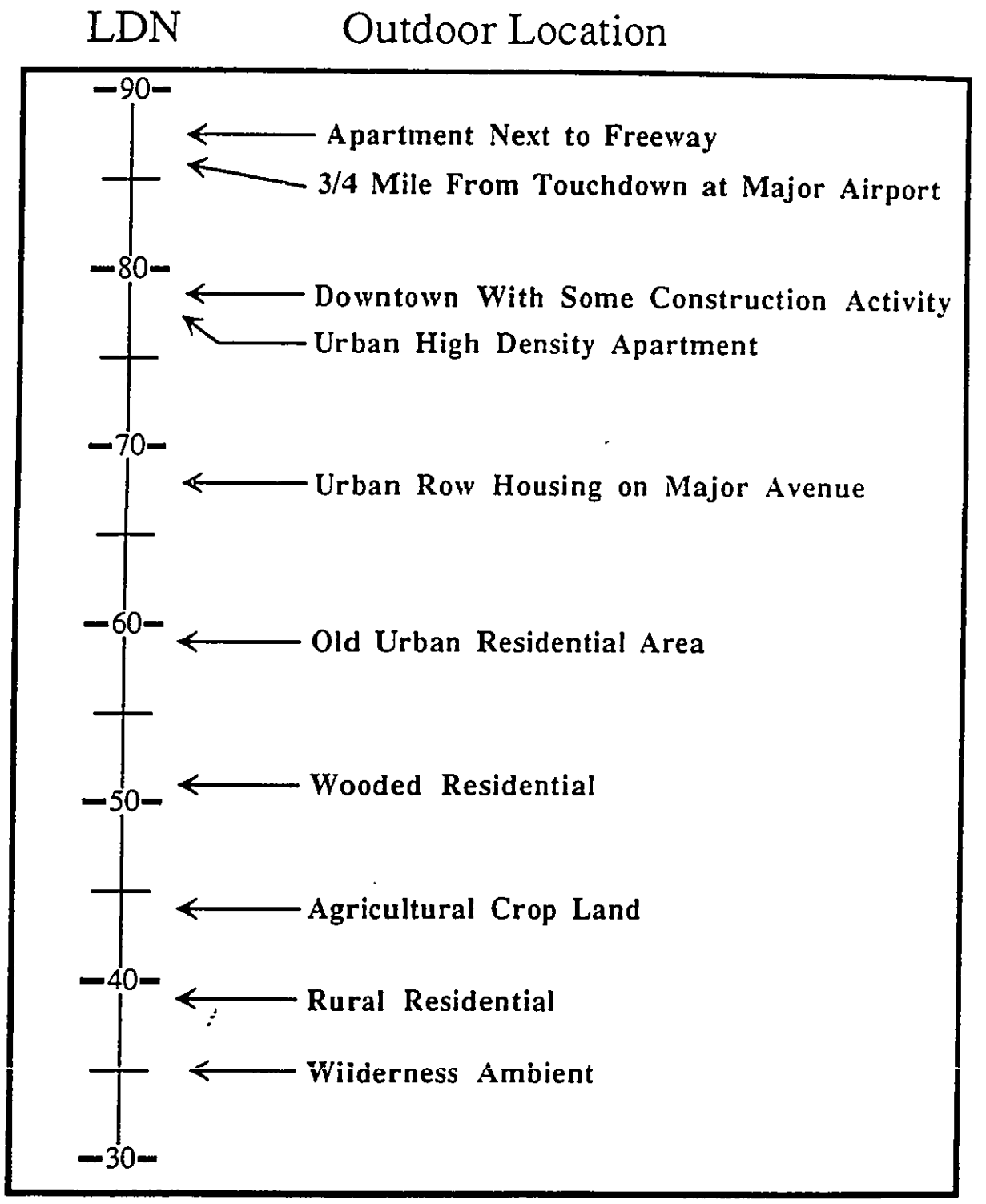


SOURCE: MGA Analysis

Kahului EIS Noise Analysis

Mestre Greve Associates

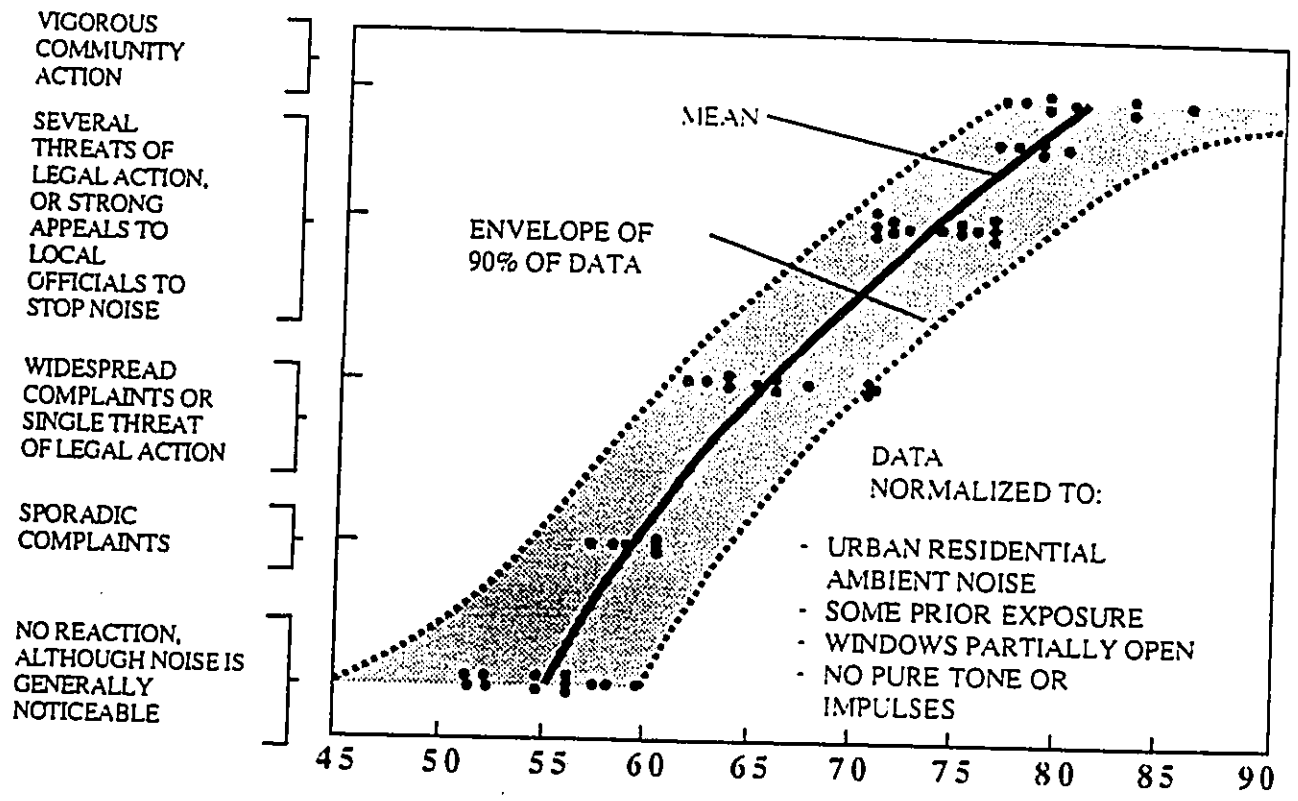
Exhibit 5
Noise Metric Illustrations



Kahului EIS Noise Analysis

Mestre Greve Associates

Exhibit 6
Examples of Day-Night Noise Levels



SOURCE: EPA Levels Document, 1974

Land Use	*Yearly Day-Night Average Sound Level (Ldn) in Decibels*					
	Below 65	*65-70*	*70-75*	*75-80*	*80-85*	*Over 85*
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and Nursing Homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental Services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail - building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade - general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	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(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusement parks, resorts and camps	Y	Y	Y	N	N	N
Golfcourses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

* The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

TABLE KEY

SLUCM	Standard Land Use Coding Manual.
Y (Yes)	Land Use and related structures compatible without restrictions.
N (No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25,30, or 35	Land use and related structures generally compatible; measures to achieve NLR or 25, 30, or 35 dB must be incorporated into design and construction of the structure.

NOTES

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR of 25 dB 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.

(3) Measures to achieve NLR of 30 dB 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.

(4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is recieved, office areas, noise sensitive areas or where the normal noise level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permited.

SOURCE: FAR Part 150

MEASURED AIRCRAFT DEPARTURE NOISE DATA

DEPARTING AIRCRAFT		NOISE MEASUREMENT LOCATIONS AT OGG												
		A	B	D	D	K	K	V	S	S	S	T	T	T
DC-10	(1)	95.4												
	(2)	97.0	78.7	84.2		79.2								
	(3)	96.0												
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B
L-1011	(1)													
	(2)			82.7		78.6				92.4			86.0	
	(3)													
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B
B-757	(1)													
	(2)			83.9	81.3	79.4	80.0							
	(3)													
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B
B-737-200	(1)	103.1	93.5	87.4	89.0	81.1								
	(2)	102.5	91.7	88.8	90.1	82.1	83.6	86.7	95.3	93.8	95.0	92.0	89.3	88.5
	(3)	102.8	92.8	88.0	89.9	81.9								
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B
B-737-300	(1)	91.6	87.6	80.3	82.0									
	(2)	92.5	83.2	82.3		77.8		75.0		86.5	86.1		81.9	81.6
	(3)	92.2	86.3	81.8										
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B
DC-9-50	(1)	104.4	98.7	88.5		81.1								
	(2)	105.1	94.6	91.2	92.4	83.4	84.8	92.6	96.5	97.8	99.1	91.8	91.1	92.2
	(3)	105.0	96.1	90.9		83.3								
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B

MEASURED AIRCRAFT DEPARTURE NOISE DATA

DEPARTING AIRCRAFT		NOISE MEASUREMENT LOCATIONS AT OGG												
		A	B	D	D	K	K	V	S	S	S	T	T	T
DASH 6	(1)	78.0	68.8											
	(2)	88.3	74.1	77.5							77.1		75.4	76.4
	(3)	85.1	71.7											
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B
ATR-42	(1)													
	(2)	81.7		73.8		76.2				77.5			74.4	
	(3)													
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B
GA-1	(1)	75.3												
	(2)	80.2	82.8		82.6		76.5							
	(3)	80.0												
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B
GA-2	(1)	78.2	70.8											
	(2)	88.2		74.5										
	(3)	86.9												
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B
P3	(1)			74.4										
	(2)	85.2								83.3			80.2	
	(3)													
	(4)	TR4	TR4	TR4	TR2	TR4	TR2	TR4	TR29	TR31A	TR31B	TR29	TR31A	TR31B

NOTES

(1) AVERAGE SEL IN dB OF DATA COLLECTED FROM JANUARY 1988 TO SEPTEMBER 1992
(2) AVERAGE SEL IN dB OF DATA COLLECTED FROM DECEMBER 1994 TO JANUARY 1995
(3) AVERAGE SEL IN dB OF DATA COLLECTED FROM JANUARY 1988 TO JANUARY 1995
(4) AIRCRAFT FLIGHT TRACK OBSERVED

SOURCE: Kahului Airport-FAR Part 150 Noise Compatibility Program, Volume II: Draft Noise Compatibility Program Report, prepared by Belt Collins Hawaii Ltd. and Y. Ebisu & Associates (April 95).

MEASURED AIRCRAFT ARRIVAL NOISE DATA

ARRIVING AIRCRAFT		NOISE MEASUREMENT LOCATIONS AT OGG						
		E	F	T	T	U	U	V
DC-10	(1)							
	(2)	96.2	87.3	84.1	84.4	78.1		
	(3)							
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A
L-1011	(1)							
	(2)	95.3	88.5		83.4		82.2	
	(3)							
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A
B-757	(1)							
	(2)				80.1		76.1	
	(3)							
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A
B-737-200	(1)	90.0	88.6					
	(2)	89.3	81.3	78.3		74.3		74.9
	(3)	89.8	85.5					
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A
B-737-300	(1)							
	(2)	90.7	84.1	81.9		70.5		75.2
	(3)							
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A
DC-9-50	(1)	92.4	89.9					
	(2)	94.7	84.4	81.3		73.6		77.2
	(3)	94.3	86.2					
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A
DASH 6	(1)	89.2	85.1					
	(2)	80.6	72.9	72.7		67.1		
	(3)	88.5	83.9					
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A

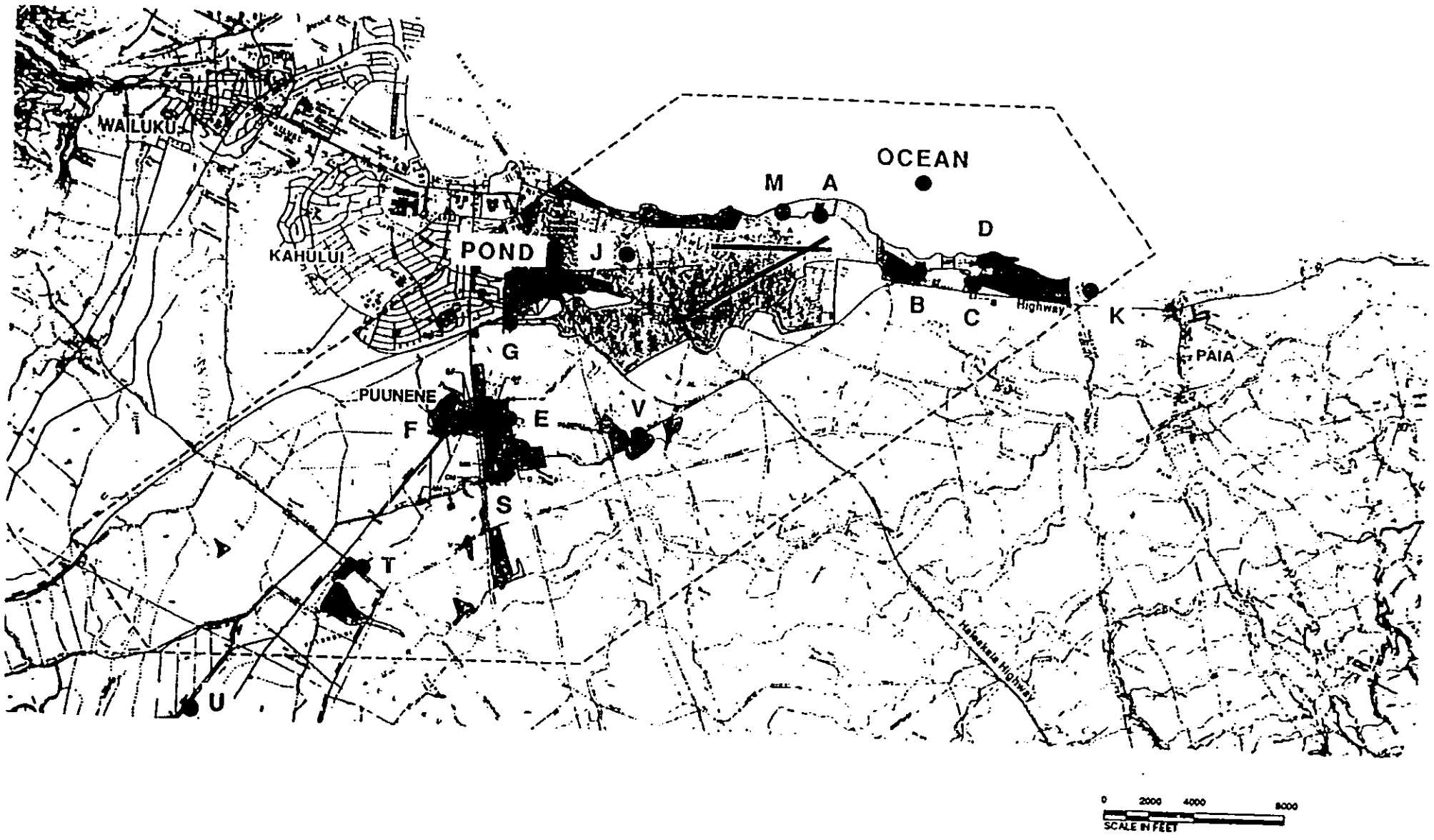
MEASURED AIRCRAFT ARRIVAL NOISE DATA

ARRIVING AIRCRAFT		NOISE MEASUREMENT LOCATIONS AT OGG						
		E	F	T	T	U	U	V
ATR-42	(1)							
	(2)	89.5	81.9	82.4		75.4		75.2
	(3)							
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A
GA-1	(1)	77.8	76.1					
	(2)	73.2	73.3	71.5				
	(3)	77.0	74.9					
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A
GA-2	(1)	85.6	75.4					
	(2)	81.9	78.0					
	(3)	84.9	76.9					
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A
P3	(1)		89.0					
	(2)	90.1	85.9	84.5		73.8		
	(3)		87.2					
	(4)	TR28A	TR28A	TR28A	TR15B	TR28A	TR15B	TR28A

NOTES

(1) AVERAGE SEL IN dB OF DATA COLLECTED FROM JANUARY 1988 TO SEPTEMBER 1992
(2) AVERAGE SEL IN dB OF DATA COLLECTED FROM DECEMBER 1994 TO JANUARY 1995
(3) AVERAGE SEL IN dB OF DATA COLLECTED FROM JANUARY 1988 TO JANUARY 1995
(4) AIRCRAFT FLIGHT TRACK OBSERVED

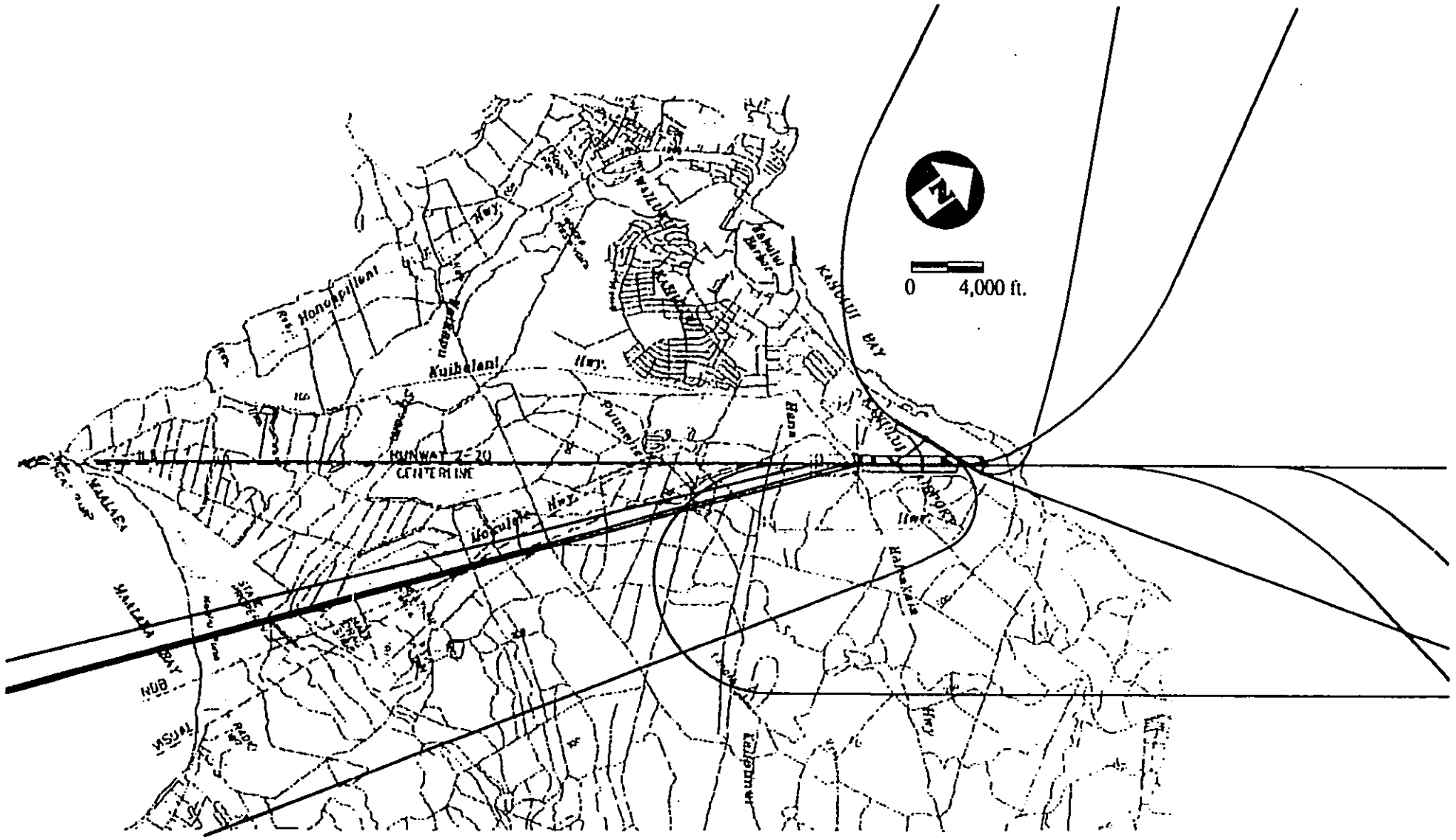
SOURCE: FAR 150



Kahului EIS Noise Analysis

Mestre Greve Associates

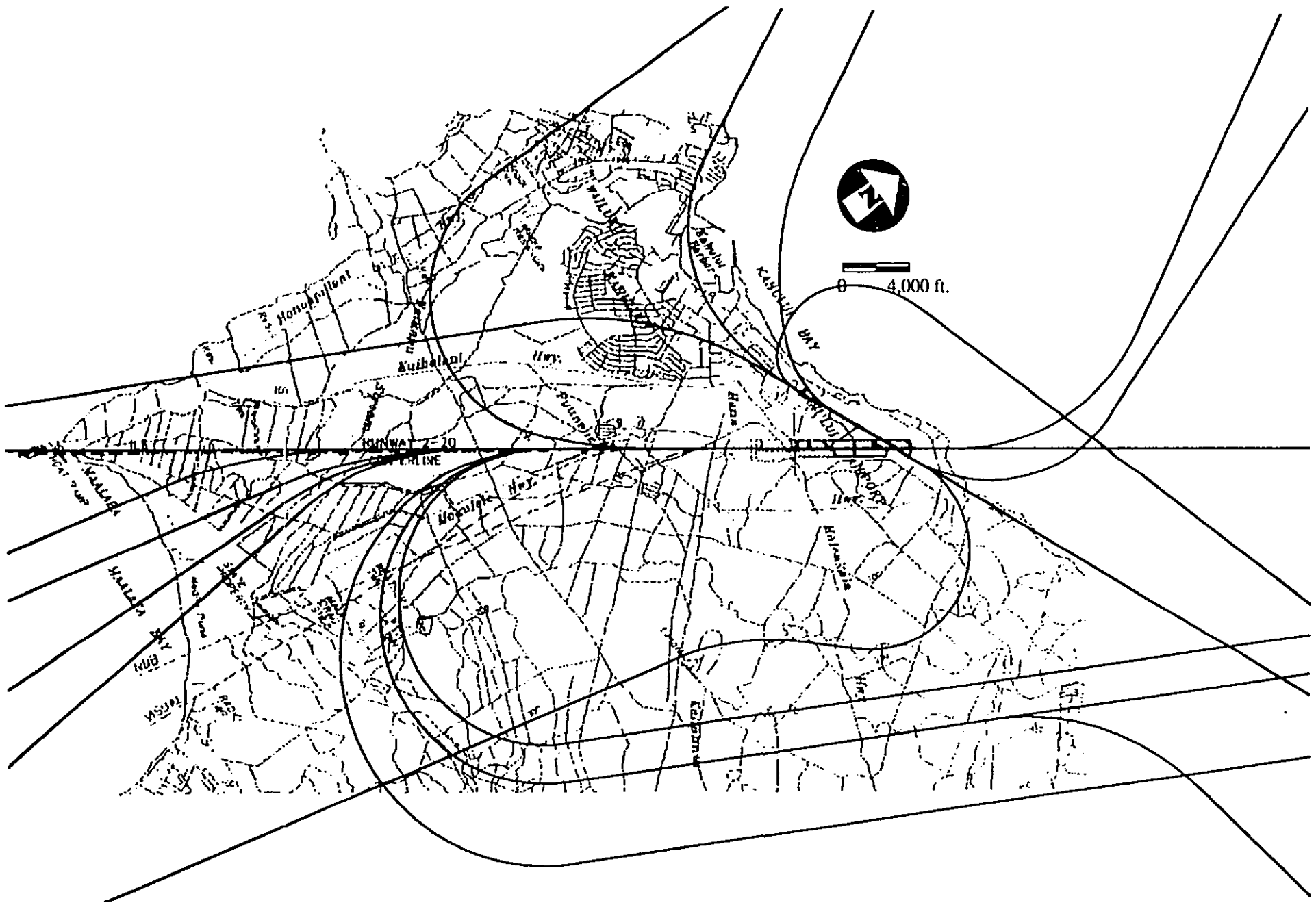
Exhibit 10
Representative Receptor Locations



Kahului EIS Noise Analysis

Mestre Greve Associates

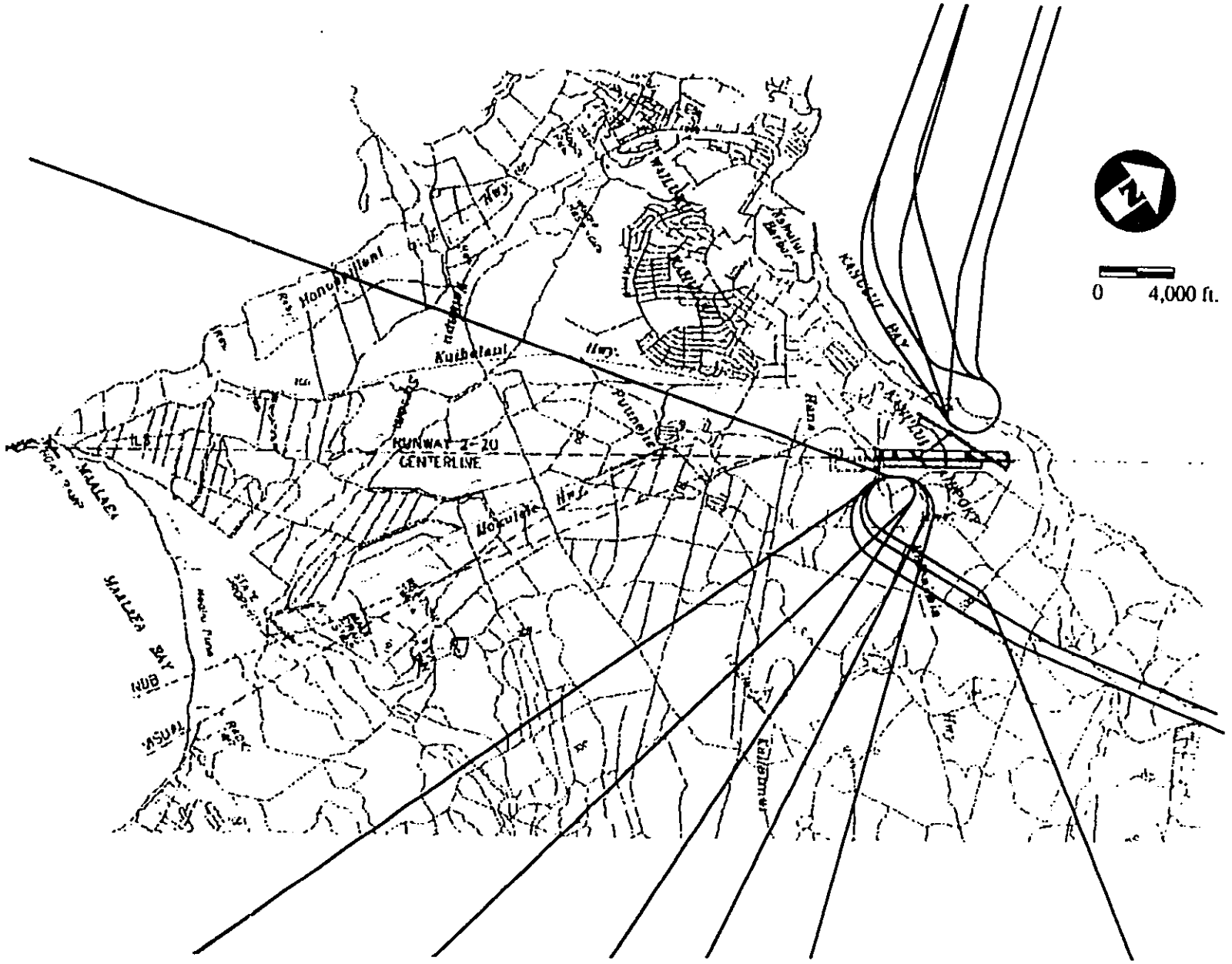
Exhibit 11
Departure Flight Tracks



Kahului EIS Noise Analysis

Mestre Greve Associates

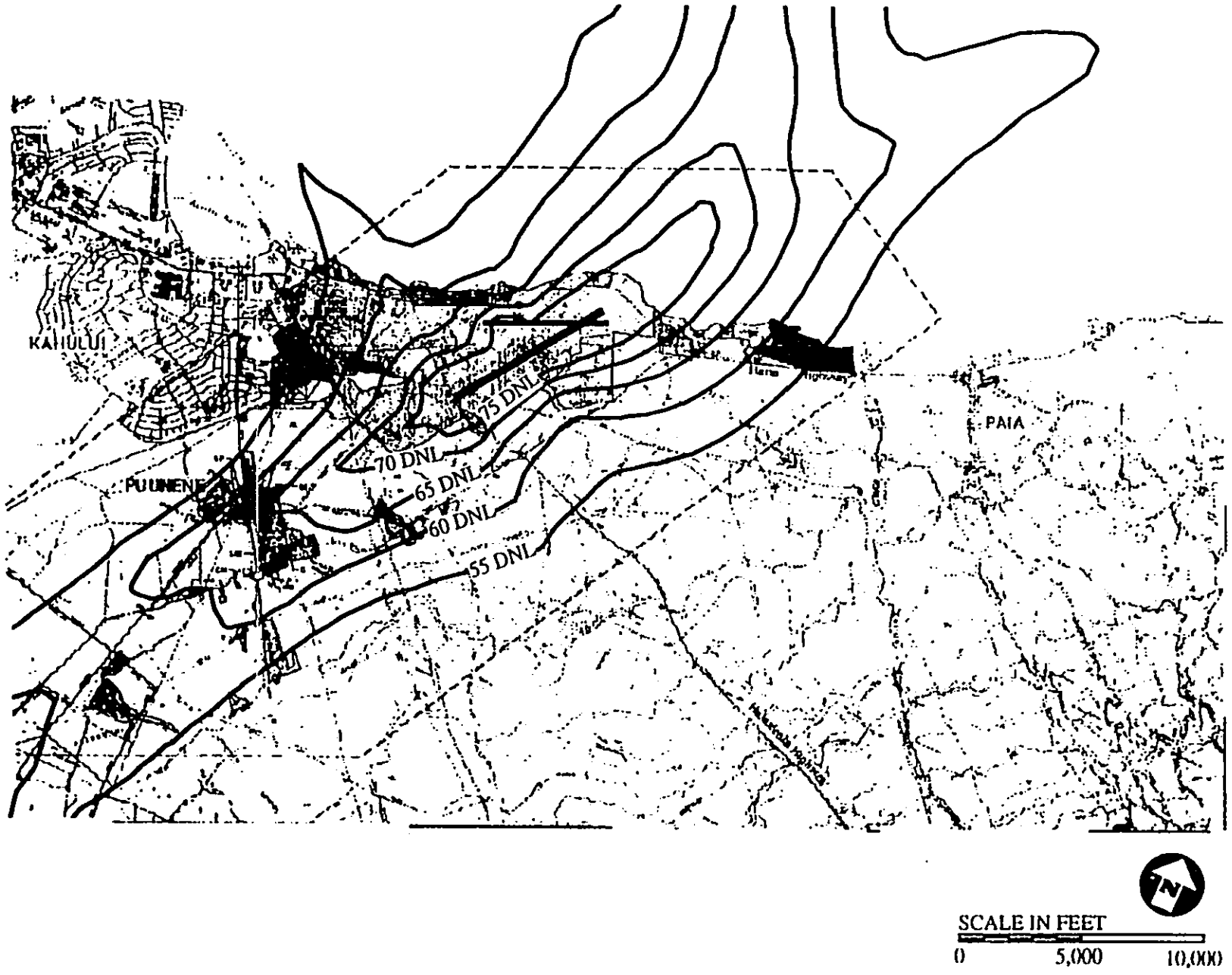
Exhibit 12
Arrival Flight Tracks



Kahului EIS Noise Analysis

Mestre Greve Associates

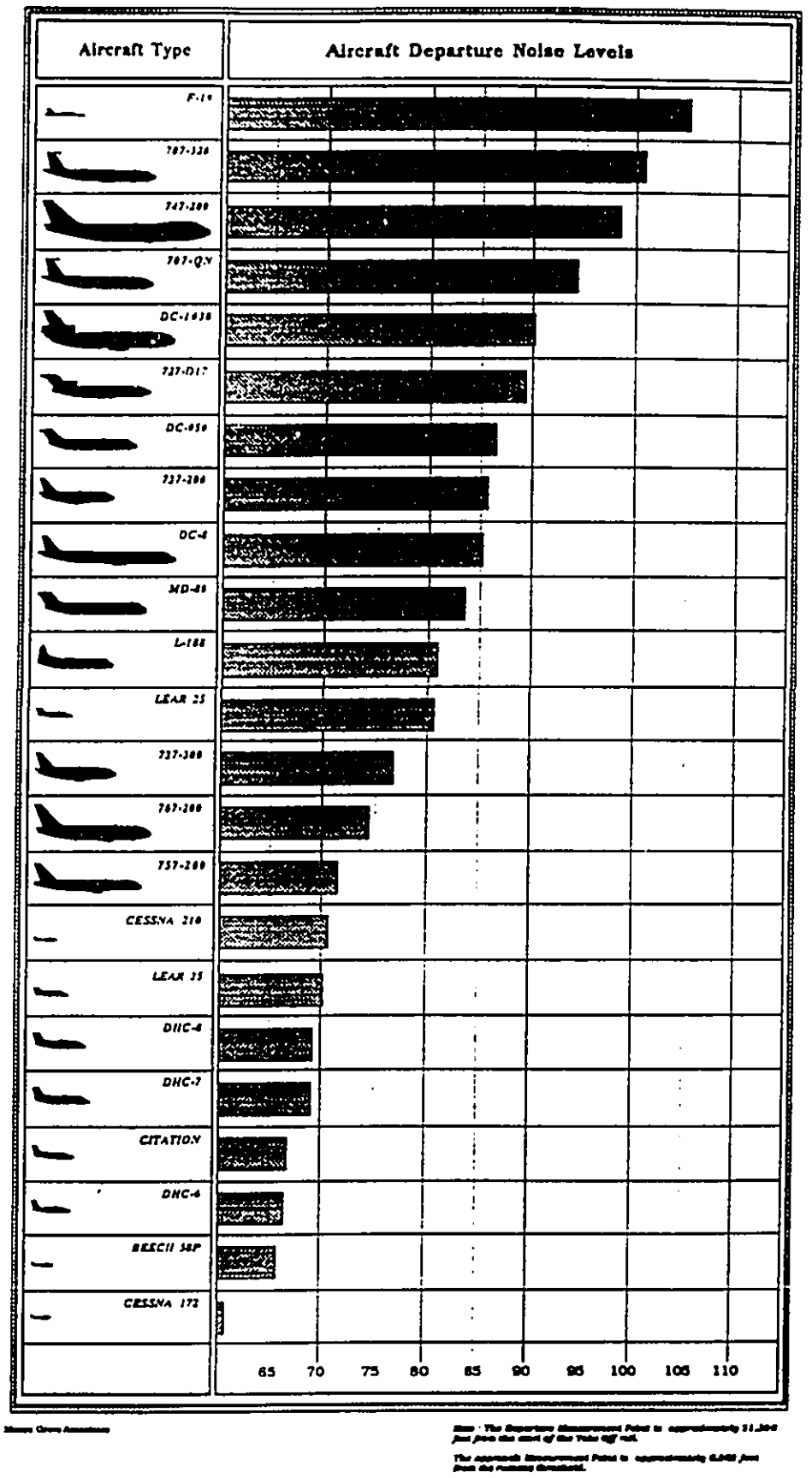
Exhibit 13
Helicopter Flight Tracks



Kahului EIS Noise Analysis

Mestre Greve Associates

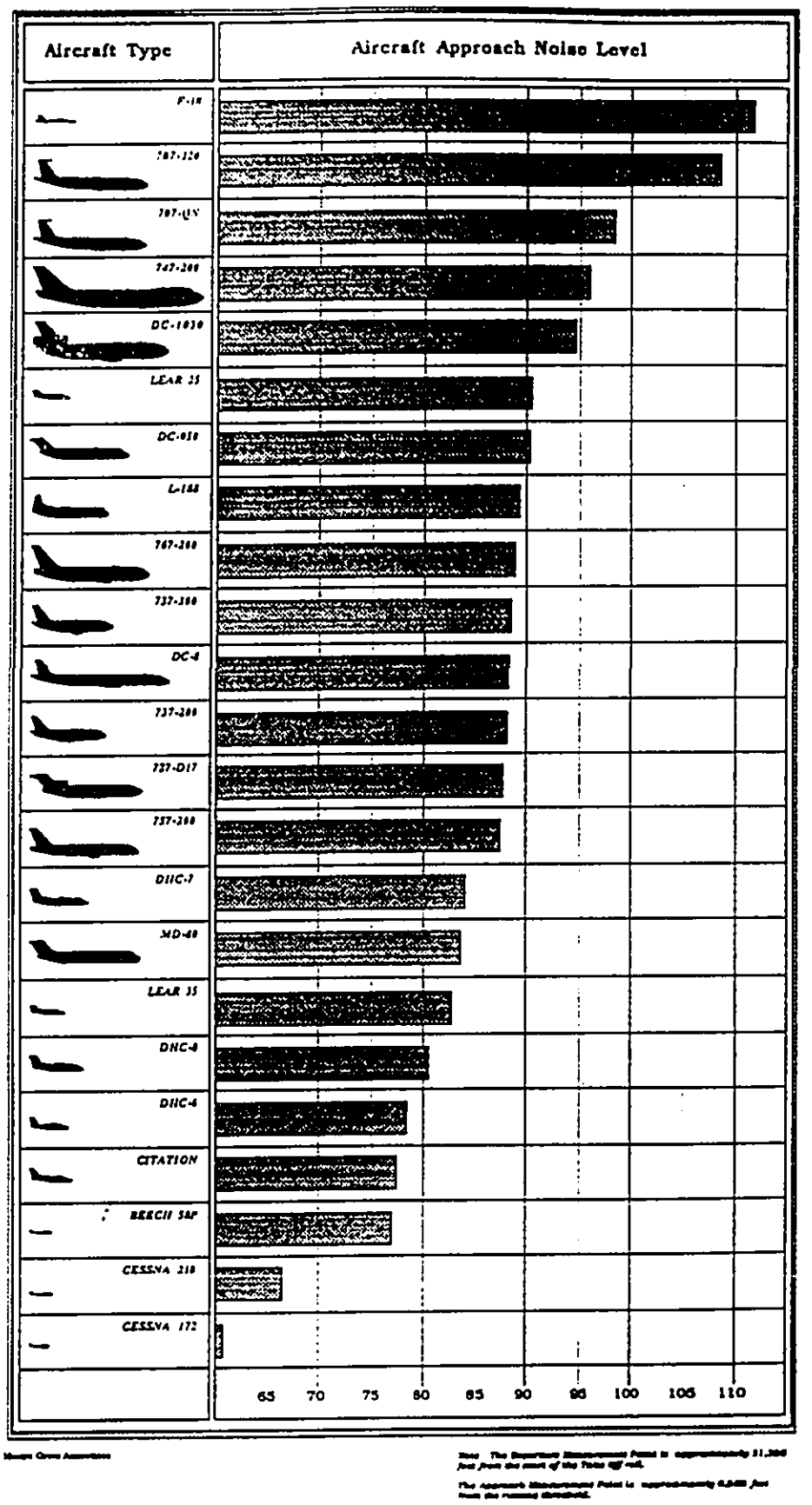
Exhibit 14
1994 Existing DNL Noise Contours



Kahului EIS Noise Analysis **Exhibit 15**

Examples of Departing Aircraft Single Event Noise Levels (SEL)

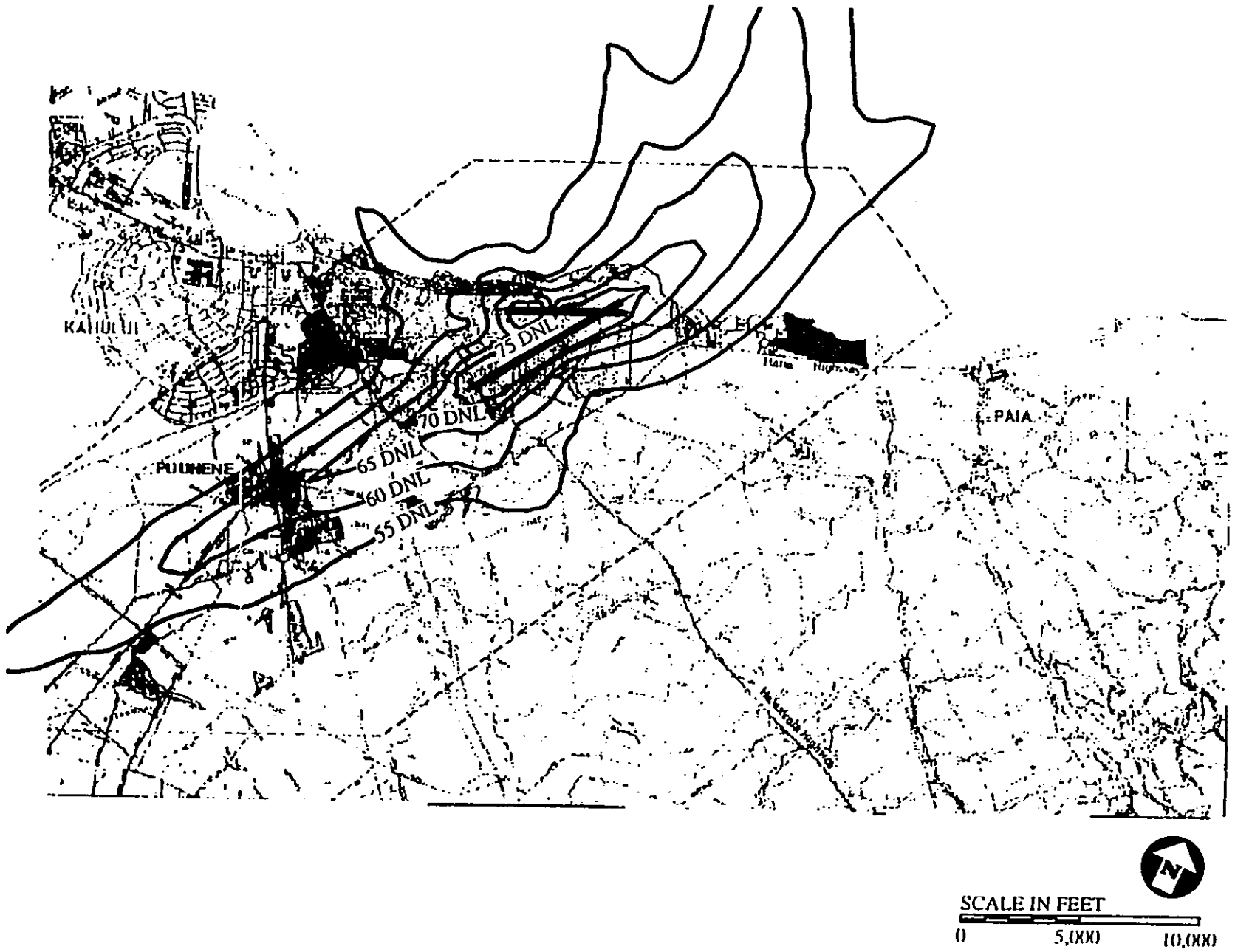
Mestre Greve Associates



Kahului EIS Noise Analysis **Exhibit 16**

Examples of Arriving Aircraft Single Event Noise Levels (SEL)

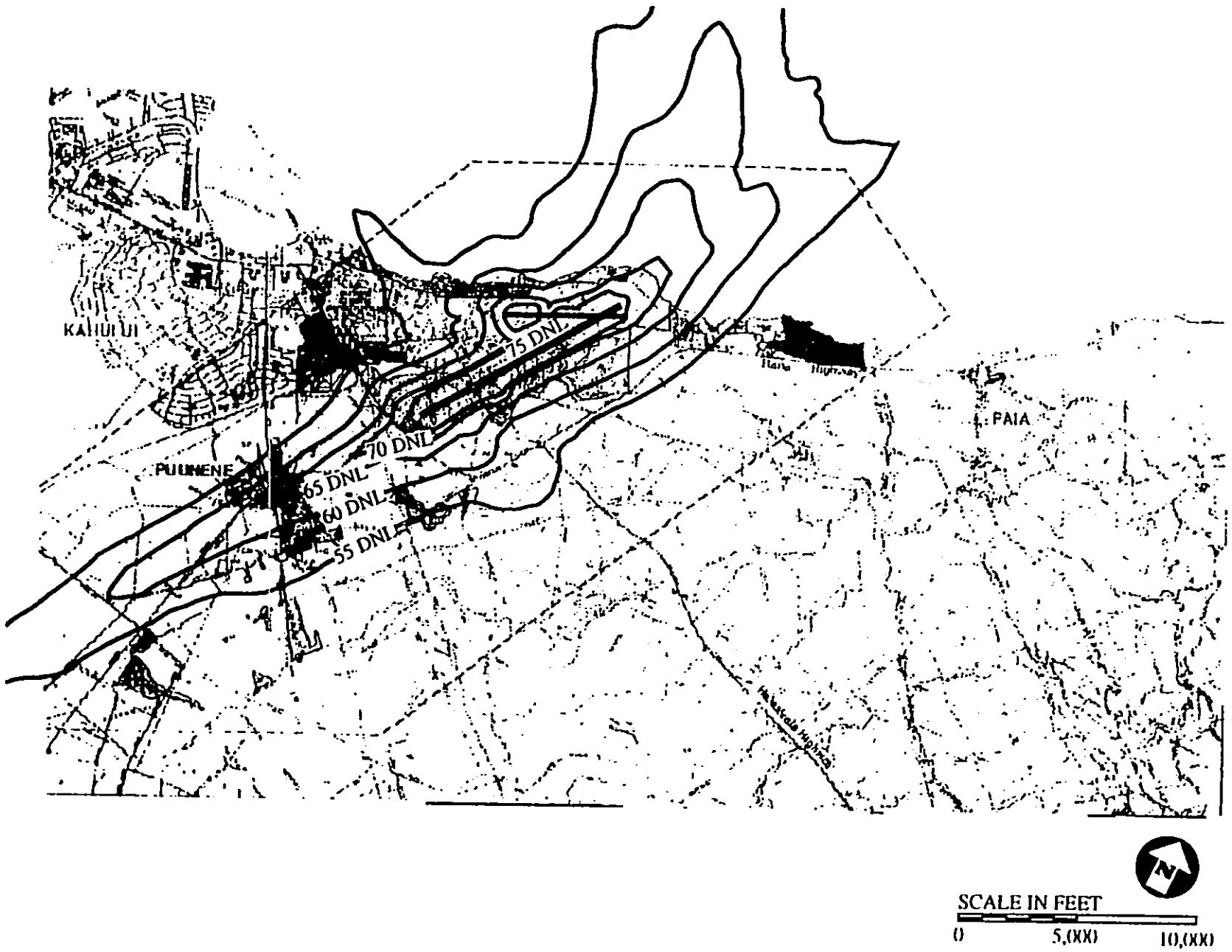
Mestre Greve Associates



Kahului EIS Noise Analysis

Mestre Greve Associates

Exhibit 17
DNL Contours for Year 2010 - No Action

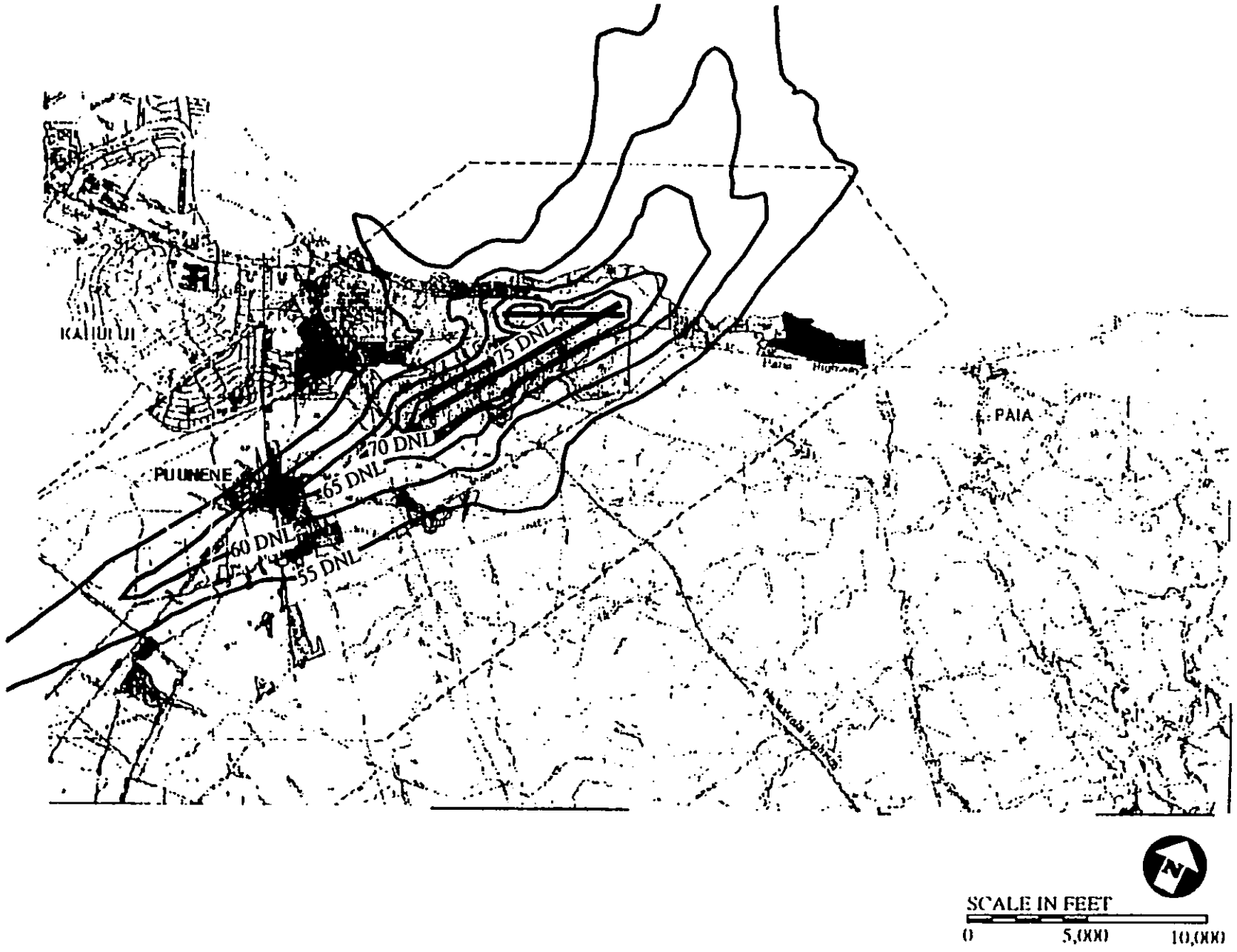


Kahului EIS Noise Analysis

Mestre Greve Associates

Exhibit 18

DNL Contours for Year 2010 - With Project and International Flights

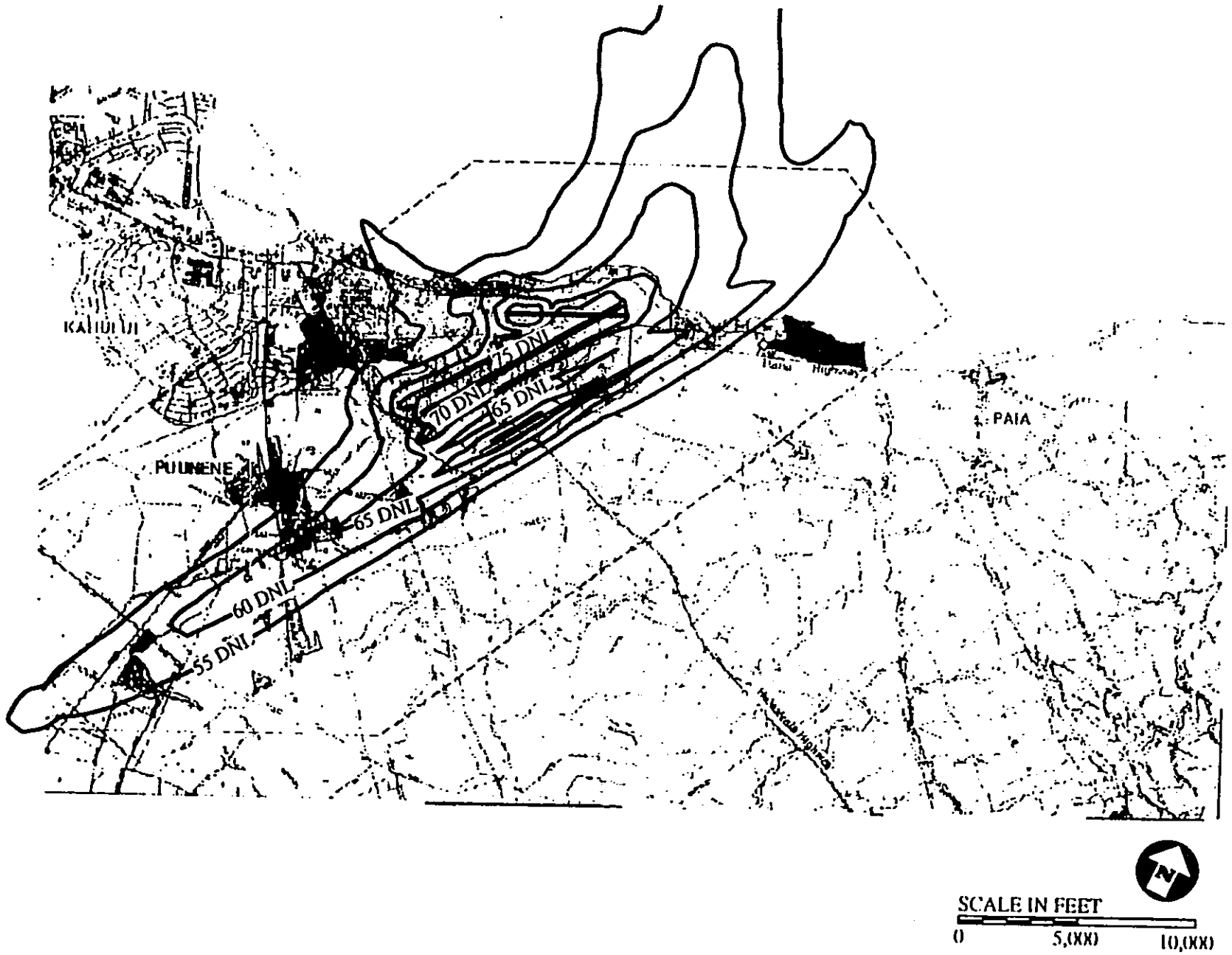


Kahului EIS Noise Analysis

Mestre Greve Associates

Exhibit 19

DNL Contours for Year 2010 - With Project, Without International Flights

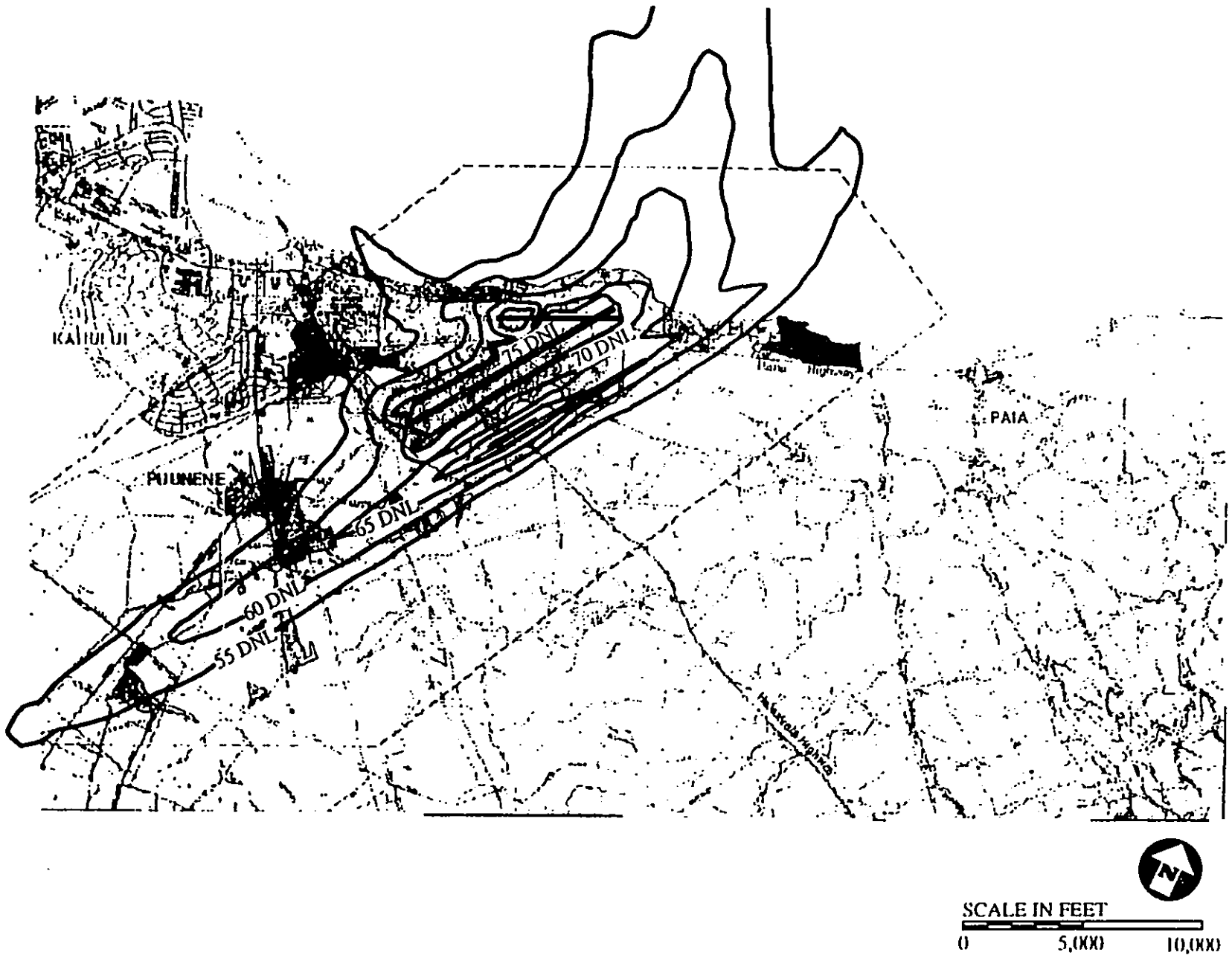


Kahului EIS Noise Analysis

Exhibit 20

DNL Contours for Year 2010 - With Project, Parallel Runway & International Flights, No Helicopters

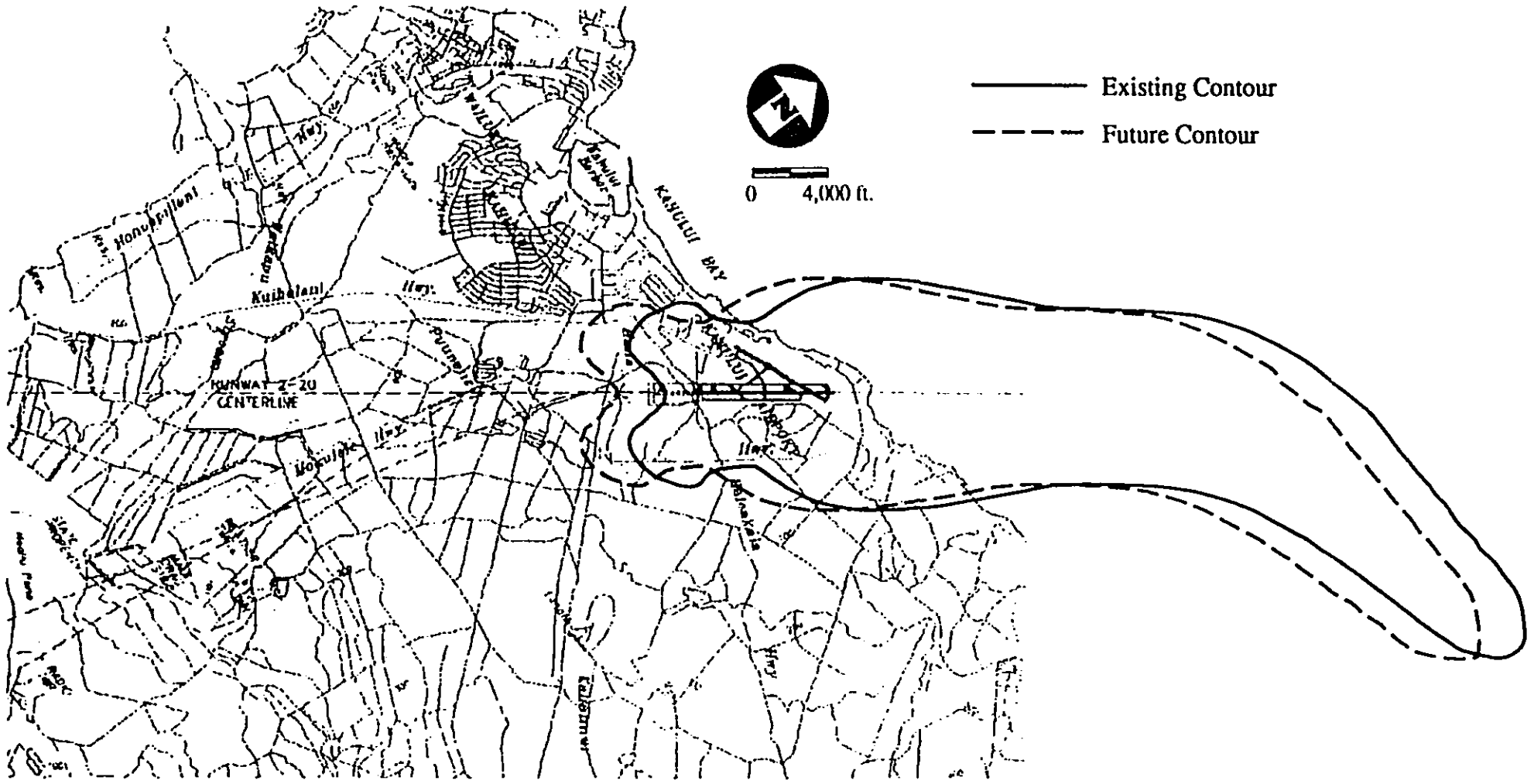
Mestre Greve Associates



Kahului EIS Noise Analysis **Exhibit 21**

DNL Contours for Year 2010 - With Project, Parallel Runway , No International Flights or Helicopters

Mestre Greve Associates

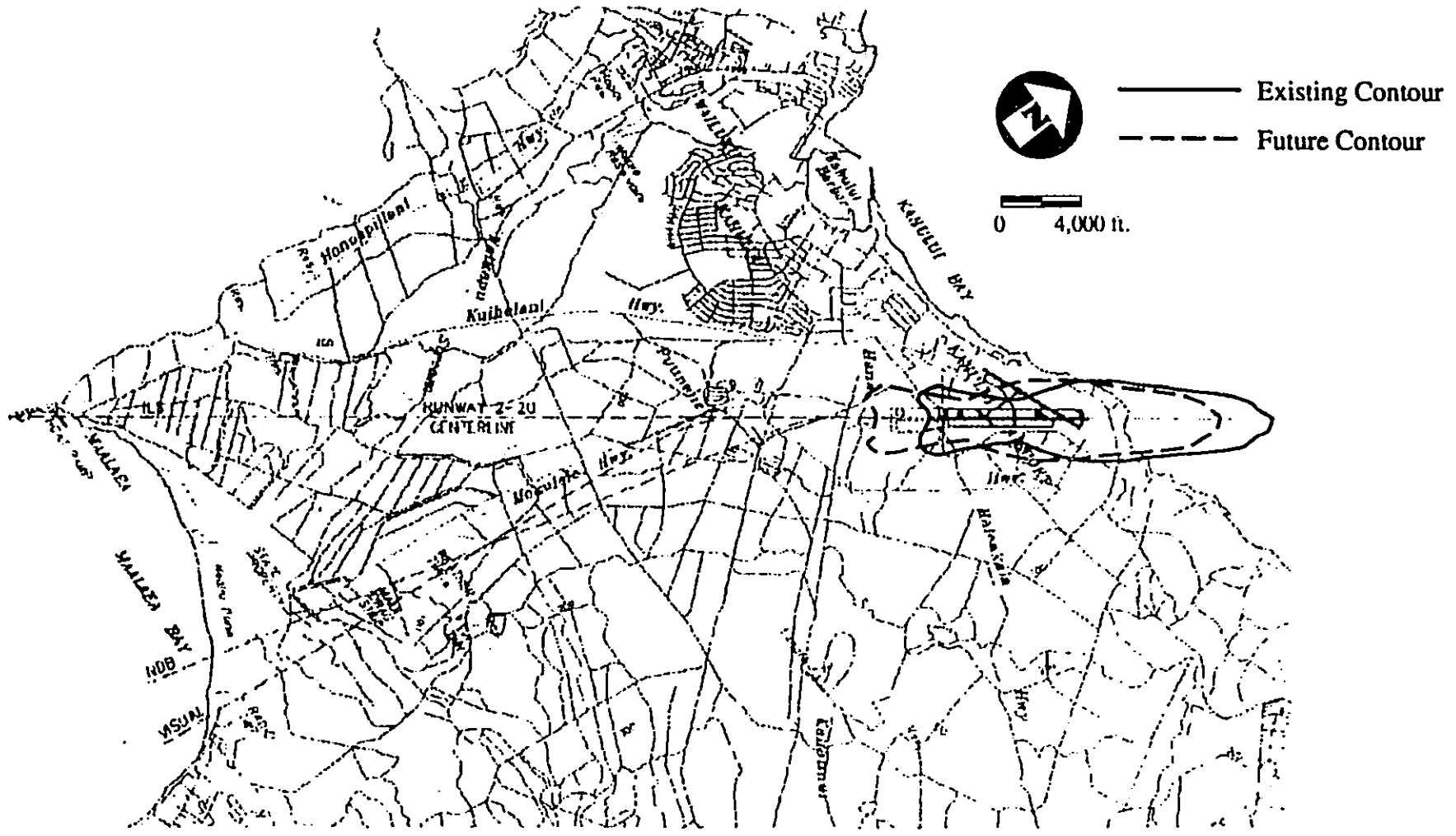


Kahului EIS Noise Analysis

Exhibit 22

85 SEL Comparison for B737-200: Existing (solid) vs. Future (dashed)

Mestre Greve Associates

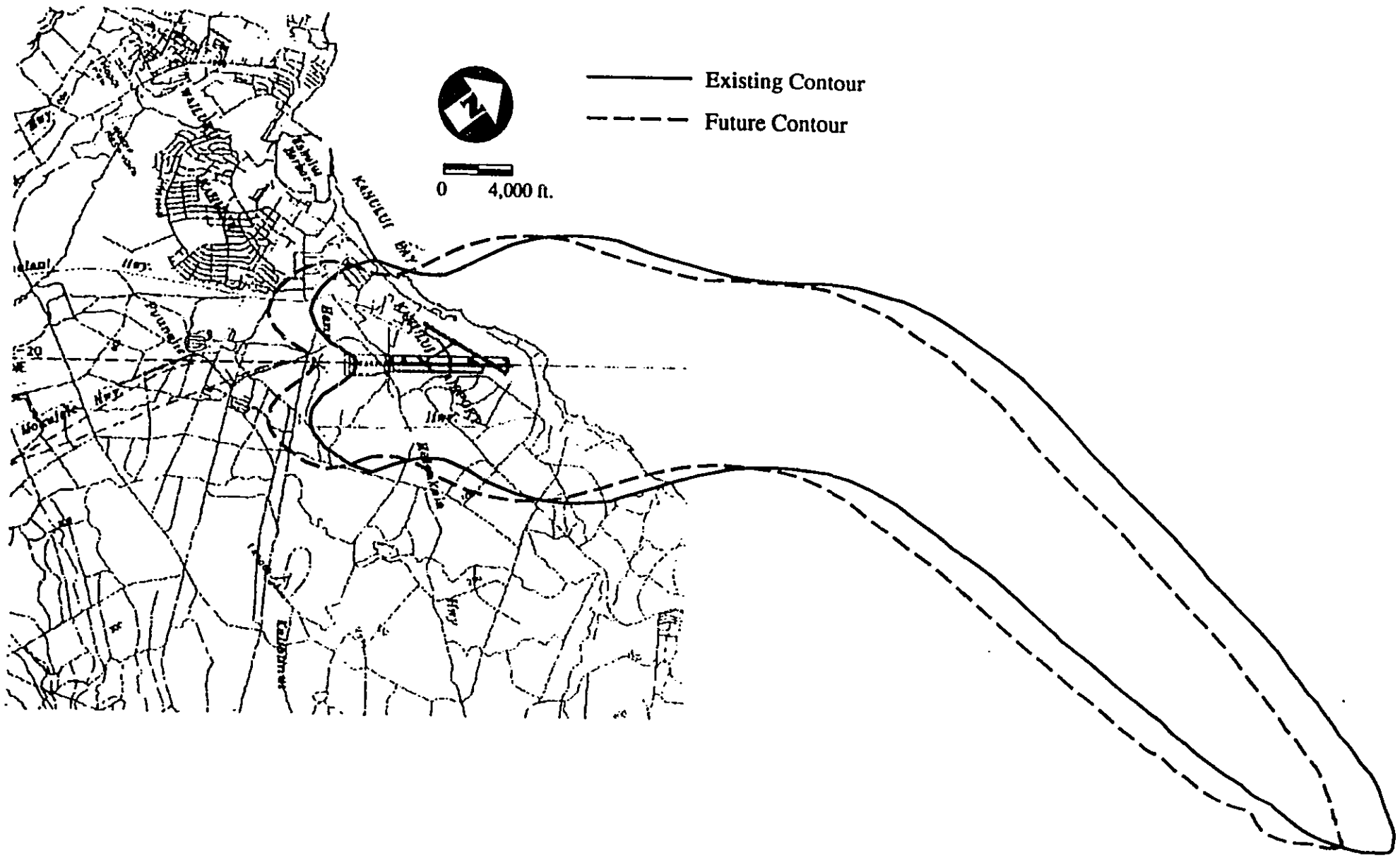


Kahului EIS Noise Analysis

Mestre Greve Associates

Exhibit 23

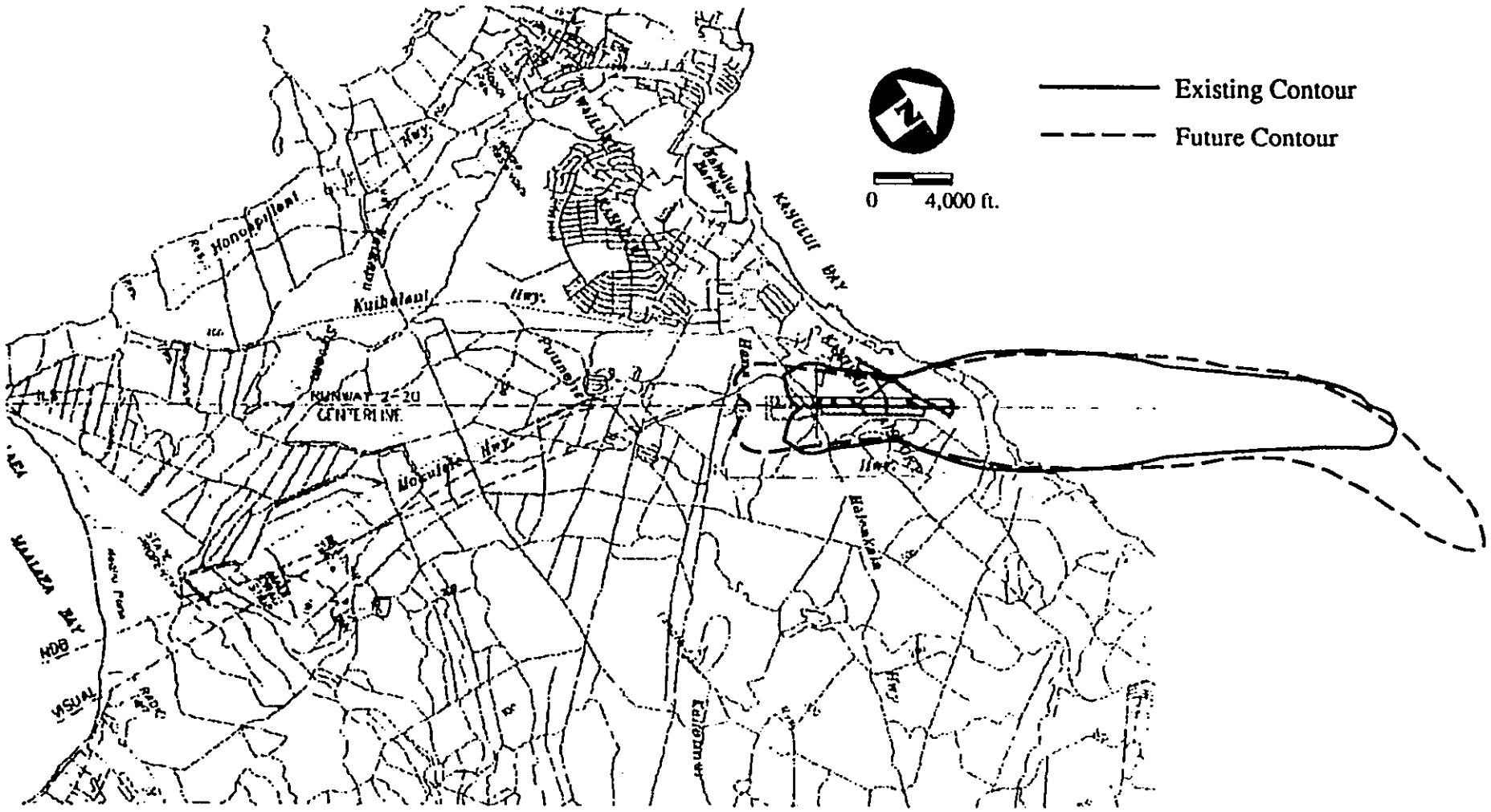
85 SEL Comparison for B737-300: Existing (solid) vs. Future (dashed)



Kahului EIS Noise Analysis

Mestre Greve Associates

Exhibit 24
85 SEL Comparison for DC9-50: Existing (solid) vs. Future (dashed)

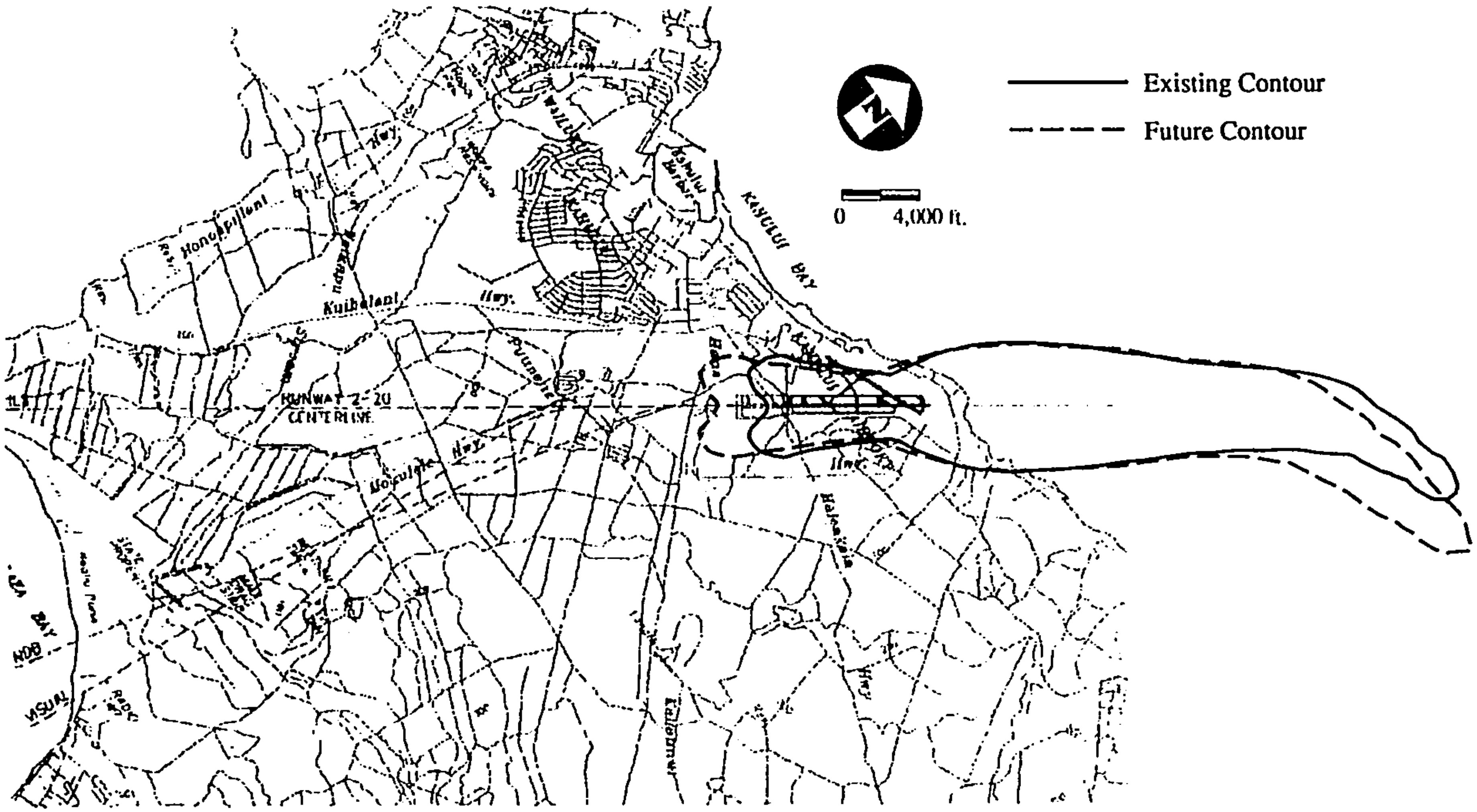


Kahului EIS Noise Analysis

Mestre Greve Associates

Exhibit 25

85 SEL Comparison for DC10-10: Existing (solid) vs. Future (dashed)

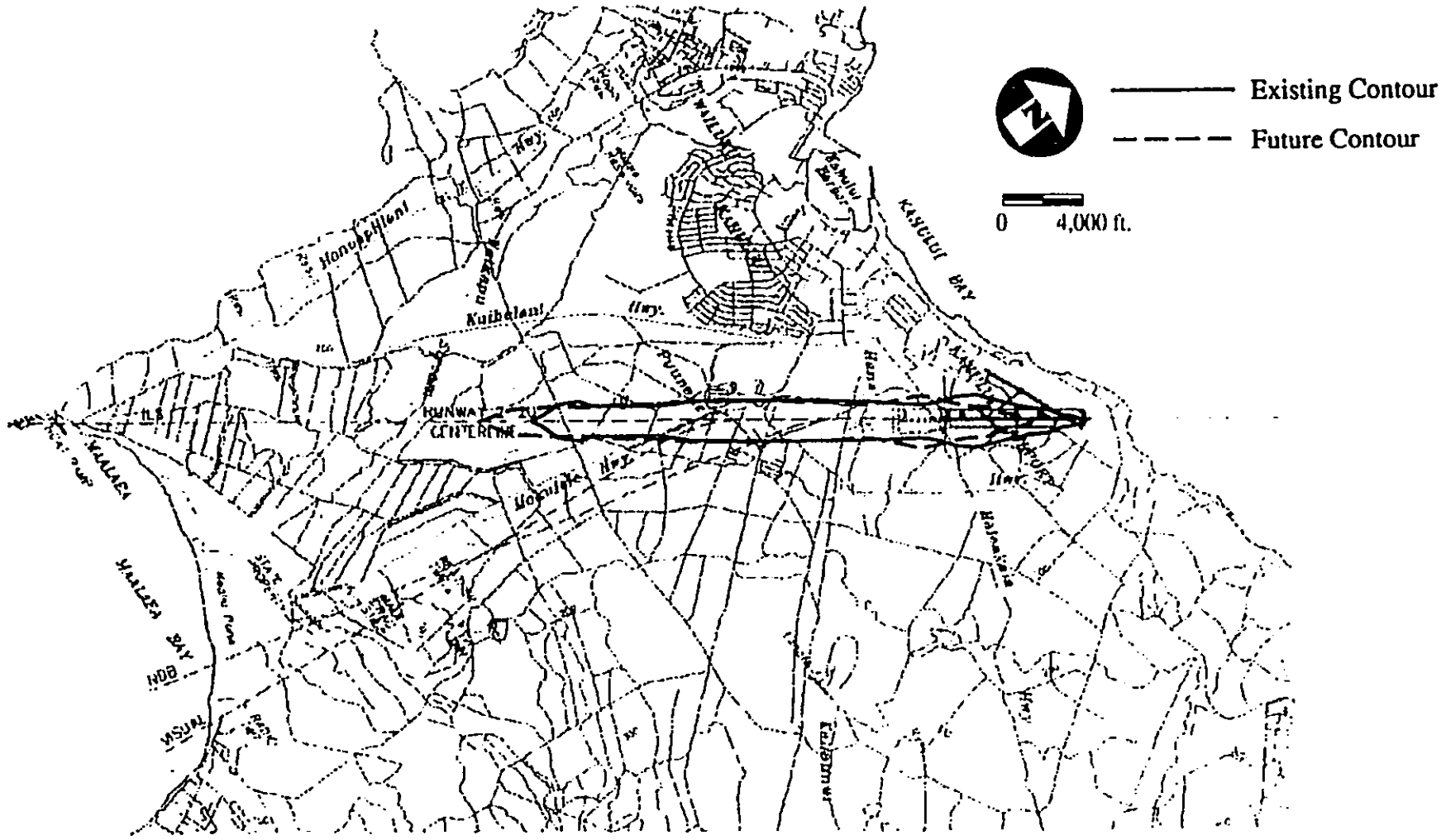


Kahului EIS Noise Analysis

Exhibit 26

85 SEL Comparison for L-1011: Existing (solid) vs. Future (dashed)

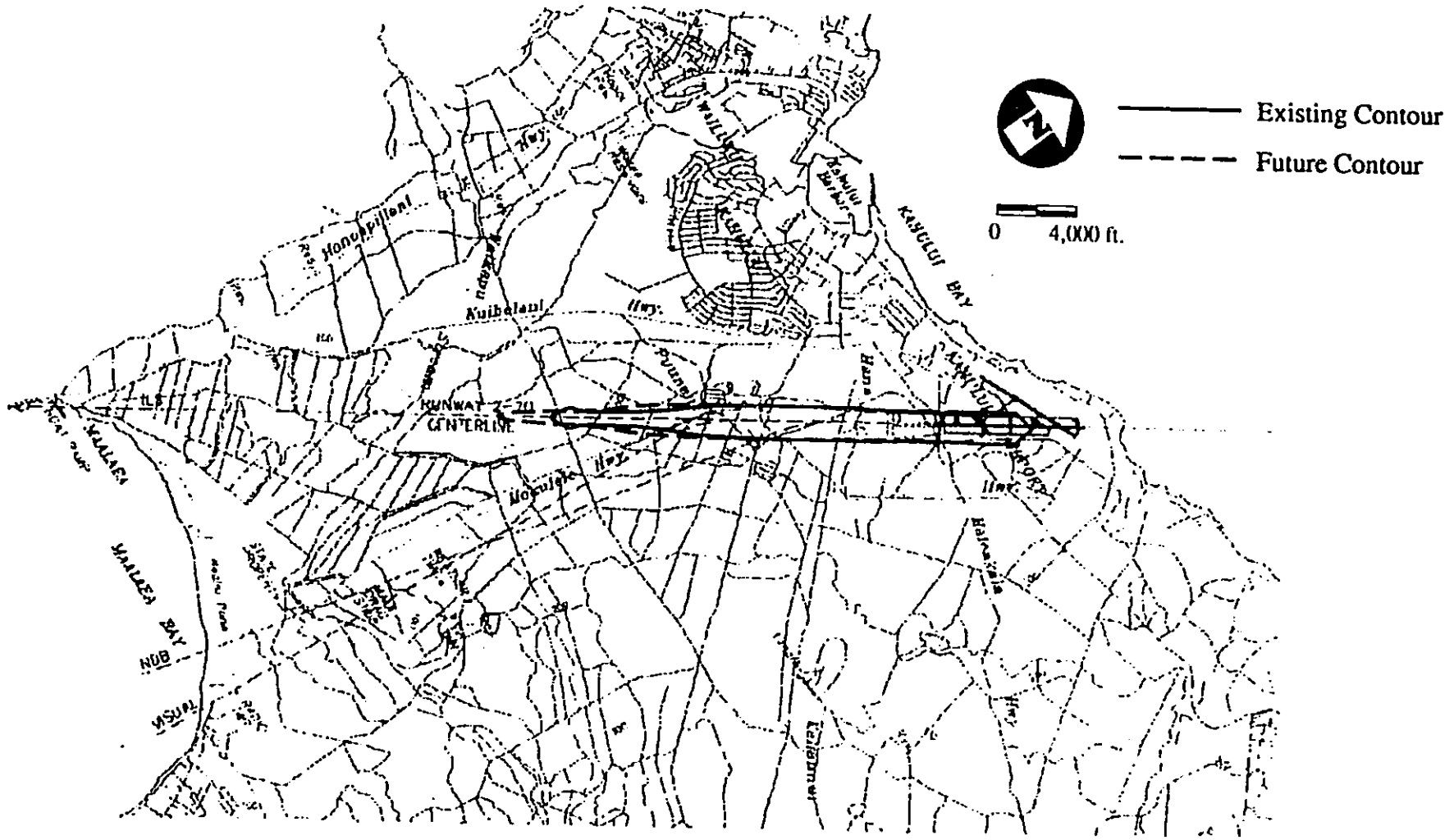
Mestre Greve Associates



Kahului EIS Noise Analysis **Exhibit 27**

85 SEL Arrival and Reverse Thrust Contours for DC9-50: Existing (solid) vs. Future (dashed)

Mestre Greve Associates

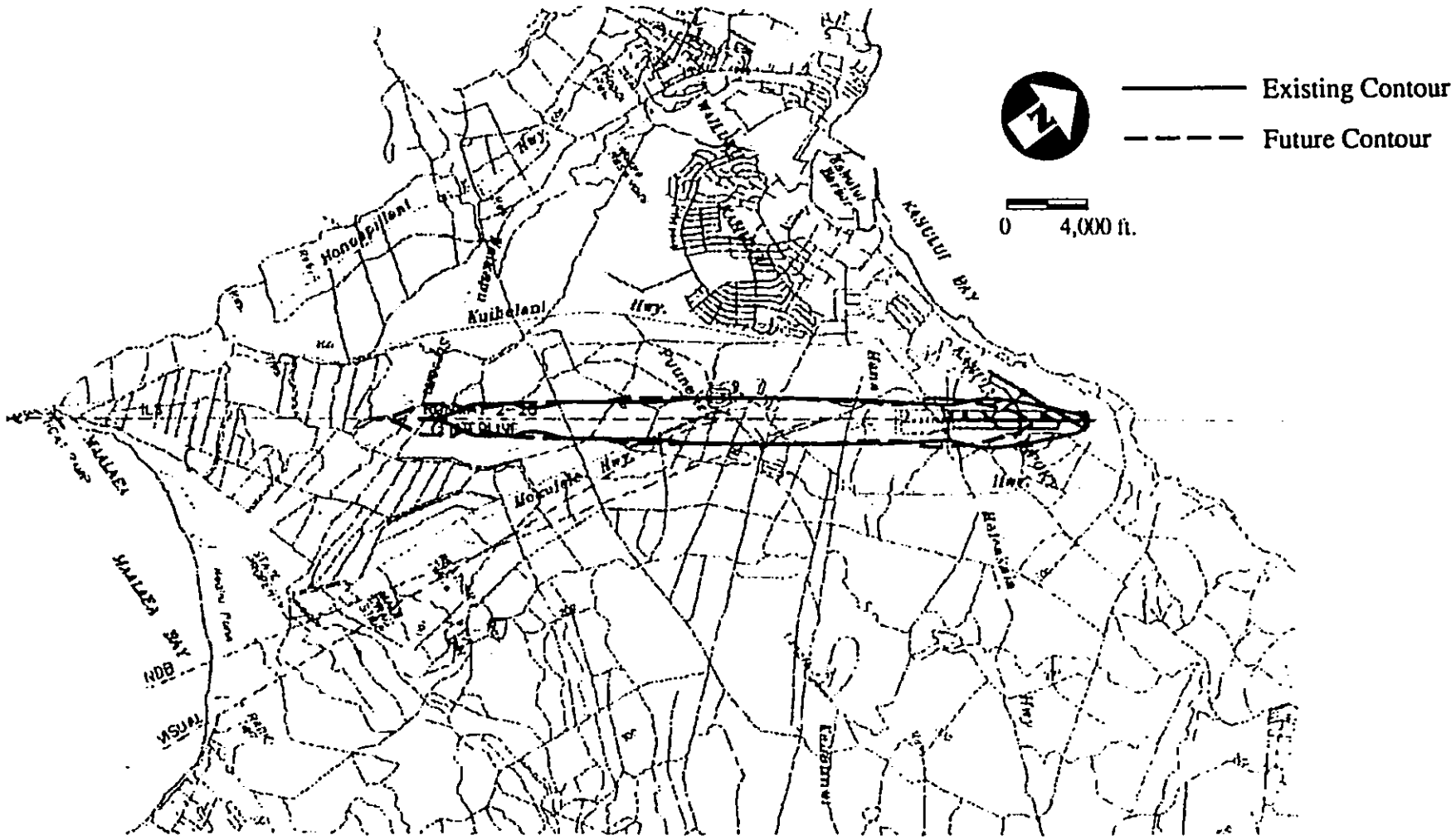


Kahului EIS Noise Analysis

Exhibit 28

85 SEL Arrival and Reverse Thrust Contours for B737-300: Existing (solid) vs. Future (dashed)

Mestre Greve Associates



Kahului EIS Noise Analysis **Exhibit 29**

85 SEL Arrival and Reverse Thrust Contours for DC10-10: Existing (solid) vs. Future (dashed)

Mestre Greve Associates

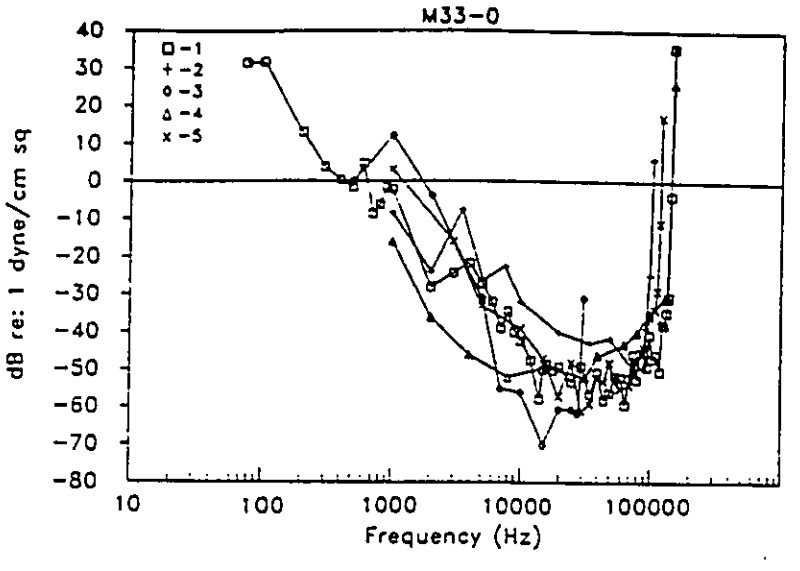


Fig. M33-0. Audiograms for several cetaceans.

1- *Tursiops truncatus* - bottlenose porpoise (Johnson, 1967)
2- *Inia geoffrensis* - Amazon river dolphin (Jacobs and Hall, 1971)
3- *Orcinus orca* - killer whale (Hall and Johnson, 1971)
4- *Phocoena phocoena* - harbour porpoise (Andersen, 1970)
5- *Delphinapterus leucas* - beluga whale (White, Norris, Ljungblad, Baron, and di Sciara, 1977)

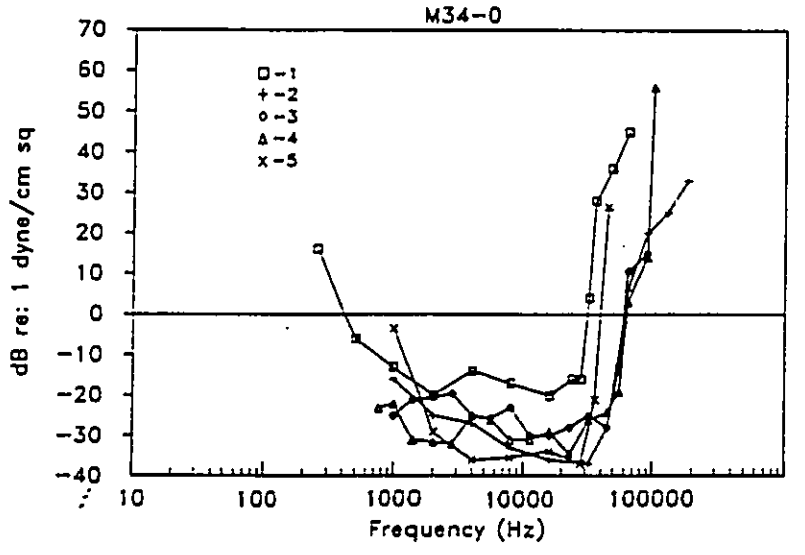


Fig. M34-0. Underwater audiograms for several pinnipeds.

1- *Zalophus californianus* - California sea lion (Schusterman, Balliet, and Nixon, 1972)
2- *Phoca vitulina vitulina* - harbour seal (Mohl, 1968)
3- *Pusa hispida* - ringed seal (Terhune and Ronald, 1975a)
4- *Pagophilus groenlandicus* - harp seal (Terhune and Ronald, 1972)
5- *Callorhinus ursinus* - Northern fur seal (Schusterman and Moore, 1978a)

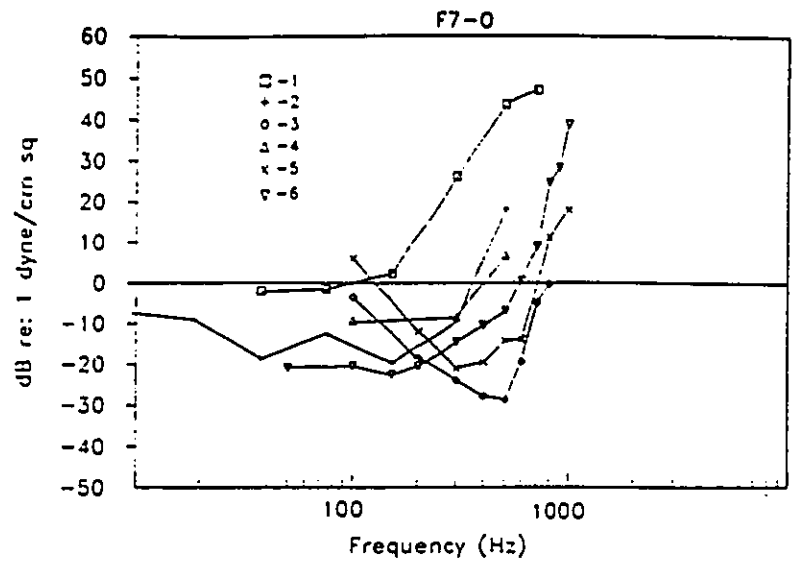


Fig. F7-0. Sound pressure detection thresholds for six fish species without known special adaptations for hearing.

1- *Opsanus tau* - toadfish (Fish and Offutt, 1971)
2- *Tautoga onitis* - tautog (Offutt, 1971)
3- *Adioryx xantherythrus* - Hawaiian squirrelfish (Coombs and Popper, 1979)
4- *Tilapia macrocephala* - African mouth-breeder (Tavolga, 1974)
5- *Lagodon rhomboides* - pinfish (Tavolga, 1974)
6- *Haemulon sciurus* - blue-striped grunt (Tavolga and Wodinsky, 1965)

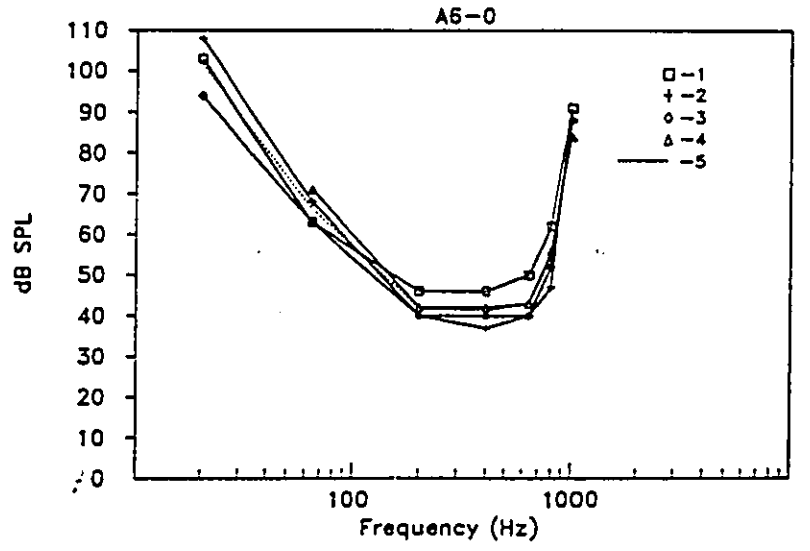


Fig. A6-0. Audiogram for *Pseudemys* sp. (a turtle) (Patterson, 1966).

1- Subject 1
2- Subject 2
3- Subject 3
4- Subject 4
5- Mean over four subjects

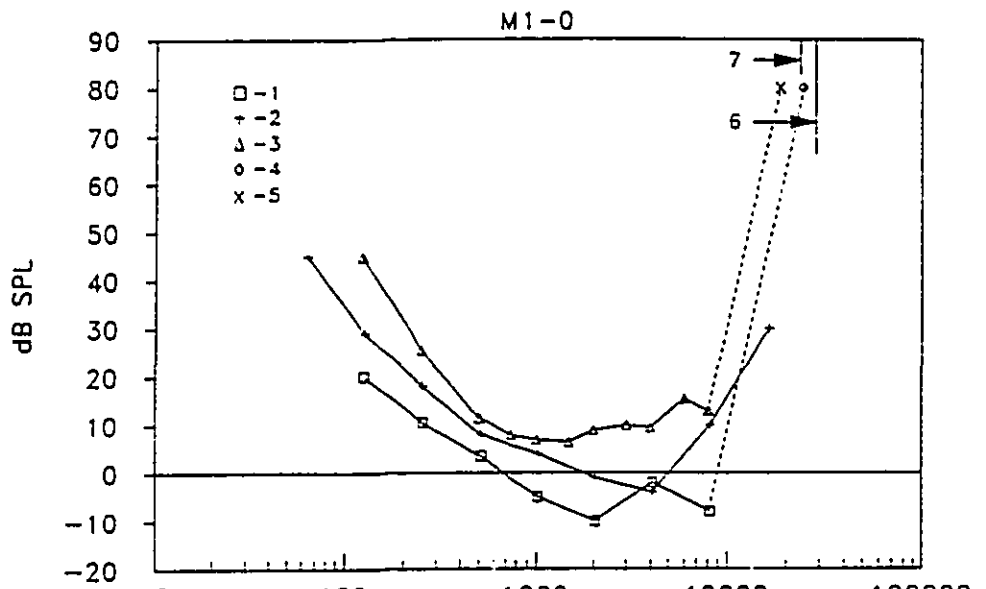
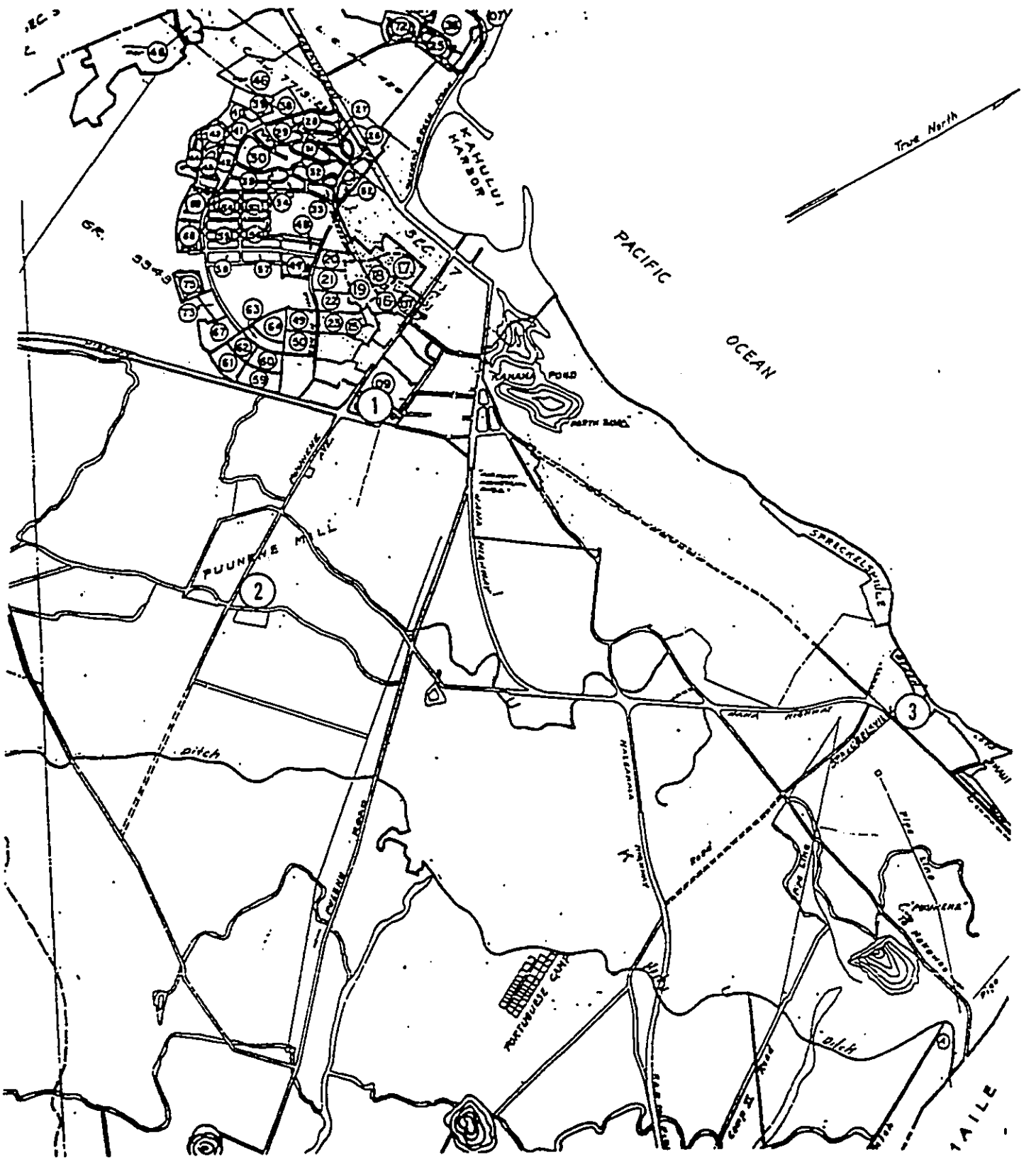


Fig. M1-0. Audiograms for *Pan troglodytes* (chimpanzee) and the human.

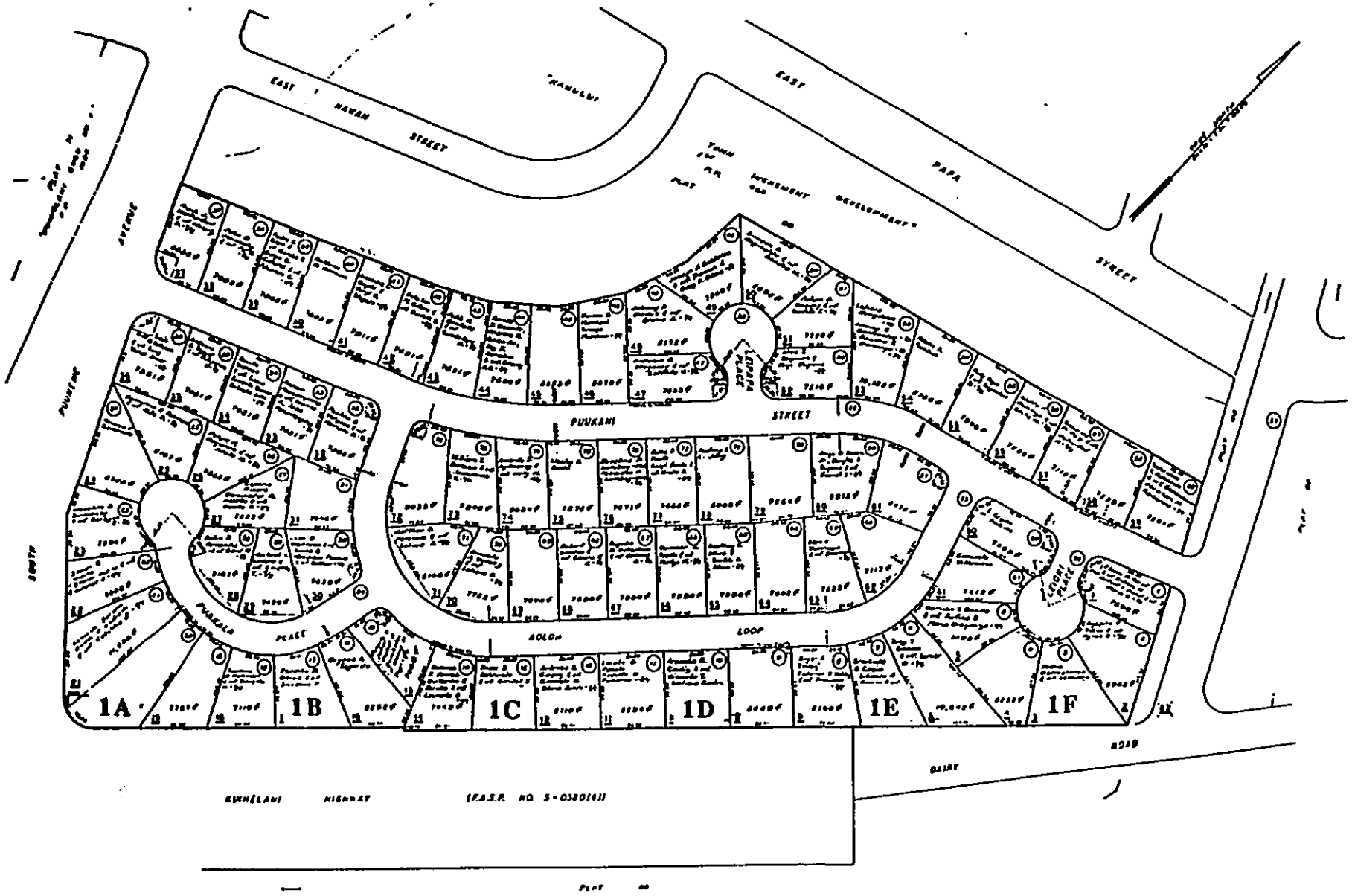
1- *Pan troglodytes* - Chimpanzee (Elder, 1934)
2- *Homo sapiens* - human, Minimum Audible Field (Sivian and White, 1933)
3- *Homo sapiens* - human, headphones (ANSI 3.6, 1969)
4- *Pan troglodytes* - chimpanzee (Farrer and Prim, 1965)
5- *Homo sapiens* - human, headphones (Farrer and Prim, 1965)
6- *Pan troglodytes* - chimpanzee (Elder, 1935)
7- *Homo sapiens* - human (Elder, 1935)



Kahului EIS Noise Analysis

Exhibit 33a
Representative Noise Sensitive Receptors

Mestre Greve Associates



Kahului EIS Noise Analysis

Mestre Greve Associates

Exhibit 33b
Residential Noise Sensitive Receptors

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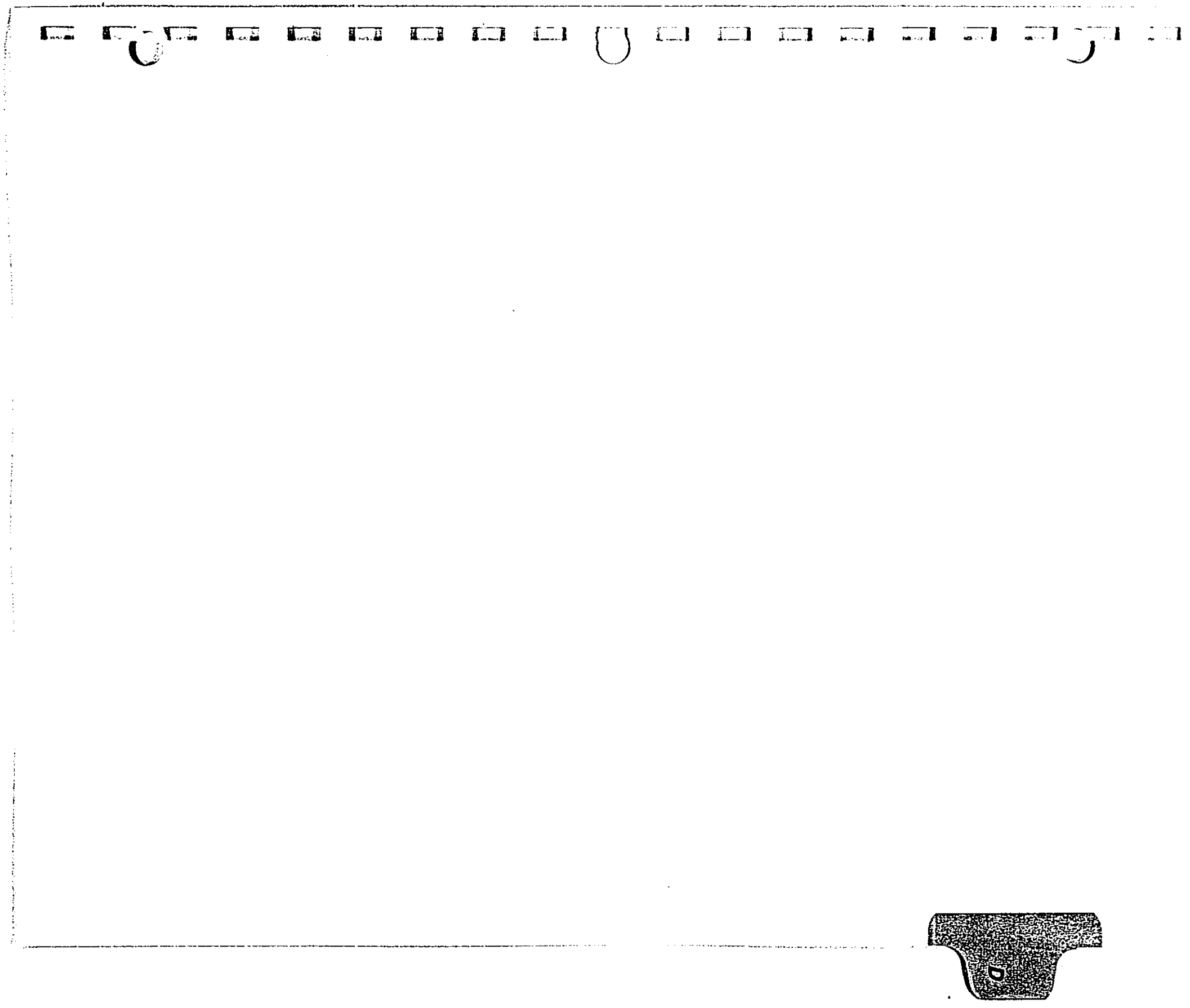
D

APPENDIX D

LAND USE ASSESSMENT

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APPENDIX

LAND USE: IMPACT ASSESSMENT

Kahului Airport
Final Environmental Impact Statement

Submitted to:

Edward K. Noda and Associates
Honolulu, Hawaii

Submitted by

Eugene P. Dashiell, AICP
Planning Services
1219 Keeaumoku Street, Suite 200
Honolulu, Hawaii
Telephone: 945-3132
Fax: 945-3536

May 15, 1995

APPENDIX
LAND USE: IMPACT ASSESSMENT

Kahului Airport
Final Environmental Impact Statement

Submitted to:

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Eugene P. Dashiell, AICP
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1219 Keeaumoku Street, Suite 200
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May 15, 1995

Contents

Exhibits

Glossary

A&B	Alexander & Baldwin
ALISH	Agriculture Lands of Importance to the State of Hawaii
alternative	An alternative plan is comprised of several facilities or actions.
CZM	Coastal Zone Management
DLNR	Department of Land and Natural Resources
EIS	Environmental Impact Statement
facility	A facility is a distinct action. In the KAMP, some facilities are common to several or most alternatives, but other facilities may appear in only one or just a few alternatives.
HC&S	Hawaiian Commercial and Sugar Company
HDOT	Department of Transportation (State agency, unless stated as U.S.)
HDOT-AIR	Airports Division, DOT
KAMP	Kahului Airport Master Plan
Ldn	Day Night Sound Level, an average sound level
LSB	Land Study Bureau, University of Hawaii, State of Hawaii
LUD	State Land Use District
OSP	Office of State Planning
SMA	Special Management Area
WKCP	Wailuku-Kahului Community Plan
WWTP	Wastewater Treatment Plant

Introduction

This report reviews the land use factors affecting the Kahului Airport area and evaluates the impacts of the proposed Kahului Airport Master Plan (KAMP) on land uses in the vicinity of the airport. This report is provided as an appendix to the final Environmental Impact Statement for the KAMP.

This report is organized as follows:

- Description of the study area.
- Discussion of the environmental and planning factors affecting the study area. This includes a review of the history of development of the area, recent developments around the airport and the major physical or planning constraints on land use.
- Description of the existing conditions of land use.
- A review of the KAMP and its alternatives to identify the facilities or actions which affect land use.
- An analysis of impacts and their significance and a review of the proposed mitigation measures.

Typical impacts on land uses surrounding commercial airports include the following:

- Aircraft noise.
- Aircraft overflight constraints (for example, height limitations or clear zones).
- Vehicular traffic generated by airport use.
- Limitations on entry or passage because airport perimeters are fenced to restrict entry and to direct access towards specific control points.

Along with the above set of typical effects of commercial airports, Kahului Airport has had an impact on the land use immediately surrounding the airport. This is manifested in two unique ways:

- Buffering. There is extensive buffering (created by the vast expanse of sugar can crop land on one side, and the ocean on the other) around much of the airport boundary. This has resulted in very little urban development except for the Kahului area, and at Spreckelsville. This is in part a function of the airport because land owners and government planners have generally avoided the higher noise areas of the airport.
- Dual market retail and commercial businesses. In the Kahului area, a group of dual market retail and commercial businesses have grown to take advantage of the fact that most Maui roads connect most Maui communities with Kahului Harbor, Kahului Airport and the seat of government at Wailuku.

Study Area

Kahului Airport is located on the north shore of Maui (Exhibit 1). Geographically, it is central to the Island's communities and road networks.

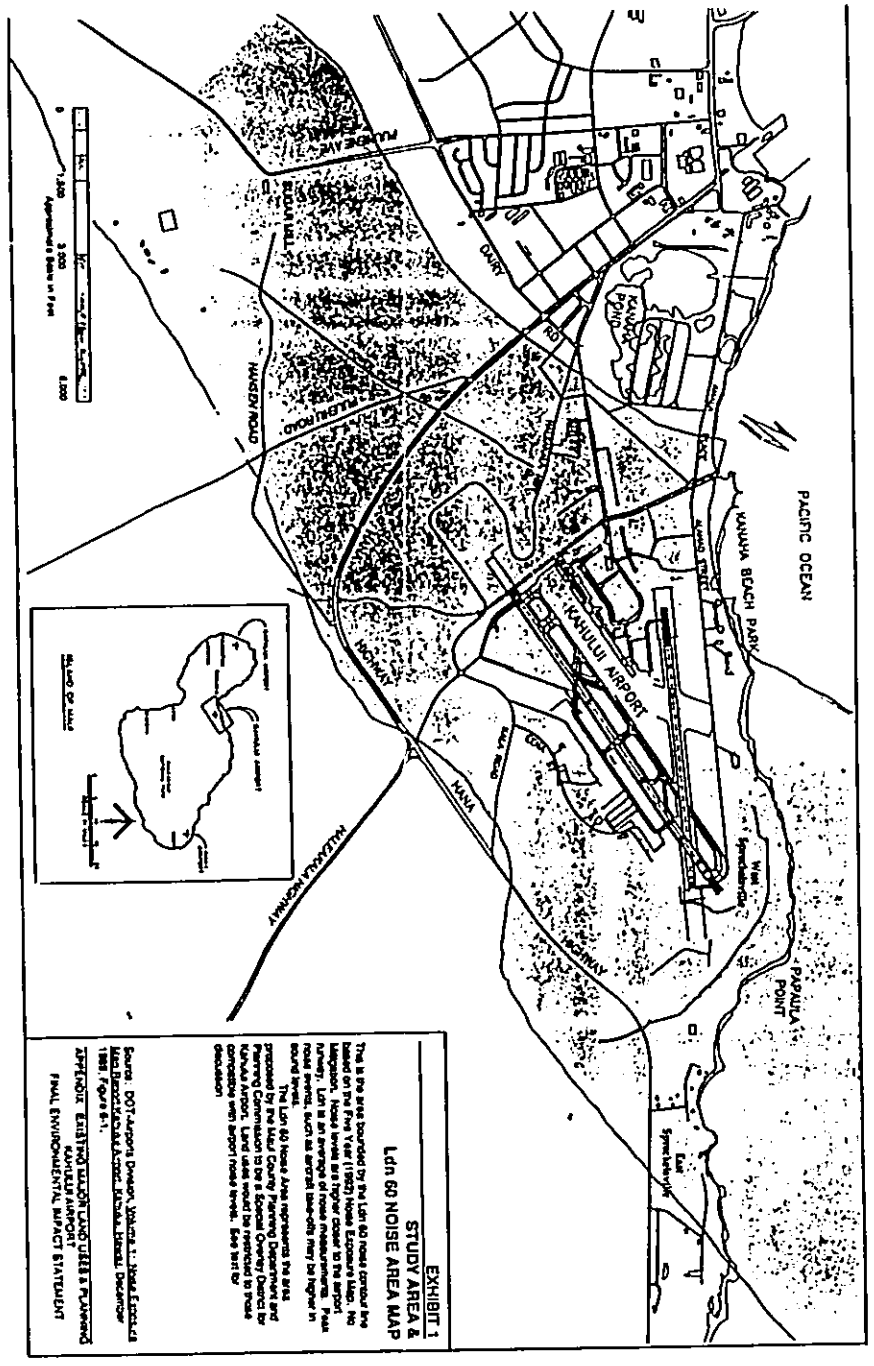
This report evaluates the impacts on land uses: where aircraft noise may reach or exceed the Ldn 60[1] levels; where aircraft operational limitations impose height restrictions; and where proposed expansion of the airport may affect near-by land use. Specifically the affected areas include:

(1) The coastal area including Kanaha Beach Park, Kanaha Pond (Kanaha Wildlife Sanctuary), West Spreckelsville, portions of East Spreckelsville, Spreckelsville Beach and offshore areas frequented by windsurfers, fishermen and beachgoers.

(2) The airport area itself including the passenger and freight terminals, shops, car rental facilities and other industrial or commercial activities.

(3) The light industrial and commercial areas near the airport entrance in the vicinity of Keolani Place, Haleakala Highway, Hana Highway and Dairy Road, and including Kahului Industrial Park, Triangle Square, Costco (proposed), Kmart and businesses along Dairy Road and on the south side of Hana Highway.

[1]The 60 Ldn noise contour is used here because it is a threshold level of noise above which the HDOT-AIR has determined incompatible land uses (such as residential or educational) should generally not be permitted. It is also a threshold recently proposed by the Maui County Planning Director in which incompatible land uses should not be permitted.



(4) Agriculture land (all in sugar cane production) between the present airport boundary and the Hana Highway, and west and south of the Hana Highway.

Environmental and Planning Factors Affecting the Study Area

The airport's presence has probably influenced the development of some commercial land uses in its immediate vicinity including a shift in prime agriculture land use from sugar cane crops to urban use. However, this relationship is also a function of the airport area being a transportation crossroads for most Maui communities. This occurs because of the long historic presence of Kahului Harbor and of Wailuku-Kahului as the traditional government headquarters and also the commercial and retail center.

The airport is one of the basic infrastructure components which serves the Island of Maui. As such, the airport serves the entire community and its capacity is determined based on the planning goals of the Maui community and of the State of Hawaii. Future airport capacity as identified in the KAMP is based on the estimated volume of passengers and cargo which may occur in the future. As a general rule, when designing infrastructure, choices enter into the calculation of projected needs and capacity estimates. One of the most crucial choices is the specification of the amount of additional capacity to be constructed beyond the capacity required to serve the existing or present conditions. This is a difficult specification to make because it can be a costly mistake to build too much capacity thus creating a situation where a facility is never fully used. This appears to have happened at the Hilo Airport where the terminals and runways seem to have excess capacity. The Hilo Airport is a classic example of infrastructure facility planning which illustrates the point that just because a facility is constructed there is no guarantee that it will attract customers, or that it will cause growth. In the case of the Hilo airport, the estimated future demand for passenger and cargo facilities did not materialize and the facility provides an example that infrastructure by itself may not be the primary cause of growth in passengers or cargo.

In general, with regard to land use, there seems to be a need for several factors (only one of which is the presence of an airport) to exist before "growth" will occur. Growth here means the broad kind of economic changes and population increases which a community such as Maui has incurred in the last two decades. Some of the crucial factors include the creation of a market (or demand) which is usually done through advertising. Maui and the State of Hawaii have been

heavily advertised to create the demand on the part of consumers to travel, to visit, to reside on the island.

Another factor required for growth, is community desire. Maui and the State of Hawaii have desired growth and statehood in 1959 have fostered tourism as a major economic industry. The goals of their land use plans have reflected this, although a countering factor has been a more recent increase in concern that Maui may have grown too much, or too fast. As a result, plans and goals have been reviewed and revised. For example, Maui County at one point changed the General Plan to restrict the length of Kahului Airport's main runway to 7,500 feet (the present length). This action reflected community concerns that the airport was a single facility which could control growth, perhaps somewhat similar to turning off the faucet on a water pipe. More recently, the County Council has changed the General Plan and removed this restriction, perhaps in the recognition that the airport itself is not the primary cause of growth, but rather only one of several crucial infrastructure components.

Testimony of the Director of Maui County Planning Department is in accord with this basic premise. He recently stated that, "Airports do not in and of themselves create growth. They are only one of the tools. The county is responsible for how these tools are used."[2]

The Planning Director has introduced a policy represented as a Special Overlay District which follows the Ldn 60 noise level contour surrounding the Kahului Airport. This policy would limit County Community Plan land uses within the Special Overlay District to airport, light or heavy industrial, commercial, agriculture, and residential only in a part of Spreckelsville.[3]

The subject of "growth inducement" involves the question of the relative contribution of the airport to broad changes in land use patterns throughout the island of Maui. Airport planning tries to follow County and State planning goals. Proposed capacity and facility sizing in the KAMP attempts to meet estimated future demands for cargo shipments and passenger travel (including both residents and visitors) based on policies and plans of the County and State governments. As such, the airport is one of several types of infrastructure considered to follow growth, rather than to lead or cause development. For these reasons, the discussion of the potential impacts on land uses from the KAMP focuses on areas around the airport where direct effects can be identified or measured.

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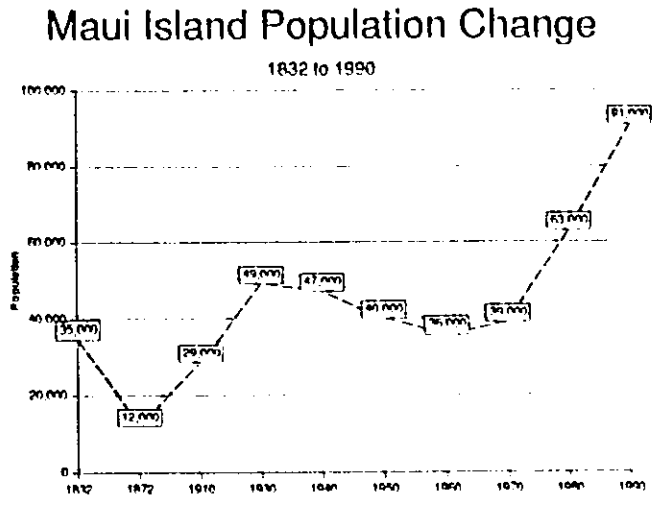
[2]County of Maui, Planning Department, Testimony by Brian Miskae, Planning Director, at the Public Scoping Meeting for the EIS, Kahului Airport, May 18, 1994, transcript, p. 27.

[3]*Maui News*, "Plan for Wailuku, Kahului advances", May 27, 1994.

Maui has experienced population[4] growth and decline cycles prior to the existence of Kahului Airport as a commercial facility. The population declined from 1832 to 1872 due to the continued loss of Native Hawaiians, a function of contact with the western world. The population reached a high level in 1930 because of the in-migration of sugar cane industry workers, a function of land use and economic policies where the native land uses were converted to industrial agriculture. From 1930 until 1960 there was a gradual decline of the population, a function of the increasing mechanization in sugar cane and pineapple cultivation, and also of broad social changes induced by the effects of World War II. [During WW II, population throughout Hawaii rose significantly due to the presence of armed forces personnel who numbered 407,000 in 1944, nearly equal to the resident civilian population.] In 1970, Maui's population was actually slightly less than in 1950 just before the airport converted (1951) from a U.S. Naval facility to a civilian facility. Maui's population did not reach the level of 1930 (49,000) until well into the 1970's.



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[4]Schmitt, Robert C., *Historical Statistics of Hawaii*, UH Press, Honolulu

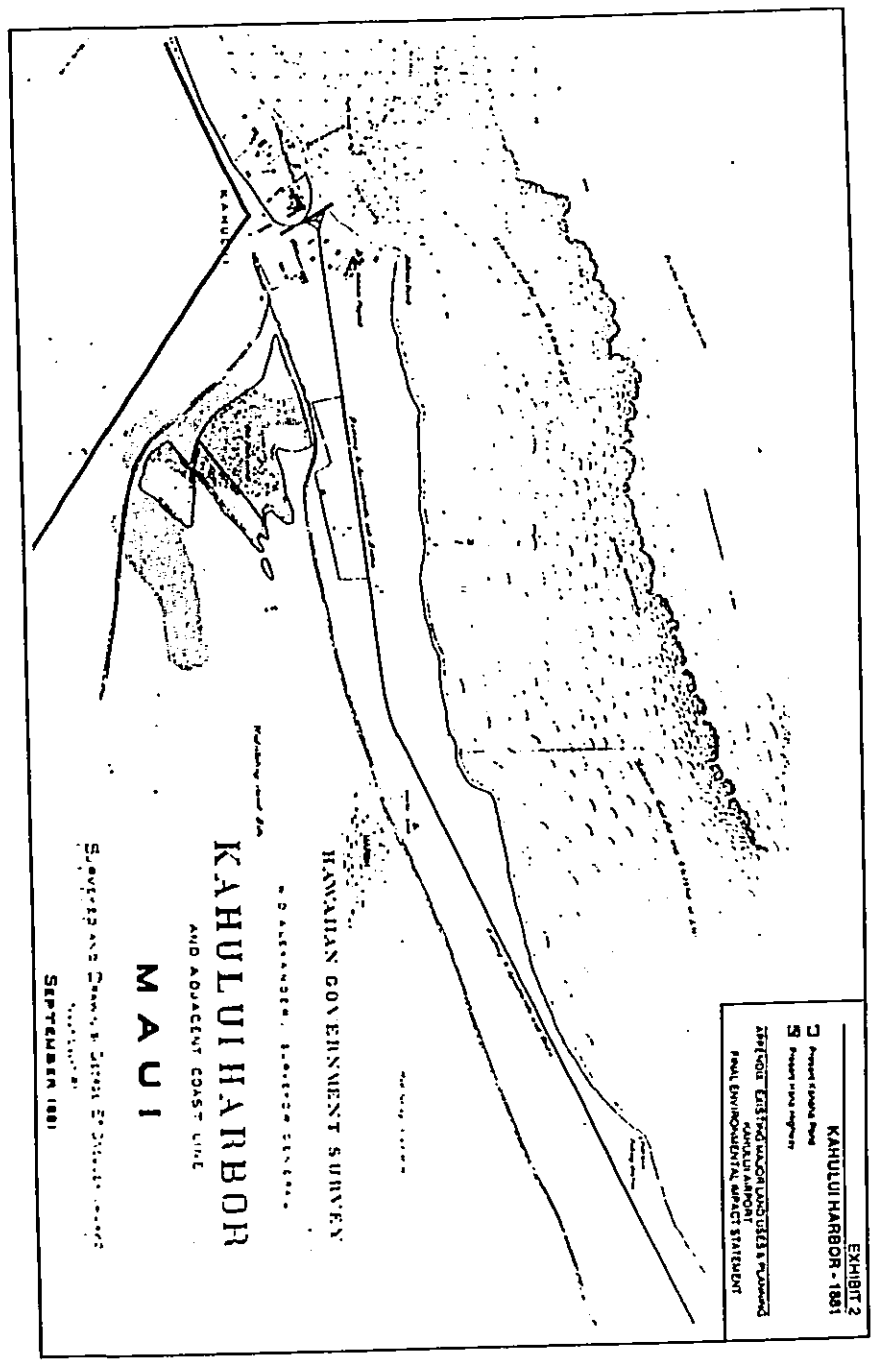
Population growth on Maui from 1970 to the present reflects a concerted effort on the part of land owners and local political leaders to develop tourism on the island. Cooper and Daws[5] note that Maui developed more rapidly than other neighbor islands because:

- The island had a diversity of natural beauty with sunny and accessible beaches.
- It was closest to Honolulu and accessible most rapidly.
- It was big, offered diversity and had a road through the center to access major tourist attractions.
- There was control of large and key potential resort areas by just a few land owners.
- There was a willingness of Maui's leaders to develop and little opposition in the community.

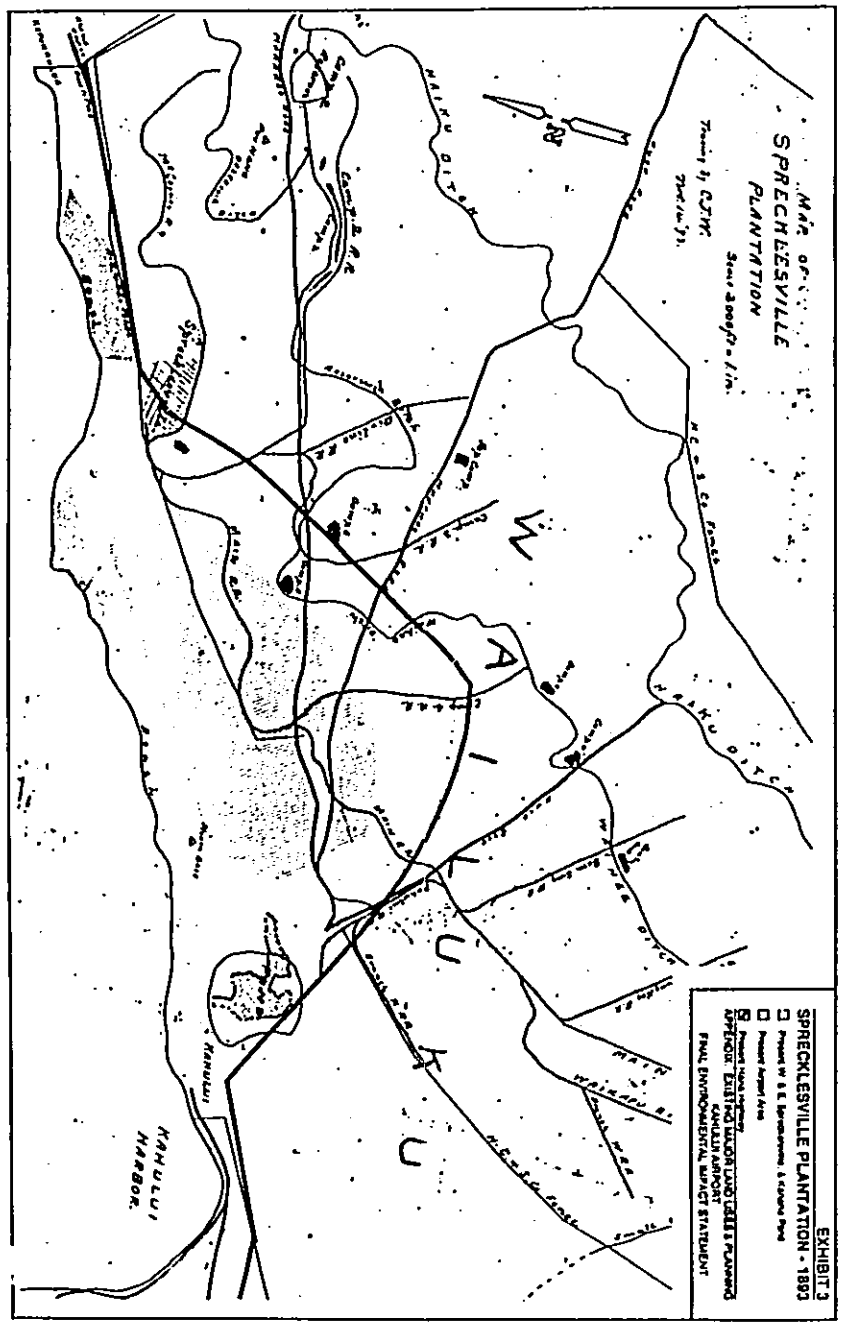
In addition to the above factors, Cooper and Daws conclude:

> "Finally, Maui's power structure was small and stable throughout the boom years, and those who ran the island's politics were united in wanting rapid and extensive development, just as much as Amfac did, or, in their turn, the other large landowners with lands that had resort potential. At the same time, there were few opponents of development compared with, say, Oahu and Kauai."
> (p. 280)

Development History of the Kahului Area. Industrial and urban development of the Kahului area begin with Kahului Harbor which was the location for imports of sugar milling equipment and export of cane sugar products from Maui's sugar plantations. An 1881 map of the area (Exhibit 2) shows a railroad along the beach connecting Kahului Harbor and Spreckelsville where the first sugar mill in this area was located. The 1881 map also shows Kanaha Pond, called an "Old Fish Pond", areas of "Undulating Sand Dunes" and a marsh where the western portion of the Kahului Airport is today. The existing Hana Highway and Kanaha Pond have been superimposed on this



[5]Cooper, George and Gavan Daws, *Land and Power in Hawaii*, Benchmark Books, Honolulu, 1985, pp. 278-281.



1881 map for reference purposes. An 1893 map (Exhibit 3) shows the original location of Spreckelsville somewhat inland of the present location. Areas representing, Kanaha Pond, Hana Highway, the Kahului Airport and present-day Spreckelsville are superimposed on this map for reference.

Kahului Airport was constructed beginning in 1942 during World War II by the U.S. Navy. The Naval airfield was turned over to the Territory of Hawaii in 1951.[6]

Land Use Changes Around the Airport Area. Following World War II sugar cane cultivation became heavily mechanized and shifted away from manual harvesting. This change led to the closure of several small sugar laborer communities and a consolidation of cane fields; a shift from trains to trucks to transport sugar cane to the mill, and sugar cane products from the mill to Kahului Harbor; and the closure of the mill at Spreckelsville and a shift to more extensive use of the Puunene Mill. Sugar crop lands around the airport area became more monolithic.

After statehood (1959), state and county planners begin to focus on the concept of economic diversification to broaden the range of employment opportunities. The visitor industry emerged during this period and Kahului Airport became increasingly significant in Maui's economy. In 1970, Maui had a population of about 38,700 which more than doubled to nearly 92,400 in 1990.

The effects on land use in the airport area can be seen in the following comparison of aerial photographs taken in 1970 and 1990. The area west of the airport in 1970 is shown in Exhibit 4. By comparison, in 1990 (Exhibit 5), some major changes had occurred including construction of the Kahului Wastewater Treatment Plant, a residential area along Dairy Road, and extensive construction of commercial and light industrial facilities.

The area east of the airport in 1970 included plantation camps (along Old Stable Road) known as Hawaiian Village and Cod Fish Village (site of Spreckelsville School, intersection of Old Stable Road and Sunny Side Road, now Kala Road) and the old Kahului Railroad route was apparent (Exhibit 6). By comparison, in 1990 (Exhibit 7), the plantation camps had been cleared and a new subdivision (former sugar cane land) was under construction in East Spreckelsville along the Hana Highway, near the Maui Country Club.

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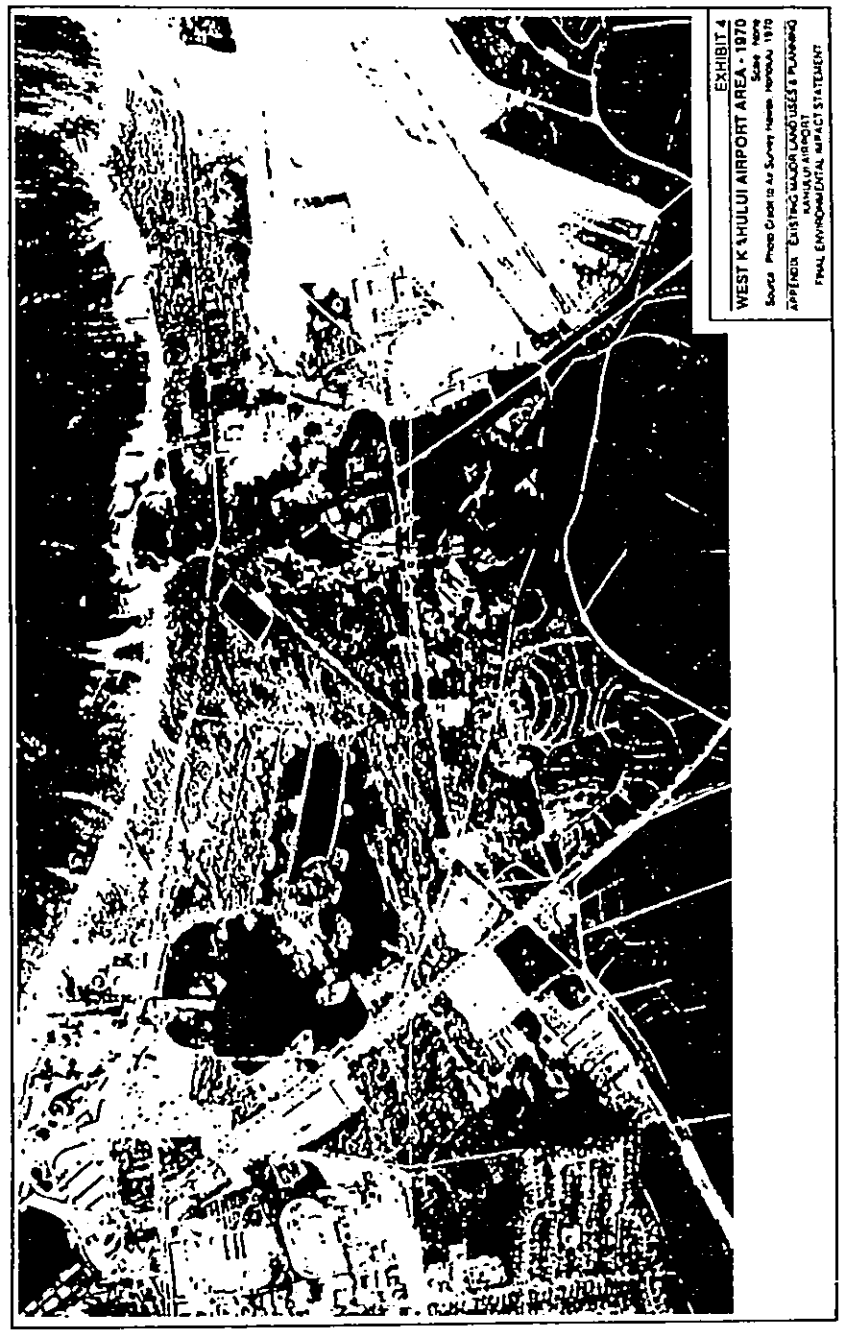
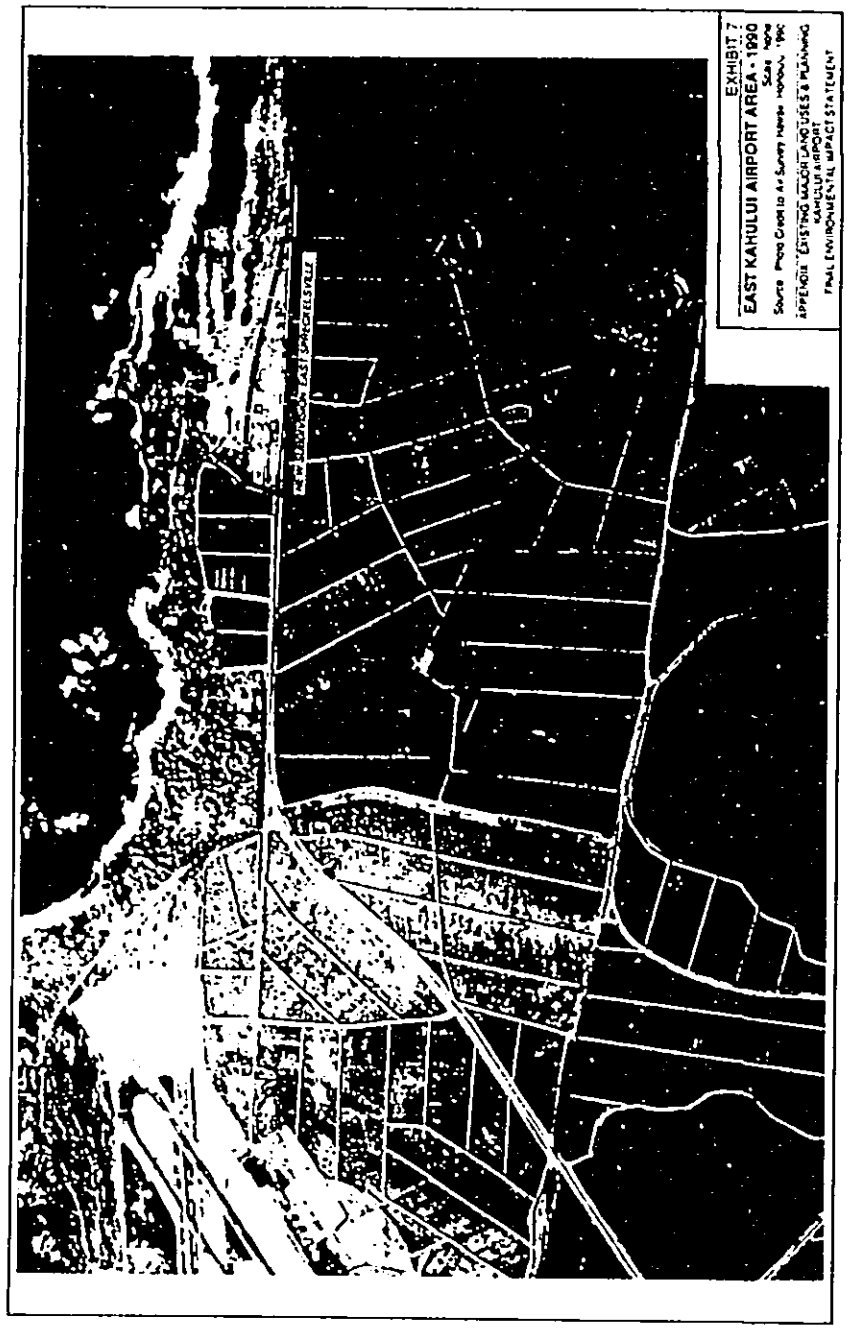
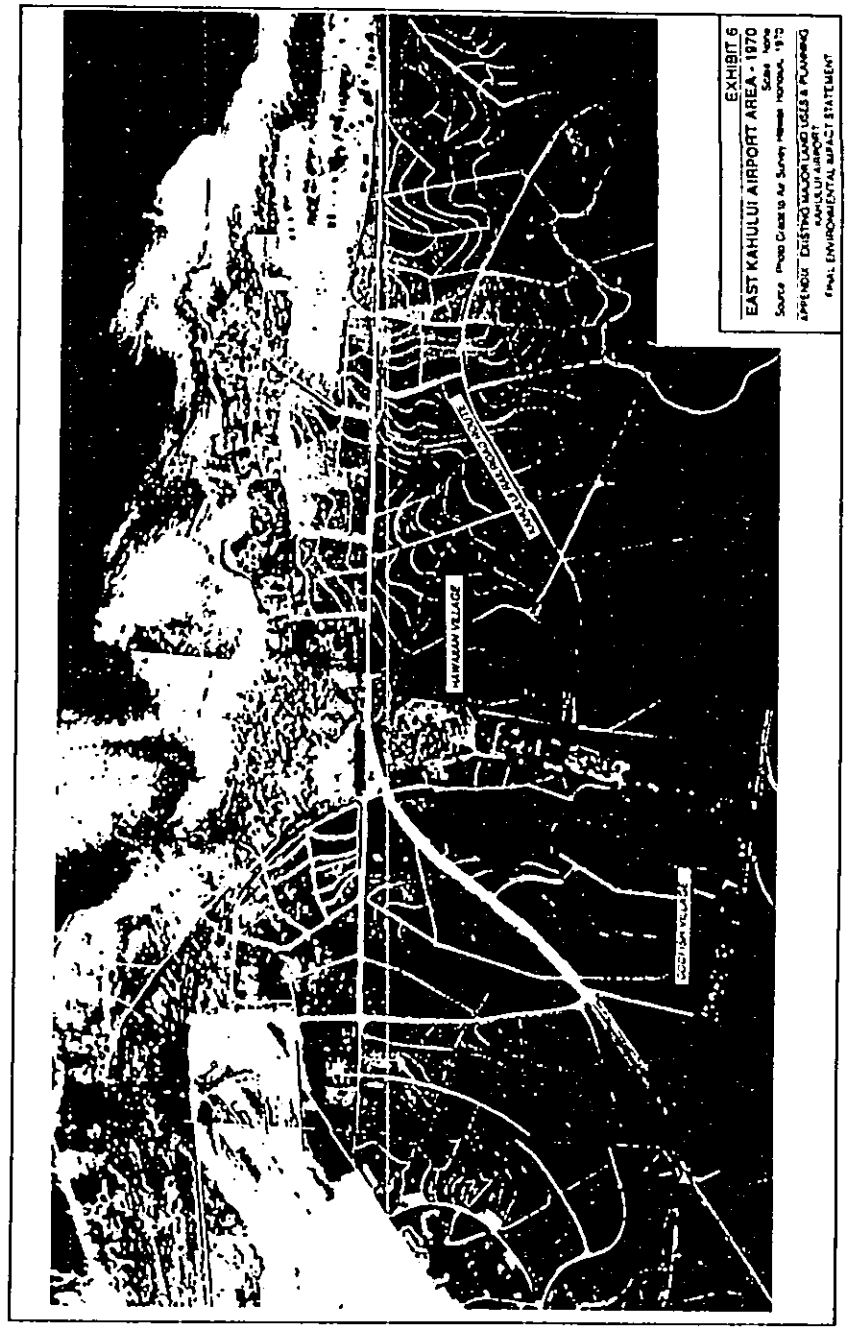
[6]International Archaeological Research Institute, Inc., The Archaeology of Kahului Airport, July 1994, p. 22.







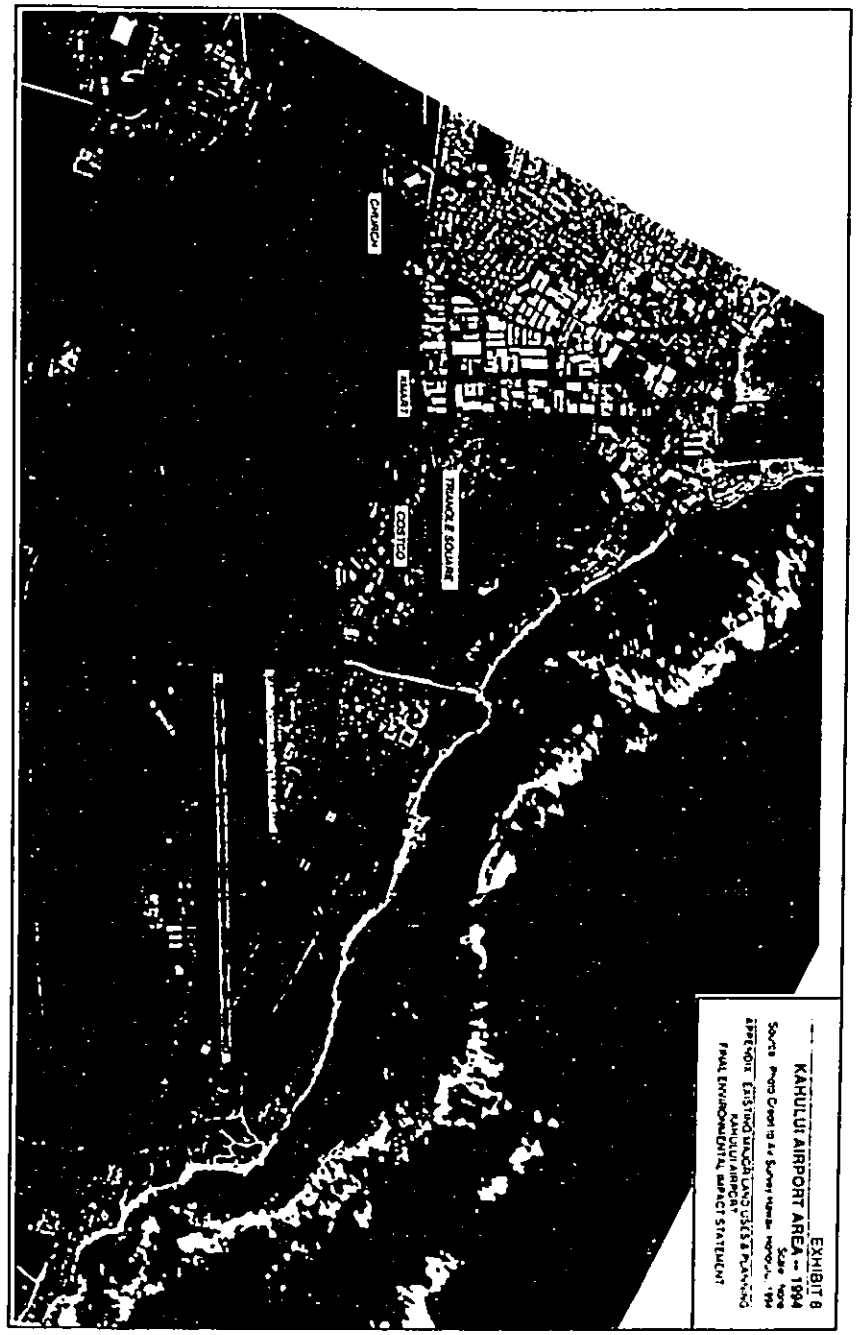
In 1994 (Exhibit 8) there is a new Kmart with a Costco about to be built alongside. A retail shopping area is under construction at Triangle Square. A large church has been completed at the intersection of Dairy Road and Puunene Avenue.

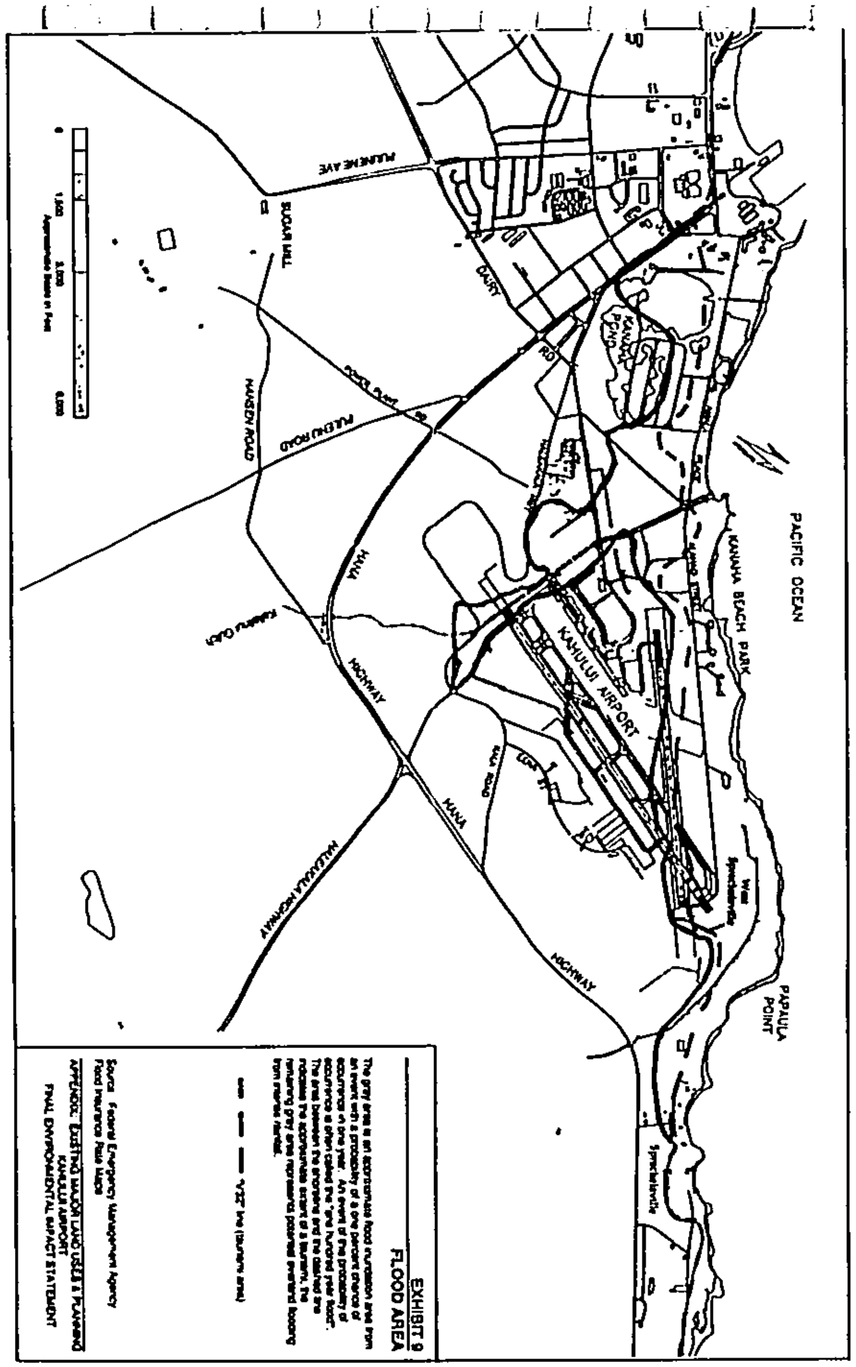
These changes reflect the population growth on Maui. They illustrate a shift to urban land uses in the area. This shift has in part have occurred because of the confluence of roads and the presence of business and government. There has been a development and clustering of businesses which may benefit from the traffic accessing the airport. To some extent this is a result of the historic growth pattern of the Kahului area which emerged with Kahului Harbor (adjacent to the Airport) as the primary focus of agricultural and commercial activity coupled with the critical location of the Kahului area as a transportation focus for most of the communities on Maui. Later, with the development of the visitor industry and the overall shift to tourism from agriculture in Maui's economy, businesses may have located around the airport access routes and focused their marketing to take advantage of the situation. Kahului is somewhat unique in Hawaii in this regard because of the heavy retail tone of the businesses around Kahului Airport and its situation differs from land use around Honolulu Airport where retailing does not tend to be a dominant commercial land use.

Tsunami and Flooding. A major constraint on land use within the coastal zone in the Kahului Airport area is the potential hazard posed by tsunami. There is also the chance of flooding caused by intense rainfall The composite flood hazard zone is shown in Exhibit 9. The tsunami inundation zone extends up to 2,000 feet inland in some locations. Wave heights of 28 feet above ground on the shoreline near the end of Runway 2-20 were recorded during the 1946 tsunami.[7] Most existing and proposed airport facilities are or will be constructed above the historic tsunami flood elevations. Existing land uses in tsunami hazard areas include the Kahului Wastewater Treatment Plant, Kanaha Beach Park, and residences in West Spreckelsville and parts of East Spreckelsville.

Prime Agriculture Land. Agriculture lands abutting the airport and throughout most of the Kahului-Puunene area are in a State Agriculture District, are designated Agriculture in the WKCP and are noted as Prime by the State Department of Agriculture on the ALISH (Agricultural Lands

[7]State of Hawaii, Department of Transportation, Airports Division, Final Environmental Impact Statement Kahului Airport Master Plan Update, July 1992, pp. 122-124.





of Importance to the State of Hawaii) maps (Exhibit 10). ALISH defines Prime agricultural land as:

> "Land which has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed according to modern farming methods."[8]

The ALISH maps are interpretations of potential agricultural productivity made using U.S. Soil Conservation Service soil surveys.

ALISH maps were compiled as part of a cooperative program between the State of Hawaii and the U.S. Soil Conservation Service and they reflect the nation's interest in inventorying and protecting valuable agriculture land.[9] The Prime classification:

> ...*does not in itself constitute a designation of any area to a specific land use* [emphasis in original text]. The classification should, however, provide decision makers with an awareness of the long-term implications of various land use options for agricultural production in Hawaii."[10]

It is important to note that the Prime classification is dependent on moisture supply. For example, Kahului receives less than 19 inches annual average rainfall and for this reason, the agricultural lands in the Kahului airport area are dependent on irrigation. This was noted by H. A. Wadsworth in 1933 who quotes Arthur D. Baldwin (son of H. P. Baldwin, writing in 1915 about his father):

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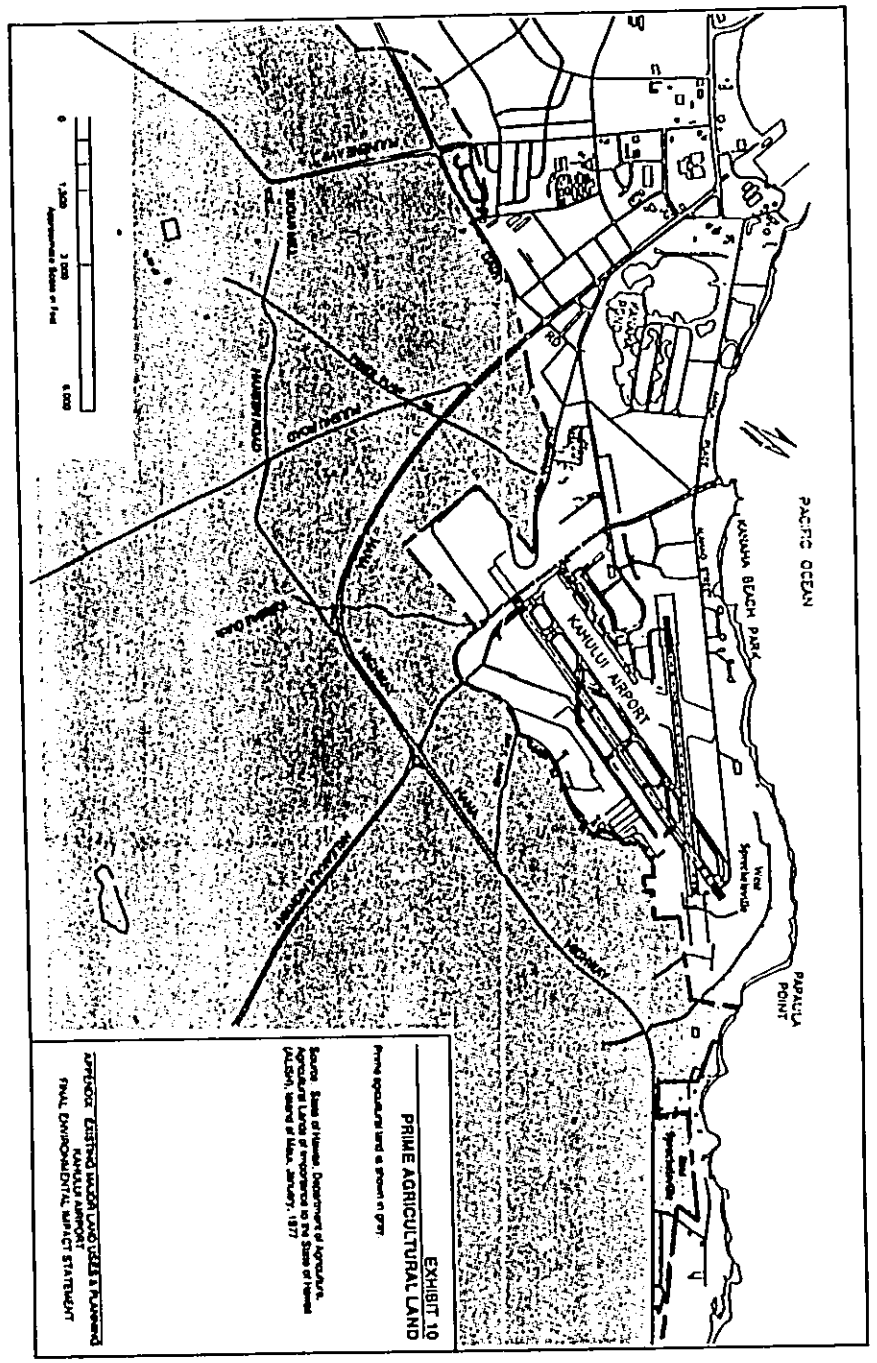
[8]State of Hawaii, Department of Agriculture, ALISH Maps M-5 & 7, quote taken from map legend, January, 1977.

[9]State of Hawaii, University of Hawaii, College of Tropical Agriculture and Human Resources, Cooperative Extension Service, Agricultural Lands of Importance to the State of Hawaii, Circular 496, July 1979, p. 1-4.

[10]Circular 496, p. 4.



> "The Spreckels, Lowrie, Koolau and other ditches have followed the Hamakua ditch, and Central Maui, which once was a bare waste is now one of the most productive spots on the globe, supporting a prosperous population where formerly little existed besides the razorback hog, prickly pear and wild indigo."[11]

The Land Study Bureau[12] made an overall agricultural productivity rating for much of this agricultural acreage (Exhibit 11) and classified lands as A (the highest possible rating) if irrigated and E (the lowest possible rating) if not irrigated. At Kahului Airport that land in cane surrounding the existing Airport boundary is either Land Type 51i or 71i. These are rated A if irrigated and E if not. This is an important and significant qualification because of the growing concern and competition for water supplies on Maui. This issue has been recently summarized as follows:

> "Access to water from the East Maui Irrigation system is a major issue for the plantation[13]. A portion of the irrigation water is provided through four State leases, which historically have been for 20 years. All of the long-term leases have expired, and HC&S has been unable to secure new long-term leases from the State. The sugar plantation is also concerned about the implementation of minimum stream flow standards which could result in less water available for irrigation."[14]

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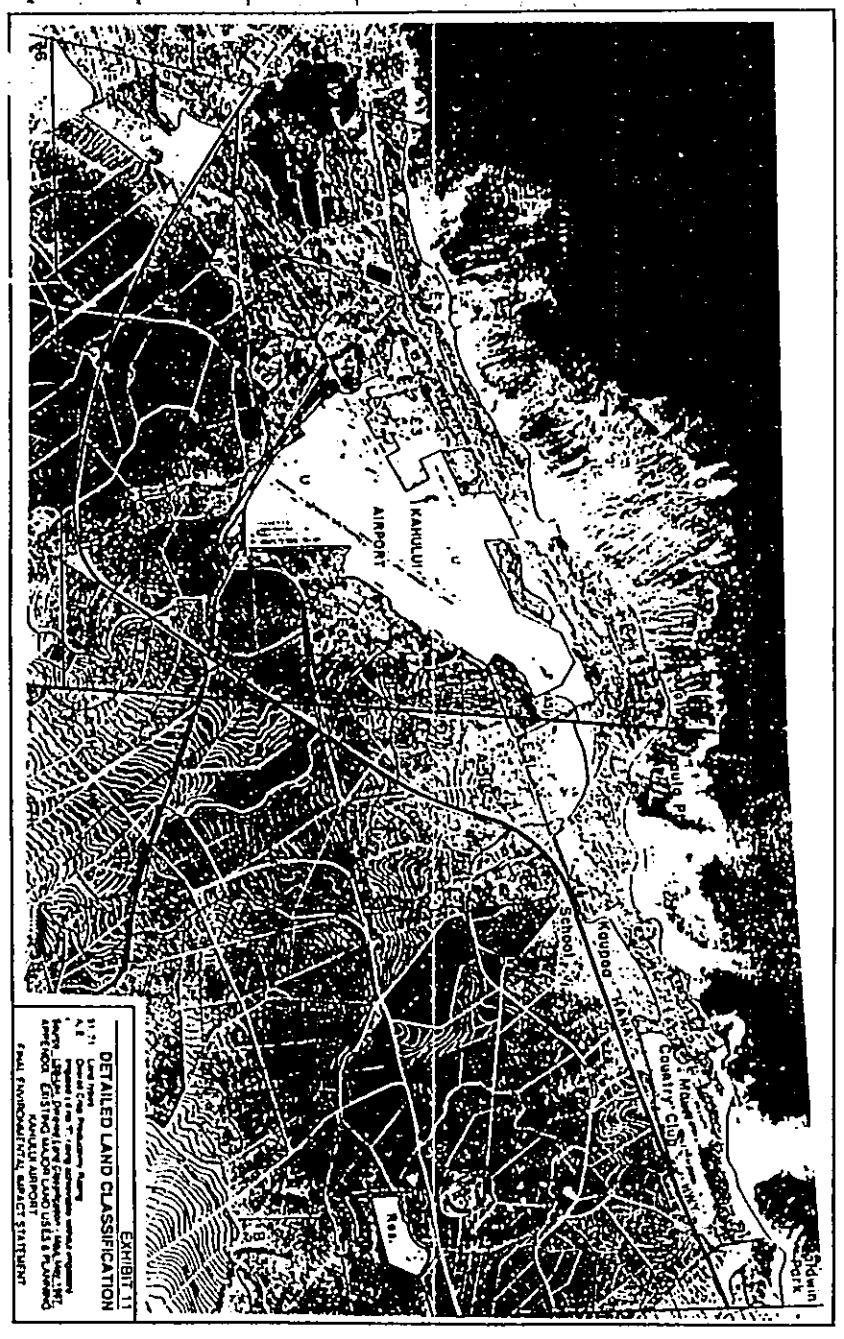
[11]Wadsworth, H. A., *A Historical Summary of Irrigation in Hawaii*, UH Reprint, December 1933, p. 145. First published in *Hawaiian Planter's Record*, Vol XXXVII, No. 3, October, 1933. Baldwin quote from *Henry Perrin Baldwin*, 1915.

[12]State of Hawaii, Land Study Bureau, University of Hawaii, *Detailed Land Classification - Island of Maui*, Honolulu, May 1967, p. 9 (Table 2) and Map No. 35.

[13]The plantation is Hawaiian Commercial and Sugar Company (HC&S), a subsidiary of Alexander and Baldwin (A&B), major landowner in the Kahului Airport vicinity.

[14]State of Hawaii, Office of State Planning, State Land Use District Boundary Review - Maui, Molokai, Lanai, Honolulu, 1992, p. II-135.



In 1992, HC&S had in fee 34,126 acres under cultivation and 25,386 idle, and leased (lease expires in 2003) 1,376 acres from the State for sugar cane production.[15]

State Land Use Districts (LUD). Land within the present airport boundary has been designated three different LUDs (Exhibit 12) : Conservation (includes Kanaha Pond and a small area along the coast which is planned for the expansion of Kanaha Beach Park; Urban (includes the active airport facilities); Agriculture (includes the acquired, or to be acquired for new airport access road and interchange[16], the runway extension, the aviation easements and the parallel runway). No change is the Conservation land use designation is anticipated. A change from Agriculture to Urban will eventually be required when those lands are to be built upon or placed into active airport use. HDOT-AIR has a pending application before the State Land Use Commission requesting changes in the designation of two parcels of land from Agricultural to Urban district land use. One parcel is at the south end of existing Runway 2-20 where airfield navigational aid lights are located. The second parcel is east side of Runway 2-20 where there are existing airport facilities (general aviation, FAA and National Weather Service). This reclassification request is pending a final EIS.

Wailuku - Kahului Community Plan and Zoning (WKCP). The WKCP is the land use plan (Exhibit 13) component of the Maui County General Plan. In it, the active airport land uses are designated A (airport use). Kanaha Pond is designated OS (open space). A small parcel adjacent to Kanaha Beach Park and within the airport boundary is classed PK (park). Surrounding land uses include LI (light industrial) in the area of Triangle Square, Kmart, Costco, the Kahului Industrial Park; HI (heavy industrial) in the area of Kahului Harbor; P (public facility) for the Kahului Wastewater Treatment Plant; OS (open space) for a large parcel (owned by A&B) between East Spreckelsville and the Airport, along the shoreline; SF (single family) for West and East Spreckelsville; and AG (agriculture) for the surrounding sugar cane crop lands. Zoning by the County implements the land use plans in the WKCP.

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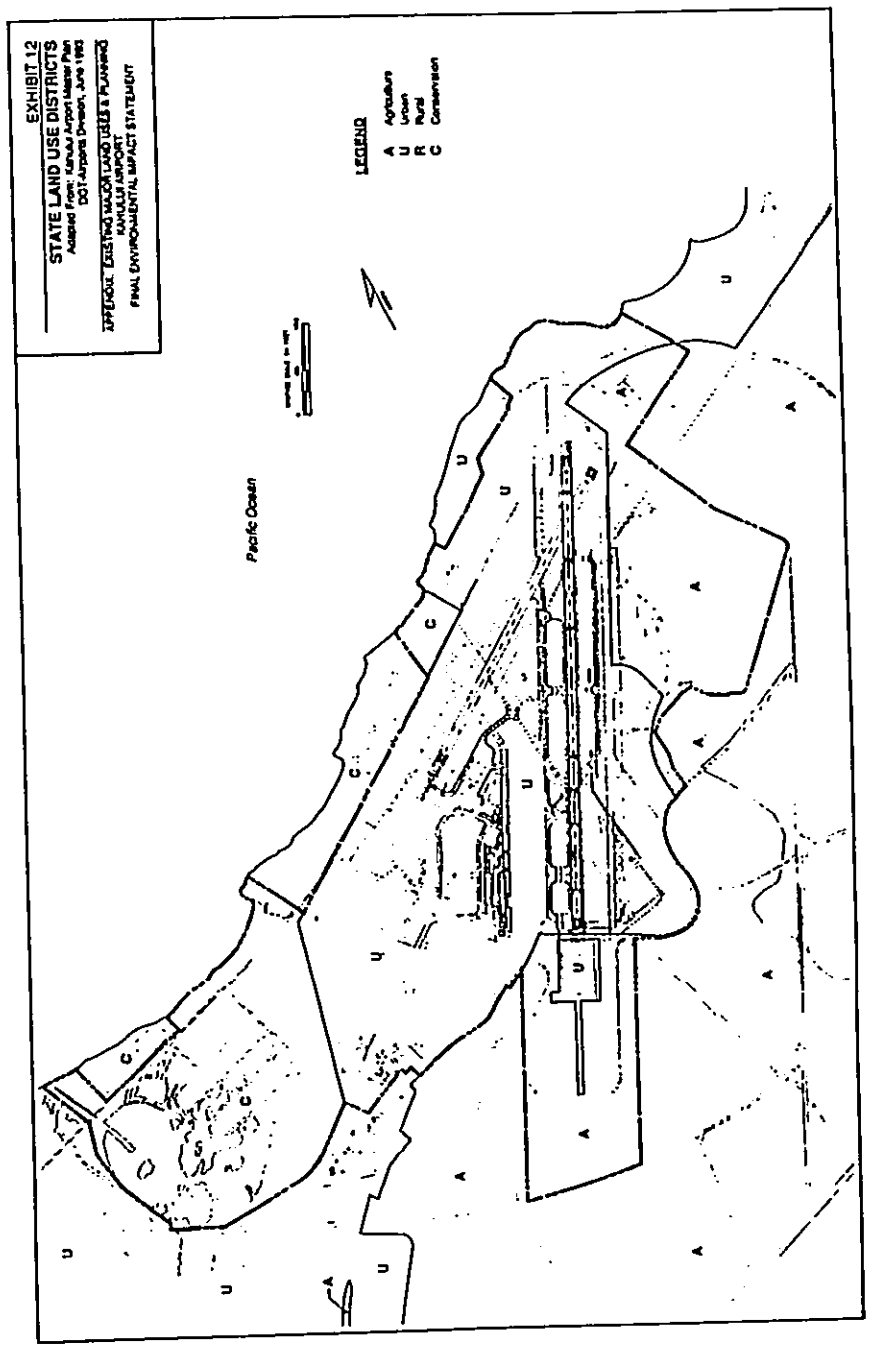
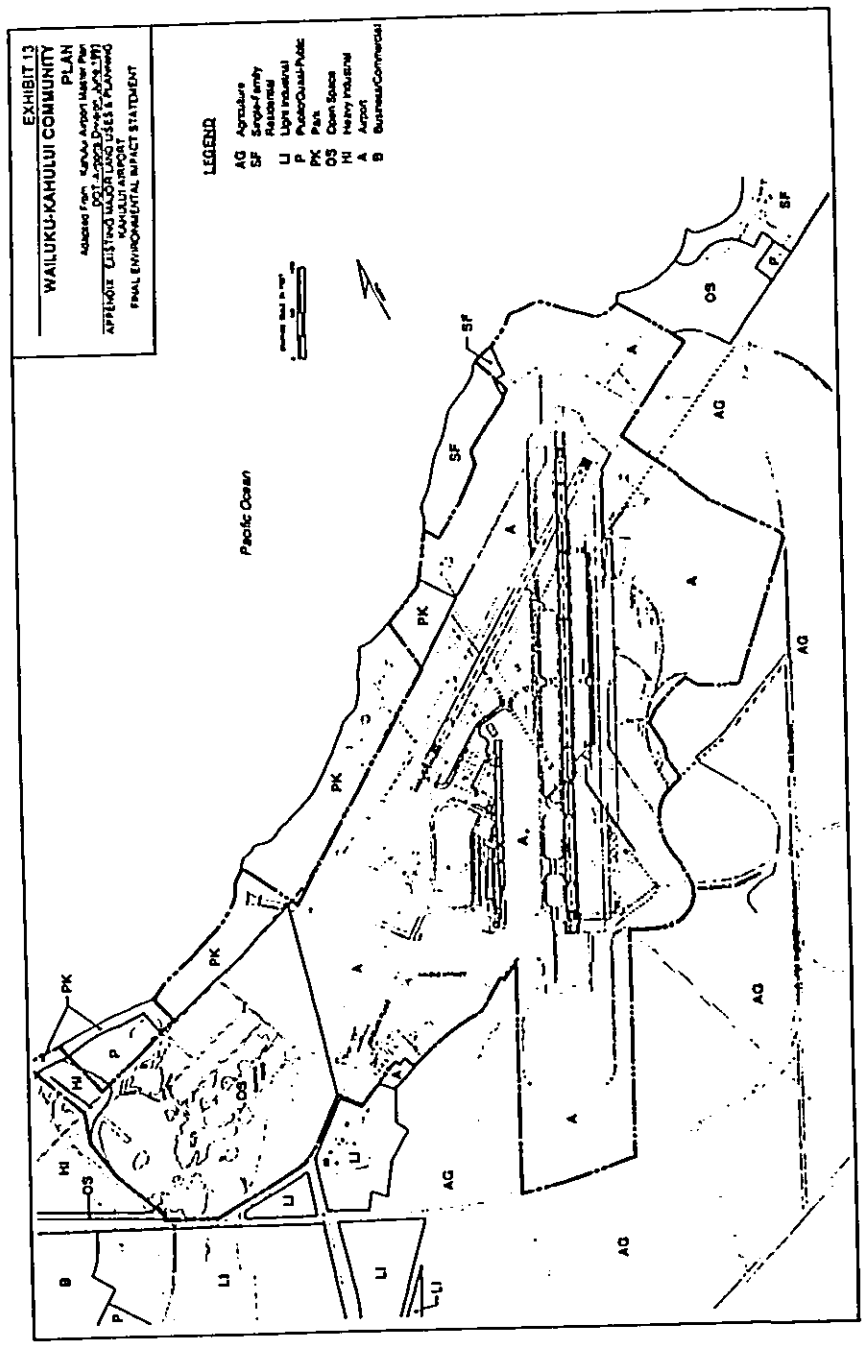
[15]Boundary Review, p. II-136

[16]Note that land surrounding the Airport Access Road interchange has already been acquired. Roads and highways are permissible uses in Agriculture Land Use Districts, so no redistricting is required for this proposed land use.





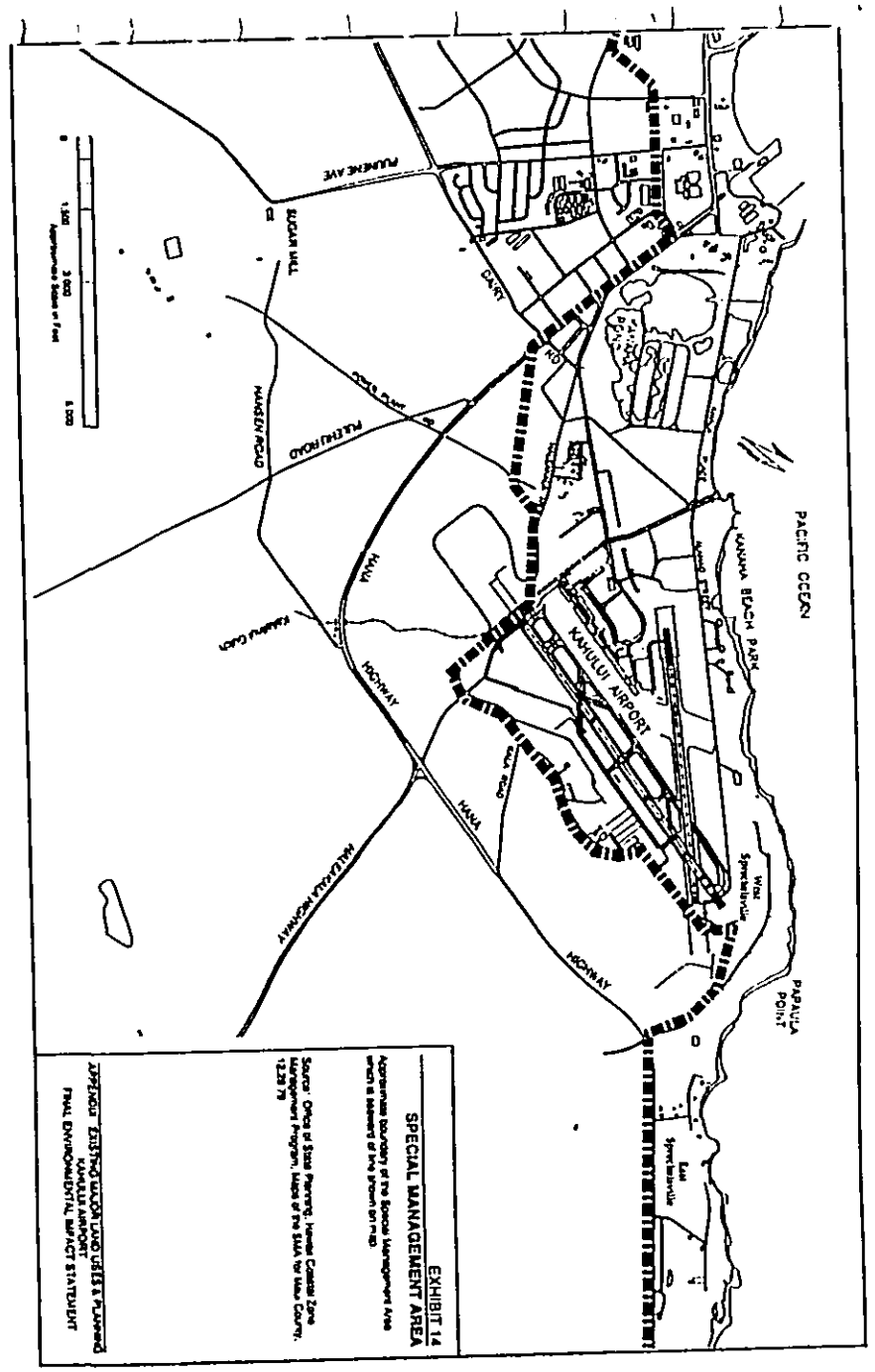
Federal Coastal Zone Consistency and Special Management Area; Coastal Barrier Act. Because federal funding is involved in the implementation of the KAMP, the Coastal Zone Management Program of the Office of State Planning is required to review the KAMP for consistency with the federal CZM Act. Additionally, the County of Maui, Planning Department, administers the Hawaii Coastal Zone Program within County where actions proposed within the SMA (Special Management Area) require a public and agency review for consistency with the objectives of Hawaii' Coastal Zone Management Program. County approvals take the form of an SMA permit. Much of the airport and all adjacent coastal areas are in the SMA (Exhibit 14). The Maui County Council has stated that an SMA permit is required for many of the proposed airport projects.[17] 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 the Hana Highway;
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. AARF training facilities."

Additionally, the following facilities may also fall within the SMA requirement: VORTAC (now under construction), and the large transient aircraft parking apron and improvements adjacent to Keolani Place (ground transportation subdivision, flight kitchen, bulk jet fuel storage facility, and fuel line).

A portion of Kanaha Park has been designated to be under the protection of the Coastal Resources Barrier Act. The purpose of the federal legislation is to protect coastal barriers which prevent shore erosion and which are significant natural geologic features. The act prohibits the

[17]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).



> "[T]he County wants to limit its investment in the existing plant which is located in an area exposing it to tsunami damage and corrosion which incurs long-term maintenance costs. Thus, should the 7.9 mgd capacity be exceeded, a new plant should be constructed, preferably in a more centrally located site to minimize collection system costs."[19]

Waste-water reuse options in this area include the use of effluent for irrigation near the shoreline where groundwater resources are limited and recharge of groundwater sources that no longer receive excess sugar cane irrigation due to the shift from furrow to drip irrigation (Infrastructure Assessment, p. 9). At 6.8 mgd, the plant's capacity is adequate to the year 1999; the planned increase in capacity to 7.9 mgd would be adequate until 2008 (Infrastructure Assessment, p. 15).

The land occupied by the WWTP (and Kanaha Beach Park) was originally part of Kahului Airport and HDOT-AIR transferred title in an Executive Order (BP No. 2358, January 9, 1968).

Roads and Airport Access. The traffic situation in Wailuku-Kahului is the most complex of any region on Maui, in part because the area is a roadway hub for the island.[20]

- Airport Access: Keolani Place. Airport access is presently via Keolani Place which connects the terminal area with the intersections of Haleakala and Hana Highways and Dairy Road. This intersection is becoming increasingly congested with the added development of Triangle Square, Kmart and Costco. The proposed new Airport Access Road and Interchange is planned to by-pass this entire intersection thus traffic relieving congestion during peak airport use periods.

[19]County of Maui, Planning Department, Maui Community Plan Update Infrastructure Assessment, September 1992, Wastewater System - p. 8.

[20]County of Maui, Planning Department, Maui Community Plan Update Infrastructure Assessment, September 1992, Roadway System - p. 6.

- Dairy Road. Dairy Road extends out to Kuihelani Highway, the route to Lahaina. In the vicinity of the Airport, Dairy Road is lined with commercial, retail, and light industrial businesses.

- Haleakala Highway (State Highway 396). Haleakala Highway enters the airport area and emerges to the east. Formerly this route from Kahului to upper Paia was known as Sunny Side Road.

- Hana Highway (State Highway 36). Hana Highway is the major roadway around the airport to and from Hana and Wailuku-Kahului.

- Alahao Street. Alahao Street provides a kind of back entrance to the airport and is probably most used to access Kanaha Beach Park. Alahao Street physically connects to Spreckelsville Beach Road (Old Stable Road) but is blocked off by the airport perimeter fence.

Residential, Industrial and Commercial Land Uses. There are two distinctive residential areas in the airport area, Spreckelsville and Kahului. Spreckelsville is located along the coast adjacent to the northwest and northeast corners of the airport. The Kahului residential area is located southwest of the airport and is outside the Ldn 60 area, but is subject to aircraft noise from single events when a particularly loud aircraft uses the airport.

Spreckelsville is comprised of two discrete clusters of homes designated east and west Spreckelsville. The original Spreckelsville was somewhat inland of east Spreckelsville near the intersection of Spreckelsville Road (formerly Old Stable Road) and Kala Road (formerly Sunny Side Road).[21] Apparently little remains from that community and the area has been cleared and planted in sugar cane. Modern east and west Spreckelsville have developed out of the Spreckelsville beach lots which provided desirable residential locations near the ocean even though located in tsunami hazard areas.

Industrial and commercial areas in the airport area have grown-up with the development of Kahului and reflect the business needs of the community in terms of both retail and light

[21] The road appears to have been named for the original Spreckels Sugar Plantation called Sunny Side located above Paia. Sunny Side Road connected Kahului with the plantation and wound through what is the existing airport area. On maps today it in the airport area is has been labeled Haleakala Highway which turns into Kala Road.

industrial shops at this nexus of roadways connecting various communities along with Kahului Harbor, Kahului Airport, and the government offices in Wailuku. The airport has contributed to the development of a retail and light industrial cluster of businesses which target the dual markets of visitors and residents as well. Businesses have taken advantage of the opportunities offered by the development of light industrial zoning and business centers developed by A&B in the airport area. Because of this sort of symbiotic relationship, changes at the airport may affect these businesses. For example, a downturn in visitors may adversely affect certain retailers. Or construction of a new airport access road which by-passes businesses located on roads now heavily traveled, may decrease traffic to those establishments.

Parks, Open Space and Conservation Uses. The primary areas are all in the coastal zone, along the shoreline although there are some neighborhood parks in the residential areas. The major park which serves many people in Maui is Kanaha Pond Beach Park which is a significant picnicking and meeting place and which serves as a base for people using the public shoreline known as Spreckelsville Beach and nearshore water areas. There are public access points in east and west Spreckelsville to Spreckelsville Beach as well, although parking is minimal. The parks, beaches and offshore areas are used for recreation and possibly some commercial activities. The range of uses includes birdwatching, biking, hiking, camping, picnicking, sunbathing, windsurfing, fishing, diving, and swimming. This area is one of the most popular windsurfing locations in the State. Several hundred windsurfers have been observed there. The land for Kanaha Beach Park was transferred from HDOT-AIR by Executive Order (BP No. 2358, January 9, 1968).

Land Ownership. The State of Hawaii owns Kahului Airport including Kanaha Pond and the shoreline. The County of Maui owns the Kahului WWTP, Kanaha Beach Park and a few small parcels where County facilities are located. The residential areas of east and west Spreckelsville and Kahului are a mix of small parcels of land in private ownership. The commercial, light industrial and agriculture lands and owned by A&B.

Existing Conditions: Land Use in the Study Area

This section evaluates the impacts of the alternatives in the KAMP on the major land uses affected by the airport and its operations. The major land uses are numbered for ease of reference on Exhibit 16 which is a map of the major land uses in the area.

1. Kanaha Pond. Kanaha Pond is a State Wildlife Sanctuary managed especially as waterbird habitat. The Sanctuary is managed by the Department of Land and Natural Resources, and is owned by the Department of Transportation, Airports Division. It is in a State Conservation District, is designated as Open Space in the Wailuku-Kahului Community Plan (WKCP). It is approximately 85 acres in water area and the proposed boundary would include approximately 230 acres. Water levels in the pond can be adjusted with a pump system which is located at the entrance to the observation platform just off Haleakala Highway. The pond's location adjacent to the urban areas of Kahului and the airport presents management problems because drainage from those areas may include typical urban storm water runoff contaminants which (as a general rule) ought not to flow into a waterbird sanctuary. However, the pond also experiences low water levels or stagnant water conditions which are not conducive to maintenance of water bird habitat. The well-water level-pump system is intended as a remedy for this problem, but may only be partially successful.

   The Pond was declared a Registered National Natural History Landmark in 1971.[22] Groups active in supporting the sanctuary have expressed concern that the pond be protected and enhanced.[23] One response from the DOT recently has been to withdraw plans for commercial leasing of land adjacent to the pond and fronting Haleakala Highway to prevent added noise or light sources and the possibility of poor quality stormwater runoff from commercial land uses. DOT has also routed airport drainage away from the pond.

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[22] Clark, John R. K., The Beaches of Maui County, Second Edition, U. H. Press, Honolulu, 1989, p. 9.

[23] Hawaii Audubon Society, Letter to U.S. DOT, September 1990, in Appendix, Final EIS Kahului Airport Master Plan Update, July 1992; and, Kanaha Pond Advisory Committee, Letter to FAA concerning EIS scoping meetings held on May 18, 1994 in Kahului, May 26, 1994.

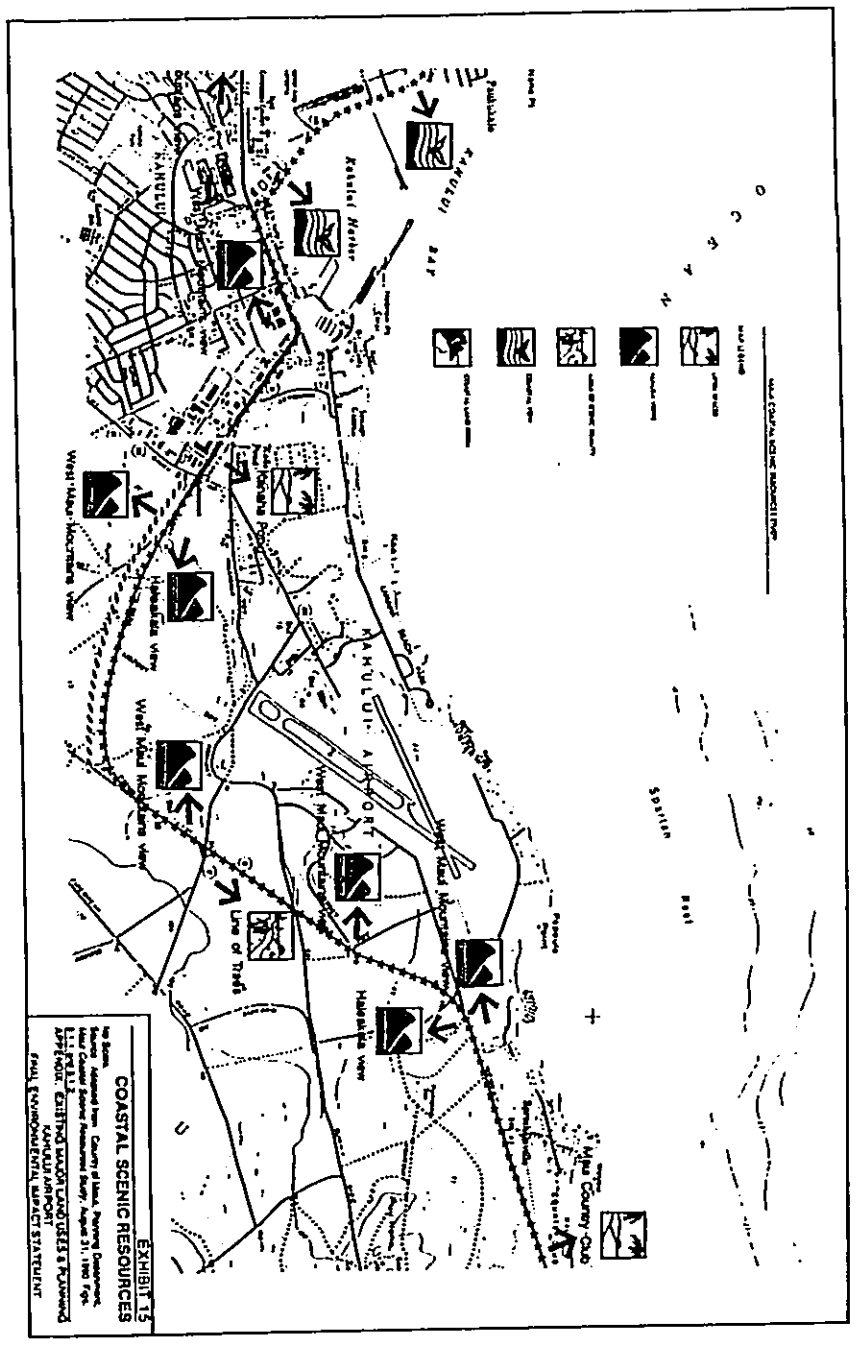
expenditure of federal funds to modify such beaches, reefs or coastal barriers under most circumstances. There are no proposed KAMP facilities affected by this designation.

Coastal Scenic Resources. The County of Maui has identified coastal scenic resources in a recent report.[18] Significant views (Exhibit 15) include the West Maui Mountains seen from the intersection of Hana Highway and Puunene Road; Kanaha Pond from Hana Highway, Haleakala and West Maui Mountains from Hana Highway; a line of trees from Hana Highway looking north; and views of the West Maui Mountains and Haleakala from Hana Highway near Spreckelsville. The Study describes the airport as follows:

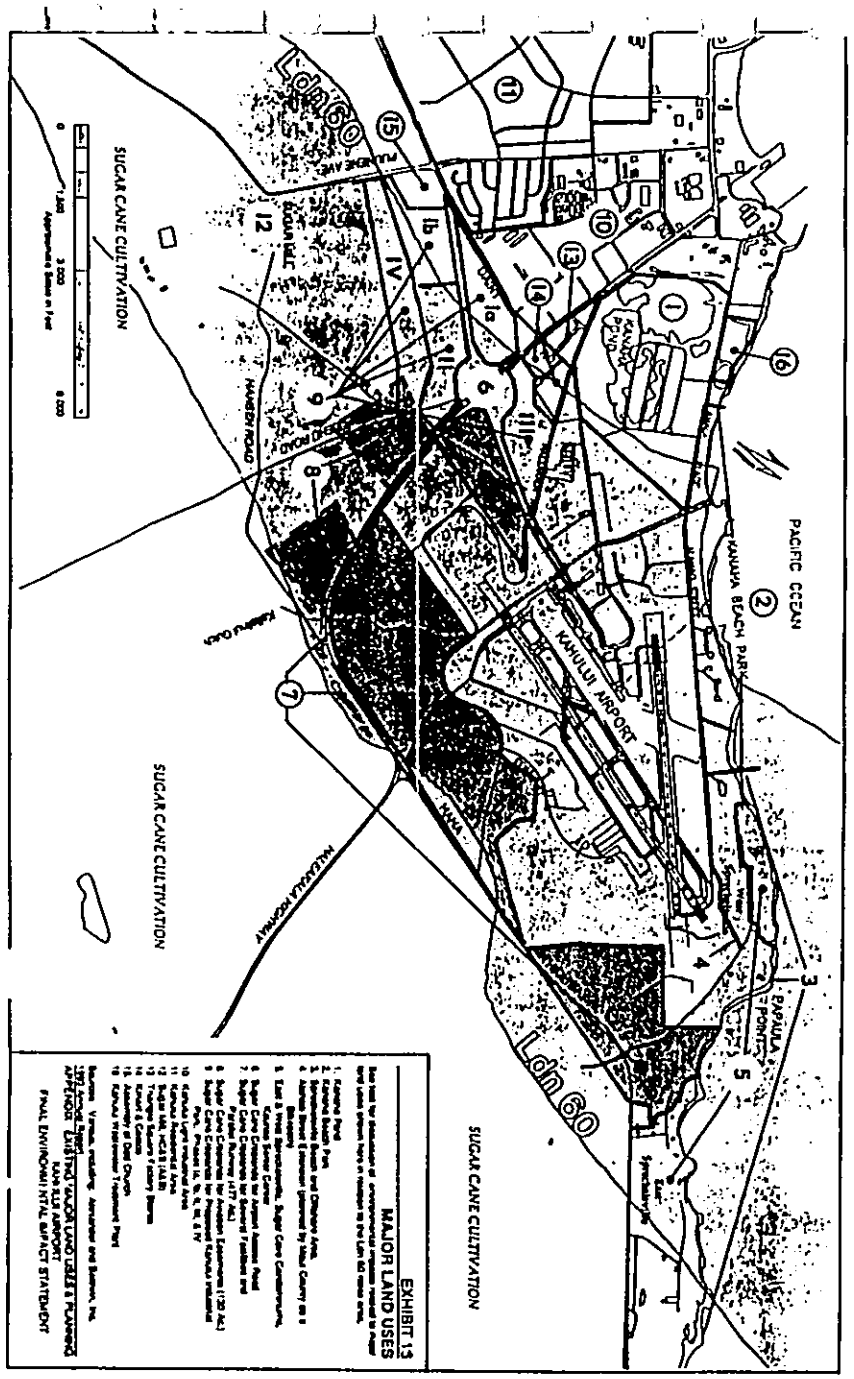
> "The expansive Kahului Airport lies makai of the highway; the large aircraft and striking red roofs of the terminal area stand in marked contrast to the surrounding agricultural land." (p. 4-4)

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). The Study encourages the use of green belts and open space buffers "...between sectors of non-similar land use (p. 6-8)." These can help achieve visual transition zones and may, "...provide supplementary recreational lands or park facilities and can serve as drainage ways...(p. 6-8)." The study is critical of a new structure along the Hana Highway north of the airport and recommends the following: "More appropriately landscape the Spreckelsville Wall to lessen its harsh impacts on the scenic environment (p. 5-6)."

Kahului Wastewater Treatment Plant (WWTP). The Kahului Wastewater Treatment Plan serves the Kahului-Wailuku area. It is designated Public/Quasi-Public in the WKCP and occupies about 16 acres. The capacity of the plant is 6.6 mgd and it operates at less than 85 to 90 percent of capacity. It could be expanded to a capacity of 7.9 mgd. According to a recent County of Maui report:



[18]County of Maui, Planning Department, Maui Coastal Scenic Resources Study, Maui, August 31, 1990, pps. 8-2 to 8-5.



shoreline from Kahului Harbor, in front of the Kahului Wastewater Treatment Plant (WWTP), to about 2,000 feet from West Spreckelsville. The KAMP planned expansion of the park would bring the park's boundary to about 700 feet of West Spreckelsville. The park features an attractive picnicking area and gentle swimming spots for children. It is popular for gatherings and barbecues.

3. Spreckelsville Beach and Offshore Area. The beach and offshore area extending between Kanaha Beach Park and H. A Baldwin Park is known as Spreckelsville Beach. It extends for more than two miles, is interrupted by groins and other structures (some broken and old) and the beach appears to be eroding. Homes have been built on the beach berm backshore which consists of large sand dunes. This area is part of the shoreline public area and is frequented by windsurfers, fishermen and beachgoers. Public access is via County parks or public access points along the shore. Public access points are somewhat restricted, as is public parking, especially in the residential areas. This area is a State Conservation District and is designated Park, Open Space or Single Family residential (WKCP).

4. Roadway to Connect Alahao Street with Old Stable Road. This is a roadway internal to the airport which is fenced off from public access. It includes a portion of the former Kahului railroad right-of-way now owned by the Airports Division. It is an integral part of the bike path proposed in the Northshore Greenway Bikeway Component Master Plan[24] which identifies potential route for a bike/hike path from Kahului Harbor to East Spreckelsville. It is also proposed in the KAMP as a possible through-road to connect Alahao Street with Spreckelsville Beach Road (Old Stable Road).

5. Spreckelsville. Spreckelsville is comprised of East Spreckelsville (about 120 acres) and West Spreckelsville (about 34 acres, 20 to 25 residential structures[25]). Spreckelsville is the residential area most directly affected by aircraft noise and operations. According to

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[24]County of Maui, Northshore Greenway Bikeway Component Master Plan, Wailuku, May 1994.

[25]Field count of residential structures in West Spreckelsville, May 19, 1994.

a 1991 report,[26] the 1980 census listed about 220 residents in East and West Spreckelsville combined, and a total of 110 housing units. Since then, the population has decreased and it is not carried as a separate census tract currently.

West Spreckelsville is comprised entirely of single family detached residences. East Spreckelsville includes the Kaunoa Senior Center and the Sugar Cove condominiums as well as single family detached residences.

6. Sugar Cane Croplands. These lands have already been acquired by HDOT-AIR and are included in the KAMP for the airport access road and interchange.

7. Sugar Cane Croplands. These lands are proposed to be acquired by HDOT-AIR and are included in the KAMP for use to support cargo expansion and other facilities (64 acres) and the new parallel runway and runway protection zones (477 acres). This land is in a State Agriculture Land Use District and is designated Agriculture in the WKCP. The land is located between the existing airport and the Hana Highway is currently being used to grow sugar cane. It is classified as Prime land for agriculture and the land is dependent on irrigation water supplies.

A&B does not oppose the acquisition and use of this land for airport expansion. They acknowledge that there will be an impact on sugar cane cultivation and view the impact as important, but not of significant adverse impact.[27]

HDOT-AIR submitted a Farmland Conversion Impact Rating Form to the U.S. Department of Agriculture requesting an assessment by the U.S. Soil Conservation Service regarding the consistency of the proposed conversion (of farmland from agricultural to airport use) with the Federal Farmland Protection Policy Act and the internal policies of the agency. The agency rated the farmland proposed to be converted at 94 out of a possible 100 points. This confirms the subject lands are prime agriculture land (Exhibit 22).

[26]State of Hawaii, Department of Transportation, Kahului Airport Master Plan, Social and Economic Impact Assessment, June 1991, p. 38.

[27]Discussion with A&B representative, July 1994.

The Office of State Planning[28] included a proposal for reclassification of 210 acres from the Agricultural to Urban District in support of expansion of the Kahului Airport, specifically the lengthening of Runway 2-20.

8. Sugar Cane Croplands. These lands (about 130 acres) are proposed to be acquired as aviation easements by HDOT-AIR and are included in the KAMP for use as runway protection zones. The location of these lands is at the south end of the airport area, south of the Hana Highway). The lands are located in a State Agriculture Land Use District and are designated Agriculture in the WKCP. These lands would remain in private ownership and would be used according to the wishes of those owners subject to easements which would be acquired by the Department of Transportation. The easements would place certain height restrictions on land uses or building construction and would allow overflight of aircraft. The height restrictions would not affect existing agriculture uses including the present cultivation of sugar cane. The easements would preclude land use alternatives involving heights greater than those permitted.

9. Sugar Cane Croplands - Sites of Proposed Kahului Industrial Park: Phases Ia, Ib, II, III, and IV. These are existing cane lands which are owned by A&B who proposes to develop them as part of the Kahului Industrial Park (totaling 213 acres). The new Kahului Industrial Park Phase Ia, Sam's Club, Kmart and Triangle Square retail outlets are included in this area. Also, A&B proposes[29] to expand the Kahului Industrial Park Phases Ib, II, III, and IV. This area is designated Agriculture (SLUD, WKCP) and straddles the proposed new airport access road and interchange with Hana Highway.

10. Kahului Light Industrial Area. This area is owned and was developed by A&B. Gradually the uses have evolved towards retail and commercial activities. The location for these businesses is advantageous because the site is conveniently accessible from most points

[28]State of Hawaii, Office of State Planning. SLUD Boundary Review, p. IV-222. HDOT-AIR has a pending application before the State Land Use Commission requesting changes in the designation of two parcels of land from Agricultural to Urban district land use. One parcel is at the south end of existing Runway 2-20 where airfield navigational aid lights are located. The second parcel is east side of Runway 2-20 where there are existing airport facilities (general aviation, FAA and National Weather Service). This reclassification request is pending this final EIS.

[29]Alexander and Baldwin Co., Annual Report, 1993, pps 15-17. Also, petition before the State Land Use Commission, May 17, 1990, by A&B.

on Maui because most major roads pass through or near to this area. The light industrial and commercial areas of Kahului are the center of business activity for Maui. They are in an Urban land use district and are designated Light Industrial in the WKCP. This has occurred because of the importance of Wailuku-Kahului as a government and business center and because of the convenience to Kahului Harbor as the main shipping point for sugar and general cargo. With the growth of the visitor industry on Maui and the increasing dependance on air travel as well as air cargo, the commercial and industrial area has expanded to fill in vacant land areas on the west of the airport and the area is now expanding around to the south of the airport. This situation is compounded because of the convergence of the Maui's main roads (Dairy Road, Haleakala Highway, Hana Highway) into this area. Existing establishments include a mix of commercial, retail, offices, and eateries.

11. Kahului Residential Area. This is an older and well established residential community which tends to be less affected (because it is outside the Ldn 60 noise area) is the large residential area of Kahului. According to the final EIS[30], there were nearly 17,000 people in Kahului in 1990, an increase of 4,000 from 13,000 in 1980. This area includes several schools, stores, churches parks and other neighborhood and community facilities and services.

12. Sugar Mill, HC&S (A&B). This mill is operated by HC&S (Hawaiian Commercial & Sugar Company), a subsidiary of A&B. The height of the mill smokestacks presents an intrusion into the aircraft approach zone which is being rectified through notation to pilots on airport maps.

13. Triangle Square Factory Stores. This development is under construction and is nearly ready to open. It will include factory store retail outlet sales.

14. Kmart and Costco. Kmart is open. Costco is planned for a site adjacent to Kmart. These and the Triangle Square development indicate the strength of urban growth forces in the

[30]Social and Economic Impact Assessment, p. 45.

area and connote the shift from smaller retail stores to large discounters who target the broad market of Maui residents and visitors alike.

KAMP Alternatives, Facilities and Actions

There are seven alternative plans (including the recommended plan) in the KAMP (Exhibit 17). In order to assess the impacts of each of the alternatives on land uses in the area, it is necessary first to evaluate the effects of each facility or action. This is because approximately one half (16) of the total number (32) of facilities and actions considered in the KAMP are common to each alternative, while the remaining number of facilities and actions are spread throughout the different alternatives. This screening process separates facilities or actions which tend to be airport-related from those which may have potential land use impacts of a broader or more serious nature. The potential land use impacts of the airport-related projects not carried forward for further evaluation are typically confined within the airport boundaries and affect other airport land uses, and not surrounding, or non-airport uses. Or similar facilities or functions already impact land uses. To begin the analysis, a table (Exhibit 18) is submitted which displays the correspondence of facilities and actions with each alternative. The table also includes information about the location or land used which would be affected by the facility, action or alternative. The table includes the following information:

- Column 1 lists each facility or action in the KAMP.[31]
- Column 2 identifies each facility by its numbered alternative plan and location. The numbers in the column refer to the numbered alternative plans (Exhibit 17).
- Column 3 lists the location or major land use which is affected by the KAMP facility or action. The numbers in the column refer to the numbered major land uses (Exhibit 16).
- Column 4 identifies the need, if required, for an evaluation of the possible impact of the facility or action (and the corresponding alternative) on a major land use.

[31]There may be minor variations in this report from other reports concerning Kahului Airport. Specifically, there may be minor variations concerning the number of facilities, actions, nomenclature, and the numbering system. This is because the emphasis or approach of reports varies.

Exhibit 18
KAMP Facilities or Actions, Corresponding Alternatives, Locations of Impact & Need for Evaluation

1. Facility or Action	2. Number of Corresponding Alternative (Rec. Plan = Recommended Plan Alternative) - Location	3. Location or Land Use Impacted by Facility (for numbers, refer to Exhibit 16)	4. Is Evaluation Required? (If Yes, Refer to Exhibit 19)
1. Realignment of Hana Highway	Common to all alternatives.	7 - Agriculture, Sugar Cane Crop Lands	Yes
2. New Airport Access Road and Interchange	Common to all alternatives.	6 - Agriculture, Sugar Cane Crop Lands	Yes
3. Control Tower and Weather Facility	Common to all alternatives.	Airport	No
4. U. S. Post Office Site	Common to all alternatives.	Airport	No
5. Post Office Ramp Access Road	Common to all alternatives.	Airport	No
6. Scenic Air Tour Facility	Common to all alternatives.	Airport	No
7. Radio Transmitter Receiver Building and Airport Surveillance Radar (VORTAC)	Common to all alternatives.	Airport	No
8. Passenger Terminal Parking	Common to all alternatives.	Airport	No
9. Commuter Air Taxi Facility	Common to all alternatives.	Airport	No
10. Keolani Place Lease Lots	Common to all alternatives.	Airport, 1	Yes
11. Alahao Street/Old Stable Road Connections	Common to all alternatives.	2, 3, 4, 5 - Alahao St. Ext. (Maui Co. proposed bikeway), East & West Spreckelsville	Yes
12. Maui County Baseyard	Common to all alternatives.	7 - Agriculture, Sugar Cane Crop Lands	Yes
13. Ground Transportation Subdivision Expansion	Common to all alternatives.	Airport	No
14. Airline Ground Service Equipment (GSE) Maintenance Facility	Common to all alternatives.	Airport	No
15. Aircraft Rescue and Fire Fighting (ARFF) Training Facility	Common to all alternatives.	Airport	No
16. *Expand Kanaha Beach Park*	Common to all alternatives.	2 - Kanaha Beach Park	Yes

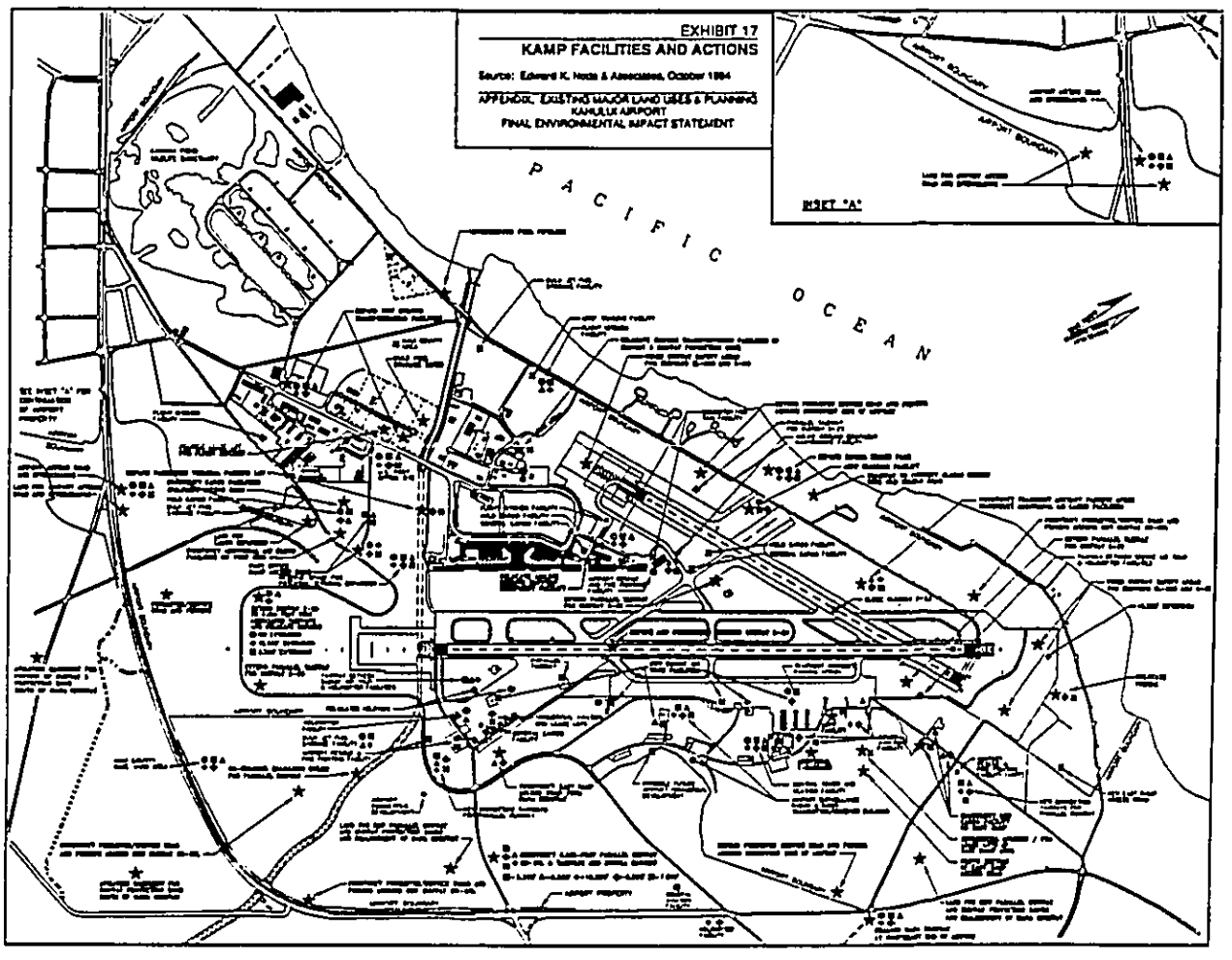


Exhibit 18
KAMP Facilities or Actions, Corresponding Alternatives, Locations of Impact & Need for Evaluation

1. Facility or Action	2. Number of Corresponding Alternative (Rec. Plan = Recommended Plan Alternative) - Location	3. Location or Land Use Impacted by Facility (for numbers, refer to Exhibit 16)	4. Is Evaluation Required? (If Yes, Refer to Exhibit 19)
17. Runway 2-20, Various Lengths	1 - 7,000 ft 2 & 6 - 8,500 ft 3 & 5 - 9,500 ft Rec. Plan - 9,600 ft 4 - 10,500 ft	Airport 8 - Ag., Sugar Cane Crop Lands 8 - Ag., Sugar Cane Crop Lands 8 - Ag., Sugar Cane Crop Lands 8 - Ag., Sugar Cane Crop Lands, Open Space	No Yes Yes Yes Yes
18. Runway 5-23, Closure	6 - Close RW 5-23	Airport, 3, 5, No overlights of Kanaha Pond	Yes
19. Parallel Runway	2, 3, 4, 5, 6, Rec. Plan	5, 7, 8 - Ag., Sugar Cane Crop Lands	Yes
20. Bulk Fuel Storage Facility	1, 2, 3, 4 - South of the East Ramp 5 - South of the West Ramp 6 - North of Runway 5-23 on Alahao St. Rec. Plan - So. of Kaiainui G.	7 - Agriculture, Sugar Cane Crop Lands 7 - Agriculture, Sugar Cane Crop Lands Airport, 2, Tsunami Zone Airport	Yes Yes Yes No
21. Underground Fuel Pipeline	Rec. Plan - From Kahului Harbor, landward of and parallel to Alahao St. to Bulk Fuel Storage Tanks	1, 2 - Kanaha Pond & Beach Park	Yes
22. Flight Kitchen	1, 2, 3, 4 - South of Alahao St. 5 - West Ramp 6 - West Ramp Rec. Plan - Keolani Pl.	Airport, 2, Tsunami Zone Airport Airport Airport	No No No No
23. Helicopter Facilities	1, 3 - East Ramp 4, 5 - E. of Hana Hwy. 2, 6, Rec. Plan - Off-site	Airport Near 7 - Ag., Sugar Cane Crop Lands Sites not known as of 10.22.94.	No Yes Unknown (need site information)
24. General Aviation	3, 4, 5, 6, Rec. Plan - East Ramp 2 - West of Hana Hwy. 1 - Off-site	Airport 7 - Agriculture, Sugar Cane Crop Lands Site not known as of 10.22.94.	No Yes Unknown (need site information)
25. Transient Aircraft/Military Apron	1, 2 - East Ramp 3, 4, 5, Rec. Plan - North of RW 5-23 6 - Old RW 5-23	Airport Airport, Tsunami Zone Airport, Tsunami Zone	No No No
26. Aircraft Rescue and Fire Fighting (ARFF) Station	1- West Ramp 2, 3, 4, 5, 6, Rec. Plan - East Ramp	Airport Airport	No No

Exhibit 18
KAMP Facilities or Actions, Corresponding Alternatives, Locations of Impact & Need for Evaluation

1. Facility or Action	2. Number of Corresponding Alternative (Rec. Plan = Recommended Plan Alternative) - Location	3. Location or Land Use Impacted by Facility (for numbers, refer to Exhibit 16)	4. Is Evaluation Required? (If Yes, Refer to Exhibit 19)
27. Aircraft Rescue and Fire Fighting (ARFF) Training Station	1, 2, 5, Rec. Plan - North of RW 5-23 6 - South of Alahao St.	Airport, Tsunami Zone Airport, Tsunami Zone	No No
28. Spine Road	3, 4, 5, Rec. Plan - East Ramp-Hana Hwy.	7 - Agriculture, Sugar Cane Crop Lands	Yes
29. General Cargo Facility	2, 3, 4, 5 - East Ramp 1 - West Ramp (North) Rec. Plan - West Ramp (South) 6 - Old RW 5-23	Airport Airport 7 - Agriculture, Sugar Cane Crop Lands Airport	No No Yes No
30. Hold Cargo Facility	1, 2, 3, 4, 5, Rec. Plan - West Ramp 6 - Old RW 5-23	7 - Ag., Sugar Cane Crop Lands Airport	Yes No
31. Other Transportation Modes	Not included in any KAMP alternative -- transportation mode infeasible.	None	No
32. Relocation of Helicopters/General Aviation Operations Off-Airport	Not included in any KAMP alternative as of 10.22.94.	Unknown	Unknown as of 10.24.94

This is a screening process to identify facilities or actions which may have impacts on land uses. Evaluated as individual actions, many of the facilities located within the airport itself are generally considered to have no impact on surrounding land uses (for example, the post office site or passenger terminal parking) unless some feature or characteristic extends beyond the airport boundaries (for example, a parallel runway). Or, existing airport functions, facilities or actions already have equivalent impacts. Where the effects of a facility or action might extend beyond the airport boundaries, or may have the potential for significant internal impacts (for example, potential fuel spillages into Kanaha Pond) the facility or action requires further evaluation.

Impacts on Land Uses, Significance, and Mitigation

The KAMP's land use impacts, their significance, mitigation measures and their effectiveness are discussed in Exhibit 19 which includes the following information:

- Column 1 identifies the specific land use which is affected. The numbers in this column refer to locations noted in Exhibit 16.
- Column 2 lists the KAMP facility or action identified previously in Exhibit 18 as requiring evaluation of its possible impact on land use.
- Column 3 describes the environmental impact of the facility.
- Column 4 discusses the significance of the environmental impact of the facility.
- Column 5 discusses proposed mitigation measures (if there is a significant and adverse impact from a proposed facility). If the impact is not significant, or if it is beneficial, a mitigation measure is not required. In some cases, mitigation is not proposed.
- Column 6 discusses the level of significance of the impact on the land use after implementation of the mitigation measure.

The result of the analysis displayed in Exhibit 19 is identification of the impacts which are likely to have a significant effect on land uses. These potentially significant impacts are displayed in Exhibit 20 which does not include consideration of any effects of mitigation. Exhibit 21 shows the effect of mitigation and the only difference is that Kanaha Pond would no longer be affected

by potential development of certain Keolani Place Lease Lots, the impact of which might cause additional urban storm runoff to the pond.

In sum, the adverse impacts on land uses of the KAMP alternatives are:

- the expansion of the Ldn 60 noise area caused primarily by the parallel runway. This may be considered an adverse impact because of possible expansion of noise impacts into an existing residential area.

- the acquisition of sugar cane land for airport uses including the parallel runway and several other facilities. This may be considered an adverse impact because of the conversion of prime agricultural land to urban airport use. The impact on sugar cultivation may be minimal because of the availability alternative cultivation sites. The need for irrigation water in this location makes farming difficult should there be decreases in the availability of water via the East Maui Irrigation system through restrictions imposed by changes in State leases. Without water for irrigation, this would no longer be prime agriculture land. The land could continue to be leased to ongoing sugar cultivation until decisions are ultimately made on the parallel runway plan.

- the connection of Alahao Street to Old Stable Road and the Hana Highway which would cause through traffic along the coast between the airport and Spreckelsville.

Beneficial impacts on land uses are:

- The expansion of Kanaha Beach Park.

Exhibit 19
Impacts on Land Uses by KAMP

1. Existing Land Use	2. KAMP Facility or Action Related to this Land Use	3. Impact of Facility or Action	4. Significance of Impact	5. Mitigation Measures	6. Level of Significance After Mitigation
1. Kanaha Pond	10. Construct Keolani Place Lease Lots.	Concern has been expressed that development of these lots might cause increased storm water runoff into the Pond, and that there would be increased noise and night lighting which could disturb water birds.	The proposed lots would drain into the airport drainage system, away from the Pond so this would not be a significant issue. Excessive noise or night lighting might cause significant impacts depending upon tenant activity.	No mitigation required under present conditions.	No change.
		These lots are no longer part of the KAMP and they have added to the Kanaha Pond Wildlife Refuge.	There are no impacts now that the lots are no longer part of the KAMP.		
	21. Underground Fuel Pipeline (this is shown on the Airport Master Plan drawings as a "Future Fuel Line from Harbor").	Concern has been expressed that the pipeline could rupture and leaking fuel would contaminate the pond.	The design of the pipeline would minimize this risk. There is an existing pipeline in place at this location which has not had a history of rupturing. The impact is not considered significant because the design will prevent the impact from occurring.	No additional mitigation is proposed.	

Exhibit 19
Impacts on Land Uses by KAMP

1. Existing Land Use	2. KAMP Facility or Action Related to this Land Use	3. Impact of Facility or Action	4. Significance of Impact	5. Mitigation Measures	6. Level of Significance After Mitigation
2. Kanaha Beach Park	Airport - Noise from aircraft operations.	Part of the park is presently impacted by aircraft noise and will continue to be so in the future.	Part of the Park is significantly impacted by aircraft noise .	Park use of the area is deemed compatible with the levels of noise both present and projected.	No change.
	16. Expand Kanaha Beach Park	Improves the recreational opportunities at the Park.	This is a significant beneficial impact which adds to the park's area and provides added parking, recreational facilities and access via an extension of Alahao Street.	None required.	
	21. Underground Fuel Pipeline	Concern has been expressed about the potential for leaks.	Pipeline design would minimize this risk.	No mitigation proposed.	
	20. Bulk Fuel Storage Facility	Some alternatives place facility in tsunami zone causing risk of leaks.	If catastrophic tsunami occurred, environmental damage might be significant.	Recommended plan places this facility inland of tsunami zone.	Potential impact is no longer significant.
	22. Flight Kitchen	Some alternatives place facility in tsunami zone causing risk of damage from kitchen chemicals or equipment.	If catastrophic tsunami occurred, environmental damage might be significant.	Recommended plan places this facility inland of tsunami zone.	Potential impact is no longer significant.
	11. Emergency Roadway to Connect Alahao Street with Old Stable Road (Spreckelsville Beach Road)	Will add emergency vehicle traffic to this area.	Not significant if only used as an emergency roadway.	None required.	

Exhibit 19
Impacts on Land Uses by KAMP

1. Existing Land Use	2. KAMP Facility or Action Related to this Land Use	3. Impact of Facility or Action	4. Significance of Impact	5. Mitigation Measures	6. Level of Significance After Mitigation
3. Spreckelsville Beach and Offshore Area	Airport - Noise from aircraft operations.	The beach and offshore area is presently impacted by noise. The proposed runway extension will not significantly alter the present situation.	The beach and offshore areas are significantly affected because they are almost entirely within the Ldn 60 area.	Outdoor recreational use of the area is deemed compatible with the levels of noise present. Because these are outdoor activities, mitigation measures are not proposed.	No change.
	18. Close RW 5-23	Would reduce noise from aircraft operations at this location.	There would be little, if any impact on Ldn 60 area and there would be an increase in aircraft operations on RW 2-20. The action might reduce single-event noise during the day from some propeller planes. Overall, the action would have a significant impact because of the shift in air traffic.	This action is a mitigation measure to reduce the impact of noise in the Spreckelsville area.	It is uncertain if there will be a significant net reduction in aircraft noise in the Spreckelsville area because aircraft traffic would be using RW 2-20 instead of RW 5-23.
4. Alahao Street Extension	11. Emergency Roadway to Connect Alahao Street with Old Stable Road (Spreckelsville Beach Road)	The emergency roadway extension would permit emergency vehicles to travel along the shoreline between Kanaha Park and Spreckelsville.	Not significant if limited to emergency vehicles.	None proposed.	
5. East & West Spreckelsville, Sugar Cove Condominiums, Kaunoa Senior Center - Within Maui County's Proposed Special Overlay District	Airport - Existing noise from aircraft operations.	E. and W. Spreckelsville are presently impacted by noise from aircraft operations and will continue to be so in the future under the proposed plans. This area includes single family residences, the Sugar Cove condominiums and the Kaunoa Senior Center.	E. and W. Spreckelsville are presently significantly impacted by noise because they are within the Ldn 60 area. The Ldn 60 area also comprises Maui County's Special Overlay District.	Residential land use in this area is deemed incompatible with the levels of noise present. The noise problem is the subject of a separate investigation called an FAA Part 150 Study. Potential mitigation measures include soundproofing homes and relocation.	No change. Proposed mitigation measures apply to individual dwellings or structures and do not alter the noise levels outdoors. If there is relocation, there may be other impacts which affect residents moving to new areas.
	11. Emergency Roadway to Connect Alahao Street with Old Stable Road (Spreckelsville Beach Road)	The emergency roadway extension would permit emergency vehicles to travel along the shoreline between Kanaha Park and Spreckelsville.	Not significant if limited to emergency vehicles.	None proposed.	No change.

Exhibit 19
Impacts on Land Uses by KAMP

1. Existing Land Use	2. KAMP Facility or Action Related to this Land Use	3. Impact of Facility or Action	4. Significance of Impact	5. Mitigation Measures	6. Level of Significance After Mitigation
5. (Continued) East & West Spreckelsville, Sugar Cove Condominiums, Kaunoa Senior Center - Within Maui County's Proposed Special Overlay District	18. Close RW 5-23.	Would reduce noise from aircraft operations at this location.	There would be little, if any impact on Ldn 60 area and there would be an increase in aircraft operations on RW 2-20. The action might reduce single-event noise during the day from some propeller planes. Overall, the action would have a significant impact because of the shift in air traffic and there would be no overflights of Kanaha Pond.	This action is a mitigation measure to reduce the impact of noise in the Spreckelsville area.	It is uncertain if there will be a significant net reduction in aircraft noise in the Spreckelsville area because aircraft traffic would be using RW 2-20 instead of RW 5-23.
	19. Parallel Runway.	Would extend Ldn 60 noise area to locations not now included.	There would be a significant adverse impact on residences not now in the Ldn 60 noise area.	Potential noise impacts are the subject of a separate investigation called an FAA Part 150 Study. Potential mitigation measures include soundproofing homes and relocation.	No change. Proposed mitigation measures apply to individual dwellings or structures and do not alter the noise levels outdoors. If there is relocation, there may be other impacts which affect residents moving to new areas.
6. Sugar Cane Croplands	2. Land for the airport access road and interchange. 2. Airport access road and interchange.	Construction of the new airport access road will be beneficial in reducing airport-related traffic congestion in the area of Dairy Road, Haleakala and Hana Highways. There may be adverse impacts to businesses along Dairy Road who receive income derived from the day-to-day visitor drive-by traffic if these visitors do not travel along the by-passed routes during their stay on Maui. The interchange and overpass will impose a different visual environment in the vicinity of Hana Highway and Dairy Road.	The improved levels of service which will result from the project are considered significant beneficial impacts. The issue of potential losses to certain businesses in the area to be by-passed has not been raised in public testimony and therefore is not considered significant at present. The visual environment will change especially when driving along Hana Highway and looking towards Haleakala just before reaching the proposed interchange. However, a new view point will be created when driving over the interchange.	1. Mitigation is not required for a beneficial impact, although lease-back to A&B to maintain cane cultivation (until actual access road construction) is under consideration by DOT-A. 2. If there is a fall-off in local business because of the by-passing by visitor traffic, one method of mitigation might be to inform visitors of the retail or commercial shops in the area. Highway and map signage along with special publications targeting visitors might aid in this effort. 3 The visual impact change is not considered significant and mitigation is not proposed for the visual impact of the interchange. However, a new view point will exist when traveling over the highway.	Business fall-off is not seen as a significant impact. It could occur along Dairy Road especially. It seems likely that visitors will find these shops anyway, especially with the opening of Triangle Square, Kmart and Costco which will have large visual and advertising presences, and which will probably cause additional traffic in the area. Such new traffic might compensate for any lost because of the new airport access road. The potential mitigation measures would further reduce the impact which, again, is not presently considered to be significant.

Exhibit 19
Impacts on Land Uses by KAMP

1. Existing Land Use	2. KAMP Facility or Action Related to this Land Use	3. Impact of Facility or Action	4. Significance of Impact	5. Mitigation Measures	6. Level of Significance After Mitigation
7. Sugar Cane Croplands	12, 20, 23, 24, 28, 29, 30. Land for cargo expansion (general cargo facility, hold cargo facility), Maui County base yard, bulk fuel storage facility, helicopter facilities, general aviation, spine road	Acquisition of these lands by DOT-A for purposes of expanding the airport will mean that the lands will gradually shift their use from sugar cane cultivation to airport use.	This is a significant impact because of the change in land use zoning required. All the land proposed for acquisition is presently in a State Agriculture Land Use District and is designated for Agriculture use in the Wailuku-Kahului Community Airport Master Plan. Zoning changes Agriculture to Urban (State Land Use District) and Airport (Community Plan) will be required for actual airport use.	1. DOT-A can mitigate the impact of the loss of cane lands by a lease-back arrangement to Alexander and Baldwin (the present landowners) who can cultivate cane until the land is actually needed for airport use. This arrangement would provide time for A&B to put other cane lands into production to avoid a loss of output. 2. Partial mitigation is provided through purchase of aviation easements on 130 acres of prime agriculture land at two other locations which will discourage conversion to non-agriculture uses. See number 8., below. 3. There is vacant and equally productive land available in Wailuku and A&B just is beginning to make use of it.	1 & 2. With the proposed mitigation measure, the effect of acquisition would be temporarily mitigated until the time of construction. The primary Airport Master Plan component which requires additional land is the parallel runway. Its construction time is projected to be during the period 2003 to 2010. The significance of this action in relation to sugar production cannot be stated because of the uncertainty in the future of Hawaii produced sugar generally. See text for discussion of prime agriculture and land productivity ratings of these land parcels. The loss of prime agriculture land is not significant because A&B sugar growing operations are able to continue. See text for discussion.
	19. Land for new parallel runway and runway protection zones including realignment of Hana Highway (47/ acres).	Approximately 1/2 mile of Hana Highway would be realigned as a result	The Hana Highway realignment by itself may be slightly beneficial because that section of highway will be upgraded to present standards.		
8. Sugar Cane Croplands	17, 19. Aviation easements, acquisition for runway protection zones, Runway 2-20 and proposed parallel runway (height restrictions over about 130 acres)	Aviation easements over these lands are proposed to be acquired by DOT-A from A&B. The easements impose height limits over the impacted areas. Cultivation of sugar cane (or other field crops) would not be impacted.	This is not considered a significant impact because there would be no land use zoning changes required, nor would existing land uses be effected. It significantly benefits prime agriculture land by imposition of height limitations which would discourage conversion to non-agricultural uses.	None required.	No change.

Exhibit 19
Impacts on Land Uses by KAMP

1. Existing Land Use	2. KAMP Facility or Action Related to this Land Use	3. Impact of Facility or Action	4. Significance of Impact	5. Mitigation Measures	6. Level of Significance After Mitigation
9. Sugar Cane Croplands - Sites of Proposed Kahului Industrial Park: Phases Ia, Ib, II, III, & IV	Airport - Noise from aircraft operations.	Existing cane lands are not impacted. Proposed land use changes by the land owner would not be impacted. Portions of Phase 1a; most of Phases Ib, II, III; and all of Phase IV are located within the Ldn 60 area. At present the lands are in cane production, or are fallow. A&B proposes to develop these lands as part of the Kahului Industrial Park.	These proposed uses would not be significantly impacted because they are acceptable in the 60 Ldn noise environment.	None required.	No change.
10. Kahului Light Industrial Area	Airport - Noise from aircraft operations.	The presence of the airport may contribute to the volume of business in this vicinity which is outside the 60 Ldn area.	This is not considered a significant impact because only one action of the proposed KAMP may impact businesses in this area, and it has been discussed related to the proposed airport access road.	None required.	No change.
11. Kahului Residential Area	Airport - Noise from aircraft operations.	The presence of the airport contributes to the noise affecting this area.	This is not considered a significant impact because this community is outside the 60 Ldn area and no other components of the proposed KAMP appear to affect the community.	None required.	No change.
12. Sugar Mill, HC&S (A&B)	Airport - Aircraft operations. (Alternative not identified) - Identification of obstructions (mill smokestack) on charts & provision of a special landing requirement.	At present, one of the five smokestacks extends into the runway approach zone by 6-feet. This condition worsens if Runway 2-20 is extended towards the south.	This is not considered significant because the KAMP does not require a change in the height of the smokestacks.	In the KAMP, the proposed mitigation measure is to identify these smokestacks on aeronautical charts as obstructions and to provide a 400-foot displaced landing threshold.	None.
13. Triangle Square Factory Stores	2. The airport access road and interchange.	Traffic patterns will change after construction of the access road which will reduce traffic congestion in the area related to peak airport arrival or departure times.	This will benefit Triangle Square because the access road will reduce traffic congestion in the area and possibility facilitate customer traffic.	None required.	None.

Exhibit 19
Impacts on Land Uses by KAMP

1. Existing Land Use	2. KAMP Facility or Action Related to this Land Use	3. Impact of Facility or Action	4. Significance of Impact	5. Mitigation Measures	6. Level of Significance After Mitigation
14. Kmart & Costco	2. The airport access road and interchange	Traffic patterns will change after construction of the access road which will reduce traffic congestion in the area related to peak airport arrival or departure times.	This will benefit Triangle Square because the access road will reduce traffic congestion in the area and possibility facilitate customer traffic.	None required.	None.

[Exhibit 19-7]

Exhibit 20
Comparison of Alternatives: Land Uses With Significant (Without Mitigation) Impacts
Presence of a or b indicates a significant impact: a = adverse impact b = beneficial impact
RP = Recommended Plan Alternative

Impacted Land Use (refer to Exhibit 19) Facility or action (refer to Exhibit 18)	KAMP Alternative 1	2	3	4	5	6	RP
1. Kanaha Pond 10. Keolani Place Lease Lots	No significant impacts.						
2. Kanaha Beach Park 16. Expand Kanaha Beach Park	b	b	b	b	b	b	b
3. Spreckelsville Beach and Offshore Area 18. Runway 5-23, Closure						b	
4. Alahao Street Extension	No significant impacts.						
5. East & West Spreckelsville, Sugar Cove Condominiums, Kaunoa Senior Center - Within Maui County's Proposed Special Overlay District 19. Parallel Runway		a	a	a	a	a	a
6. Sugar Cane Croplands							
7. Sugar Cane Croplands	No significant impacts.						
8. Sugar Cane Croplands							
9. Sugar Cane Croplands - Sites of Proposed Kahului Industrial Park: Phases Ia, Ib, II, III, & IV	No significant impacts.						
10. Kahului Light Industrial Area							
11. Kahului Residential Area	No significant impacts.						
12. Sugar Mill, HC&S (A&B)							
13. Triangle Square Factory Stores							
14. Kmart & Costco							

Exhibit 21

Comparison of Alternatives: Land Uses With Significant (After Mitigation) Impacts

Presence of a or b indicates a significant impact: a = adverse impact b = beneficial impact
RP = Recommended Plan Alternative

Impacted Land Use (refer to Exhibit 19) Facility or action (refer to Exhibit 18)	KAMP Alternative						
	1	2	3	4	5	6	RP
1. Kanaha Pond 10. Kahului Place Lease Lots	Mitigation not required because there are no significant impacts.						
2. Kanaha Beach Park 16. Expand Kanaha Beach Park	Mitigation not required because of beneficial impacts.						
3. Spreckelsville Beach and Offshore Area 18. Runway 5-23, Closure							
4. Alahao Street Extension	Mitigation not required because there are no significant impacts.						
5. East & West Spreckelsville, Sugar Cove Condominiums, Kaunoa Senior Center - Within Maui County's Proposed Special Overlay District 19. Crosswind Runway		a	a	a	a	a	a
6. Sugar Cane Croplands	Mitigation not required because there are no significant impacts.						
7. Sugar Cane Croplands							
8. Sugar Cane Croplands							
9. Sugar Cane Croplands - Sites of Proposed Kahului Industrial Park: Phases Ia, Ib, II, III, & IV	Mitigation not required because there are no significant impacts.						
10. Kahului Light Industrial Area	Mitigation not required because there are no significant impacts.						
11. Kahului Residential Area							
12. Sugar Mill, HC&S (A&B)							
13. Triangle Square Factory Stores							
14. Kmart & Costco							

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request: February 2, 1995
Name Of Project: Kahului Airport Expansion	Federal Agency Involved: FAA
Proposed Land Use: Airport and related uses	County And State: Maui, Hawaii
PART II *(To be completed by SCS)*	Date Request Received By SCS: 2/24/95

Does the site contain prime, unique, statewide or local important farmland? Yes ☒ No ☐ (If no, the FPPA does not apply – do not complete additional parts of this form).

Major Crop(s): Sugarcane, Pineapple	Farmable Land In Govt. Jurisdiction: Acres: 193,559 % 42	Acres Irrigated: 67,200	Average Farm Size: 498
Name Of Land Evaluation System Used: State of Hawaii LESA	Name Of Local Site Assessment System: None	Amount Of Farmland As Defined in FPPA: Acres: 159,000 % 24	Date Land Evaluation Returned By SCS: 3/1/95

PART III *(To be completed by Federal Agency)*	Alternative Site Rating: Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	9			
B. Total Acres To Be Converted Indirectly	130			
C. Total Acres In Site	139			
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	139			
B. Total Acres Statewide And Local Important Farmland	0			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.001			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	15			
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	94			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b))*	Maximum Points				
1. Area In Nonurban Use	15	7			
2. Perimeter In Nonurban Use	10	5			
3. Percent Of Site Being Farmed	20	20			
4. Protection Provided By State And Local Government	20	20			
5. Distance From Urban Builtup Area	15	0			
6. Distance To Urban Support Services	15	15			
7. Size Of Present Farm Unit Compared To Average	10	10			
8. Creation Of Nonfarmable Farmland	10	10			
9. Availability Of Farm Support Services	5	5			
10. On-Farm Investments	20	10			
11. Effects Of Conversion On Farm Support Services	10	0			
12. Compatibility With Existing Agricultural Use	10	0			
TOTAL SITE ASSESSMENT POINTS	160	102			
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	94			
Total Site Assessment *(From Part VI above or a local site assessment)*	160	102			
TOTAL POINTS *(Total of above 2 lines)*	260	196			

Site Selected: Site A | Date Of Selection | Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

Site A was chosen because it was contiguous to the existing airport property and meets the air field requirements to support the expanded facility.

Exhibit 22 (Continued)
Farmland Conversion Impact Rating -- Part VI

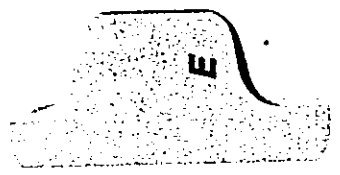
Site Assessment Criteria[32]	Score Range[33]	Score[34]	Rationale for Score[35]
1. Area in Nonurban Use	0 to 15	7	Approx. 50% of the land is in nonurban use within a radius of 1.0 miles.
2. Perimeter in Nonurban Use	0 to 10	5	Approx. 50% of the perimeter of the site borders on land in nonurban use.
3. Percent of Site Being Farmed	0 to 20	20	Approx. 50% of the site has been farmed more than 5 of the last 10 years.
4. Protection Provided by State and Local Government	0 to 20	20	The site is subject to State/local government policies to protect farmland.
5. Distance from Urban Built-up Area	0 to 15	0	The site is adjacent to an urban built-up area.
6. Distance to Urban Support Services	0 to 15	15	Water, sewer lines, local facilities and services which promote non-agricultural use exist more than 1 but less than 3 miles from the site.
7. Size of Present Farm Unit Compared to Average	0 to 10	10	The farm unit containing the site is as large as the average-size farming unit in the county.
8. Creation of Nonfarmable Farmland	0 to 10	10	Acreage equal to or less than 5 percent of the acres directly converted by the project will become non-farmable because of interference with land patterns.
9. Availability of Farm Support Services	0 to 5	5	The site has available adequate supply of farm support services and markets.
10. On-farm Investments	0 to 20	10	The site has a moderate amount of on-farm investments including drainage and irrigation.
11. Effects of Conversion on Farm Support Services	0 to 10	0	There will not be a reduction in demand for farm support services so as to jeopardize the continued existence of these.
12. Compatibility with Existing Agricultural Use	0 to 10	0	The proposed project is fully compatible with existing agricultural use of surrounding farmland.
Total Points	160	102	

[32]These 12 criteria are specified by the FAA in 7 CFR 658.5(b).

[33]These ranges, and the total maximum score, are specified in 7 CFR 658.5(b).

[34]These scores are made by the proposing agency application of the criteria in 7 CFR 658.5(b).

[35]The rationale for scoring is stated in 7 CFR 658.5(b).



APPENDIX E

SOCIO-ECONOMIC ASSESSMENT

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SOCIO-ECONOMIC IMPACT ASSESSMENT OF PROPOSED KAHULUI AIRPORT MASTER PLAN IMPROVEMENTS

November 1994

(Revised May 1995)

Prepared for:
E.K. Noda & Associates, Inc.

Prepared by:
Community Resources, Inc., with the assistance of
Coopers & Lybrand

EXECUTIVE SUMMARY

INTRODUCTION

Purpose

This report deals with socio-economic impacts of proposed improvements to Kahului Airport on the island of Maui. It is intended as an appendix to the overall Environmental Impact Statement (EIS) being prepared for the State of Hawaii Department of Transportation (DOT) by Edward K. Noda & Associates.

Impact assessment involves comparison of future conditions with a project and future conditions without that project. Future conditions on Maui cannot be predicted with absolute certainty. Community Resources, Inc. (CRI) uses several different assumptions about the future, in order to identify the greatest socio-economic impacts that could reasonably be expected to arise due in part to changes at the airport. CRI examines the likelihood that airport facilities could either limit or encourage growth.

The analysis leads to the conclusion that the growth of tourism on Maui from the U.S. Mainland will be little affected by changes at Kahului Airport. (As for eastbound tourism, to and from Japan and Asia, the impacts of new facilities plus internationalization are very uncertain. CRI consequently identifies the largest changes in tourism, jobs, and the resident population that can be reasonably estimated.)

As requested by the client, Community Resources, Inc has used the year 2010 as the time horizon for impact study.

Nature of Proposed Actions

The proposed improvements at Kahului are specified in the 1993 Kahului Airport Master Plan in the form of various alternatives. The components of these alternatives are diverse, but the most critical for purposes of this report include runway lengthening (which would permit nonstop flights to and from long-haul destinations past the West Coast); a new access road (greatly improving traffic to and from the airport); and land acquisition for a parallel runway (leading to displacement of some Spreckelsville residents). Different potential runway lengths would allow nonstop service to different parts of the U.S. and Canada.

Some of the alternative scenarios for improvements include the possibility of a new parallel runway which could serve overseas flights. On a long-term basis, this would substantially affect the airport's capacity to serve both overseas and

interisland passengers. However, it would not in and of itself induce growth or generate impacts (other than construction jobs). Other than to acknowledge its long-term additional potential for facilitating tourism growth, we do not treat the second runway as a major factor for purposes of this analysis.

Additionally, due to public concerns and a court order requiring it, the EIS and this study include discussion of potential impacts of internationalization at Kahului Airport, even though this is not a component of any of the Master Plan alternatives. Internationalization involves the establishment of permanent Federal Inspection Services (FIS) facilities (including U.S. Customs), so that Maui could be served by nonstop or direct flights originating in foreign countries. (Given the current structure of Hawaii's visitor industry, the only country likely to generate such flights in the foreseeable future was found to be Japan. Flights from Canada could be scheduled without FIS facilities.) For the internationalization components of our study, CRI has primarily examined the *cumulative* impacts of both domestic overseas flights which might be generated by airport improvements *plus* international flights.

Again, CRI studied potential impacts of a road connection between Alahao Street and Old Stable Road. This issue, mandated by Court order, involves minimal impacts so long as the connection is for pedestrians and bicyclists, and open to larger vehicles only for emergency purposes.

CRI recognizes that noise impacts of current and potential future operations are important and can have socio-economic consequences. These impacts and their mitigation are the subject of a separate study being conducted by Br Collins Hawaii.

IMPACTS OF MASTER PLAN ALTERNATIVES

Growth-Inducing Impacts

A major concern in previous public discussions of the proposed airport improvements has involved growth of tourism levels and of associated residential employment and population. Many Maui residents feel the rapid growth of the late 1980s brought too much congestion and possibly social problems. Pointed questions have been asked about the extent to which airport improvements (by allowing more nonstop overseas flight) would impact further growth.

CRI took these concerns very seriously and devoted much of the study effort to the question of "growth-inducing impacts." We retained an expert subcontractor in the field of tourism market research, reviewed relevant studies, developed our own case studies of comparable situations, interviewed several dozen airline and

tourism executives to learn about cause-effect linkages between airports and growth, and conducted growth analyses at two different levels:

- Probable Impact: "What is our single best conclusion about what will really happen due to the runway extensions?"

- Potential Maximal Impact: "What is the maximal reasonable estimate of growth which we think realistically could result from the runway extensions?" (This is often called a "sensitivity analysis," in that it tests the importance or sensitivity of alternative assumptions.)

Logic of the Analysis: Any impact assessment requires, first, the definition of a "No-Action Future" — the way the world (or, in this case, Maui) will probably be in the future (in this case, 2010) if the proposed action is not permitted. The "impact" of the action is the change from this expected "No-Action Future," not the change from the present.

The DOT has produced several forecasts of passenger activity for the statewide airport system and for Maui in the year 2010 (Aries, 1994). (These included assumptions about statewide visitor arrivals, though the figures for Maui only specified total passengers, not visitors alone.) The forecast adopted for this EIS and for airport planning purposes serves as the potential starting point for defining the "No-Action Future."

However, the forecast explicitly assumes the same number of passengers deplaning at Kahului Airport with or without runway lengthening — i.e., overseas passenger would be equally likely to come to Maui whether they could take nonstop flights or whether they would have to change to a connecting interisland flight at Honolulu International Airport, as at present. The unintended effect of this assumption is to predetermine a "no-impact" finding for most socio-economic factors, since the levels of tourism are effectively assumed to be identical with or without runway lengthening and nonstop flights. A similar assumption in past airport studies was the subject of a good deal of public controversy. Also highly controversial was the general level of growth which the government seemed to be accepting for Maui.

Therefore, CRI did not automatically accept either the DOT forecasts or the "no-impact" assumption for purpose of this analysis. Instead:

(1) We retained as subcontractor the nation's largest tourism and hospitality industry consultant, Coopers & Lybrand, to produce an independent assessment of the reasonableness of the DOT forecasts, along with other official State planning forecasts. Coopers & Lybrand concluded there is substantial reason to expect continued tourism growth in Hawaii, although not the "hyper-growth" rates of the late 1980s. They further concluded that

the DOT forecast numbers, while somewhat "aggressive," do provide a reasonable vision of year 2010 visitor activity.

(2) Given this analysis, we then estimated the implications of the DOT forecasts for year 2010 Maui tourism levels, islandwide employment, and residential population. (CRI stresses in this report that all forecasts, including our own numbers, are not to be taken as firm predictions of the future. Rather, they are rough estimates based on what seem to be the most reasonable assumptions at the time. But use of similar methods with different input assumptions can still yield a good sense in the relative difference in outcomes, and that is the point of impact assessment.)

(3) We examined the nature of expressed public concerns about the prior forecast, and determined there were two very different objections about the "no-impact" assumption. To paraphrase, these were:

- *"How do you know that growth wouldn't be lower than your forecast levels if you do not allow nonstop flights?"* That is, some people thought that not extending the runway might "constrain" future growth. This implies that a "Constrained No-Action Future" could be lower than the DOT forecast levels.

- *"How do you know that growth won't be higher than your forecast levels if you do allow nonstop flights?"* This implies the possibility of what could then be called the "Unconstrained No-Action Future," in which the DOT forecast is the appropriate reference point .. but there still might be additional growth impacts for reasons not considered in the forecast (e g , things like major new marketing initiatives triggered by the flights).

Our sensitivity analyses were structured in such a way as to answer both questions — i.e., we always looked at two different types of "impacts," one assuming the "Unconstrained" full DOT forecast was an appropriate starting point for defining future economic activity without the airport improvements; the other assuming a "Constrained" less-than-full DOT forecast was an appropriate definition of the "No-Action Future."

Conclusions about Most Probable Growth Impacts. Despite our initial skepticism, we ended up agreeing with previous studies: We believe 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.) This conclusion is based on the preponderance of evidence that was available to us

- None of our Hawaii case studies (or national/international case studies generated by Coopers & Lybrand) found any evidence of tourism growth impacts in an unregulated aviation market.

- A detailed analysis of tourism market factors by Coopers & Lybrand examined the full range of considerations affecting travel decisions. They concluded that the importance of having to make a 30-minute connecting flight is trivial in comparison to the major "push" and "pull" determinants of future Maui tourism growth levels.

- The few published studies which do suggest a growth impact from direct flights are, in our opinion, of limited applicability. For example, a statistical study by University of Hawaii economists concluded that the 1983 introduction of current limited direct flight service to Maui had real if very small impacts — but we believe even these small changes more probably just reflect increased Maui hotel development in the 1980s.

- Many airline executives assert that domestic Hawaii routes are not profitable, and airlines will not continue an experimental new service if it does not quickly pay off. Under these circumstance, much of the needed marketing effort would have to be undertaken by local interests, and government here has historically not provided the same level of promotional funds as do governments of other resort areas.

- The majority of our expert interviewees saw no substantial growth impacts from runway extension without internationalization. Most (though not all) still supported the improvements, but for more limited reasons — maintaining options, insuring against future technology changes, having the chance to bargain with airlines for temporary campaigns in long-haul markets when regular markets are down, etc.

There are a few caveats to our "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 past 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.

Potential Maximal Impacts (Sensitivity Analysis): Although our best call is "little or no impact," there were some expert interviewees who thought nonstop flights might — gradually — attract some more people to Maui, not just serve those going anyway. Additionally, despite our reservations about the few published studies suggesting growth impacts, they do suggest the need to take a second look at the possibility of impacts.

Based on such studies and on our interviews with experts, we estimated the maximal reasonable effect on westbound visitor arrivals would be:

(1) *"Unconstrained No-Action Future"* — Increments to this future (defined as 100% of the DOT forecast levels) would come strictly from added demand generated by new flights ... primarily spin-offs of marketing, secondarily slight additions to length of stay on Maui. There is no reasonable basis for expecting much more than 2% impact on the West Coast (where Maui is already extremely well known) or than 5% on the East Coast (where Hawaii will always be at a competitive disadvantage with more nearby tropical areas). However, some interviewees thought there could be as much as a 10% growth effect in the Rocky Mountain or Mid West states.

(NOTE: This is not to say there will only be a 2% increase in direct flights from the West Coast — just that the expected level of sustained advertising for those flights will largely attract people already coming to Maui anyway.)

(2) *"Constrained No-Action Future"* — This "No-Action Future" was assumed to choke off or "constrain" 10% of the growth in each market not served by nonstop flights, largely as a function of time cost or inconvenience factors. The 10% figure was used in a previous EIS and represents the largest reasonable figure we encountered in any study or expert interview. The cumulative growth impacts of nonstop flights for this scenario would then consist of both the added demand effects (discussed above) and the removal of growth constraints as nonstop service is extended to a specified westbound market.

In addition to these assumptions about maximal reasonable market effects, we also made some necessary assumptions about future geographical distributions of Maui's visitor market. In doing this we somewhat "stacked the deck" in favor of impacts by assuming market shifts toward areas most potentially affected by nonstop flights — e.g., the Mid West or (anticipating the later analysis of internationalization) Japan. We then estimated year 2010 tourism and residential growth levels for each scenario, as well as for the "Constrained No-Action Future." Finally, we compared the results for scenarios with runway

extensions with results for appropriate "No-Action Futures," in order to measure the differences (i.e., the impacts).

Exhibit ES-A on the next page presents results of this analysis for Maui Island. For the "Unconstrained" scenario, almost all impacts (particularly for the 9,600-foot runway) are under 5%. For the "Constrained" scenario (in which larger impacts were built in through the very nature of assumed growth constraints without a runway), impacts are still just in the 10% for the 9,600-foot runway, slightly higher for the 10,500-foot runway.

The "Constrained" scenario percentage impacts may be judged "significant" on a technical basis. However, the changes at issue consist of the removal of barriers that have been hypothesized for the analysis, so the extent of change is a product of the analysis. It should be noted that the absolute numbers for the various measures are nearly identical for all runway alternatives in both the "Constrained" and "Unconstrained" scenarios.

Thus, we feel the sensitivity analysis tends to confirm our initial conclusion of "little or no impact," since the maximal reasonable potential growth impacts are only slightly larger than the DOT forecast levels.

(The "Preferred Alternative" shown in Exhibit ES-A and elsewhere in this report is the Recommended Master Plan alternative, involving a 9,600-foot runway and various improvements at Kahului Airport.)

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 have been planned to meet anticipated 2010 demand. These will benefit a wide range of shippers with small or door-to-door export business. Products that could be affected include flowers and Maui onions.

Pineapple (Maui's major agricultural product exported by air) is further constrained by the fact that only limited cargo space is available on passenger flights. Passengers, baggage, and mail are all given priority by carriers. A very preliminary estimate by CRI suggests that from 900 to 2,600 tons 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. 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.

Exhibit ES-A

SUMMARY OF POTENTIAL QUANTIFIABLE GROWTH-INDUCING IMPACTS

Runway Length: / Related Alternatives:	7,000' No-Action, Alt. 1	8,500' Alt. 2, Alt. 6	9,500'/9,600' Preferred Alt. Alt. 3, Alt. 5	10,500' Alt. 4
"UNCONSTRAINED" NO-ACTION FUTURE				
Visitor Arrivals	3,667,280	3,698,690	3,791,540	3,822,260
Percentage increase over No-Action	0%	1%	3%	4%
Average Visitor Census	65,510	66,170	68,100	68,740
Percentage increase over No-Action	0%	1%	4%	5%
Occupied Visitor Units	23,400	23,630	24,320	24,550
Percentage increase over No-Action	0%	1%	4%	5%
Civilian Jobs	69,080	69,600	71,120	71,630
Percentage increase over No-Action	0%	1%	3%	4%
Resident Population	129,880	130,860	133,720	134,670
Percentage increase over No-Action	0%	1%	3%	4%
Housing Units	47,020	47,380	48,420	48,760
Percentage increase over No-Action	0%	1%	3%	4%
"CONSTRAINED" NO-ACTION FUTURE				
Visitor Arrivals	3,277,150	3,427,350	3,613,050	3,705,220
Percentage increase over No-Action	0%	5%	10%	13%
Average Visitor Census	58,540	61,660	65,530	67,450
Percentage increase over No-Action	0%	5%	12%	15%
Occupied Visitor Units	20,910	22,020	23,400	24,090
Percentage increase over No-Action	0%	5%	12%	15%
Civilian Jobs	62,710	65,180	68,230	69,750
Percentage increase over No-Action	0%	4%	9%	11%
Resident Population	117,910	122,540	128,290	131,140
Percentage increase over No-Action	0%	4%	9%	11%
Housing Units	42,690	44,370	46,450	47,460
Percentage increase over No-Action	0%	4%	9%	11%

Socio-Cultural Impacts of Growth. This report summarizes various social changes on Maui over the past several decades which may be attributed to growth — both demographic and related socio-political change, and also trends in social problem indicators. Rapid growth has clearly resulted in substantial in-migration, 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 1980s. 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 actually be getting better over time). However, because we do not believe the airport improvements will be a cause of growth, we do not believe it 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 need for governmental 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, we believe the runway itself is ultimately largely irrelevant to that debate.

Immediate Area Effects

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. (As discussed elsewhere in the EIS, changes in noise impacts would affect Specklesville residents as well.)

Improvements at the airport would provide work for construction workers over 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)

Public Facilities

Between now and 2010, much 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 proposed airport improvements.

Improvements to Kahului Airport land at Kanaha Beach Park will allow more parking at that 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 its surroundings.

IMPACTS OF INTERNATIONALIZATION

Internationalization could occur only with runway lengths of at least 8,500 feet, since a shorter, strengthened, runway could accommodate few large-bodied long-haul aircraft from Japan (the only "international" country generating enough foreign visitors to Maui to warrant attention in this analysis).

Growth-Inducing Impacts

This analysis followed the same procedures as discussed for "Growth-Inducing Impacts," except that (a) primary emphasis in quantitative analysis was placed on cumulative impacts of domestic and international flights, combined, and (b) as noted below, CRI found it inappropriate to state a single "best conclusion" about most probable impacts.

Conclusions about Most Probable Growth Impacts. Based on the preponderance of available evidence, CRI would conclude that any near-term effects 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 this report concurred that initial consequences would be limited to a few flights a week, at most — and these might just be serving the current market.

Beyond that, we believe that *actual impacts are virtually unknowable at this point in time, although there is a greater potential for growth-inducing impacts from introduction of international nonstop flights than from domestic flights*

The future is more cloudy in regard to international flights for a number of reasons One of the more important is that bilateral international political approvals are required for any new international routes, and many other American

cities would probably contest additional routes to Hawaii. Other international political and economic factors could affect monetary exchange rates, which are very important determinants of international tourism. Additionally, Section 7 of this report discusses other types of conflicting evidence about whether nonstop Japan-Maui flights would or would not occur, and whether they would simply "serve" the market or actually "grow" the market.

Some of this evidence does suggest a greater potential for "growing" the international market than the domestic U.S. market. The Japanese market for Maui is far less mature than the American market, though Maui probably has increasing name recognition in Japan — all of which suggests a potential for Japanese to repeat historical American trends of gradual shifts away from Oahu and toward Maui (and other Neighbor Islands). Recent visitor statistics indicate that more of Maui's few Japanese visitors are starting to visit Maui only, and a strong "Maui-only" market would be needed to sustain nonstop flights both in and out of Maui. International routes to Hawaii are generally more profitable than domestic routes, and so carriers conceivably may make a greater commitment to the flights, including heavier promotion and advertising.

Potential Maximal Impacts (Sensitivity Analysis): The analysis assumed a growing Japanese market share even without nonstop service, and it assumed continuation of heavy recent Japanese expenditure patterns on the part of all eastbound passengers, though there are indications this may not be so. We made these assumptions in order to err on the side of overstating rather than understating potential impacts.

Exhibit ES-B on the following page provides results of the cumulative impact analysis, assuming some effects from both domestic and international flights. (Effects of internationalization alone would be computed by subtracting numbers in Exhibit ES-A from those in ES-B.)

The figures in Exhibit ES-B suggest potential maximal growth impacts in the range of 10% (assuming an "Unconstrained" No-Action Future) or in the range of 20% (assuming a lower "Constrained" No-Action Future).

However, **this level of cumulative year 2010 impact could be achieved only if local government issues additional permits for resort unit development.** According to Maui County Planning Department studies, current resort development land use permits would result in about 23,700 occupied visitor units by the year-2010 — only slightly more than the amount suggested by the DOT forecasts in the "Unconstrained" No-Action Future. Exhibit ES-B suggests that the level of units associated with these potential maximal impacts would exceed the 23,700 figure by 5% to 8%.

Thus, it is questionable whether the "potential growth-inducing impact" of nonstop flights should be attributed to airport improvements, since (a) much of the impact could not occur without more resort approvals, and (b) tourist demand far more a function of expected on-site experiences at resorts than of expected travel experiences.

Exhibit ES-B
SUMMARY OF POTENTIAL QUANTIFIABLE GROWTH-INDUCING IMPACTS (MAUI ISLAND, CUMULATIVE WITH INTERNATIONAL FLIGHTS)

Runway Length: / Related Alternatives:	7,000' No-Action, Alt. 1	8,500' Alt. 2, Alt. 6	9,500'/9,600' Preferred Alt. Alt. 3, Alt. 5	10,500' Alt. 4
"UNCONSTRAINED" NO-ACTION FUTURE				
Visitor Arrivals	3,667,260	3,967,880	4,060,730	4,091,450
Percentage increase over No-Action	0%	8%	11%	12%
Average Visitor Census	65,510	69,120	71,040	71,670
Percentage increase over No-Action	0%	6%	8%	9%
Occupied Visitor Units	23,400	24,690	25,380	25,600
Percentage increase over No-Action	0%	6%	8%	9%
Civilian Jobs	69,090	73,920	75,420	75,930
Percentage increase over No-Action	0%	7%	9%	10%
Resident Population	129,840	138,960	141,810	142,760
Percentage increase over No-Action	0%	7%	9%	10%
Housing Units	47,020	50,310	51,340	51,690
Percentage increase over No-Action	0%	7%	9%	10%
"CONSTRAINED" NO-ACTION FUTURE				
Visitor Arrivals	3,277,150	3,784,320	3,970,020	4,052,190
Percentage increase over No-Action	0%	15%	21%	24%
Average Visitor Census	58,540	65,590	69,450	71,370
Percentage increase over No-Action	0%	12%	19%	22%
Occupied Visitor Units	20,910	23,420	24,800	25,490
Percentage increase over No-Action	0%	12%	19%	22%
Civilian Jobs	62,710	70,860	73,950	75,660
Percentage increase over No-Action	0%	13%	18%	20%
Resident Population	117,910	133,290	139,030	141,880
Percentage increase over No-Action	0%	13%	18%	20%
Housing Units	42,690	48,260	50,340	51,370
Percentage increase over No-Action	0%	13%	18%	20%

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, its most likely impact will be to help stabilize demand for Maui products.

Socio-Cultural Impacts. A variety of speculative social impact scenarios can be developed in regard to effects of increasing 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 from the island's principal resort area.

However, our 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.

Immediate Area Effects

Internationalization would have little impact at the airport and in the surrounding area above and beyond impacts anticipated with airport improvements. 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 the new federal jobs) is estimated as reaching a maximum of about 280 jobs (up to 14% more direct operations jobs than in the No-Action Future)

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 and 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 public 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.)

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LIST OF EXHIBITS (continued)

LIST OF EXHIBITS (continued)

Section 1
INTRODUCTION

This report is a socio-economic impact assessment of the Kahului Airport Master Plan developed in 1993 for the State of Hawaii Department of Transportation, Airports Division (DOT-A) by Aries Consultants and Belt Collins Hawaii. This report is intended as an appendix to an Environmental Impact Statement (EIS) prepared for DOT-A by Edward K. Noda & Associates (EKNA)

Kahului Airport is the major airport for Maui island. It is located close to the island's transport, commercial, and government centers in Kahului and Wailuku. At the same time, it is located close to residential areas in Spreckelsville and beaches from Kanaha Beach Park south into Spreckelsville. (Exhibit 1-A is a map of the project area.)

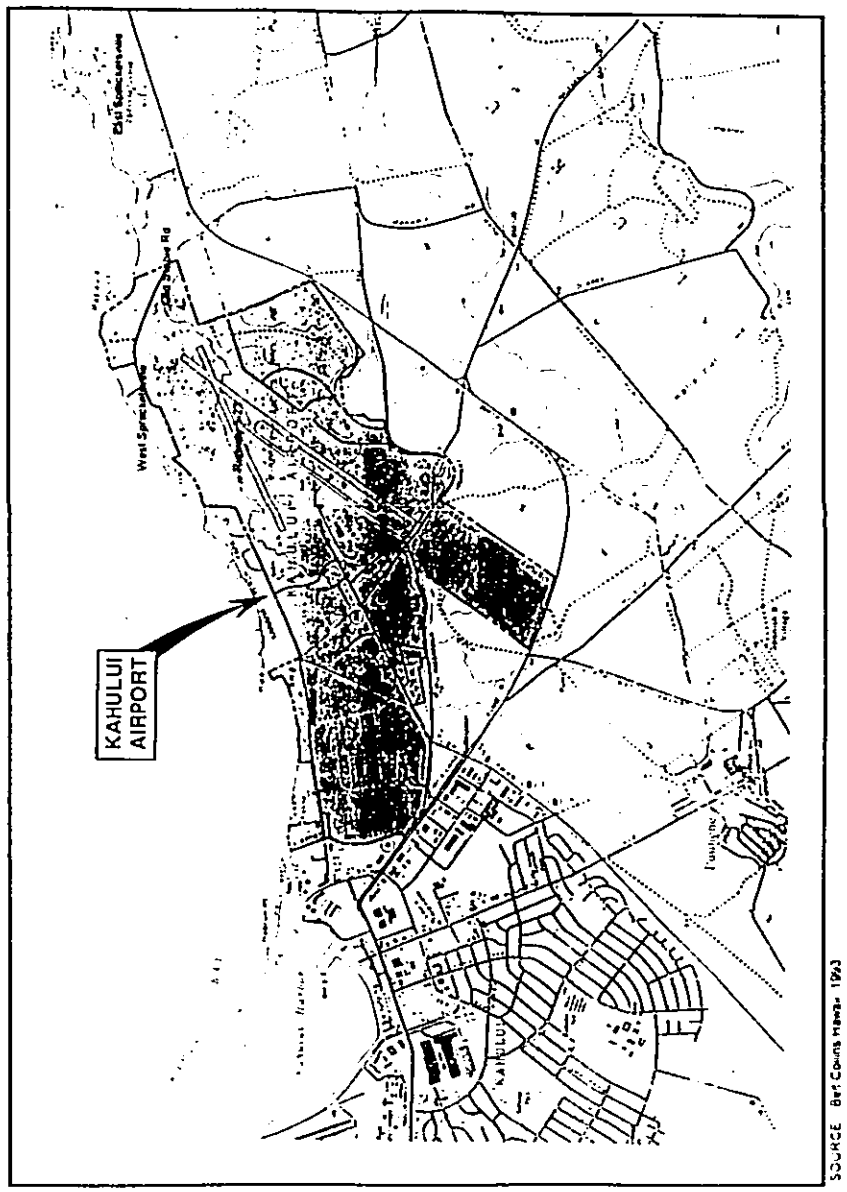
1.1 MASTER PLAN OBJECTIVES

The 1993 Master Plan stated the aims of guiding future development of Kahului Airport to "satisfy forecast aviation demand in a financially sound manner, while addressing the community's environmental and socio-economic concerns." The Draft EIS includes discussion of the need for the various facilities proposed in the Master Plan.

The Master Plan is one of a series of plans prepared for Kahului Airport. It is also part of a continuing effort to plan for the entire airport system administered by the State. Judgments of the financial soundness and efficiency of any proposed alternative must rest on an overview of the State system. Forecasts used for planning purposes (Aries 1990, 1994) address the potential growth in usage of the system as a whole, and only secondarily estimate change at any particular airport. The DOT-A's budgets and financial agreements with airlines also cover the entire airport system, rather than applying only to a single airport.

When analyzing the socio-economic impacts of proposed actions at Kahului, Community Resources, Inc. (CRI) did not assess the fit between various alternatives and DOT-A objectives. An examination of system-wide efficiency and economy is outside our scope and competence. In effect, CRI accepts, as a starting point for the assessment reported here, DOT-A's finding that certain alternatives are worthy of consideration in relation to its objectives.

Exhibit 1-A
PROJECT AREA



1.2 ALTERNATIVES AND ISSUES CONSIDERED IN THIS REPORT

The 1993 Master Plan reviewed six alternative sets of improvements for Kahului Airport, and then proposed a recommended master plan — a preferred alternative — based on combining the strengths of the six alternatives considered earlier. Exhibit 1-B shows the various components of the preferred alternative and aligns these, as much as possible, with similar or equivalent components of the other alternatives. (The EIS and Exhibit 1-B use the term "Recommended Master Plan." In the rest of this report, CRI uses "Preferred Alternative" for the alternative recommended in the Master Plan and specified in the EIS prepared for DOT-A by Edward K. Noda and Associates.)

Exhibit 1-B is organized to show a "core" of similar actions (numbered 21 through 30) that runs through all these alternatives. Core components may vary in some respects — for instance, the length of the taxiway in component 22 varies according to the length of runway 2-20 in each alternative.

The Master Plan organized the proposed actions into phases. Exhibit 1-C shows those phases. It also indicates the fact that a few actions listed in the Master Plan have already been taken. These are not considered further in this report. The years associated with each phase are years of construction. Impacts could well extend beyond the end of each phase.

The Master Plan provides detailed descriptions of some early actions and vague descriptions of later ones. Facilities to be built in Phase I or II usually respond to well-known needs. Demand for later facilities is expected, but the timing and strength of demand are less certain. Later actions could well change in the coming years. In any event, future master plans will review and refine scheduled improvements.

The various Master Plan alternatives are viewed here as a range of alternative developments to be considered as alternative projects in this report. They are further contrasted with "No-Action" conditions in later sections. "No-Action" conditions describe a future situation in which the project is absent. To identify the impact of a proposed action or project, a future point of comparison is needed, in order to separate impacts of the project from changes that come over time, with or without the project.

Proposals to improve Kahului airport have already been the subject of Court actions. An earlier EIS (Pacific Planning and Engineering, 1992) was prepared to comply with a judicial decision concerning the need for an EIS. The Court later indicated that the present EIS is to do more than just assess the Master Plan according to laws and regulations guiding EIS preparation. In addition, the EIS is to assess the potential impact of "international" flights and facilities. Impacts of those flights are treated in a separate section of this report.

Exhibit 1-B

COMPONENTS OF ALTERNATIVES IN 1993 MASTER PLAN

	Recommended Master Plan (Preferred Alternative)
1	strengthen parallel runways and air carrier taxiways to accommodate up to 900,000 pounds strength
2	extend Runway 2-20 southwards from 7,000 feet to 8,600 feet, 1,000 x 500 foot runway safety area to the south
3	install, for parallel runways, MITL for new taxiways, various navigational equipment for new parallel runway
4	construct 8,500 foot parallel runway 2,500 feet eastward of Runway 2-20, 1,000 x 500 foot runway safety areas
5	construct new & extended taxiways to connect parallel runways and existing taxiways, build several new loading aprons
6	Reclaim Runway 5-23 for general aviation & air taxi operations, 1,000 x 500 foot runway safety area to the east and west
7	provided over 350,000 square feet of apron for fixed-wing general aviation facilities in existing location, construct T-hangars
8	relocate helicopter facilities off-airport (land), possible sites include the eastern side of Hana Hwy & old Puunene Airport
9	replace existing air taxi support activities structure
10	new commercial aviation lease lots
11	relocate airline ground equipment maintenance facility
12	new parking apron north of Runway 5-23 for military & large transient aircraft, provide office facility
13	new & expanded cargo facilities at 12-acre site near new Post Office, new cargo facilities at northern end of East Ramp on 4-acre site
14	construct new bulk fuel storage facilities on southern side of Kahului Gulch, near existing ground transportation subdivision
15	new fuel line to ramp
16	relocate ARFF station on East Ramp near general aviation facilities
17	construct an ARFF training facility north of Runway 5-23, with a road connection to Alahao Street
18	new flight kitchen facilities in the expanded ground transportation subdivision or Kaalaea Place lease lots
19	new East Ramp Access Road
20	new public roads and service roads for new and reconfigured on-airport development
21	new Post Office Ramp Access Road
22	extend taxiway parallel to Runway 2-20 to full length of Runway 2-20
23	expand existing ground transportation subdivision southwards across Kahului Gulch
24	relocate VORTAC facilities to area north of Runways 2-20 and 5-23
25	create beach park facilities on east side of Kanaha Beach Park in connection with existing Maui County facilities
26	new Hana Airport Access Road on western side of airport, create Hana Hwy interchange, acquire 126 acres of land
27	relocate northeast corner of airport to provide runway protection for new parallel runway (land)
28	secure land easements between current boundary and Hana Hwy
29	new acreage, 42 for tee or irrigation easements south of Hana Hwy for runway protection zones, 10 for MALSR, 5 for NAVAIDS

SOURCE: Bert Cukins Hawaii, 1993

Exhibit 1-B (continued)

	Alternative 1	Alternative 2	Alternative 3
1	repair & strengthen Runway 2-20	repair & strengthen Runway 2-20	repair & strengthen Runway 2-20
2		extend Runway 2-20 from 7,000 feet to 8,500 feet (land)	extend Runway 2-20 from 7,000 feet to 9,500 feet
3		relocate Runway 2-20 Instrument Landing System	relocate Runway 2-20 Instrument Landing System
4		new 3,500 foot parallel runway near Hana Hwy (land)	new 8,500 foot parallel runway 2,500 feet to the east (land)
5		new taxiway connecting southern end of new parallel runway	new taxiways connecting the parallel runways, new
6			
7	relocate general aviation reliever airport elsewhere on Maui (land)	new general aviation terminal betw parallel runway & Hana Hwy	expand general aviation lease lots & T-hangar areas northwards
8	relocate helipads relocate some helicopter hangars	relocate helicopter facilities off-airport (land)	relocate helipads expand helicopter facilities at East Ramp
9	replace existing air taxi support activities structure	relocate air taxi operations to vacated helicopter facilities	replace existing air taxi support activities structure
10			
11			
12	strengthen general aviation apron for military & large aircraft		new parking apron by Runway 5-23 for military & transient aircraft
13	new cargo facilities near Post Office	new cargo facilities near Post Office & at north end of East Ramp	new cargo facilities near Post Office & at north end of East Ramp
14	new bulk fuel storage facilities south of vacated helicopter facilities	new bulk fuel storage facilities south of vacated helicopter facilities	new bulk fuel storage facilities south of vacated helicopter facilities
15			
16		relocate ARFF station south of taxiway connecting runways	relocate ARFF station with general aviation facilities
17			
18	new flight kitchen	new flight kitchen west of Runway 5-23	new flight kitchen
19			
20		new roads to serve East Ramp facilities	
	Core to Alternatives 1 to 6 →		
21	new Post Office Ramp Access Road	Core	Core
22	extend taxiway parallel to Runway 2-20 to length of Runway 2-20	Core	Core
23	expand ground transportation subdivision west of Keolani Place	Core	Core
24	relocate VORTAC facilities to northeast of Runways 2-20 & 5-23	Core	Core
25	create beach park facilities on east side of Kanaha Beach Park	Core	Core
26	new Airport Access Road & Hana Hwy interchange (land)	Core	Core
27	minor realignment of Hana Hwy at airport's northeast corner (land)	Core	Core
28	acquire all land east of airport betw current boundary & Hana Hwy	Core	Core
29	acquire land avigation easements south of Hana Hwy	Core	Core

Exhibit 1-B (continued)

	Alternative 4	Alternative 5	Alternative 6
1	repair & strengthen Runway 2-20	repair & strengthen Runway 2-20	
2	extend Runway 2-20 from 7,000 feet to10,500 feet (land)	extend Runway 2-20 from 7,000 feet to 9,500 feet (land)	extend Runway 2-20 from 7,000 feet to 8,500 feet (land)
3	relocate Runway 2-20 Instrument Landing System	relocate Runway 2-20 Instrument Landing System	
4	new 10,500 foot parallel runway 2,500 feet to the east (land)	new 8,500 foot parallel runway 2,500 feet to the east (land)	new 7,000 foot parallel runway (land)
5	2 new taxiways connecting the parallel runways	new taxiways connecting the parallel runways	
6			close Runway 5-23 expand terminal area northwards
7	expand general aviation lease lots & T-hangar areas northwards	expand general aviation lease lots & T-hangar areas northwards	relocate general aviation lease lots east to commercial aviation
8	relocate helicopter facilities to east side of Hana Hwy (land)	relocate helicopter facilities to east side of Hana Hwy (land)	relocate helicopter facilities to east side of Hana Hwy (land)
9	replace existing air taxi support activities structure	replace existing air taxi support activities structure	relocate air taxi facilities to main terminal & FAA tower
10		new commercial aviation lease lots	relocate commercial aviation to vacated helicopter facilities
11			relocate airline ground equipment maintenance facility
12	new parking apron by Runway 5-23 for military & transient aircraft	new parking apron by Runway 5-23 for military & transient aircraft	new parking apron by Runway 5-23 for military & transient aircraft
13	new cargo facilities in vacated helicopter facilities	new cargo facilities near Post Office & at north end of East Ramp	relocate cargo facilities in new expanded terminal area
14	new bulk fuel storage facilities south of vacated helicopter facilities	new bulk fuel storage facilities west of Access Road (land)	new bulk fuel storage facilities on northwestern side of airport
15			
16	relocate ARFF station north of taxiways connecting runways	relocate ARFF station south of taxiways connecting runways	relocate ARFF station near vacated helicopter facilities
17			relocate ARFF training facility
18	new flight kitchen	new flight kitchen	new flight kitchen in new expanded terminal area
19		new East Ramp Access Road	new East Ramp Access Road
20			
21	Core	Core	Core
22	Core	Core	Core
23	Core	Core	expand ground transportation subdivision eastwards
24	Core	Core	Core
25	Core	Core	Core
26	Core	Core	Core
27	Core	Core	Core
28	Core	Core	Core
29	Core	Core	Core

1.3 SCOPE AND ORGANIZATION OF THIS REPORT

This report identifies the impacts of the proposed actions through the following steps:

- Existing conditions on Maui are summarized in the next section.
- Section 3 reviews key analytical issues in impact assessment, and hence establishes the theoretical foundation for subsequent analysis.
- Section 4 provides an analysis of "growth-inducing impacts," identifying potential causal linkages between the proposed activities at Kahului Airport and changes in Maui's economy and society. This analysis moves from a general consideration of factors affecting tourism to an attempt to quantify the potential extent and direction of impact of particular alternatives. In this section, islandwide impacts are estimated.
- Section 5 deals with the specifics of proposed actions at the airport, noting potential impacts on-site and in the immediate vicinity.

  Although the proposed Alahao Street/Old Stable Road emergency connector is part of the Court order, not any Master Plan alternative, it is considered in Chapter 5 as an action that could have immediate area impacts.
- Section 6 assesses the impact on selected public facilities of both specific changes at the airport and potential economic growth attributable to particular alternatives. It deals with public safety (police and fire services), medical services, recreation, and education.
- Section 7 deals with potential impacts of regularly scheduled international flights to Kahului. According to the latest set of long-range airport passenger forecasts for Hawaii (Aries, 1994), demand for such direct international flights might arise by 2010.
- Section 8 summarizes adverse impacts and potential mitigations for those impacts. The significance of potential impacts is then assessed.

As shown in Exhibit 1-C on the next page, the Master Plan covers three development phases. The phasing shows the extent to which airport planners find actions to meet short- vs long-term needs. The timing of actions slated for later phases could be hurried or slowed in future years in response to changing needs of the airports and air travel in Hawaii.

Exhibit 1-C
COMPONENTS OF PREFERRED ALTERNATIVE BY PHASE

	Preferred Alternative
PHASE I	
1	strengthen parallel runways and air carrier taxiways to accommodate up to 810,000 pounds strength
2	extend Runway 2-20 southwards from 7,000 feet to 9,800 feet; 1,000 x 500 foot runway safety area to the south
3	ARTL for parallel runways; MITL for new taxiways; distance markers; various navigational equipment for new parallel runway
13	new cargo facilities at 12 acre site near new Post Office
16	relocate ARFF station on East Ramp near general aviation facilities
17	construct an ARFF training facility north of Runway 5-23 with a road connection to Alahao Street
19	new Post Office Ramp Access Road
21	new public roads and service roads for new and reconfigured on airport development
24	relocate VORTAC facilities to area north of Runways 2-20 and 5-23
26	new 6 lane Airport Access Road on western side of airport, re-route Hana Hwy where change; acquire 178 acres of land
30	new acreage south of Hana Hwy for NAVAIDS
*	East Ramp sewer system
*	Underground utilities
*	New potable water supply system
PHASE II	
4	land for 8,500 foot parallel runway 2,500 feet southwards of Runway 2-20; 1,000 x 500 foot runway safety areas
7	provided over 350,000 square feet of airport tax lessee general aviation facilities; in existing location; construct 7 hangars
8	replace existing air taxi support activities structure
11	relocate airfield ground equipment maintenance facility
13	new cargo facilities at northern end of East Ramp on 4 acre site
14	construct new bulk fuel storage facilities on southern side of Kahalawai Gulch, near existing ground transportation subdivision
15	new fuel line to ramp
20	new East Ramp Access Road (north section)
21	new public roads and service roads for new and reconfigured on airport development
23	expand existing ground transportation facilities
25	create beach park facilities on east side of Kanaha Beach Park in conjunction with existing Maui County facilities
29	new acreage 42 for fee or navigation easements south of Hana Hwy for runway protection zones; 90 for MALSR
NOT EXPLICITLY ATTRIBUTED TO A SPECIFIC PHASE IN MASTER PLAN (1)	
6	Relocate Runway 5-23 for general aviation & air taxi operations; 1,000 x 500 foot runway safety areas to the west and west
9	relocate hydrocarbon facilities off airport (Ilwa); possible sites include the eastern side of Hana Hwy & old Pineapple Airport
10	new commercial aviation lease lots
28	acquire land easements between East end boundary and Hana Hwy
PHASE III	
4	construct 8,500 foot parallel runway 2,500 feet southwards of Runway 2-20; 1,000 x 500 foot runway safety areas
5	construct new & extended taxiways to connect parallel runways and existing taxiways; build several new holding aprons
12	new parking apron north of Runway 5-23 for military & large transient aircraft; provide office facility
13	expand cargo facilities at 12 acre site near new Post Office
18	new flight kitchen facilities at the expanded ground transportation subdivision at Kaahumanu Place lease lots
20	new East Ramp Access Road (Hana Hwy section)
21	new public roads and service roads for new and reconfigured on airport development
22	extend taxiway parallel to Runway 2-20 to full length of Runway 2-20
23	expand existing ground transportation subdivision southwards across Kaahumanu Gulch
27	minor realignment of Hana Hwy along northeast corner of airport to provide runway protection for new parallel runway (land)
*	Upgrade RSAs for Runways 2-20 and 5-23

NOTES: Some components of the preferred alternative are partially or fully completed as of October 1994: the ARFF Station has been constructed on the East Ramp; the ARFF Training Facility is currently under design and will be located north of Runway 5-23; the relocated VORTAC facility is under construction; and land for the Airport Access Road has been acquired. Using the above designations, these partially or fully completed components are 16, 17, 24, and 26, respectively.
Component numbers are comparable to those on Exhibit 1-B and Appendix B-13. Italicized numbers refer to components that occur in more than one phase.

(1) For the purposes of this report, these actions are treated as if in Phase II.

SOURCE: Edward K. Noda & Associates, Inc., 1994; Gail Codera Harmon, 1995.

In this report, CRI treats the Master Plan, as a whole, as being realized by 2010 and as being properly assessed in relation to the volume of air travel forecast for that year. CRI finds that a phase-by-phase analysis would be misleading, since it would suggest that Phase I improvements bring the airports to the level of efficiency needed in 2000, Phase II improvements bring the system to the level needed in 2005, and so forth. CRI has no basis for making such a precise judgment. Moreover, the 1993 Master Plan preferred alternative was

decided on the basis of old forecasts The more recent forecasts (Aries, 1994) indicate a slower rate of growth in passengers than the previous set (Aries, 1990)

1.4 RELATION BETWEEN THIS REPORT AND PREVIOUS EIS TERMS AND ANALYSIS

The Final EIS produced in 1992 (Pacific Planning and Engineering, 1992) at times used much the same terms as CRI uses in Section 3 and afterwards Consequently, it seems necessary to clarify some of the differences between that EIS and the present socio-economic impact assessment.

The 1992 EIS:

- Assessed impacts of a 1988 Master Plan for Kahului Airport — not the 1993 Master Plan assessed here.
- Used the State's "M-K" Series forecasts and the 1989 Statewide Air System Projections (Aries, 1990) to estimate future growth — while the present analysis uses more recent passenger projections, allowing revised estimates of employment and population.
- Included a "sensitivity analysis" based on a "Constrained No-Action Scenario" in response to comments on the Draft EIS. In effect, the main line of argument was that the proposed airport improvements would not affect passenger counts (and the economy) — but a second line of analysis was added, attempting to estimate the size of impacts if, somehow, growth would be limited if the improvements were not built.

In the present SIA:

- Causal factors shaping growth of Maui's tourism economy are explicitly analyzed;
- Comparison cases from Hawaii and around the world are discussed as part of the causal analysis; and
- Two hypotheses about growth are explored, and two different sensitivity analyses are done.

These differences make any point-by-point comparison of the projections in the 1992 EIS with projections developed here extremely complex The "Constrained No-Action Future" used here is not precisely equivalent to the "Constrained No-Action Scenario" used in 1992 No precise comparison of these (or of other forecast items used in the analysis) will be attempted here

1.5 A NOTE ON TERMINOLOGY AND EXISTING AIRPORT CONDITIONS

Past debates over the future of Kahului Airport have been marked by misunderstandings about some basic terms for air activities Some terminological and factual points deserve clarification here

- **Direct flights** are scheduled flights between Kahului and overseas destinations Direct flights may include a stop between the origin point and the destination Airplanes scheduled to travel either from Kahului to Honolulu to Denver, or Kahului to Los Angeles to Denver would be direct Kahului-Denver flights. A **nonstop flight** is a direct flight without an intermediate stopping point.

  With a 7,000-foot runway, Kahului can now accommodate nonstop flights to and from Mainland airports. Large aircraft leaving Kahului for overseas destinations are likely not to be allowed to take off with a full payload Arriving flights (with much of their fuel already consumed) are not so constrained.

- **Internationalization** has been discussed as an expansion of routes and visitors to Kahului In point of fact, charter flights from outside the United States now land at Kahului Canadian charters come fairly frequently; charters from Europe and Japan have come on occasion. Three components are involved in "internationalization":

  - International flights need to be cleared for admission to the United States as they land in Hawaii. In contrast, passengers and cargo on flights from Canada are inspected at Canadian airports These "precleared" Canadian flights are hence not "international "
  - "Internationalization" involves regularly scheduled flights Federal agents (of the Customs Service, Immigration and Naturalization Service, Public Health Service, and Department of Agriculture) have in a few cases cleared international flights to Kahului, and could do so without any change in current policy.
  - "Internationalization" calls for facilities to handle international traffic apart from other passengers and baggage. Partly in response to demand for efficient, speedy processing c international flights, Federal regulations now call for separate international areas even in "temporary" facilities (US Customs Service, 1991).

Please refer to the EIS and technical studies by other consultants for further discussion of air traffic issues. Concepts used to develop the analysis of impacts are discussed in Section 3.

Section 2
EXISTING CONDITIONS

2.1 MAUI ISLAND BACKGROUND

2.1.1 Overview

Maui is named for the demi-god who championed the rights of mortals by pitting his cunning against that of the entire Polynesian pantheon. Hawaiian legend suggests that the impressive volcano known as Haleakala (House of the Sun) was the site of Maui's victorious battle with the sun-deity, La. The island's great natural beauty still inspires praise: within close proximity one can find rugged valleys, sunny beaches, misty waterfalls, desolate lava flows, and mountain rain forests.

Maui's economic development in recent history has been as varied as its landscape The Lahaina-based whaling industry which flourished in the early nineteenth century brought with it Maui's first deluge of westernization, quickly transforming the traditional Hawaiian chiefdom into a vital modern link between the markets of San Francisco and Canton. Whaling and trans-Pacific trade eventually gave way to cattle ranching in the uplands and vast plantations throughout the fertile lower elevations of the island. Large-scale sugar and pineapple cultivation reached their zenith early this century. Several quaint towns reminiscent of the era still dot the countryside. Despite a decline in plantation agriculture after World War Two, a few companies continue to thrive today, with Maui claiming the most successful plantations in the State.

As with the other Hawaiian islands, however, tourism managed to supplant agriculture as the major post-War industry. Maui's popularity as a visitor destination now ranks second only to Waikiki in volume of tourists. But the surging tourism industry of the 1970s and 1980s was a double-edged sword for residents. The booming economy expanded employment opportunities and garnered higher incomes for the working class, but widespread hotel and condominium development drew accusations from the middle class that Maui was becoming a playground for rich outsiders. Quality of life improved appreciably for some but deteriorated for others, spurring island political leaders to impose a moratorium on resort projects until the effects of development could be better understood.

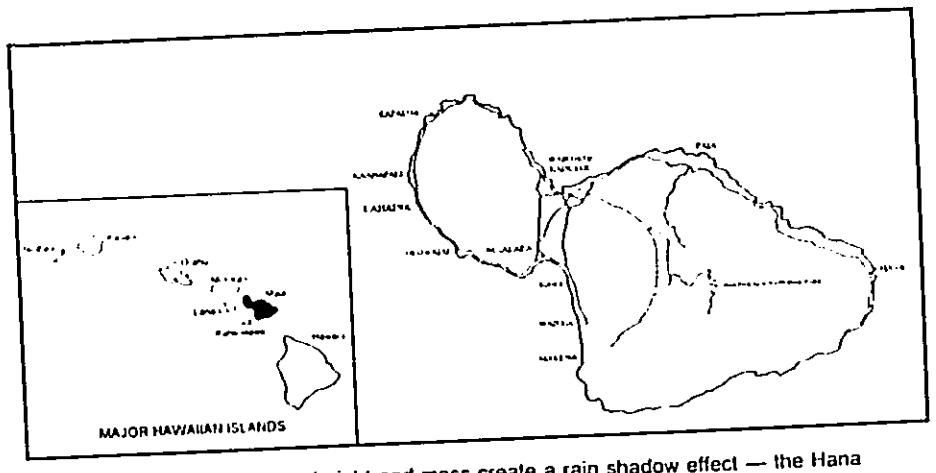
In any case, the beginning of this decade saw tourism leveling off, and a subsequent drop in business for heavily tourist-dependent industries such as construction, retail, and aviation. Increased unemployment forced both local government and the private sector to seek new industrial capabilities for the island Diversified agriculture is gradually gaining a stronger foothold, and

dedication of a new supercomputer in Kihei has bolstered Maui's fledgling high-technology segment Tourism shows signs of recovery for 1994. Hopefully the income it generates will help rather than hinder the island's steps towards a more diverse economic base.

2.1.2 Physical Description

Lying at the hub of the smaller islands of Moloka'i, Lana'i, and Kaho'olawe, Maui is the second-most southerly island in the Hawaiian archipelago (see below). Maui's topography is dominated by two mountain systems the older West Maui Mountains, which are heavily eroded, and the imposing Haleakala, a more recent relief feature which reaches 10,023 feet and comprises the island's eastern bulge. Ancient lava flows from these two shield volcanoes formed an isthmus which now constitutes the fertile central plain of the island

Exhibit 2-A
MAUI ISLAND



Haleakala's great height and mass create a rain shadow effect — the Hana coast at the windward base of the mountain receives more than five times the rainfall of either the Kihei-Makena or West Maui areas. As with the rest of the State, sea-level temperatures on Maui are mild, averaging between 71 and 79 degrees Fahrenheit from the coolest to the warmest months of the year

At 735 square miles, Maui ranks as the second largest island in the Hawaiian chain Much of this acreage is open space, with only 4% of Maui classified as

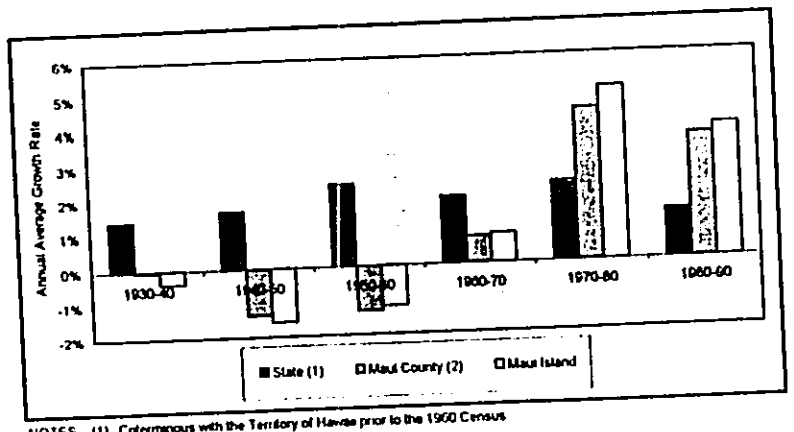
"Urban" by the State Land Use Commission, compared to Oahu's classification of 25% Urban (Maui Economic Development Board, Inc., 1993):

LAND CLASSIFICATION	SHARE OF MAUI ISLAND
Urban	4%
Conservation	42%
Agricultural	53%
Rural	1%

2.1.3 Demography

From 1930 to 1960, Maui's population declined over each decade (see exhibit below). Growth between 1960 and 1970 was modest and still less than growth for the State as a whole. From 1970 on, however, Maui's booming visitor industry fueled substantial population growth — more than twice the statewide rate (also see Appendix A-1 for annual population estimates). By 1990, Maui Island's resident population stood at 91,361, making it the State's third most populous island after Oahu and the Big Island.

Exhibit 2-B
POPULATION GROWTH, 1930-1990

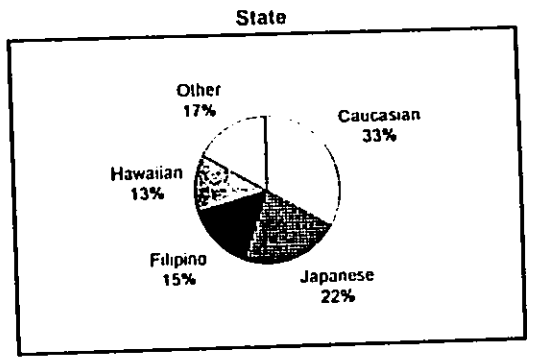


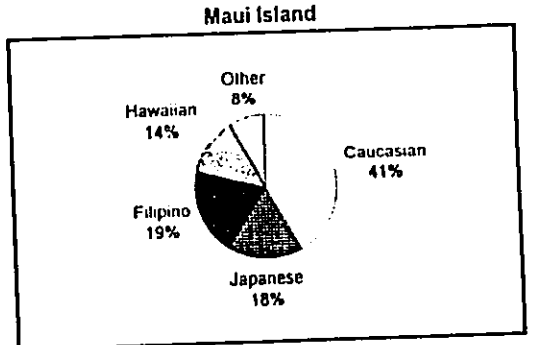
NOTES (1) Coterminous with the Territory of Hawaii prior to the 1960 Census
(2) Includes Kalawao County (or Kalaupapa Settlement)

SOURCES U S Bureau of the Census, 1991, 1983a, 1983b, 1981a, 1972, 1971, 1961a, 1961b, 1952a, 1952b, 1943, 1931, Hawaii State DPED, 1973

Maui Island residents share most of the demographic characteristics that typify residents statewide (see Appendix A-2 and A-3 for detailed exhibits). One noticeable difference is that Maui has proportionately many more Caucasians than the State:

Exhibit 2-C
ETHNICITY, 1990





SOURCE U S Bureau of the Census, 1991

2.1.4 Housing

As of 1990, Maui's 38,422 housing units were generally newer than units statewide, and there were more single-family homes than the State average (Refer to Appendix A-4.) Noticeably more Maui Island units were vacant — especially those used for seasonal and recreational purposes. This results from the high number of Maui condominiums reserved as visitor accommodations or second homes in the resort areas of West and South Maui.

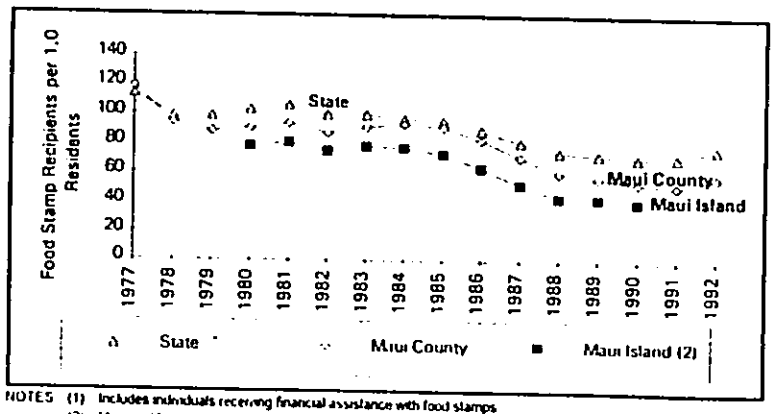
The 1990 mean value of a Maui home was roughly 90% of the State mean. With less expensive homes, it is not surprising to see a greater degree of homeownership in Maui Island than statewide. While there were fewer persons per Maui household, homes were small, on average, and so about as many were crowded as elsewhere in Hawaii (about 8% of households).

2.1.5 Income and Poverty

Maui Island's 1990 mean household income of $48,365 was slightly higher than the State mean (Appendix A-5). Furthermore, the income of Maui households was more egalitarian than for the rest of the State; that is, there was less discrepancy between the richest households and the poorest households. Other indications of Maui's relatively high standard of living in 1990 include fewer households on public assistance income and lower overall owner housing costs. However, Maui rents tended to be higher than State averages.

The incidence of persons living below the poverty level was somewhat lower for Maui than for the State in 1990. Even more impressive is Maui Island's consistently lower rate of food stamp reliance between 1980 and 1990 (also see Appendix A-6).

Exhibit 2-D
AVERAGE MONTHLY FOOD STAMP RECIPIENTS, 1977-1992 (1)



NOTES (1) Includes individuals receiving financial assistance with food stamps
(2) Maui and Lana'i Islands were counted together prior to 1980

SOURCES Hawaii State Department of Human Services, 1993, 1992a, 1992b

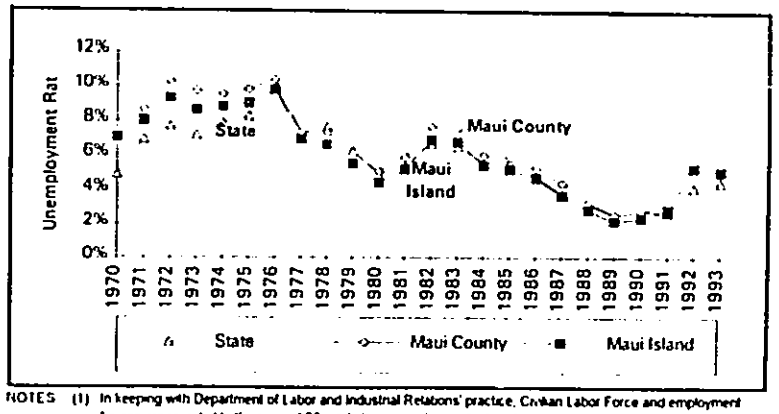
2.1.6 Labor Force and Industry

Maui's 1990 labor force was almost entirely civilian. The military presence on the island was, and still is, negligible (as shown in Appendix A-7). 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.

In 1988, when Maui was close to full employment, a statewide survey revealed that about a quarter of Maui County residents worked more than 48 hours a week, and up to half of all workers usually worked on the weekend or in the evenings (Appendix A-8). The survey also indicated that some 53% of Maui County workers held jobs in the tourism industry.

From 1970 until recent years, Maui's unemployment rate stayed below the State's (see Appendix A-9). Estimates from the State Department of Labor and Industrial Relations show that this trend has changed sharply over the last three years:

Exhibit 2-E
UNEMPLOYMENT, 1970-1993 (1)



NOTES (1) In keeping with Department of Labor and Industrial Relations' practice, Civilian Labor Force and employment figures are rounded to the nearest 50, while the unemployment rate is based on raw, unrounded numbers.
(2) Figures for this year are preliminary and are rounded to the nearest ten.

SOURCES Hawaii State Department of Labor and Industrial Relations, 1994a, 1994b

The latest DLIR estimates show the job situation on Maui apparently growing even tighter, now well above the State's level of unemployment:

Exhibit 2-F
CIVILIAN LABOR FORCE AND UNEMPLOYMENT, JUNE 1994

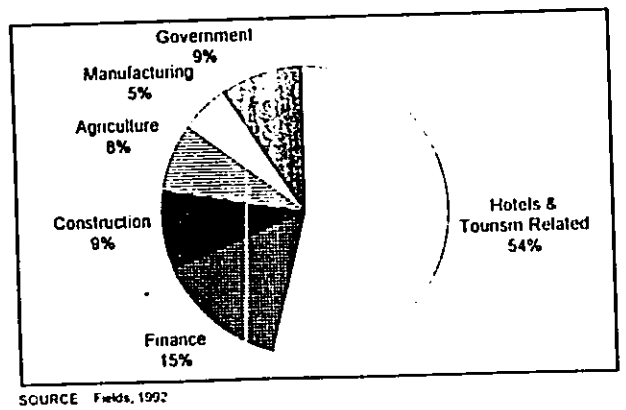
	STATE	Maui County	Maui Island
CIVILIAN LABOR FORCE	597,049	67,268	62,441
Employed	561,748	62,693	58,471
Unemployed	35,301	4,575	3,970
Unemployment Rate	5.9%	6.8%	6.4%

SOURCE: Hawaii State Department of Labor and Industrial Relations, 1994b

2.2 MAJOR INDUSTRIES

Maui County's (and therefore Maui Island's) most important non-government industries are: Hotels & Tourism; Finance, Insurance, & Real Estate; Construction; and Agriculture. This discussion will address Tourism, Construction, and Agriculture, since the Finance industry is mainly an outgrowth of these other three. Exhibit 2-G displays the relative importance of Maui County industries:

Exhibit 2-G
MAUI COUNTY GROSS COUNTY PRODUCT BY INDUSTRY, 1989



SOURCE Fields, 1992

2.2.1 Tourism[1]

Tourism remains at the heart of the Maui economy. In 1992, 2,285,410 visitors to Maui spent more than $2.2 billion (Exhibit 2-H below). These expenditures support an estimated 45% of Maui residents in tourism jobs — down somewhat from the 1988 survey results (Fields, 1992).

Exhibit 2-H
VISITOR ARRIVALS AND EXPENDITURES, 1989-1993

	State		Maui County		Maui Island	
YEAR	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	6,673,690	$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	N/A	2,260,940	N/A	2,209,980	N/A

SOURCES Hawaii Visitors Bureau, 1994a, 1994b, 1993a, 1993b, 1992a, 1992b, 1991a, 1991b, 1990a, 1990b

Most visitors to Maui in 1992 remained on island roughly a week (though Eastbound tourists stayed only about half a week). About half stayed only in hotel accommodations, and nearly two-thirds visited other islands besides Maui. Visitor arrivals tended to peak between June and August, and between October and December. (See Appendix A-10.)

Visitor arrivals have generally declined for both Maui Island and the State as a whole from 1990 to 1993. However, recent trends are causing guarded optimism in Maui's tourism industry:

- The first quarter of 1994 saw strong visitor arrivals for the State. Arrivals for March 1994 had increased by more than 10% over March 1993 (Glauberman, 1994a).
- Airlines recently made more seats available for summer trips to Hawaii from the Mainland. This is the first increase in passenger capacity to Hawaii in the last three years and is expected to boost overall travel to the islands considerably (Lynch, 1994).
- Maui's hotel occupancy is somewhat lower than the State average, but occupancy rates are returning to pre-recession levels. Moreover, the 1993 average daily room rate on Maui was some $20 higher than the statewide rate (Exhibit 2-I on the next page).

[1] Section 7 will present further information about tourism patterns and internationalization

Exhibit 2-I
HOTEL OCCUPANCY AND ROOM RATES, 1989-1993

YEAR	State		Maui Island	
	Occupancy Rates	Average Daily Room Rate	Occupancy Rates	Average Daily Room Rate
1989	79%	$96	69%	$134
1990	79%	$102	70%	$129
1991	72%	$105	64%	$131
1992	74%	$105	64%	$125
1993	72%	$103	68%	$123

NOTE Maui County figures unavailable

SOURCES Pannell Kerr Forster, 1994, 1993, 1992, 1991

- The number of Maui visitor units increased by 3,000 between 1989 and 1993, so the higher occupancy rates indicate a strong recovery (Exhibit 2-J below).

Exhibit 2-J
VISITOR UNITS, 1989-1993

YEAR	State			Maui County			Maui Island		
	TOTAL	Hotel	Condo & Other	TOTAL	Hotel	Condo & Other	TOTAL	Hotel	Condo & Other
1989	68,034	47,474	20,560	16,008	7,806	8,202	15,439	7,470	7,969
1990	72,237	50,071	22,166	18,169	8,528	9,641	17,361	7,950	9,411
1991	74,112	51,765	22,347	19,132	8,540	10,592	18,241	7,823	10,418
1992	73,779	49,324	24,455	19,552	9,632	9,920	18,626	8,901	9,725
1993	70,542	47,633	22,909	19,389	9,536	9,853	18,443	8,901	9,542

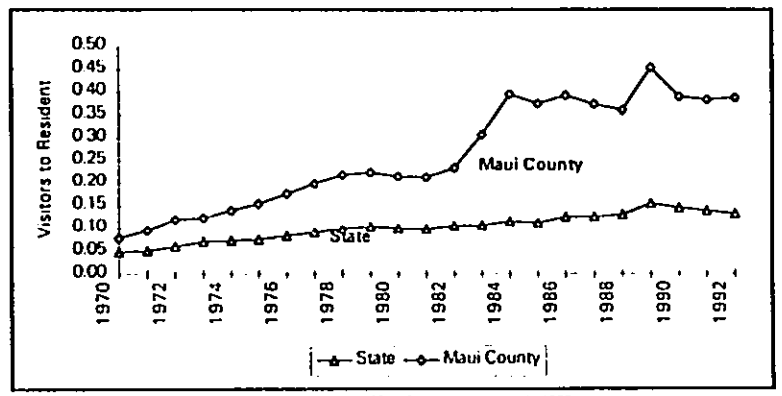
SOURCES Hawaii Visitors Bureau, 1994a, 1994b, 1993c, 1992c, 1991c, 1990c

- The Japanese economy has bottomed out and shows signs of a mild rebound, including an increase in persons traveling abroad. Even though Maui has traditionally attracted U.S. and Canadian visitors, eastbound arrivals (mainly Japanese) actually increased between 1990 and 1992. Westbound arrivals dropped by more than 700,000 during the same period.

- The U.S. Dollar has devalued against the Japanese Yen considerably over the last few months. Overseas destinations like Hawaii may now appear much more competitive to the Japanese, and spending from Japanese tourists will likely amount to more dollars than previously. Maui is likely to receive its share of increased arrivals and spending.

- 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.

Exhibit 2-K
VISITORS TO RESIDENTS, 1970-1992 (1)



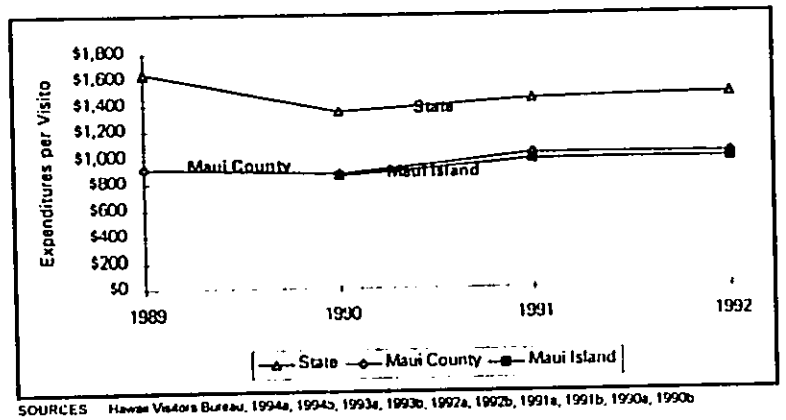
NOTE (1) HVB did not break out the AVC for component Maui County islands prior to 1989

SOURCES Hawaii Visitors Bureau, 1994a, 1994b, 1993a, 1993b, 1992a, 1992b, 1991a, 1991b, 1990a, 1990b, Hawaii State DBED, 1994, 1993, 1992

- On any given day in 1992, Maui County had about four tourists for every ten residents. (Maui Island average visitor census estimates are available for only a few years. However, Maui Island makes up the bulk of the County. See also Appendix A-11.)

Despite the importance of tourism to Maui, expenditures per visitor are much lower than the State average (Exhibit 2-L on the next page). In part, this is because the average Maui visitor is American, probably a repeat visitor, and likely to stay in a condominium. In contrast, Japanese visitors staying in hotels spend more on lodging and gifts. (Maui has more non-hotel visitor units than hotel visitor units. This is in contrast to the State as a whole, which has more than twice as many hotel units as non-hotel units.)

Exhibit 2-L
EXPENDITURES PER VISITOR, 1989-1992



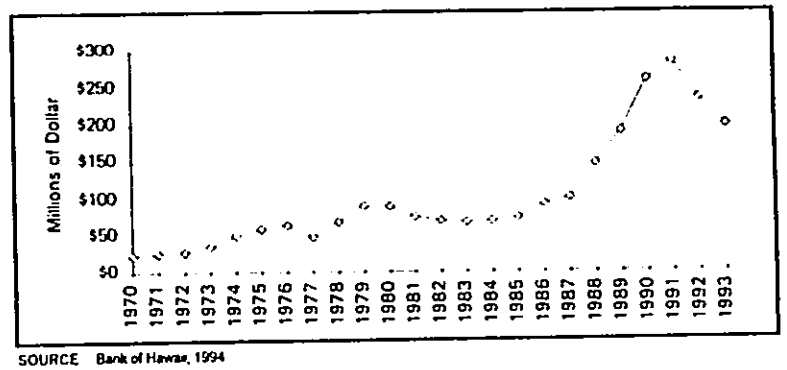
SOURCES Hawaii Visitors Bureau, 1994a, 1994b, 1993a, 1993b, 1992a, 1992b, 1991a, 1991b, 1990a, 1990b

2.2.2 Construction

A continuing construction slump has put almost a third of Maui's 1,200 construction-related union members out of work, although this is reportedly an improvement over last year when close to half were jobless (Ma and Markrich, 1994). Construction on Maui is closely tied to a bullish tourist market, and tourism has been lackluster for the last three years. A comparison of the ratio of visitors to residents (Exhibit 2-K on the previous page) and construction put in place (Exhibit 2-M on the following page) shows a clear relationship.

Of particular note on both graphs is the peak around the late eighties. As visitors increased, the demand for construction of additional hotel and condominium units increased. The need to renovate and refurbish existing visitor units, and build spin-off facilities such as restaurants and shops also rose. New employment opportunities (promotions, as well as new jobs) from tourism granted the means for residents to buy new homes, further boosting construction levels.

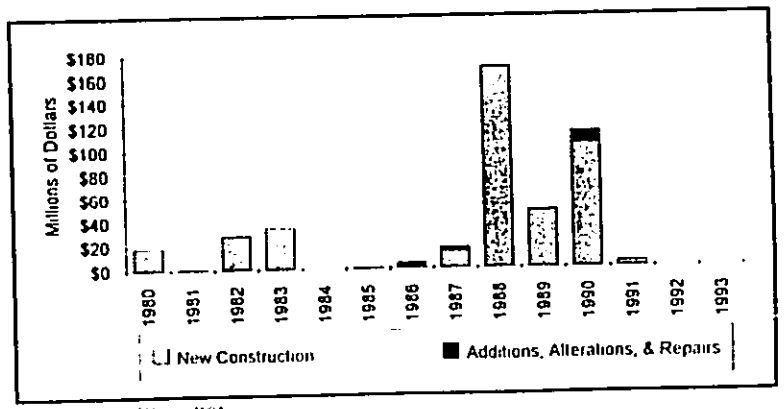
Exhibit 2-M
MAUI COUNTY CONSTRUCTION PUT IN PLACE, 1970-1993



SOURCE Bank of Hawaii, 1994

As shown in Exhibit 2-N below, the value of permits directly attributable to hotel construction and maintenance has waxed and waned over the years. Values plummeted from a peak in 1988 (when eight new hotel projects joined 14 projects begun the year before) to zero in 1992 and 1993 (when no new hotel projects were started at all).

Exhibit 2-N
MAUI COUNTY VALUE OF HOTEL BUILDING PERMITS, 1980-1993



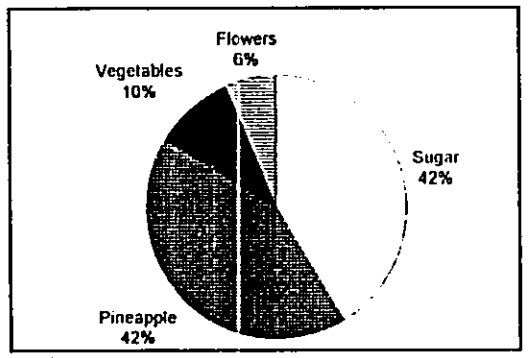
SOURCE Bank of Hawaii, 1994

New residential units continue to comprise the lion's share of Maui construction. Permits for some 660 single-family and 212 multi-family units were obtained in 1993 (Bank of Hawaii, 1994). This represents a substantial decrease in the number of single-family homes being built, but only a slight increase in the number of new multi-family homes over 1992.

2.2.3 Agriculture

Sugar and pineapple remain Maui's dominant agricultural activities. In 1992, Maui County's crops were grown on a total of 355,000 acres and had a combined market value over $141 million, most of which was sugar and pineapple (see Exhibit 2-O). Diversified agriculture — mainly vegetables and flowers — is slowly gaining in market share as both sugar and pineapple production gradually decline.

Exhibit 2-O
VALUE OF MAJOR MAUI COUNTY CROPS, 1992



SOURCE: Hawaii State Department of Agriculture, 1993

Another $11.7 million worth of livestock products brought Maui County's total value of agricultural products to $152.7 million in 1992, or roughly a third of the entire State total (Hawaii State Department of Agriculture, 1993).

Sugar. Only two sugar plantations remain on Maui — Alexander & Baldwin's Hawaiian Commercial & Sugar Company (HC&S), with approximately 84% of Maui's total sugar acreage, and AMFAC/JMB's Pioneer Mill Co. Together, these companies utilized some 42,200 acres of canelands in 1992 (Hawaii State Department of Agriculture, 1993).

Located in Central Maui, HC&S remains as one of Hawaii's few viable sugar companies, producing 224,677 tons of sugar in 1993, compared to 193,388 tons in 1992 (Ma and Markrich, 1994). Part of the company's success is due to high yields on large tracts of land (HC&S is the largest sugar plantation in Hawaii), good management, benevolent climate, and ample irrigation. Besides producing raw sugar, HC&S provides Maui Electric Company with 100,000 megawatts of electricity, which accounts for 12% of the island's usage (Ma and Markrich, 1994).

Pineapple. In 1992, three pineapple companies in Maui County had a total of 14,100 acres under cultivation (Hawaii State Department of Agriculture, 1993). Maui Land & Pineapple (ML&P) operates the largest Maui Island pineapple concern, and is the only producer of canned Hawaiian pineapple in the State. ML&P was profitable until 1992 when cheaper-operating foreign companies outpaced several domestic pineapple producers in devastating price wars (Ishikawa, 1994).

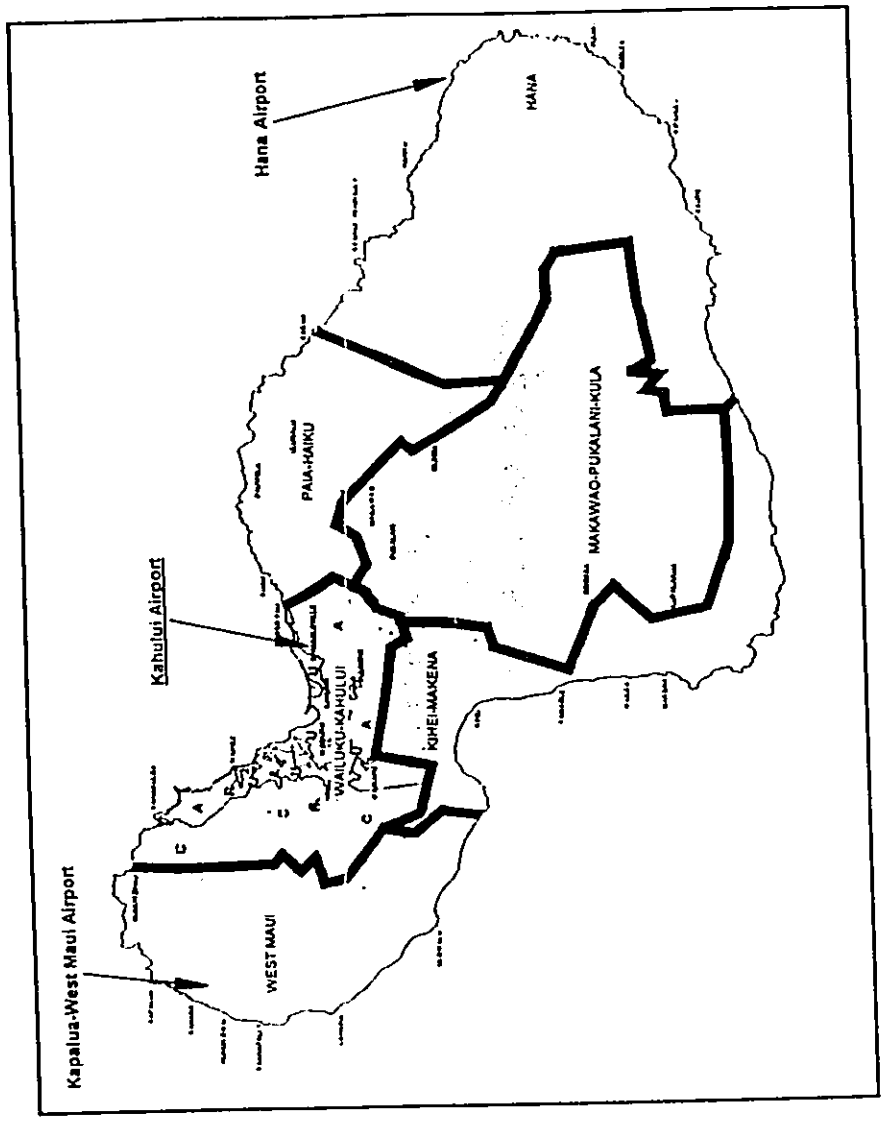
Diversified Agriculture. This is the one agricultural sector on Maui that is growing exponentially. Floriculture increased 73% between 1986 and 1990, and vegetable production increased by 38% (Fields, 1992). Other diversified agriculture crops grown in Maui County include fruits (excluding pineapple), coffee, macadamia nuts, and taro. The combined product value of Maui's diversified agriculture reached $28.8 million in 1992 (Hawaii State Department of Agriculture, 1993).

Livestock. Cattle ranching is the largest livestock activity in Maui County. As of 1992, 210 cattle operations produced over five million pounds of beef, some 80 hog farms, the next biggest livestock sector, produced about 1.5 million pounds of pork (Hawaii State Department of Agriculture, 1993).

2.3 AVIATION ON MAUI

Maui Island has three airports operated by the State Department of Transport: Kahului, Hana, and Kapalua-West Maui (see Exhibit 2-P on the following page). Not only is aviation critical to Maui's visitor industry (since nearly all Maui-bound tourists fly to the island), but air transportation is crucial in exporting many perishable Maui products. (It should be noted that most Maui exports are made by ship: in 1989 some 550,126 tons of cargo, mainly sugar, was shipped from Kahului Harbor — three-quarters of which was bound for the other islands. Only 4,356 tons of cargo was enplaned at Kahului Airport during the same year.)

Exhibit 2-P
MAUI ISLAND AIRPORTS AND COMMUNITY PLAN REGIONS



The airports also provide important entrepreneurial and employment opportunities for Maui residents. Kahului Airport alone was estimated to have generated almost $325 million worth of economic benefits in 1991 (Fields, 1992).

Kahului Airport. Kahului Airport is the principal Maui airport. It encompasses 1,447 acres between the towns of Kahului and Spreckelsville. The airport's two runways handled between them 172,265 aircraft operations in 1993, making Kahului second only to Honolulu International Airport in the State (Hawaii State Department of Transportation, 1994a). The Honolulu-Kahului route is particularly busy, and was counted as the most heavily traveled U S. air route in 1993 (Glauberman, 1994b). Indicators of Kahului Airport's traffic for 1993 include:

KAHULUI AIRPORT	1993
Aircraft Operations	172,265
Total Passengers:	5,358,039
Interisland	4,081,848
Out-of-state	1,276,191
Cargo (tons)	35,322
Mail (tons)	4,815

SOURCE: Hawaii State Department of Transportation, 1994a

Between 1990 and 1993, the number of aircraft operations at Kahului Airport decreased by an overall 6%, while passengers and mail handled by the airport noticeably increased (Belt Collins, 1993). This suggests that larger capacity aircraft have gradually become the norm at Kahului. (The volume of air cargo was the only component to decrease between 1990 and 1993, probably because airlines favor passengers over freight when runway limitations require restricted take-off capacities for outbound aircraft.)

It is important to note that, since 1983, **Kahului currently has both nonstop and one-stop direct regularly scheduled air carrier passenger service to U.S. Mainland destinations** (on which cargo can also be shipped on a space-available basis). Large aircraft — DC-10s or larger — can land on Kahului's current runway, but are subject to weight restrictions on takeoff, so that they cannot usually fly with a full load on a nonstop basis to the Mainland.

As of autumn 1994, three different overseas airline carriers were providing a total of seven daily flights, as follows:

CARRIER	INBOUND	OUTBOUND
American	Dallas-Honolulu-Kahului L.A.-Honolulu-Kahului	Kahului-Honolulu-Dallas Kahului-Honolulu-L.A.
Delta	L..A.-Kahului (nonstop) L.A.-Honolulu-Kahului	Kahului-Honolulu-L.A. Kahului-Honolulu-L.A.
United	L..A.-Kahului (nonstop) S.F.-Kahului (nonstop) Chicago-Honolulu-Kahului	Kahului-L.A. (nonstop) Kahului-San Francisco (nonstop) Kahului-Honolulu-Chicago

More flights are sometimes provided during peak travel seasons such as Christmas. In addition, Kahului Airport services various charter flights through the year, which may arrive directly from both the U.S. and foreign (usually Japanese) cities. U.S. customs officials will fly from Honolulu to set up temporary inspection facilities on a one-time basis for foreign charter flights.

Hana Airport. Hana Airport occupies 119 acres, approximately halfway along the remote northeastern coast between Nahiku and Hana. It accommodates mainly commuter and general aviation flights. In 1993, Hana Airport handled 17,841 interisland passengers and two tons of cargo (Hawaii State Department of Transportation, 1994a).

Kapalua-West Maui Airport. Ownership of Kapalua-West Maui Airport was recently acquired by the State from Hawaiian Airlines. This airport is located near Honokowai in the midst of Maui's west coast resort area. It has primarily serviced commuter flights since opening in 1987.

In 1993, Kapalua-West Maui dealt with 307,363 passengers, 694 tons of cargo, and two tons of mail, making Kapalua Airport busier than either Moloka'i Airport or Lana'i Airport (Hawaii State Department of Transportation, 1994a).

2.4 MAUI ISLAND COMMUNITY PLAN REGIONS

Maui County is divided into a total of nine regions, including the islands of Maui, Lana'i, Moloka'i, and Kaho'olawe. The following discussion deals only with the six *Maui Island* regions, focusing on Wailuku-Kahului, Lahaina, and Hana since these three regions each have an airport (see Exhibit 2-P on page 2-15).

Exhibit 2-Q
POPULATION OF MAUI ISLAND REGIONS, 1970-1990 (1)

Maui Island Region	1970	1980	1990
Wailuku-Kahului	20,583	26,076	32,807
West Maui (2)	5,574	10,284	14,574
Hana	969	1,423	1,895
Kihei-Makena	1,636	7,262	15,374
Makawao-Pukalani-Kula (3)	6,247	12,501	18,923
Paia-Haiku	3,732	5,277	7,788

NOTES: (1) See Appendix A-12 for Census equivalents of Maui Island Regions
(2) Previously known as Lahaina Region.
(3) Also referred to as "Upcountry."

SOURCES: U.S. Bureau of the Census, 1991, 1983a, 1983b, 1981, 1972, 1971, Hawaii State DPED, 1973

2.4.1 Wailuku-Kahului

Located on Maui's northwestern shore, the Wailuku-Kahului region stretches from the West Maui Mountains on its western boundary to Paia and the base of the uplands on its eastern boundary. The island's major urban centers of Wailuku and Kahului, as well as Kahului Airport and Kahului Harbor are concentrated near the region's central shoreline. About a third of all Maui residents live in Wailuku-Kahului. Furthermore, the region's coastal communities have been transformed from small, distinct plantation communities to suburbs of Kahului.

Although Wailuku and Kahului are adjacent towns whose boundaries overlap, they are different in character. Wailuku is a relatively old, fairly dense residential area, and functions as the county seat. Kahului, on the other hand,

has subdivisions generally newer than Wailuku and is the commercial and industrial center of the island It contains malls and other commercial outlets used by residents islandwide. These two towns and their numerous cultural facilities provide an important economic and employment base.

Other communities in the region are Spreckelsville to the east, Puunene and Waikapu in the central plain to the south, and Waihee/Waiehu to the north:

- **Spreckelsville.** This area had a population of 213 in 1990. It consists of a scattering of just over 100 single-family homes, about 2% of which are reserved for seasonal or recreational use. Incomes are high — the 1989 median household income stood at $73,853.

  Spreckelsville is divided into two distinct areas by unused Kahului Airport-owned land. The beach area of the Airport land is ungated and has become a busy windsurfing spot. West Spreckelsville, directly at the end of the Airport's main runway, is comprised of old but elegant beachfront estates. About half a mile away, near the Maui Country Club golf course, East Spreckelsville lies in the direct path of the Airport's secondary runway. East Spreckelsville's beachfront homes are similar to those in West Spreckelsville, but East Spreckelsville also includes several newer, more modest homes built along the Hana Highway.

  Spreckelsville residents generally consider their community rural, despite its location in the distinctly urban Wailuku-Kahului area, and the town's proximity to Kahului Airport (Eagar, 1994).

- **Puunene.** This was once a busy plantation community, but by 1990 the resident population had dwindled to 217. The Hawaiian Commercial and Sugar Company mill and a sugar museum remain here, along with 51 homes.

- **Waikapu.** This small town (population of 729 in 1990) has become the focus of new C. Brewer & Company and Alexander & Baldwin developments, one of which includes a golf-oriented community centered on two courses.

- **Waihee and Waiehu.** These are distinct in appearance Waihee looks very much the "country" town, while Waiehu has seen extensive development of subdivisions However, both are inhabited largely by commuters. Waihee and Waiehu had a combined 1990 population of 4,004.

Besides urban settlements, the Wailuku-Kahului region includes fertile agricultural lands along the lower slopes of the West Maui Mountains and on the central plain of the island.

2.4.2 West Maui

The population of West Maui is spread along the coastal Honoapiilani Highway. The West Maui Mountains tower to the east, separating West Maui from the rest of the island by about an hour's drive. Pineapple and sugar cane plantations cover the gently-sloped flood plain between the mountains and the highway.

The dry, warm climate, sandy beaches, historic areas, and extensive visitor facilities all contribute to making West Maui a premier tourist destination, second only to Waikiki in number of visitors hosted annually. On a typical day, over half of the people in West Maui are visitors.

The main settlements include the former whaling town of Lahaina, which has most of West Maui's permanent residents, and the coastal resort areas stretching north from Kaanapali to Kapalua. Kaanapali has a single landowner, so the resort has been planned and marketed as a unit. The newer resort area of Kapalua, to the north, is following a similar development strategy. Interspersed with the major resort areas are pockets of older residential neighborhoods and villages.

During the heyday of West Maui's sugar industry, early this century, residential camps for the workers of ML&P and Pioneer Mill dotted the area. The plantation camps dwindled and ultimately disappeared as employment in the West Maui sugar industry dropped to a few hundred.

As West Maui's visitor industry grew throughout the 1970s and 1980s, the population mix changed. Labor shortages in the booming visitor and construction industries attracted young workers (especially from the U.S. Mainland) to the area. Retirees and investors also moved into the area and purchased more upscale homes, often in planned communities built around golf courses

2.4.3 Hana

The Hana region comprises Maui's isolated eastern coast. Hana Town is the region's principal settlement, located about 50 miles from Kahului along the coast, approximately midway between the region's northern and southern boundaries Several other villages, ending with Kaupo at the extreme south of the highway are dispersed along the Hana shoreline, but the entire region had less than 2,000 persons in 1990

The region is predominantly agricultural in nature, with cattle ranches, orchards, and taro cultivation found throughout. Despite a somewhat hazardous, twisting coastal road, Hana manages to draw a large number of visitors to its scenic attractions.

2.4.4 Other Maui Island Regions

Paia-Haiku. Paia-Haiku is a fairly rugged area, comprised of sea cliffs at the coast and gulches inland. It is situated on Maui's north shore, between Wailuku-Kahului and Hana. The town of Paia at the extreme west of the region was once the center of the Hawaiian Commercial and Sugar Company, and many of its buildings date back to the turn-of-the-century plantation era.

Paia has gradually become a bedroom community for commuters to Wailuku-Kahului, and is growing toward the urban sprawl stemming from that region. It is also taking on new importance as a windsurfing center, and hence a visitor destination. Haiku, the region's secondary settlement, remains a fairly rural community.

Makawao-Pukalani-Kula. Also known as Maui's "Upcountry," this region is located on Haleakala's western slopes. The high altitude creates a temperate climate suited to agriculture. The two main towns — Makawao and Pukalani — are close-knit rural communities that service the region's cattle, vegetable, and flower activities. Makawao-Pukalani-Kula has attracted many residents since 1970, despite its infrastructure problems that limit housing development. It is now Maui's second most populated region.

The 27,350-acre Haleakala National Park comprises the higher elevations of Haleakala and predominantly lies in the Makawao-Pukalani-Kula region. (However, a good portion of its eastern areas, such as Kipahulu Valley, are actually part of Hana.) The summit affords stunning vistas of the volcano's crater, as well as most of Hawaii's major islands. The park has become an important tourist venue, in addition to providing sanctuary for endemic Maui wildlife. Haleakala's highest pinnacle, Pu'u 'Ula'ula (Red Hill), allows an excellent platform for several astronomical observatories, a USAF tracking station, and a FAA repeater station.

Kihei-Makena. This region extends along most of Maui's central southern shoreline at the base of Haleakala. It is characterized by an urbanized strip of condominiums intermingled with residential subdivisions at its western end. A number of luxury resorts and golf courses with a view of Kaho'olawe Island are located approximately midway down the region's coast.

The four major communities, running from west to east are Maalaea, Kihei, Wailea, and Makena. After Makena, the coastal highway turns into a narrow jeep trail, and the urban development gives way to lava rock.

2.5 COMMUNITY ISSUES

2.5.1 Debates over Maui's Future

In the last decade, Maui residents have debated at length over the future of the island and county. Arguments over the Kahului Airport Master Plan have been part of these discussions. Indeed, much of the discussion has not concerned specific changes at the airport so much as anticipated impacts on Maui's economy, population, infrastructure, and natural environment outside the airport.

Participants in Maui County's debates have been characterized as pro- or anti-development. Actually, most residents' views appear to be complex. Surveys taken at different points have recorded swings in opinion. These may not signify changes in views so much as in priorities — people's ideas of what is to be done now, rather than their overall expectations and concerns about the future.

A 1988 survey showed complex attitudes toward tourism and the visitor industry. (See Appendix A-13.) Maui residents recognized the importance of the industry and most thought that government revenues from tourism should go to improve visitor areas. However, a large majority thought that Maui's economy too dependent on tourism and that it was more important to "keep things as i than to create more tourism jobs. (This suggests that residents were not particularly unhappy with Maui's current situation.)

In 1988, residents of Maui were about equally divided between those who thought that their quality of life had improved over the last five years and those who thought it had declined. Residents of areas with major visitor facilities tended to think it had declined. (This trend was visible in similar areas statewide.)

The General Plan. By 1990, concerns about urbanization, infrastructure problems, and the speed of change on Maui led to explicit statements in the most recent revision of the County General Plan (dated 1990 but passed as Ordinance No. 2039 in 1991) that put more emphasis on controlling change than on sustaining growth rates. Five themes were listed as central to planning for the future.

1. Protect Maui County's agricultural land and rural identity.

2. Prepare a directed and managed growth plan

3. Protect Maui County's shoreline and limit visitor industry growth.

4. Maintain a viable economy that offers diverse employment opportunities for residents.

5. Provide for needed resident housing.

The 1990 General Plan included a specific policy opposing: (a) internationalization of Kahului Airport, and (b) extension of runways at Kahului and Kapalua. In 1993, this policy was deleted from the plan after a unanimous vote of the County Council.

Community Plan Issues. While the General Plan provides broad parameters for planning, the Community Plan for each region of the County provides more specific guidelines. The Community Plans are passed by the County Council after being drafted by citizen committees and revised by the County Planning Department and Planning Commission. They all follow the General Plan in seeking ways to manage growth, but differ in the extent to which control over growth or promoting slow growth is emphasized. Major themes in recent (1993-1994) draft revisions of the Community Plans include:

Wailuku-Kahului

- Develop the region as the island's urban center while still 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.

Lahaina

- Control growth and its impacts on the environment, infrastructure, housing supply, and quality of life;
- Improve the regional infrastructure, and
- Stabilize the region's economy by promoting diversification

Kihei-Makena

- Preserve open space and unique attributes of the region's communities;
- Improve transportation, public facilities, and infrastructure; and
- Allow land for housing development sufficient to meet anticipated regional needs.

Makawao-Pukalani-Kula

- Manage limited water resources to preserve agriculture, the development of Hawaiian Homelands parcels by Hawaiians, and the long-term viability of the region;
- Preserve the region's environment and rural character, and
- Provide improved public facilities and services for the region's residents.

Paia-Haiku

- Establish and implement land use standards appropriate for the region's rural, low density character;
- Support diversified farming and, as appropriate given the area's rural character, economic revitalization,
- Preserve open space, coastal waters, and cultural resources; and
- Address the specific housing needs of the region

Discussion of the Hana Community Plan, the only Maui Island community plan to be debated at the County Council level as yet, dealt above all with a request for development of a golf course and space for golf course housing

2.5.2 Debates over Airport Improvements

Residents' ideas and questions about the proposed Master Plan improvements have been summarized elsewhere (Earthplan, 1991; Perry, 1992a) In the scoping process for the current Environmental Impact Statement, most of those ideas and questions were restated. Two themes running through most viewpoints deserve emphasis here

1. Most residents expect that airport improvements will facilitate or create growth in visitor arrivals, and hence in the island's visitor population, resident population, and hotel stock.

2. Maui's infrastructure is not adequate to meet current and anticipated needs. (Some see this as necessitating new limits on visitor industry growth; others do not.)

The first expectation runs against the findings of the earlier EIS prepared for the Airport Master Plan, that the Master Plan improvements would have little or no impact on visitor arrivals. The question will be examined anew in Section 4 of this report.

A 1992 Maui News poll touched on some of the issues that have become intertwined in discussions about airport improvements (as shown in Appendix A-14). While most respondents favored lengthening the runway, a majority "strongly agreed" with the view that Maui roads, water systems, and sewers should be upgraded before the runway is extended. Members of the community could distinguish between their views of runway improvements and international flights. More respondents favored international flights than those who opposed, but the strongest single opinion on this issue was "Don't Know." In contrast, very few respondents were uncertain whether they favor or oppose runway extension, or about the impacts they anticipated from extension.

Nearly all participants in the recent scoping process agreed that airport improvements will bring economic and population growth. However, their perspectives on growth differ. Emphases of various members of the community with regard to these issues fall into four broad classes.

- **Anti-Development.** Some view Maui's recent economic development based on tourism as wrong-headed. They see limits on airport development as a means to limit visitor industry growth, and perhaps to help Maui find a different economic and social organization.

- **Infrastructure Development before New Economic Development.** Some want current infrastructure inadequacies rectified. However, they worry that "too much" infrastructure development — that is, more infrastructure than required to meet existing residential demand — may provide a basis for additional visitor industry growth. They fear that such growth could eventually overtax island infrastructure in the future, with residential users once again left bearing the brunt of the shortfall.

- **Managed Growth.** Some emphasize the need for a growth management plan. (These persons need not oppose airport improvements, although they may oppose letting the State or market forces decide what will be built.)

- **Need for Investment to Assure Maui's Competitive Position.** Many supporters of the airport improvements see these as helping Maui's visitor industry and as an important boost for the construction industry. By 1994, they spoke of runway extension as needed to assure that Maui's visitor industry will remain competitive with other destinations, both in Hawaii and elsewhere. (In other words, their idea of the growth impact of the airport improvements was not so different from the "anti-development" position sketched above, but they welcome renewed prosperity of the tourism economy, while others expressed less concern about this.)

More specific issues with regard to proposed improvements will be listed in Sections 4 through 7, along with Community Resources' assessment of the likelihood of anticipated impacts of the project.

Section 3
FRAMEWORK FOR IMPACT ASSESSMENT

This section presents the analytic framework for socio-economic impact assessment — the underlying ideas guiding the approach taken in the rest of this study. Three major sub-sections address:

- Key general concepts, such as the nature of "impact" and the ideas of "No-Action Futures" (constrained or unconstrained).
- Criteria for determining the "significance" of likely impacts.
- Aspects of the project potentially important for socio-economic change.

3.1 KEY CONCEPTS FOR IMPACT ASSESSMENT

The purpose of this discussion is to clarify what a socio-economic impact assessment is intended and/or able to accomplish, vs. what it is not intended and/or able to accomplish. Much of the discussion applies to any or all socio-economic impact assessment, although some aspects are unique to the Kahului Airport situation.

Topics to be addressed include:

1. The concept of "impact" as the difference between potential futures (the "No-Action" and "With-Action" futures) — and conceptual adjustments made for this study
2. Assumed cause-and-effect model in socio-economic impact assessment — standard model and conceptual adjustment made for this study.
3. The concept of "cumulative impact."
4. Basis for assumed "No-Action" futures used in this study.
5. Probable vs. possible impacts — and the extent to which firm conclusions can be drawn in this study
6. Project vs proposal impacts.
7. Locational vs absolute impacts.
8. Various types of "direct" vs "indirect" impacts discussed in this study

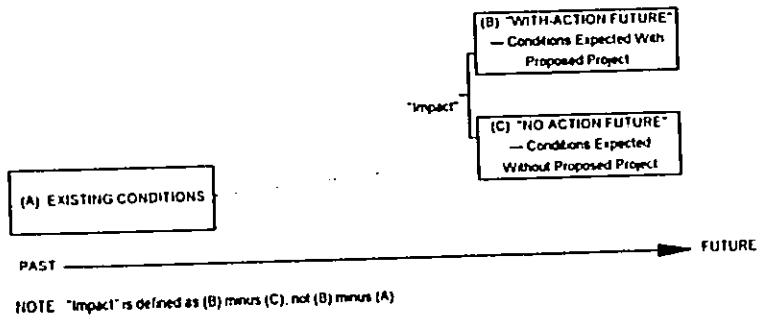
3.1.1 "Impact" As Difference between Two Potential Futures

General Concepts. For impact assessment purposes, the socio-economic "impact" of some proposed action or project is an estimate of the likely change in some social or economic condition which would be caused by that project. However, an "impact" is *not necessarily a change from present conditions, but rather is a change between two potential futures*:

- The *"No-Action Future"* is an estimate of what the affected community will be like at some future point in time if the action or project does not occur. (For this EIS, all studies are using the year 2010 as a common future reference point.)
- The *"With-Action Future"* is an estimate of what the affected community will be like at the same point in time if the action does occur. (For an EIS such as this, in which several alternative project configurations are being considered, there are several alternative "With-Action" scenarios.)

The project "impact" is the difference between these two potential futures:

Exhibit 3-A
BASIC CONCEPTUAL MODEL OF "IMPACT"



NOTE "Impact" is defined as (B) minus (C), not (B) minus (A)

This concept is important for socio-economic impact assessment because communities may be changing dramatically, independent of a proposed project. There are two different reasons for using the "No-Action Future" — rather than present conditions — as the baseline for looking at project impacts.

1. Impact Calculation. Some types of impacts may actually be estimated quite differently, depending on what "No-Action Future" is posited. For example, assume a proposed project will generate 100 low-skilled jobs. Currently, the

target community has a high unemployment rate, and there is an ample supply of low-skilled labor — hence, it might be concluded that the project will generate little or no in-migration of workers, and hence little or no population impact.

However, if several other job-generating projects have recently been approved and appear likely actually to materialize, all the available labor may be absorbed by those other projects. Thus, it would be concluded that the proposed project *would* generate in-migration and population impact, despite the current availability of labor.

2. Impact Significance: The importance of a given impact clearly depends on the background situation. For example, assume an existing residential community has 1,000 housing units, and a proposed new housing development will add 250 units. Viewed as a 25% increase over existing conditions, the population impact might be considered highly significant.

   However, if community authorities have already approved vast numbers of other housing development projects which appear highly likely to be developed, perhaps the community is slated to grow to 4,000 units even without the proposed additional 250-unit project. In this case, the proposal is for a 6 25% increase over the "No-Action Future" — a figure which might be judged as far less (or even not) significant.

   (The possibility that a proposed project may act in conjunction with many other probable future changes raises the question of "cumulative impact," which will be discussed shortly.)

Adjustment for Kahului Airport Situation. This study involves a modification of the usual impact assessment model set forth in Exhibit 3-A. The modification comes from the requirement that the analysis include attention to potential islandwide "growth-inducing" effects of nonstop overseas flights that may be generated by airport improvements.

The current Hawaii State DOT forecasts for Kahului passenger arrivals (and, by implication, visitor arrivals) assume the same basic number of arrivals with or without a runway extension and nonstop overseas flights (Aries, 1994, personal communication, John Sanders, September 1994). These forecasts are considered to reflect passenger and visitor demand which is unconstrained by any significant airport-related impediment during the forecast timeframe.

However, CRI has reviewed the extensive public comments made in the record of public debate over runway approval. We found that people called for analysis of two different possible ways that airport improvements might hypothetically affect growth (particularly tourism growth) on Maui:

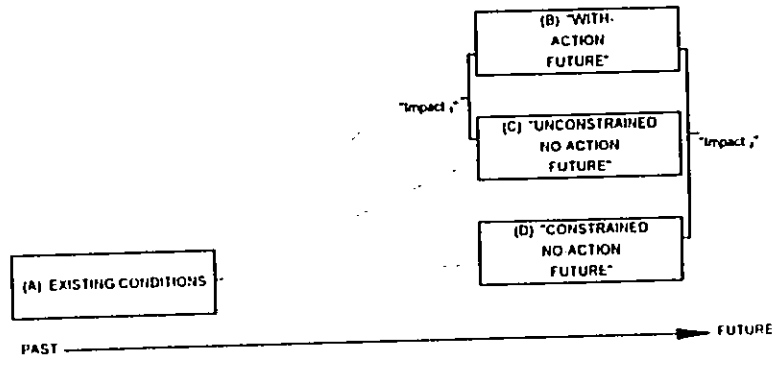
- **Removal of Constraints.** Without the runway extension and nonstop flights, some of the forecast growth might actually be constrained (or "choked off"). *This implies that the "No-Action Future" would be lower than the DOT forecasts — that is, it could be called a "Constrained No-Action Future."*

- **Added Demand.** The runway extension and nonstop flights may somehow generate even more visitor demand than is being forecast. *This sort of effect could be added either to a "Constrained No-Action Future" or to the future specified by the DOT forecasts — with the latter then being regarded as the "Unconstrained No-Action Future."*

It is important to reiterate that these are hypotheses to be explored in the present study, not CRI's own assertions of actual impact.

Section 4 of this analysis includes a sensitivity analysis based on CRI's estimate of the likely reasonable maximal implications of either of these t hypothetical possibilities. However, in order to carry out this analysis, we are r the unusual situation of having to consider two different possible "No-Action Futures" — the "Constrained" version (suggested by those who believe that an unimproved airport would hold back growth that would otherwise automatically flow into Maui, much as a dam constrains a river's flow) and the "Unconstrained" version (in which the DOT forecasts are considered an appropriate baseline, but one which may not take into account all possible effects of nonstop flights).

Exhibit 3-B
MODIFIED CONCEPTUAL "IMPACT" MODEL FOR KAHULUI AIRPORT



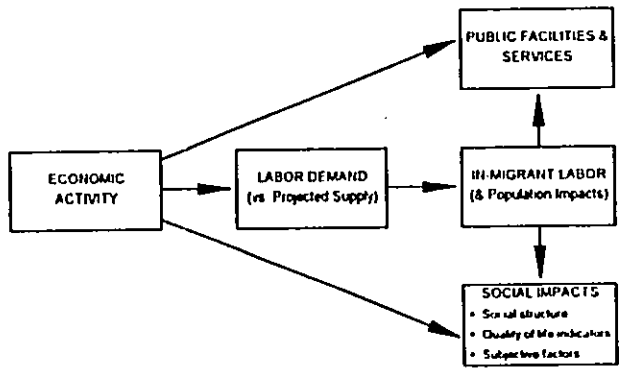
NOTE: This chart indicates a single "With Action Future." However, it is also possible that use of two separate "No Action Future" baselines could produce two separate estimates of the "With Action Future."

Having two different "No-Action Future" baselines means it is necessary to estimate two different "impact" results for any given topic, as illustrated in Exhibit 3-B on the previous page. This adds an unusual level of complexity to this study. However, CRI considers it a necessary modification if we are to explore the idea that not improving the airport would constrain or "choke off" growth.

3.1.2 Socio-Economic Impact Cause-Effect Models

General Model. As indicated in Exhibit 3-C below, the usual logic of a socio-economic impact assessment is to calculate, *for each potential future*, changes in economic activity ... which produce changes in demand for labor ... which (depending on availability of labor supply) trigger in-migration and population growth. The population growth in conjunction with the new economic activity can produce further effects, such as socio-cultural impacts and the need for new public services and facilities.

Exhibit 3-C
GENERAL CAUSE-EFFECT MODEL OF SOCIO-ECONOMIC CHANGE



NOTE These are separately estimated for "No Action" and "With Action" futures. The difference between the two equals project impact

After the calculations or assessments have been made for each future, the futures are compared and the difference is noted as the "impact."

Adjustment for Kahului Airport "Growth Impacts" Situation. In order to present a reasonably comprehensive discussion of potential "growth-inducing" impacts, it is necessary to consider a much more fully articulated model than that of Exhibit 3-C. In fact, it is necessary to present two models, because — as

previously noted — one hypothetical type of impact assumes that airport improvements would remove constraints to growth (adding growth to a "Constrained No-Action Future"), while the other hypothesis involves the possibility that airport improvements and nonstop overseas flights could somehow trigger added demand. This added demand could be over and beyond levels expected under either the "Constrained" or the "Unconstrained No-Action Future" assumed by DOT forecasts.

Hypothesis That "No-Action Future" Is NOT Constrained by Airport Facilities: Exhibit 3-D shows the first conceptual model, based on the idea of an "Unconstrained No-Action Future" (or, at least, unconstrained by airport factors). In this model, national and international economic factors generate a potential demand (throughout the world) for tourism activities in general. The level of this potential demand is affected by factors such as disposable income, amounts of leisure time, international exchange rates, etc.

However, potential demand for tourism on Maui is constrained by competitive factors (e.g., image and appeal of competing vacation areas) and simple logistical concerns such as time and distance. Some of these constraints may be overcome by market augmentations such as advertising, new attractions, and so forth. These initial constraints and augmentations produce a hypothetical potential consumer demand level for Maui tourism activities alone.

The potential Maui market demand faces other constraints — but airport constraints are not considered a factor in what is therefore labeled the "Unconstrained No-Action Future." Rather, the constraints have to do with travel factors (cost and time, as dictated by airline economics and technology) and with accommodations factors (availability and cost of lodging). Given the level of these constraints, a final "ambient demand" for Maui tourism dictates expected tourism-related economic activity: visitor counts, mix, and expenditures. These in turn produce resident growth and social impacts, as per Exhibit 3-C.

Exhibit 3-D(i) indicates this model for the "Unconstrained No-Action Future," while Exhibit 3-D(ii) shows the hypothetical difference for the "With-Action Future:" i.e., possible additional demand from airport improvements, above and beyond the demand expected otherwise. As discussed further in Section 4, the most likely scenario for such additional demand would be the possibility (but not the certainty) of substantially increased marketing, which is why the "Added Demand" is shown as entering the model at the same point as "Augmentations."

Hypothesis That "No-Action Future" IS Constrained by Airport Facilities: Exhibits 3-E(i) and 3-E(ii) show the comparable, slightly more complicated, models for the hypothetical "Constrained No-Action Future" situation. This approach adds the idea that not improving the airport does now, and/or will in the future, further constrain Maui market demand. Thus, if this is true, a possible

consequence of airport improvements could be the removal of some or all of these constraints, as well as adding demand.

Exhibits 3-D and 3-E (on following pages) provide much of the framework underlying the Section 4 analysis of potential "Growth-Inducing Impacts." (Section 7 analysis of growth-inducing impacts of internationalization at Kahului Airport would also follow the same logic.)

3.1.3 "Cumulative" Impacts

As previously noted, a project's socio-economic impact might be small in and of itself, but might also be part of a much larger set of changes which could affect a target community. In these cases, impact statements are required to discuss the cumulative impacts of all the pending changes.

However, it should be noted that the purpose of cumulative impact discussions is to provide an appropriate context for decision making about the project. *The purpose of impact assessments is to provide information useful for making decisions about a specific proposed action, not for deciding whether other forces for change are "good" or "bad."*

We make this point because of the strong concern which some people have about the desirability of continued economic and population growth on Maui. Given existing land use approvals, such continued growth is possible with or without the proposed airport improvements. This possible continued growth is an appropriate context for evaluating airport impacts, and is therefore properly included in cumulative impact considerations.

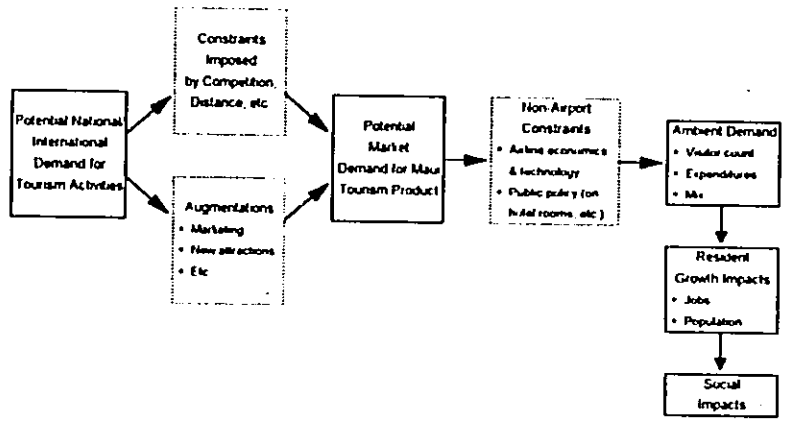
However, a decision to approve or disapprove proposed airport improvements is not a decision to retain or rescind existing land use approvals for other economic activities. Therefore, this study is more concerned with assessing airport impacts (in a cumulative impact context) than with assessing the desirability of cumulative growth that could happen independently of the project.

3.1.4 Basis for Assumed "No-Action Futures" Used in This Study

Readers of forecasts and impact models (such as shown in Exhibits 3-A through 3-E) understandably look to these for glimpses of the "real" future. They may expect that a socio-economic impact assessment will predict with great accuracy the precise future levels of economic activity and resident population on Maui.

Exhibit 3-D
ANALYSIS BASED ON "UNCONSTRAINED FUTURE"

(i) "NO-ACTION FUTURE"



(ii) "WITH-ACTION FUTURE"

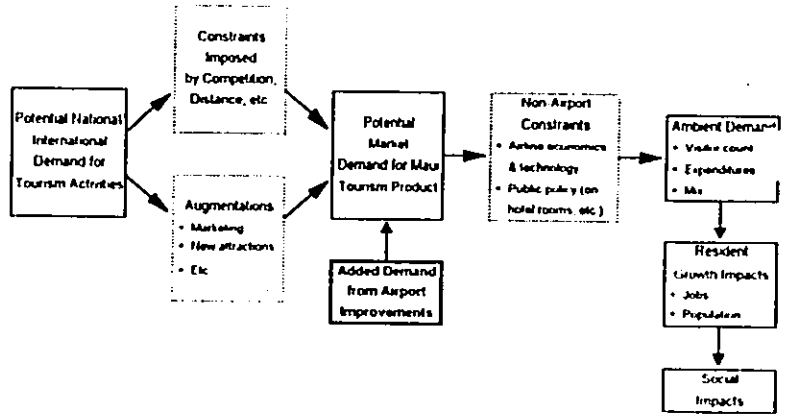
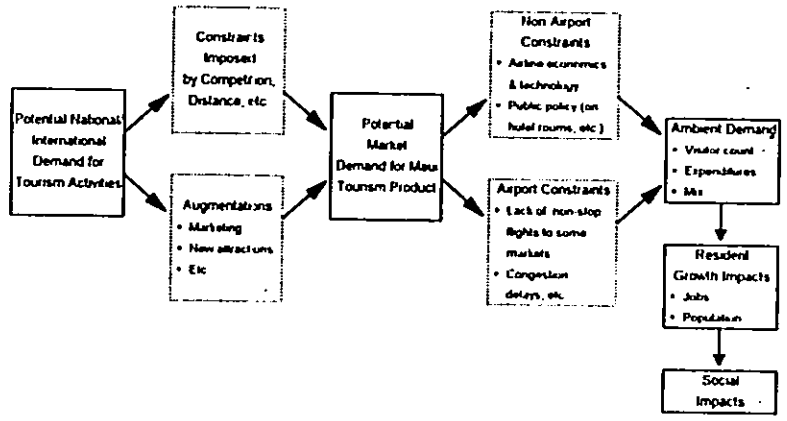
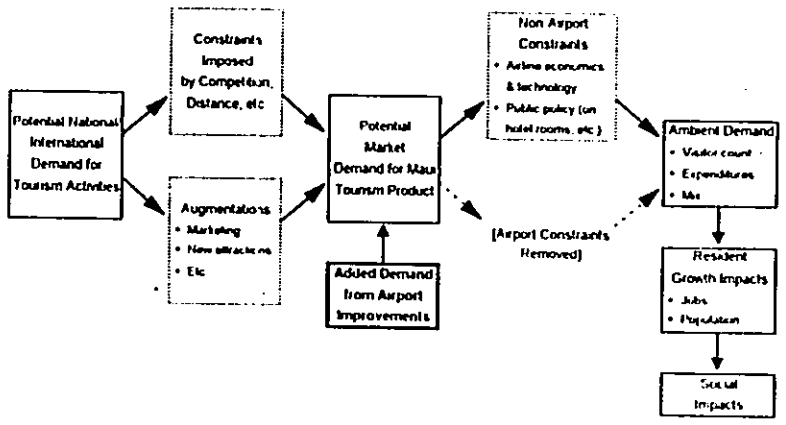


Exhibit 3-E
ANALYSIS BASED ON "CONSTRAINED FUTURE"

(i) "NO-ACTION FUTURE"



(ii) "WITH-ACTION FUTURE"



However, there are serious limits to the ability of socio-economic analysts to gaze into crystal balls and see the "real" future. The purpose of this sub-section and the following one is to note the nature of some of these limits and to suggest what it is realistically possible to do in an EIS socio-economic study.

As Exhibits 3-D and 3-E perhaps begin to make clear, it is possible to make increasingly complex models of socio-economic systems and still not take into account all real-life variables and relationships. Large computerized economic models which attempt to forecast the future can be very complicated and very expensive, costing tens or hundreds of thousands of dollars — and (as further discussed in Section 4) they are still only as good as the assumptions which go into them How then to achieve the goal of estimating cumulative impacts and of projecting both "With-Action" and "No-Action" futures?

There are two basic related answers:

- An EIS is not actually intended to provide a comprehensive and accurate forecast of all future conditions. Rather, it is intended to provide a reasonable "best general sense" of likely futures in order to estimate the differences between them — the impacts.

- In order to do this, the EIS can make its own broad assumptions, or it can utilize reasonable scenarios generated by other studies or forecasting efforts. For Maui, at least three options exist.

  - The State's official "M-K Series" projections, produced in 1988 and now considered to be increasingly outdated;

  - Maui County Planning Department's Community Plan Update projections, developed by Community Resources, Inc (1993) — which, however, in current form are tied to by State M-K assumptions; and

  - The State DOT's forecast of Kahului Airport passenger levels (Aries, 1994), which can be used along with other assumptions to estimate visitor arrivals and related economic conditions.

Consistent with other studies being undertaken for this EIS, CRI uses the most recent DOT forecasts as the best, most recent basis for estimating "ambient tourism market demand" for Maui. However, for purposes of analysis, we also explore the hypotheses that these forecasts may be either too high for the "Unconstrained No-Action Future" (because not improving the airport could "choke off" some growth) or that the forecasts may not take into account some level of added demand stimulated by new nonstop flights (which would then constitute "growth-inducing impacts" of airport improvements).

3.1.5 Levels of Certainty in Conclusions: Probable vs. Possible Impacts

As noted, the future can never be predicted with absolute certainty. An impact assessment does not aspire to infallible predictions, but simply to use the best reasonable estimate of what could happen, given available evidence, in order to estimate impacts.

In some cases, an impact assessment analyst can present a picture of the most probable single future (for each of the "No-Action" and "With-Action" scenarios), within reasonable bounds of error. This makes for the simplest and clearest study.

In other cases, however, future outcomes may depend on so many external factors that it would be irresponsible to limit the assessment to a single set of conclusions about one likely "With-Action Future." In such cases, one or both of two other approaches can be taken:

- The impact statement can discuss various possible future outcomes, noting which seem remote possibilities and which seem somewhat more likely.

- Without attempting to determine "true" probabilities, the impact analyst can conduct a sensitivity analysis of the likely effects of the project itself

  In a sensitivity analysis, the unpredictable external factors are assigned some plausible values, and the project impacts are calculated in this context. Assumptions are made about the maximum reasonable likely effects of various project factors, and the subsequent calculations suggest how big the impacts might be — how "sensitive" they are to the assumptions used in the analysis. This gives a sense of the magnitude of the project's highest likely potential impact, even though the total future picture (including "true" impact) may remain somewhat uncertain.

In this study, CRI determined that certain impacts of the proposed Kahului Airport improvements can be estimated with a high degree of probability — particularly those associated with immediate airport activities, such as on-site employment. This permits us to make simple (if still approximate) statements about likely project impacts related to changes in the airport's immediate area.

In regard to "growth-inducing impacts" of the runway extension, the approach is a little more complex. The future of tourism growth on Maui is tied to many, many variables other than the runway extension, and it is possible that any of these conditions may change in coming years. Based on the evidence discussed

in Section 4 (and Section 7 on potential internationalization), we believe it is possible to make reasonable conclusions about effects of airport improvements on tourism growth. However, there is enough uncertainty about the total future Maui tourism growth that we also include sensitivity analyses to estimate th growth-inducing effects of nonstop flights — if they indeed occur and if they generate additional tourism growth on Maui.

Thus, our approach to the issue of "growth-inducing impacts" involves several steps:

- Explore the relative importance of airport improvements vs. other factors in Exhibits 3-D and 3-E in affecting economic growth outcomes on Maui.

- Come first to the best possible conclusion about the likelihood that airport improvements will in fact actually lead to many nonstop flights, and that such flights will actually bring additional people to Maui.

- However, in light of the variety of factors involved, recognize that there may be possible consequences other than the principal conclusion. (That is, recognize that any conclusion is necessarily tentative.)

- Based on a thorough review of existing evidence, explore the potential impacts associated with the hypotheses that airport improvements will remove constraints to growth and/or generate added demand. Use best reasonable assumptions about proportionate increases or decreases to conduct a sensitivity analysis about maximum reasonable potential impacts on economic and population growth if nonstop flights are generated and if tourism growth-inducing effects occur.

Ultimately, this approach is not unlike that taken in the previous EIS. However, it is based on substantial additional research and analysis.

3.1.6 Project vs. Proposal Impacts

Part of this study deals with "social" (as opposed to "economic") impacts. It has been our experience that many impact statement readers assume that "social impact" refers largely to whether the affected community favors or opposes a project, and/or to whether the action is controversial.

However, the federal EIS framework regards "social impact" as something else. Specifically, the idea of social impact assessment is to estimate likely future project outcomes for such things as population levels, social structure, and social group dynamics

In truth, some of the most important social outcomes — at least in terms of things like political consequences, social agitation, "splitting communities" into different camps — can come not from actual project implementation, but from the simple proposal of controversial projects in an extended decision-making process. While often important, these socio-political "proposal impacts" are not the main focus of an EIS study (even though they may be mentioned in the EIS because they provide some context for assessing actual "project impacts").

In fact, the rationale for EIS studies includes the assumption that information about likely future project social impacts will help determine current public attitudes about a proposal. That assumption is often questionable, since people tend to form attitudes without waiting to read an EIS. However, this study is conducted in a framework which assumes the purpose of social impact assessment is to inform public opinion, not simply to report about public opinion.

3.1.7 Locational vs. Absolute Impacts

Sometimes a proposed action may generate impacts which simply would not happen within the target community without that new project — e.g., whether or not a new factory site is approved in a community will determine whether or not there will be a spurt of new employment and population in that community. These may be regarded as "absolute" impacts.

However, some types of proposals affect only the location of things which are expected to happen anyway in that community. For example, the community which is growing due to new factory jobs will also need new government and commercial services. Assuming an adequate supply of commercial-zoned land, a proposed shopping center on some particular site may provide services and service employment which would occur even without that particular new center, but would occur at different locations.

The relevance of this to Kahului Airport once more has to do with the issue of inducing growth. If an extended runway attracts new nonstop overseas flights, these "new" planes may simply be rerouting passengers who would have come to Maui anyway via Honolulu and the West Coast. Alternatively, some of the passengers might not be coming without the new runway and nonstop flights — these people would represent the real, or absolute, growth impacts of the airport improvements.

Similarly, if passengers are simply switching from interisland to overseas airlines, the number of on-site airport jobs may be about the same, but the location (in terms of which company employs the workers) may be different.

This study will note locational impacts, but the greater focus will be on absolute change. How much new growth or other impacts, above and bey what would happen anyway, will or may be produced by airport improvements?

3.1.8 Various Types of "Indirect" and "Islandwide" Impacts

This study takes note of two related but separate types of "indirect" and/or "islandwide" impacts.

Islandwide Growth-Inducing Impacts. If the airport improvements result in more visitors coming to Maui than would otherwise come, then more off-airport visitor industry employment will be created, and the resident population will grow accordingly. In a broad sense, this might be called an "indirect" effect of airport improvements, since it is an off-site effect.

However, as economists use the term, these new visitor industry jobs would be "direct" jobs, because the term "direct" means that the jobs are created by the direct expenditure of money entering the economy from outside the state. Additional "indirect and induced" jobs are subsequently created when either the tourism businesses or the tourism workers spend some of this money to buy goods and services from other businesses on Maui (or elsewhere in the state). The analysis of potential airport growth-inducing impacts needs to consider all this employment — and related population change — together, as the combined direct, indirect, and induced growth impacts.

Immediate Area Impacts. Another part of this analysis will look at impacts just at the airport site itself, or in the immediate area of adjacent residential communities or businesses affected in a very immediate way by physical changes at the airport.

That is, the project will generate on-site or near-site employment linked primarily to actual airport operations. (Even if the improvements were to result in no new operational jobs, they would still produce construction jobs.) These jobs would again produce secondary "indirect and induced" expenditures and employment, at the islandwide and possibly statewide levels. Depending on the method of analysis, these could possibly be a sub-set of the jobs associated with the islandwide growth-inducing impacts.

To avoid confusion, this report will reserve the term "indirect" to refer to the employment (and related population) generated by businesses purchasing goods and services from other businesses. The term will be used only in conjunction with the analysis of Immediate Area Impacts, since the analysis of Growth-Inducing Impacts will look at total employment impacts, without regard to technical distinctions between "direct," "indirect," and "induced."

However, it should be noted that both types of impacts are islandwide (and to a degree) statewide in nature. That is, all of Maui could be affected both by the effects of any Growth-Inducing Impacts and by the effects of indirect employment as Immediate Area businesses recycle dollars in the larger economy.

3.2 SIGNIFICANCE CRITERIA

Federal EIS regulations call for identification of "significant" impacts on the environment and, if these are not beneficial, identification of ways to mitigate impacts. "Significance" is not easily defined or operationalized.

An impact must be considered in relation to both its context and intensity. For example, addition of 100 new workers may be insignificant in the context of an entire state, but much more important at the level of a neighborhood. Furthermore, the intensity of the impact may vary depending on the special characteristics of the neighborhood. Introduction of 100 new skilled craftsmen and their families to a settled neighborhood raises the possibility of changes in community character, local political relations, and competition for jobs in the area.

It is standard practice to identify quantitative criteria for determining that impacts are significant. Quantitative measures must be supplemented when distinctive, treasured qualities of a neighborhood or way of life are potentially affected. In assessing socio-economic impacts of improvements at Kahului Airport, CRI will use the following criteria:

A. Employment

(1) Immediate: Change in number of direct jobs at airport by 5% (compared to No-Action Future).

(2) State, County, and Island: 5% variance from estimated total employment.

B. Economic Activity

(1) Immediate: Change in location of customers for retail businesses leading to loss of at least 5% of income (compared to No-Action Future).

(2) State, County, and Island: Change in the location of jobs (and income) by 5% (compared to No Action for 2010).

C. Population and Housing

(1) Immediate: Displacement and/or relocation of homes.

(2) State, County, and Island: Change in population and housing demand by 5%.

D. Community Cohesion and Neighborhood Character

Any context: Disruption of identifiable communities and/or major change in population in local areas.

E. Public Facilities

Any context: Change in demand for public facilities making it impossible to deliver services at accepted standard levels.

These criteria can be used once impacts have been estimated. They are used in Section 8, after impacts and potential mitigations have been identified. CRI stresses that the significance of impacts due to a project — differences between the With-Action and No-Action Futures — are assessed, not change from current levels of population and economic activity.

3.3 ACTIONS POTENTIALLY IMPORTANT FOR SOCIO-ECONOMIC CHANGE

Because the various alternatives are complex sets of actions (as shown in Exhibit 1-B), not single construction projects, a preliminary sorting of actions in terms of their potential effects is helpful.

3.3.1 Actions Potentially Important for Immediate Area Change

Actions potentially important for socio-economic change on-site at the airport or in the immediate vicinity include:

- **The Airport Access Road.** This is expected to ease traffic congestion and will redirect traffic from Keolani Place, Dairy Road, Haleakala Highway to the new road. Construction will involve short-term jobs. Changes may affect local businesses.

- **Extension of Runway 2-20.** Extension of the runway: (a) allows fully loaded nonstop flights to overseas destinations; and (b) can allow more operations to be handled at the airport in a given period of time. If runway extension leads to more flights between Kahului and overseas

destinations, and if the number of visitors to Maui — not just the number of visitors taking direct flights to Maui — increases, then runway extension could lead to a change in airport jobs. Construction will involve short-term jobs.

- **Parallel Runway.** Construction will involve many short-term jobs. Taking of land for this runway will cut off the existing road access to West Spreckelsville. Use of the runway will change dramatically the noise contours (and hence the desirability or even possibility of residential life) for much of East Spreckelsville. Little or no change in airport operations could be attributed specifically to this Phase III project in the timeframe (1995-2010) of the EIS study.

- **Location of General Aviation Facilities and/or Helicopter Facilities.** If these are moved away from the airport, as proposed in some alternatives, jobs associated with them would also be relocated.

- **Kanaha Beach Park Improvements.** Addition of parking facilities will allow for greater recreational use of the park.

Other components of the project involve construction employment over a limited term and are deemed by DOT-A to be needed, either in support of the actions noted above or separately, to provide for efficient operation of the airport.

3.3.2 Actions Potentially Important in Inducing (or Constraining) Growth

- **Extension of Runway 2-20.** As noted above, potential increases in demand for Maui tourism are associated with this action (if with any of the actions in the Master Plan).

- **Parallel Runway.** With a parallel runway, total possible operations could increase substantially.

- **Location of General Aviation Facilities and/or Helicopter Facilities.** If these are moved away from the airport, the volume of air carrier traffic conceivably could increase substantially.

- **Construction of Transient Apron and Additional Air Cargo Facilities.** These could permit additional air cargo flights, including flights by new air cargo operators, to Kahului. Given appropriate airline economics and marketing, these facilities could contribute to growth in demand for Maui products.

As noted in Section 1, CRI does not consider the parallel runway to be potentially growth-inducing before 2010, since it would only be built in Phase III, just before 2010.

Potential impacts of the various alternatives are assessed in sections 4 through 6. (The issue of internationalization is not listed above, because it is not part of any alternative under study. Addition of international facilities, after strengthening and extension of the runway, deserves consideration as potentially growth-inducing. Internationalization is considered in Section 7.)

Section 4
ISLANDWIDE SOCIO-ECONOMIC GROWTH-INDUCING IMPACTS

This section of the study explores the proposed project's potential impacts on overall (1) economic growth, and (2) consequent growth in residential employment and population. The following Section 5 looks at some similar topics (e.g., jobs and population), but in the narrower framework of "immediate" (i.e., on-airport or near-airport) activities. For the most part, the immediate-area future situations discussed in Section 5 would comprise a sub-set of the conditions projected in this Section 4.

(NOTE: This section was prepared in response to the Court order mandating EIS study of growth-inducing impacts. Given that background, the intended audience for this section is, particularly, the Maui resident who is concerned about rapid growth. For this audience, we have written at more length than we might normally do, in order to provide fundamental information about market forces underlying past and prospective future growth on Maui.)

For purposes of this section, the principal focus will be only on the various alternative proposed runway extensions, their implications for new nonstop direct flights, and any consequent added tourism-related economic activity. Briefer discussions will also touch on the parallel second runway proposed in some Master Plan alternatives, and the implications of any new flights for Maui's agricultural sector. However, the second runway has implications only for theoretical capacity; it would not affect actual airport utilization by 2010. In regard to agricultural cargo, as noted in Section 2, Maui's economy is — and is expected to continue to be — driven overwhelmingly by the tourism sector, and so the visitor industry is the main focus of this study of growth-inducing impacts.

The framework for the analysis in this section was set forth in the preceding Section 3.1, and the reader is strongly encouraged to review that discussion in order to appreciate the meaning and logic of such terms as "impact" and "Unconstrained No-Action Future." Of particular import was the decision to conduct a two-stage analysis:

- Based on available evidence, present CRI's best conclusion about *actual likely impact*.
- However, because of the great number of uncertainties imposed by national and international economic conditions, estimate likely maximal reasonable impacts based on evidence discussed in the study ("*sensitivity analysis*") if impacts exceed our expectations.

4.1 OVERVIEW AND SUMMARY

The topics addressed in this section may be presented as a series of questions, with summary answers to be explained and elaborated upon in the remainder of the analysis.

Q: *How will the airport improvements affect capacity to accommodate future growth in tourism?*

A: Existing airport facilities can accommodate growth forecast to 2010. However, several proposed improvements would further increase the airport's capacity to process arriving and departing aircraft. The most immediate capacity increase would come from extension of Runway 2-20, although relocation of general aviation operations would also contribute to capacity. Long term, alternatives involving construction of a second major runway parallel to Runway 2-20 would theoretically expand capacity to accommodate overseas operations.

However, in the case of Kahului Airport, "capacity" is a far less critical concern than "demand." A desert city can build a huge reservoir, but the reservoir will not make it rain any more often. On the other hand, if a new highway "opens up" remote tracts of land for development, the highway may help generate motorist demand which it then meets. The key question for analyzing project growth-inducing impacts is whether the runway improvements will cause more visitors to come to Hawaii than would otherwise come — whether it will induce additional visitor demand for Maui.

Q: *How much growth is possible on Maui Island, independent of airport considerations?*

A: A recent Maui County Planning Department study estimated that existing approvals for visitor units could accommodate some 26,300 units (about 10,000 more than the 1990 figure) for Maui Island as of 2010. According to that study, this number of units implies an average daily visitor census of about 66,700 tourists and a resident population of about 127,700 (compared to the 1990 figures of 38,150 visitors and 91,400).

These numbers assume that (1) the demand for tourism actually materializes at this level; (2) all permitted resort units are actually developed, and (3) no additional resort development permits are granted. The official State planning forecast (the so-called "M-K Series") stipulates even higher levels of demand and of permitted growth (36,000 units, 71,500 daily visitors; 133,500 residents).

However, the M-K forecast figures were derived in 1988, and recent trends have called into question the underlying assumption that tourist demand for either Maui Island or the state as a whole will continue to increase at such a rapid rate. Consequently, the State DOT's 1994 airport passenger forecasts envision continued growth, but at a less rapid pace than implied by the official State M-K forecasts.

Q: *What are the implications of the latest DOT airport passenger forecasts for future visitor and residential population levels?*

A: The forecasts are based on projected statewide airport system demand. They specify assumed statewide "visitor arrivals" for various years — including the benchmark year 2010 — but only total "passengers" (including residents and business travelers) for Maui. Consequently, for this study, CRI used additional assumptions to estimate the "passenger" forecast implications for Maui tourism levels and residential population. Some of the assumptions (particularly an increasing Japanese share of total visitors) were designed to maximize both implied residential population and also magnitude of potential impact in the later sensitivity analyses.

Based on CRI assumptions, the 1994 forecasts imply somewhat less growth than any of the figures discussed above, although still substantial increases over present levels. The implied year 2010 figures are for 24,890 occupied visitor units; 65,510 average visitor census; and 129,900 resident population on Maui Island.

Q: *How accurate are the various growth forecasts which have been used for Maui? Has tourism growth now stopped, or will it continue to boom?*

A: It should be emphasized that this question is posed as part of the larger analysis of "growth" on Maui, <u>not</u> because of implications for the need to improve Kahului Airport. The Master Plan improvements are in response to a variety of objectives (including safety and efficiency); they do not depend solely on the validity of any particular forecast for, say, the year 2010.

The accuracy of forecasts cannot be known in advance. However, in order to provide the fullest possible discussion of the "growth" issue, CRI subcontracted with the Hawaii office of the nation's largest tourism consultant, Coopers & Lybrand, to conduct an independent assessment of tourism growth potential in the Pacific generally and Hawaii in particular.

In Appendix E, Coopers & Lybrand have assembled international data indicating that tourism <u>will</u> continue to expand rapidly in the overall East Asia and Pacific region. However, in part due to the proliferation of competing new destinations, Hawaii (and Maui) will probably grow at slower rates than

in the past, and at slower rates than other East Asia/Pacific destinations. Based on this current assessment of prospective market demand, Coopers & Lybrand concluded that the 1988 M-K estimates for Hawaii's growth are now clearly outdated and overstated. They felt that the 1994 DOT forecasts are credible, although perhaps at the "optimistic" or "aggressive" end of the spectrum of possibility.

Q: *Based on <u>national/international tourism expertise and comparable situations</u>, what are the conclusions about probable effects of runway extensions on Maui tourism growth?*

A: The 1994 DOT forecasts are for passenger and visitor activity which are "unconstrained" by any airport-related constrictions in the flow of passengers. In part because the capacity of the current airport exceeds the 2010 forecast, DOT's forecast consultants consider the forecast passenger counts to apply equally to an improved or unimproved airport — i.e., a longer runway (and any increase in nonstop overseas flights) would not generate more passengers, but would simply route them differently. The runway would not produce an "impact" on the expected number of visitors.

In order to explore the accuracy of this "no-impact" assumption, CRI asked Coopers & Lybrand to conduct an analysis of probable runway impacts based primarily on their expert knowledge of travel and tourism factors, literature on travel motivation factors, and comparable national or international airport improvement situations.

Coopers & Lybrand concur with the "no-impact" assumption. Their study indicates that airport issues comprise an extremely minor factor in affecting leisure travelers' decisions about where to visit on vacation. While travel "dollar cost" may be important to leisure travelers, travel "time costs" and other inconveniences associated with airport stopovers are far less critical. Coopers & Lybrand note that the potential for nonstop flights to Maui from long-haul origin points would result in a relatively marginal time savings, rather than "opening up" a new destination which was previously accessible only if the traveler expends significant time and effort. And the Coopers & Lybrand review of somewhat comparable airport situations (in places such as Thailand, U.S. Virgin Islands, and Puerto Rico) found no effect on visitor demand.

Q: *Based on <u>Hawaii-related research</u>, what are the conclusions about probable effects of runway extensions on Maui tourism growth?*

A: While Coopers & Lybrand explored probable impacts on demand from the "expert" and "national/international" perspective, CRI separately and independently looked at the same questions from a relatively "naive" and

"Hawaii-based" perspective. That is, with no strong preconceptions based on theory, we examined outcomes in comparable Hawaii airport situations; reviewed past studies on airport consequences for visitor growth; and interviewed some 24 experts in airlines, tourism marketing organizations, and tour wholesaling companies which operate in the Hawaii market.

- Hawaii airport comparables provide no indication of growth impacts (although Kona's extended runway has probably been in operation too short a time to yield meaningful results). Hilo has had a 9,800-foot runway for nearly 30 years, but lack of market demand resulted in eventual phase-out of all direct overseas service. At Honolulu, only about 25% of westbound flights come from past the West Coast. On Maui itself, improved access via the interisland Kapalua/West Maui airport (eliminating the need for bus or auto travel after arrival at Kahului) has had no appreciable effect on West Maui visitor counts.

- Three brief studies (one of these simply a critique of the previous EIS) conclude there may be some degree of growth-inducing effect from introduction of nonstop flights. CRI carefully reviewed these studies and concluded that, for various logical and technical reasons, they had limited validity for our present analysis. However, we feel they do provide reason to take a second look at any "no-impact" conclusion for westbound tourism growth.

- Interviews with airline and tourism marketing experts produced few consensus answers, but little basis for expecting any major impacts. Given the low or negative profitability of airline service to Hawaii, domestic carriers are likely to initiate new nonstop service to Maui only on a tentative and experimental basis. Even if nonstop flights are introduced, most interviewees thought that little or no growth-inducing impacts would result. Those who did foresee eventual long-term growth impacts were mostly focused on niche markets and concerned with counteracting either short-term or long-term trends toward potential market loss on Maui. For them, impacts with small implications for long-term population growth could have important short-term economic benefits in "smoothing out" tourism fluctuations. Thus, while some do expect or simply hope for eventual growth-inducing impacts, most believe there will be no large or immediate effect.

Thus, although evidence is mixed, CRI believes the most reasonable conclusion is that the airport improvements will have little or no impact on long-term growth levels.

(This conclusion applies to the timeframe which all EIS consultants were asked to use — i.e., by the year 2010. Obviously, it is theoretically possible

that at some point in time past 2010 demand might further increase and the County might permit additional visitor units. In this case, the additional capacity provided by airport improvements would — along with other needed infrastructure such as highway widening or sewage treatment plant construction — facilitate the theoretically permitted additional growth.)

Q. *If impacts on demand do occur after all, what is the maximal likely effect on tourism and residential growth by 2010?*

A: While CRI's best conclusion is that runway improvements will have little or no effect on visitor demand for Maui, we cannot state this with absolute certainty due to the wide array of external variables which could affect final outcomes. Therefore, based in large part on our interviews with airline and marketing executives, we designed a sensitivity analysis to determine what we think would be the maximal reasonable estimates of any actual effects.

Two different impact scenarios were created. In one, the DOT forecast is taken as the basis for what would happen even without airport improvements ("Unconstrained No-Action Future"), and impacts are calculated solely as a function of the possibility that nonstop flights will generate added demand. In the other, it is hypothesized that an unimproved airport would constrain or choke off some demand ("Constrained No-Action Future"), and impacts are calculated as a function both of removing these constraints and of any added demand from nonstop flights.

Our analysis for the "Unconstrained No-Action Future" suggests that effects of added demand alone would, even assuming maximal reasonable effects in particular markets, result in only about a 4% to 5% increase in the total visitor count for the longest runway extension under consideration. The associated islandwide residential population would consequently be just about 4,800 more than implied by the DOT forecast figures. These differences would not be considered "significant" by the criteria set forth in Section 3.2, except possibly for visitor population under the 10,500-foot runway alternative.

For the "Constrained No-Action Future," our analysis suggests a maximal increase of just 11 percentage points over a starting point that was already assumed to be 10 percentage points lower to begin with — such that the 11% "impact" still brings the final figure only up to 101% of the DOT forecast figure. Consequently, the islandwide residential population would be about 13,200 more than implied by the low "Constrained No-Action Future" estimates. Technically, these impacts would meet the criteria of Section 3.2 for being considered "significant," since they represent an increase of more than 5% (over the "Constrained No-Action Future" estimates, not the full

DOT forecast figures). Practically, they suggest a future Maui situation which is almost identical to that implied by the DOT forecasts.

As discussed further in Section 7, CRI believes that effects of nonstop international flights from Japan could have somewhat more meaningful growth impacts on Maui.

Q: *How might airport improvements affect growth or change in the agricultural sector?*

A: 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 Kahului Airport. New cargo facilities have been planned to meet anticipated 2010 demand. These improvements will benefit a wide range of shippers with small or door-to-door export business (iincluding flower and onion growers). A planned transit apron will make it easier for all-cargo shippers to send large aircraft to Kahului.

Pineapple, Maui's major agricultural product exported by air, is further constrained by the fact that only limited cargo space is available. Passengers, baggage, and mail take priority over cargo.

Runway improvements will allow direct flights to leave Maui with larger loads. As a result, aircraft will be able to carry more cargo to the Mainland. A preliminary estimate by CRI suggests at least 900 to 2,600 tons of additional cargo might be shipped from Kahului if the runway is extended. That amount is larger than the volume of pineapple that Maui Land and Pine estimates it could send now if cargo space were assured. However, if demand for agricultural cargo space grows at the same pace as overall demand for cargo, the space available could soon once again be insufficient. In sum, runway improvements will allow more cargo to be shipped, but it is not certain whether it will be possible to export by air from Maui all the cargo ready to be shipped in the years ahead.

Q: *What are the social implications of any growth effects?*

A: Although cause-effect links are by no means clear, rapid tourism and population growth on Maui in the past few decades have occurred in the same timeframe as major changes in the nature of the island's society. Maui's population has grown proportionately more Caucasian and Mainland-born, more politically conservative, and given to occasional cultural conflicts between Hawaii-born and "outside" people moving in. Using statewide figures as a benchmark, Maui's people have become more economically

prosperous, but housing costs have gone up and some social indicators (e.g., divorces, nonmarital births, child abuse) indicate more problems on Maui than elsewhere in Hawaii (Social problem indicators are not necessarily worsening — some, like crime rates, have generally been improving — but the gap between Maui and statewide averages has stayed in place whether the overall trend is positive or negative.)

The relationship between growth and social problem indicators is far from clear. However, if rapid growth continues on Maui, the gap between Maui and statewide averages will probably persist. The DOT forecast figures imply continued substantial growth by 2010 — less growth than had been previously forecast; more growth than some tourism experts think will actually be the case. (It should be noted that economic downturns also produce social problems, often more serious than problems from rapid growth.)

However, because the airport improvements will have no or very small effects on growth, they will probably have no or very small effects on the social consequences of rapid growth. If it is true that not extending the runway could "choke off" a small amount of growth, then a decision not to extend the runway might arguably "choke off" a small amount of social friction — but, equally arguably, it might also exacerbate social conflicts associated with economic downturns if it deprives tourism marketers of a potential tool to help maintain tourism employment levels.

Another sort of social implication is simply the political controversy which has occurred to date over the runway proposal. Opinion surveys suggest strong and perhaps increasing anti-growth sentiment, both on Maui and statewide. For some, the runway extension proposal has come to symbolize growth, for others, it has come to symbolize potential action to protect tourism and/or construction, both economically damaged industries at this point. The airport proposal has served a socio-political function in crystallizing public debate over growth issues on Maui — but, we believe, in actuality it is largely irrelevant to that debate.

4.2 KAHULUI AIRPORT'S CAPACITY TO ACCOMMODATE GROWTH

The purpose of sub-section is to review what is possible with or without airport improvements, while the rest of Section 4 deals with the amount of growth that seems likely, and the extent to which airport improvements would affect likely growth by 2010. Thus, this discussion will explore:

(1) Capacity of current airport, whether or not improvements are made,

(2) Changes in capacity if improvements are made.

CRI's expertise is not aviation. Here we summarize information in the Master Plan (Belt Collins Hawaii, 1993) and Draft EIS (Edward K. Noda & Associates, 1994).

Airport "capacity" can be defined in a number of ways. For purposes of this section, which deals with growth-inducing impacts, the focus will be on:

- Capacity for flight operations which bring visitors to or from the island;
- Potential for freight (particularly agricultural cargo) to leave Maui by air.

As will be discussed in more detail, the current airport can serve the volume of passengers forecast through 2010, although delays would increase substantially by 2010. The airport does not send all the cargo which Maui shippers want to send to overseas destinations, since freight space is limited on flights to the Mainland US. Several of the proposed improvements — relocation of general aviation and/or helicopters, a longer runway, or a parallel runway — would allow Kahului to handle more traffic, while a longer runway would allow flights to leave Kahului fully loaded for distant Mainland points. The airport will be able to handle more overseas freight with improvements, if airlines increase flights and cargo space.

4.2.1 Capacity of Current Airport

Overseas Destinations. Kahului Airport's 7,000-foot runway is long enough to allow heavy long-distance commercial carriers (such as DC-10s) to arrive from any point on the U.S. Mainland. Similarly, overseas flights can arrive from foreign cities, but Kahului does not have federal facilities needed to handle regularly scheduled international flights.

The runway permits large planes to fly to the West Coast with most, but not all, of their space used. The 1993 Master Plan describes how the U.S. airlines respond to this limitation:

> "Runway 2-20's existing 7,000-foot length . . . imposes significant takeoff weight restrictions on the DC-10 and L-1011 aircraft that American Airlines, Delta Airlines, and United Airlines currently operate on flights to the West Coast. Partly because of this, American Airlines routes all of its departing flights through Honolulu International Airport, where they refuel. Two of Delta Airlines' three Mainland-bound departures also stop in Honolulu, but the third flies non-stop to Los Angeles. Because of the short runway, Delta cannot fill all of the

> aircraft's 302 seats, instead, it operates with between 230 and 270 passengers — depending upon the temperature, airport wind speed, and anticipated en route weather (especially headwinds). United Airlines usually fills all 289 seats available on its DC-10s, but takes little cargo; and it has had to off-load baggage and/or passengers when the Airport experiences last-minutes shifts in the wind." (Belt Collins Hawaii, 1993, 4-9.)

Runway Capacity. Several different measures of "capacity" are used. The Master Plan indicates that Kahului's hourly capacity is about 51 operations — takeoffs or landings — in instrument-landing conditions, and over 60 operations per hour under visual approach conditions. Annual service volume and the extent of delays are also estimated.

According to the 1993 Master Plan, **all the potential new traffic forecast for Kahului Airport through 2010 could be accommodated** by the existing runway configuration, but with ever-longer delays. The Master Plan estimated that the average delay at Kahului would be 11 minutes with the current facilities in 2010 (based on the 1990 Aries forecasts, not the lower 1994 forecast). That delay is much greater than the estimated 2.2 minute delay for 1995 (Belt Collins Hawaii, 1993), even if smaller than the delays experienced at the largest Mainland airports. However, the Draft EIS (Section 2.4) warns that both hourly capacity and annual service volume at Kahului could exceed "acceptable limits" by 2010 if no improvements are made, leading to "excessive" delays.

The existing main terminal has enough gates and parking positions to accommodate operations forecast through 2010 (Belt Collins Hawaii, 1993)

Overseas Cargo. Existing air cargo facilities are inadequate in at least two respects: (a) direct cargo service from Maui to overseas destinations is limited, since air carriers restrict cargo on overseas flights; and (b) airport buildings and cargo handling areas are not large enough for demand. While Kahului has less than 20,000 square feet devoted to air cargo buildings, the Master Plan indicates that some 60,000 square feet are wanted by 1995, and 90,000 square feet by 2010.

Some 10,580 tons of freight were shipped from Kahului in 1993, 53% on overseas flights. A reported additional 800 tons did not leave or reach its destination because of limited cargo space (Perry, 1993) The major product affected is pineapple.

4.2.2 Changes in Capacity with Improvements

Overseas Destinations. The proposed runway extension (or the eventual proposed 8,500-foot parallel runway) would permit unrestricted flights, and flights to farther destinations on the Mainland:

Exhibit 4-A
OVERSEAS DESTINATIONS & RUNWAY LENGTHS

Runway Lengths:	7,000'	8,500'	9,500/9,600'	10,500'
Alternatives:	No Action, Alt. 1	Alts. 2, 6	Preferred Alt., Alts. 3, 5	Alt. 4
Restricted Flights to:	West Coast	Rockies		
Unrestricted Flights to:	N/A	West Coast	Mid West	East Coast

NOTES Takeoff weight is restricted to varying extents at Kahului, depending on specific features of particular aircraft, and wind and heat conditions. This table is meant as a simple representation of the analyses developed in other sections by P•D Aviation.

Runway Capacity. The number of air carrier flights to and from Kahului Airport can be increased in three ways included in the Master Plan alternatives:

- With longer runways, it will be possible for planes to use Runways 2-20 and 5-23 at the same time, increasing hourly capacity;
- By moving general aviation away from Kahului, the number of hourly operations would be much lower; and
- With the proposed parallel runway, more operations could be scheduled at the airport.

Addition of a parallel runway would, in theory, substantially increase total capacity. With a second runway longer than the existing Runway 2-20, two overseas flights could conceivably be handled at the same time, while a third local flight used Runway 5-23. This would significantly increase the airport's ability to accommodate any post-2010 additional visitor activity — if demand actually increased and if additional visitor units were permitted to accommodate that demand. (Actual runway use would depend on procedures approved by the FAA for the new runway configuration. Hence the above projection of future airport capacity with a parallel runway is speculative.)

Although a second runway might appear to be a major contributor to airport capacity, other actions could have at least as much impact on Kahului's capacity to handle passengers from off-island, and could do so earlier. (The second runway would not be built until at least 2003, in Phase III of the current Master Plan. Additional master plan updates, including associated public review, would predate any construction of a second runway.)

Relocation of general aviation away from Kahului would lower hourly operations. In 1992, general aviation accounted for 26% of airport operations, and commuter/air taxi activity — mainly helicopters — accounted for 39% (Aries, 1994). By 2010, the forecast share of operations would be 19% for general aviation and 45% for commuter/air taxi flights. If general aviation were moved elsewhere, the airport's capacity to handle air carriers, with many passengers, would substantially expand.

Overseas Cargo. Changes affecting cargo operations include:

- Runway extension (and/or construction of an 8,500-foot parallel runway), allowing overseas flights without load restrictions;
- Expanded air cargo buildings; and
- Construction of a new "transient apron" in Phase III, where airplanes that do not need to use passenger gates — such as all-cargo planes — could be parked while loading.

The Preferred Alternative allocates some 16 acres for new cargo buildings, providing more than 100,000 square feet of enclosed space for air cargo operations.

4.3 AIRPORT FORECAST IMPLICATIONS FOR FUTURE TOURISM AND POPULATION GROWTH ON MAUI

4.3.1 Other Government Forecasts of Anticipated Growth

State and county governments were in many ways surprised by the levels of tourism growth and associated population growth which occurred in the 1960s through the mid 1980s. Growth tended to outpace infrastructure development (a problem which has persisted into the 1990s). One consequence was that, when the Hawaii State government updated its old "M-F Series" economic and population projections in 1988, the new "M-K Series" was based on the assumption that government should anticipate and plan for substantial continued growth. Projected population growth was based on assumed continued heavy increases in Hawaii tourism demand, linked to ongoing economic growth in the

U.S. Mainland and Japan, Hawaii's two principal markets. (By contrast, the old "M-F" forecasts assumed that government could and somehow would constrain permitted tourism growth to the level of natural increase in Hawaii's population. The M-K Series is an "unconstrained" projection, reflecting only assumed market forces.)

As noted later, the M-K Series is now generally regarded as somewhat dated, and its projected levels of tourism demand as too high. However, the M-K forecasts were established by the Hawaii State Legislature as the appropriate framework in which each of Hawaii's four counties should fix their planning efforts. The M-K forecasts include projected levels of visitors, needed visitor units, and likely associated resident populations for all counties, including Maui County, through the year 2010. Thus, although they are aging, the M-K forecasts provide the best vehicle for assumptions about the relationships among these variables, and M-K ratios and factors can be utilized in later studies (such as this report).

Because Maui County had already issued numerous approvals for yet-to-be-developed resort projects and related infrastructure, the Maui County Planning Department retained consultants to determine whether and to what extent Maui's future tourism levels would be "constrained" from reaching M-K levels if no additional resort permits were issued thereafter.

(NOTE: In this case, the terms "constrained" and "unconstrained" refer to the possibility that land use permits might constrain tourism growth. In most of the rest of this study, the terms "constrained" and "unconstrained" refer to the hypothesis that lack of airport improvements might constrain tourism growth. Still other local "constraints" — notably water and infrastructure development — could also limit tourism growth on Maui.)

As part of this County effort, detailed projections of population, jobs, and housing were prepared by Community Resources, Inc. (1993a), for use in the Planning Department's Community Plan Update process. One set of projections, the "Unconstrained Maui County Forecast," accepts the Hawaii State M-K forecast of visitor and resident numbers for the County, and apportions these to the various Community Plan regions. A second set of projections, the "Land Use Constrained Maui County Forecast" takes into account existing land use permits (as analyzed by Wilson Okamoto, 1992). If the Unconstrained Forecast calls for more visitors than can reasonably be housed in a region given existing permits, then the Constrained Forecast (a) locates them elsewhere on Maui, if possible, or (b) does not count them as coming to the island. That is, the Constrained Forecast is an estimate of tourism growth capacity, given existing broad land use approvals.

Exhibit 4-B
COMPARISON OF ALTERNATE MAUI COUNTY FORECASTS, 1990-2010

Forecast Variables	Historical 1990	Projected 2005	Projected 2010	Percent Change, 1990 to 2010	Annual Average Change, 2005 to 2010
RESIDENT POPULATION					
Unconstrained (M-K)	100,504	134,060	145,870	45.1%	1.7%
Land Use Constrained	100,504	134,060	140,060	39.4%	0.9%
CIVILIAN JOBS					
Unconstrained (M-K)	54,990	71,760	77,660	41.2%	1.6%
Land Use Constrained	55,000	71,760	74,570	35.6%	0.8%
AVERAGE VISITOR CENSUS					
Unconstrained (M-K)	39,500	65,300	73,800	86.8%	2.5%
Land Use Constrained	39,500	65,300	69,960	77.1%	1.4%
HOUSEHOLDS					
Unconstrained (M-K)	33,207	45,730	50,300	51.5%	1.9%
Land Use Constrained	33,207	45,730	48,300	45.5%	1.1%
HOUSING DEMAND (1)					
Unconstrained (M-K)	34,950	48,140	52,950	51.5%	1.9%
Land Use Constrained	34,950	48,140	50,840	45.5%	1.1%

NOTE (1) Does not include pent-up demand from existing households which would like to split into two or more households. Pent-up demand has been estimated at 10 to 20 percent of existing households, based on private surveys of Maui Island households.

SOURCE: CRI, 1993a

Exhibit 4-B above compares some of the County-level results of the two forecasts (detailed Maui County figures are in Appendices B-7 and B-8). Both forecasts show continuing and very substantial increases in the average visitor census, the number of visitors in Maui at any time, and less rapid increases in the resident population, civilian jobs, and housing demand.

At the County and island levels, the two have basically the same results through 2005. If Maui County wanted to attract all the visitors that, according to the M-K Series forecast, will want to come after 2005, more permits for hotel and resort development would be needed. If no new permits are issued, hotel occupancies could climb to very high levels after 2000, and visitor units in areas such as Kihei-Makena would be built more quickly than otherwise. Eventually, the number of potential visitors wanting to come to Maui could be greater than the inventory of visitor units could hold.

As discussed later in this section, neither these nor other forecasts are definitive. They are simply the best set of estimates of the future that can be developed at a given time, with what appear to be the most reasonable assumptions at that time. Appendices B-9 and B-10 provide further details of the projections for the island of Maui. Appendices B-11 and B-12 summarize the results for the Wailuku-Kahului Community Plan area.

For Wailuku-Kahului, the two forecasts diverge by 2,106 residents in 2010 — 4.4% of the Unconstrained Forecast total (48,132) for the area. The area will likely continue as the industrial and commercial center of Maui. Housing projects slated for the area — above all, the Maui Lani project that has long been planned — will accommodate many new households.

4.3.2 Quantitative Implications of Airport Forecasts

The new DOT forecast was developed on the basis of historical data. As part of the analysis, two forecasts of overall passenger demand were made. One, the High forecast, estimated future demand on the basis of data from 1980 to 1992. The Low forecast estimated future demand using 1970 to 1992 data. When the trend lines are extended to 2010, the difference between these was 12.5% — but still less than the difference between the Low forecast and the M-K Series:

STATEWIDE 2010 PASSENGER FORECASTS

DOT (Aries, 1994) LOW	49,849,000	100.0%
DOT (Aries, 1994) HIGH	56,105,000	112.5%
M-K Series (DBED 1988)	60,437,000	121.2%

After reviewing the statewide results, DOT and the Airline Committee of Hawaii found that the Low projections, based on a longer historical time series, provided a more credible estimate of future trends than the High ones. Thus, all following references to the "DOT forecasts" and/or "Aries 1994 forecast" actually refer only to the "Low" figures.

(In addition, Aries prepared passenger forecasts for two scenarios: (a) with Honolulu as the sole port of international arrivals through 2010, and (b) with international flights to and from Kahului and Ke-ahole by 2010. However, these two scenarios differed only in regard to flight operations, not passenger counts.)

The previous State DOT forecast (Aries, 1990) — the one on which the Kahului Airport Master Plan was actually based — roughly followed the M-K forecasts, although it envisioned the possibility that even more visitors might fly into the statewide airport system.

The most recent DOT forecast (Aries, 1994) assumes lower levels of statewide visitor or other passenger arrivals by 2010 than had been the case in the previous forecast. However, the DOT forecasts were compiled not for the purpose of estimating future tourism activity, but simply for "passengers" (and, ultimately, flight operations) affecting various airports. The 1994 forecast specifies "visitor arrivals" (Eastbound vs. Westbound) at the statewide level. However, at the Maui County level, it contains only projected numbers of "passengers" (visitors and non-visitors) as of 2010.

The challenge facing CRI for this study was to estimate the implications of the airport forecasts for Maui County (and then Maui Island) visitor activity and consequent residential employment and population. This is needed to provide a baseline for later discussions of project impact — but for the present, the analysis is concerned only with tourism and population implications of the forecast, which is not the same thing as the "impact" of the airport improvements.

To produce such an estimate requires additional assumptions. The results of any such analysis will depend on the nature of the assumptions made at the beginning. The assumptions used here are the best and most reasonable which CRI could make, given available evidence, but there is no way to be sure they are totally accurate. For this reason, the outcome of the following analysis is not to be regarded as "truth." Rather, the value is to provide a point of comparison — comparison to estimated 1993 actual conditions and to other year 2010 forecasts (as is done in the next few pages), or to results of sensitivity analyses to determine maximal likely impacts (as is done later in this section).

Assumptions. Appendices B-1 and B-2 provide a full account of the assumptions used by CRI for the analysis of tourism activity levels and residential employment/population levels, respectively. Needed assumptions include things such as the Eastbound vs. Westbound share of 2010 Maui visitor arrivals; length of stay; islandwide jobs per occupied visitor unit; and population per job. Sources for our assumptions included current 1993 figures, ratios taken from the M-K forecasts for Maui County, and research undertaken for the Maui County Community Plan Update process.

In developing these assumptions, CRI tried to err on the side of overstating rather than understating assumed population growth levels and/or things that would affect subsequent impact calculations. For example, we assumed that the eastbound share of Maui County visitor arrivals would increase markedly from the 1993 level (21%) to the projected 2010 level (30%) — an assumption which would automatically increase the importance of any new demand from introduction of nonstop flights from Japan. (On the other hand, Eastbound visitors tend to stay for a shorter time than Westbound visitors, so increasing the Eastbound share of total visitor arrivals may decrease the average visitor census. It is sometimes difficult to "overstate" one thing without "understating" something else.)

We further assumed that virtually all Eastbound travelers exhibited the same high expenditure patterns as Japanese visitors — and hence generate more growth in jobs and population per visitor day — even though HVB figures indicate only about a third of Maui County's Eastbound arrivals in 1993 were actually Japanese (special computer printouts provided by Hawaii Visitors Bureau Research Dept., October 1993). And we omitted the possibility that any significant percentage of Maui's visitor units would be occupied by lower-spending residents of other Hawaiian islands.

Results: Implications for Tourism Growth. Exhibit 4-C shows major results of the analysis for things such as visitor arrivals or average visitor census (the number of tourists on island any given day). Additionally, Appendices B-1 and B-2 contains additional details and shows the exact logic of the analysis.

Exhibit 4-C
IMPLICATIONS OF DOT AIRPORT FORECASTS FOR YEAR 2010
MAUI TOURISM LEVELS

	1993 Actual	M-K	Aries 1990	Aries 1994
VISITOR ARRIVALS				
Total Maui County (1)	2,260,940	4,131,440	4,473,490	3,901,360
Westbound	1,790,480	2,892,010	3,131,440	2,730,950
Eastbound	470,460	1,239,430	1,342,050	1,170,410
Maui Island (2)	2,209,980	3,883,550	4,205,080	3,667,260
Westbound	1,746,200	2,718,490	2,943,550	2,567,090
Eastbound	463,780	1,165,060	1,261,530	1,100,190
AVERAGE VISITOR CENSUS				
Total Maui County (1)	42,280	73,800	79,910	69,690
Westbound	37,330	60,220	65,200	56,860
Eastbound	4,950	13,580	14,710	12,830
Maui Island (2)	39,900	69,370	75,110	65,510
Westbound	35,080	56,600	61,200	53,450
Eastbound	4,820	12,770	13,820	12,060
OCCUPIED VISITOR UNITS				
Total Maui County (1)	12,949	26,400	28,540	24,890
Maui Island (2)	N/A	24,780	26,830	23,400

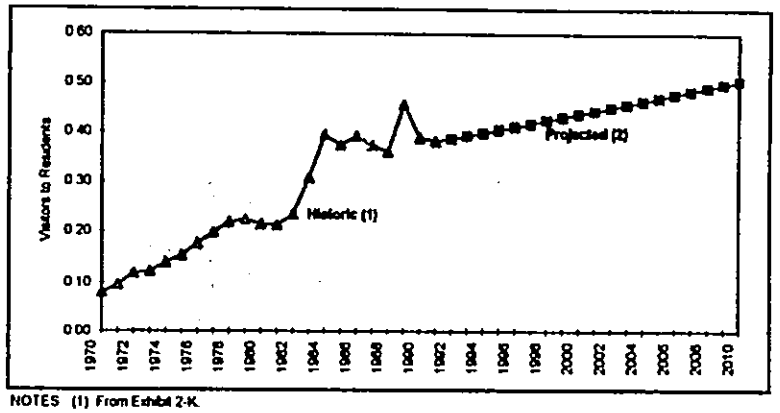
NOTES (1) See Appendices B-1 and B-2 for the detailed assumptions and calculations used to produce these figures
(2) Estimated at 94% of the County level, based on 1990 Maui Island share of Maui County civilian jobs

SOURCES Hawaii Visitors Bureau, 1994a, 1994b

According to this analysis, the DOT forecasts imply that Maui's total visitor arrivals and average visitor census in 2010 will be roughly 65% higher than in 1993. While this represents substantial growth, and would further increase the ratio of visitors to residents on Maui, the rate of change would be less dramatic

than that which occurred in 1980s (and a little less than that which occurred in the 1970s):

Exhibit 4-D
HISTORIC & PROJECTED CHANGES IN RATIO OF MAUI COUNTY VISITORS TO RESIDENTS, 1970-2010



NOTES (1) From Exhibit 2-K.
(2) Based on the average annual rate of growth between 1992 and 2010. Average Visitor Census for 2010 from Exhibit 4-C, and Resident Population for 2010 from Exhibit 4-E

SOURCES Hawaii Visitors Bureau, 1994a, 1994b, 1993a, 1993b, 1992a, 1992b, 1991a, 1991b, 1990a, 1990b, Hawaii State DBEDT, 1994, 1993, 1992.

It may also be noted that the estimated year 2010 figures are about 6% less than the M-K forecast numbers. Furthermore, the figures suggested by the 1994 DOT forecasts are somewhat lower than the "Land Use Constrained" year 2010 estimates for Maui Island in Appendix B-10 (although it should be noted that those earlier results were computed using slightly different input assumptions). This suggests that — if the DOT forecasts are correct — there would be a market demand for about 270 fewer occupied visitor units in the year 2010 than current land use approvals would allow to be constructed. This is a close enough match that — for all practical purposes — it means the year 2010 visitor demand implied by the DOT forecast would match the supply of visitor units currently permitted for Maui Island.

Results: Implications for Residential Population/Employment Growth. Exhibit 4-E shows major results of the analysis for variables such as resident jobs, population, and needed housing units. (Appendices B-4 and B-5 provide more details, as well as the full logic of the analysis.)

Exhibit 4-E
IMPLICATIONS OF DOT AIRPORT FORECASTS FOR YEAR 2010 MAUI JOBS/POPULATION

	1993 Actual	M-K	Aries 1990	Aries 1994
CIVILIAN JOBS				
Total Maui County	54,250	77,200	82,780	73,460
Maui Island	51,100	72,600	77,830	69,060
RESIDENT POPULATION				
Total Maui County	108,000 (2)	145,200	155,690	138,160
Maui Island	N/A	136,500	146,340	129,880
HOUSING UNITS				
Total Maui County	45,940 (2)	52,570	56,370	50,020
Maui Island	N/A	49,420	52,960	47,020

NOTE. (1) See Appendices B-4 and B-5 for detailed assumptions and calculations used to produce these figures. All figures rounded to nearest ten.
(2) Estimates for 1993 are unavailable, so 1992 estimates are used here.

SOURCES. Hawaii State DLIR, 1994a; Hawaii State DBEDT, 1994a.

According to this analysis, the DOT forecasts imply a year 2010 Maui Island residential population of about 129,880. This is about 42% higher than the population in 1990 (91,361), the last year for which figures are available, but about 5% lower than had been suggested by the M-K forecast. It is also about 8% higher than was suggested by the "Land Use Constrained" figure from Appendix B-10. (Although the number of implied Maui Island visitor units are approximately equal in the DOT forecast and the County's "Land Use Constrained" estimates, the higher population under the DOT forecast is due to a different assumption used for this analysis — i.e., a larger share of eastbound visitors, who spend more and thus create more jobs and population.)

4.3.3 Notes on the Accuracy of Socio-Economic Forecasts

Accurate predictions are the "Holy Grail" of forecasting, to which end extremely sophisticated mathematical forecasting models have been devised, both for tourism demand (e.g., Witt and Witt, 1992) and broader economic and population goals (c.f., Green, 1984; Montgomery, 1990). However, as previously noted, the accuracy of forecasts depends heavily on the accuracy of assumptions used. In an influential review of forecasting techniques, William Archer (1978) observed that improving the methodological complexity of models contributes far less to the accuracy of the forecasts than improving the input assumptions.

However, another fundamental principle of forecasting is that results are usually more accurate over the long term and for large areas than for any particular year or small place. That is because general socio-economic tendencies may hold true on average for large populations, but unique local conditions can produce widely fluctuating results for particular times or particular small populations (Armstrong, 1985). Overall, these deviations may cancel out in national or regional forecasts, but they are far more problematic when dealing with relatively small and exact situations — such as the Kahului Airport in the year 2010.

Finally, virtually all forecasting models utilize simple "linear" assumptions about ways that input variables (e.g., visitor counts) affect outputs (e.g., resident population levels). This suggests that the future is not only well determined by a handful of known variables, but also truly predictable. This may be the case for short periods of time in which other, unknown external variables are held constant, but forecast accuracy can suddenly change when background variables change — e.g., when there is a sudden dramatic shift in international exchange rates or when the airline industry undergoes massive change due to shifts in technology or government regulation. Some socio-economic forecasters are beginning to explore the scientific principles underlying thermodynamic systems — in which the future is "deterministically chaotic," such that predictive techniques are subject to sudden major change or sporadic periods of acknowledged total uselessness — but those explorations are in their infancy (Coveney and Highfield, 1991).

That is why CRI considers neither the government forecasts discussed above nor the specific numbers in our own analyses of growth implications to be accurate "truth." Government planners must make forecasts, the best possible forecasts, in order to prepare for the future. However, they are always subject to change based on new information. For small places such as Maui or even Hawaii as a whole, their most useful function is to allow comparison of results as conditions or assumptions change. We should not believe that any specific number in any one forecast is "true" — but we should attend to differences in forecasts as conditions change, observing whether forecasted outcomes are getting larger or smaller.

4.3.4 Independent Assessment of Tourism Growth Potential

Because of the inherent limitations in forecasting, and because the current Hawaii tourism slowdown has left some people asking if Maui's (or the state's) growth potential has come to an end, CRI felt that a thorough discussion of the project's "growth" potential required an independent assessment of whether further tourism growth is really much likely on Maui or elsewhere in Hawaii.

We subcontracted this market analysis question to the Honolulu office of Coopers & Lybrand, whose "Hospitality Industry Consulting Services Group" is the largest tourism and hospitality consultant practice in the United States. The Honolulu office of Coopers & Lybrand is responsible for the company's consulting activities throughout the Asia and Pacific region. The local office also produces a quarterly research report Hawaii's tourism, golf, and hotel industries.

CRI asked Coopers & Lybrand both to discuss broad tourism market trends affecting Hawaii, and, in this context, also to comment on the general feasibility of statewide tourism growth forecasts, including the M-K Series and the 1994 DOT forecast implications for tourism growth (as interpreted by CRI). Appendix E contains the full Coopers & Lybrand report on this issue. Conclusions may be summarized as follows:

- International tourism has grown more rapidly in the East Asia and Pacific part of the world (including Hawaii) than in any other region of the world else in recent years. For example, total East Asia/Pacific hotel room supply increased by 357% from 1980 to 1992, compared to a worldwide increase of only 35% for the same period.

- Global or regional organizations which forecast tourism growth all anticipate continued rapid growth in the East Asia/Pacific region. For example, the World Tourism Organization anticipates this region will increase from 13.7% to 21.5% of world market share from 1995 to 2010.

- Hawaii's international visitor market is expected to continue to grow. It has consistently been among the top three destinations of Japanese travelers worldwide, and is becoming a major destination for visitors from Korea and Taiwan (considered two of the most promising outbound source markets in Asia).

- However, growth in Hawaii will probably not match the explosive levels predicted for the rest of the East Asia/Pacific region, for several reasons:

  - Much of Hawaii's market still depends on the U.S. Mainland, where economic growth may not be so rapid and where there is strong market competition from the Caribbean, Mexico, etc.

  - The Asian international market also now has a much wider choice of competitive resort destinations, particularly in high-growth areas such as Malaysia, Australia, and Indonesia.

  - While Japanese air carriers maintain strong interest in Hawaii routes, other international carriers — such as Singapore Air, Malaysian Air, and Cathay Pacific — are now overflying Hawaii due to various economic and strategic considerations

- For the rest of the 1990s, Coopers & Lybrand expects Hawaii tourism to produce a "moderate growth rate" of about 3% to 4% a year (vs. an overall East Asia/Pacific rate of about 7% a year). This expected Hawaii growth rate is higher than the flat or negative figures of the early 1990s, less than the "hyper-growth" of the late 1980s, more like the historical situation from 1960 to 1985.

- Coopers & Lybrand consider the 1988 State of Hawaii M-K forecasts now to be outdated and unlikely to be realized. In order to achieve the M-K's projected year 2010 visitor counts, there would need to be an annual increase in visitor arrivals of some 340,000 per year — far more than the average 200,000 per year increase since 1965.

  "In essence, for the Series M-K projections to be achieved, it would be expected that much of the forces that drove demand during the hyper-growth period [1985-1990] would need to be present in the marketplace between 1995 and 2010" (Coopers & Lybrand, Appendix E, p. 45).

- Finally, Coopers & Lybrand believe the State DOT's "Low" (Aries, 1994) statewide visitor projections are feasible, if slightly optimistic. They note that the DOT/Aries numbers are 16% lower than the M-K figures for the year 2010, suggesting increases closer to historical figures for the 1960-1985 period.

  "This demonstrates that, while the Aries projections are somewhat aggressive, they are not out of the realm of possibility when compared to historical performance, and appear to be more realistic than the Series M-K projections" (ibid., p. 46).

4.4 COMPARATIVE ROLE OF AIRPORTS AND NONSTOP FLIGHTS IN DETERMINING VISITOR ARRIVALS (EXPERT ASSESSMENT)

Thus far, this analysis has explored the question of likely statewide and Maui tourism growth from now until 2010 — but independently of any effects of airport improvements. The analysis now takes up the question of whether extending Runway 2-20 is likely to affect tourism growth by inducing added demand or removing any constraints to demand.

In order to come to the best possible conclusions about actual impacts, CRI broke the analysis into two parts. In this Section 4.4, we asked our subcontractor, Coopers & Lybrand, to function as experts in the field of tourism marketing factors, and to discuss national or international literature and comparable airport situations which may illustrate likely outcomes at Kahului Airport. In the following Section 4.5, CRI presents its own "naive" (i.e., not influenced by any significant previous involvement in airline or tourism marketing activities) and Hawaii-based research conclusions.

The remainder of this Section 4.4 was written by Coopers & Lybrand, with minor stylistic edits by CRI. (NOTE: Some of the following comments on Japanese travel motivations are perhaps more pertinent to the Section 7 discussion on possible internationalization. However, they were left here in order not to disrupt the flow of the Coopers & Lybrand discussion.)

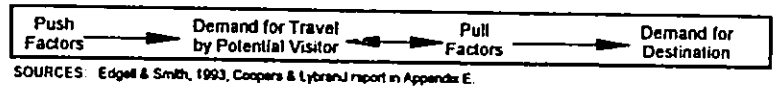
The purpose of this section is to assess the influence which airports and nonstop flights have on visitor arrivals. In discussing the role of airports and nonstop flights on visitor arrivals, a framework first needs to be developed to gain an understanding of visitor travel motivations and the travel distribution system. Comparative analyses will also be presented to highlight and reinforce the concepts presented. This discussion will be comprised of five main sub-sections as follows:

- "Push/Pull" Factors of Travel;
- Visitor Motivations to Travel;
- Role of the Air Travel Distribution System;
- Analysis of Comparable Airports; and
- Conclusions Regarding Roles of Airports and Nonstop Flights.

4.4.1 "Push/Pull" Factors of Travel

To facilitate discussion of potential impacts and roles of airports and nonstop flights, it is essential to gain a fundamental understanding of the primary factors that impact demand for travel. In assessing travel demand, there are a number of key factors that impact demand (Edgell and Smith, 1993). These factors can be described as "push" factors which drives demand from source markets, and "pull" factors in which demand is created from the destination itself. This demand "push/pull" model is graphically presented below as follows:

Exhibit 4-F
BASIC CONCEPTUAL TRAVEL DEMAND PUSH/PULL MODEL



SOURCES: Edgell & Smith, 1993, Coopers & Lybrand report in Appendix E.

Push Factors of Demand

Push factors are movements within source markets that can influence the demand for overseas travel. The extent of strength of push factors for each source country generally is dependent on how far and fast the source country has evolved economically and socially to world class standards.

- **Per Capita Gross Domestic Product (GDP).** Per capita gross domestic product, which measures average wealth per individual for a given geographical region, is an obvious major factor in creating demand for overseas travel. A 1993 study by S.G. Warburg Securities (Far East) Ltd determined that the take-off point for Asian markets for sustained overseas travel occurred when per capita GDP reached $4,000 to $6,000 per year. Countries such as Japan, Hong Kong, Singapore and certain cities within Taiwan and Korea have long ago reached that level and have become major source inter-regional markets within the East Asia and Pacific Region.

  Certain southern coastal cities in China such as Guangzhou are also approaching this per capita GDP level and are now becoming major source markets for Hong Kong and Singapore. While short-haul travel will most likely occur for younger economies such as China, long-haul travel, including to Hawaii, is already occurring for the more mature and affluent Asian countries.

- **Household Income.** Another 1993 study by the Economics Intelligence Unit (EIU) concluded that sustainable long-haul travel occurs when

household income reaches $35,000 or more The EIU estimated that the Asia Pacific region had over 50 million households at this income level, and that such income will rise in tandem with GDP growth of many of these "Newly Industrialized Countries." The EIU concluded that this group will increase in tandem with the rise in GDP ranging from 5% to 9% throughout the rest of the decade. This estimate is further corroborated by the Asian Development Bank, which expects the overall region to grow in GDP by over 7% through the year 2000.

- **Savings Rate.** In addition to rising wealth, the extremely high individual savings rate of many of these countries creates substantial disposable income for discretionary purchases, including travel. Savings rates range from 17% for Japanese households (Japan Travel Bureau Foundation, *All about Japanese Overseas Travelers*) to 47% for Singapore (Singapore Economic Research Institute, 1994). These savings rates compare with the U.S., in which the savings rate has been fluctuating between 4.5% and 5.5% over the past several years. Thus, the affluence of these travelers will certainly benefit Hawaii with respect to potentially higher visitor expenditures from these markets, as we have already seen from the Japanese market.

- **Increase in Leisure Time.** Along with rising wealth has been the increase in leisure time as vacation days allotted to workers have been steadily increasing. This increase in leisure time along with increasing wealth has helped create a growing overseas travel market. Increasing the length of vacation time also promotes longer-haul travel as the individual is able to afford longer travel times to reach his or her destination, as well as spending more time at that destination.

- **Maturity of Outbound Travel Market.** Under this context, maturity refers to the experience the source outbound market has with travel. The outbound markets in the Asia Pacific markets are relatively new, with rising per capita GDP reaching levels of travel only for the past ten to fifteen years. At the beginning, most overseas travel is primarily short-haul travel such as Hong Kong to Taiwan or Singapore. Often, the purpose of travel is for business, religious pilgrimage or visiting friends and relatives.

  As the market matures, becomes more affluent and experienced, longer-haul travel becomes more prevalent. Such is the case of the Japanese, who initially opted for short-haul travel to Thailand, Guam and Hong Kong; then matured to medium-haul travel to Hawaii; and are now traveling in record numbers to Europe and the east coast of the U.S.. Currently, evolving new markets for Hawaii are primarily the Taiwanese and Koreans.

- **Lifting of Outbound Travel Restrictions.** Another push factor for travel has been the lifting of restrictions for outbound travel for many of these countries. These restrictions included lifting of exit visas for residents traveling abroad and the easing of currency restrictions that residents may carry to destinations.

- **Evolution of National Air Carriers.** The evolution of national air carriers for these Asia countries has also helped spur outbound travel to overseas destinations. With national air carriers, these countries are no longer dependent upon foreign carriers for medium and long-haul travel, and now have the freedom as a nation to negotiate landing rights with any destination it desires.

Pull Factors of Demand

An analysis of demand "pull" factors also need to be considered These pull factors needs to be analyzed not only for the destination under consideration, but also within the context of competing destinations. The strength of each competitive attribute and "pull" factor are major determinants of how much market share each destination will receive within the tourism market place. The following represents an overview of the pull factors that need to be considered in assessing potential tourism markets, and its implications for Hawaii and Maui:

- **New Destination.** New destinations clearly can spark interest in travel markets, particularly if they are portrayed as exotic, unspoiled or culturally rich. While the presence of tourism infrastructure is a necessity for successful large scale demand generation, new destinations by their nature infer that the destination has yet to be over-taken by mass tourism. From this perspective, Hawaii and Maui may be at a disadvantage given the multitude of "new" destinations that have and are being developed throughout the Asia Pacific region. This may be particularly true given the relative time savings that many of the Asia Pacific destinations will have with other Asia source markets. On the other hand, Hawaii and Maui continue to have a strong positive image with outstanding tourism infrastructure and a proven track record as a successful visitor destination

- **New Resorts/Attractions.** New resorts and attractions can act as catalysts for tourism demand for both new destinations and mature destinations such as Hawaii. As a significant number of resorts in Hawaii and Maui consistently rank among the top resorts in the world by Conde Nast Traveler Magazine in its annual readership poll, new resorts, attractions, and activities would generally receive worldwide attention This would particularly pique the interest of repeat visitors to Hawaii who wish to try the new resort or golf course. Such demand is known as "induced" demand, whereby a new product, coupled with an effective marketing

campaign, will be able to induce new demand above and beyond normal demonstrated demand. We should note, however, that other "maturing" destinations are also adding new visitor products, including golf resorts, theme parks, gaming. This competition also occurs within Hawaii. Exhibit 4-G presents visitor arrivals by island for the period 1985 to 1993. As the analysis indicates, Maui arrivals tapered somewhat during the latter half of the 1980s and into the 1990s due in part to the numerous new resorts on the island of Hawaii.

- **Quality of Experience of Destination.** Quality of experience is extremely important as it dictates whether the experience is of world class standard, and whether the destination will be able to continue to grow its market base. Through 1992, the Hawaii Visitors Bureau (HVB) published a Visitor Satisfaction Report which surveyed consumer satisfaction with Hawaii and Maui. The last satisfaction report indicated that both U.S. and Japanese visitors rated their Hawaii vacation as either above average or excellent, with a 92% and 84% rating, respectively. For the Island of Maui, the approval rating of above average or excellent was 93% and 85%, respectively, for the U.S. and Japanese markets. When polled as to whether they would recommend Hawaii as a destination to a friend or relative, 98% of those polled said that they would likely do so. These extremely high satisfaction ratings demonstrate the superior quality of experience for the Hawaii and Maui visitor product, indicating a high demand pull factor.

- **Attractiveness Relative to Other Destinations.** As new destinations reach world class standards, international competition begins to rise. A 1991 study conducted by the HVB (1992e) indicates that Hawaii fares very well against competitive destinations. However, concerns are now being raised regarding the rapidly rising quality of experience for Asia destinations, which were not part of the 1991 study. In particular, service and quality levels of many Asian hotels are considered to be on par or superior to U.S. hotels, including Hawaii. Still, other experiential concerns remain with these other destinations, including safety, sanitation, infrastructure, and consistency in experience.

- **Culture Orientation.** The culture of the destination also plays an important pull factor for demand. Part of the desired experience of traveling is to experience new customs, food, and heritage that may be quite different than the visitor's home. Besides Native Hawaiian culture, Hawaii offers a diverse mix of ethnic attractions to the visitor. Many of Hawaii's cultural elements will appear delightfully exotic, while others will promise comforting familiarity. A similar advantage that helps demand is that Hawaii is a unique tropical location that provides all the conveniences of a U.S. state.

This is often a desirable feature for domestic and international visitors alike.

Exhibit 4-G
VISITOR DISTRIBUTION BY ISLAND, OVERNIGHT & LONGER

	Oahu		Maui		Kauai		Hawaii	
	Total (1)	Change	Total (1)	Change	Total (1)	Change	Total (1)	Change
ANNUAL VISITORS								
1985	3,999,640	N/A	1,999,110	N/A	961,580	N/A	780,380	N/A
1986	4,491,030	12.3%	2,205,870	10.3%	1,168,650	21.9%	865,930	13.9%
1987	4,583,500	2.1%	2,134,780	-3.2%	1,133,840	-5.2%	872,550	0.8%
1988	4,844,860	5.7%	2,204,050	3.2%	1,181,710	4.2%	885,360	1.5%
1989	5,049,800	4.2%	2,514,100	14.1%	1,291,230	9.3%	1,120,540	26.6%
1990	5,350,630	6.0%	2,390,160	-4.9%	1,285,930	-0.4%	1,170,900	4.5%
1991	5,048,550	-5.6%	2,272,240	-4.9%	1,267,620	-1.4%	1,188,630	1.5%
1992	4,884,270	-3.3%	2,285,410	0.6%	877,060	-30.8%	1,142,340	-3.9%
1993	4,504,900	-7.8%	2,209,980	-3.3%	571,780	-34.8%	1,120,040	-2.0%
AVERAGE ANNUAL GROWTH RATE								
1985 to 1990	6.0%		3.6%		5.6%		9.0%	
1985 to 1993	1.5%		1.3%		-6.5% (2)		5.0%	

NOTES (1) The sum of visitor totals to each island does not equal total visitors to the State due to multiple stays
(2) Hurricane Iniki struck Kauai in September 1992, and its aftermath is still impacting visitor arrivals to the island

SOURCE Hawaii Visitors Bureau, 1994a, 1994b

- **World Class Destination.** While there are new destinations being developed in Asia and other parts of the world, a distinction should be made between world class destinations and regional destinations. Hawaii is a world class destinations in that there are features, terrain, and culture that are wholly unique and cannot be duplicated. Many of the destinations that are being developed elsewhere offer little else than sun and sand. This is not to downplay other formidable competitive regions in the Asia Pacific region, such as Phuket, Thailand and Bali, Indonesia However, when regional destinations are eliminated from the competitive set, Hawaii still fares well among the competition as a truly international and world class resort.

- **Life Cycle of the Destination.** Perhaps the greatest issue for Hawaii is that as a resort destination, we are on the downward verge of the resort life cycle. In its simplistic form, the resort life cycle moves in the following fashion.

Discovery→ Growth→ Investment→Mass Tourism→Decline

After several decades as a mass tourism destination, we are beginning to witness the toll of tourism on our infrastructure, including concerns over water availability, traffic congestion, resident/visitor competition for land use, and other social and environmental issues. Some new destinations such as Phuket are being master-planned with the intention of avoiding mass tourism and opting for "sustainable" tourism instead. Maui is currently nearing its mature stage, although new resort development along the Wailea resort district and upgrading of several major properties and businesses in Lahaina have helped rejuvenate Maui's product offering.

Hawaii's greatest challenge now is for thoughtful reinvestment and long-term planning to preserve and enhance our visitor product. These issues are now becoming apparent and are moving to the forefront with planning efforts such as the annual Hawaii Tourism Congress. Nonetheless, as the new resort destinations develop, they will inherently draw demand as the international tourism industry "discovers" new experiences and travel destinations.

- **Tourism Infrastructure.**[1] Tourism and overall infrastructure plays an important role in creating demand. Without infrastructure such as hotels, activities and attractions, transportation systems, and a trained work force, destinations would not be able to compete on an international level. While Hawaii's infrastructure was beginning to strain during the height of our tourism boom, it is still considered to have one of the best tourism infrastructure systems in the world. Although reinvestment into our tourism infrastructure is a key to maintaining our future competitive edge, we still enjoy a competitive advantage over much of our competition.

- **Safety.** Of the numerous and frequent travel surveys given, safety has always come out as one of the primary factors in choosing a destination. In fact, a 1994 survey by Travel Weekly identified the number one concern in choosing a destination was personal safety. The second choice, not surprisingly, was the safety of the destination itself. One of Hawaii's major advantages is that it is considered by many travelers and travel professionals as one of the safest destinations worldwide. It is interesting to note that, particularly for repeat Japanese visitors, safety was one of the most common positive attributes given by the visitor. This is clearly a major advantage over many newer destinations, where travel alerts are routinely posted for more untraveled areas of that particular country.

[1] In tourism studies, the entire local economic, intellectual, and physical organization sustaining tourism may be termed its "infrastructure."

- **Cost of Travel, Accommodations and Subsistence.** An obvious determinant of demand is the cost of travel to the destination. With air travel and creative tour packaging, travel products have become extremely competitive in the world travel markets. While Hawaii has developed a reputation as an expensive destination, hotel room costs in many Asia destinations such as Hong Kong and certain areas of Thailand are actually higher than in Hawaii. With Hawaii's hotel rooms selling on average at about $105 per night per Coopers & Lybrand's most recent hotel survey, Hawaii is actually very comparable with many of its competitive destinations both nationally and internationally. Currency exchange movements have also made Hawaii more affordable for many markets, particularly the Japanese and Taiwanese markets where the dollar has been trading at much lower levels than in previous years.

- **Time Cost of Travel and Air Access.** In addition to monetary considerations, time cost of travel is also a factor impacting demand. Time cost between Japan, our closest major Asia destination, and Hawaii approximates eight hours on point-to-point travel. Points beyond Japan such as Bangkok, Singapore and Hong Kong require an additional four to six hour of flight time. Similarly, Chicago, a major U.S. hub and feeder city for travel to Hawaii, is also approximately eight hours away from Hawaii, with additional flight times to points beyond Chicago.

  Incumbent on travel duration is the availability of nonstop air routes between city pairs of travel. As aircraft technology advances and bilateral air service agreements are extended, the ability to fly direct from major city pairs can substantially reduce time travel. This is particularly true for long-haul travel where stopovers for refueling can be avoided. In this respect, Hawaii is at a major disadvantage as air technology and new bilateral agreements have led to substantial declines in air service to Hawaii.

  During the last five to seven years, international service to Hawaii has been reduced drastically due to overflights between the U.S. and major Asia destinations. Most flights into East Asia now are required to connect through Japan, although we are now beginning to see the return of direct flights from certain growing Hawaii markets such as Korea. As discussed previously, however, most outbound markets from farther destinations in East and South Asia continue to be relatively marginal to warrant regular service between Hawaii and destinations such as Singapore and Bangkok.

4.4.2 Visitor Motivations to Travel

Once the ability and desire for travel has been established by the traveler, the traveler's motivation needs to be understood as it determines how the travel decision

is made. These motivations can generally be segmented into the two broad market groups of business and leisure travelers (Smith, 1989). As Hawaii is primarily a leisure destination, we will concentrate our discussion on the leisure segment. Leisure travel decisions are made based on five major categories (Gearing, Swart, and Var, 1974). These categories are:

(1) Natural factors.

(2) Social factors.

(3) Historical factors.

(4) Recreational and shopping facilities.

(5) Tourism infrastructure (including access and transportation), food and shelter.

More recent surveys of leisure travelers have supported this travel decision-making theory. In fact, a distinct hierarchy of travel decision making variables have begun to emerge in both academic research (Hu and Ritchie, 1993) as well as consumer research, as discussed below.

Hierarchy of Leisure Travel Decision Making

A hierarchy of decision criteria has emerged for leisure travel. This hierarchy appears to cross both cultural and geographical boundaries as most travelers, regardless of origin, seek the same end result; namely leisure recreation or educational travel. Furthermore, the lead times for leisure travel are typically much longer than for business travel, and therefore the motivations and planning for leisure travel are generally well thought out. The following are the results of recent consumer research that profiles the decision hierarchy for leisure travelers. These surveys will be presented first for the general U.S. and Japanese travelers. We will then discuss actual westbound and Japanese experiences for the island of Maui and their implications for defining the role of airports and nonstop flights for Maui.

U.S. Travel Decision Hierarchy. The following survey is based on consumer research prepared by Longwoods International in 1994 for consumers expressing interest in beach resort destinations. Percentage responses are approximations due to the presentation format of the Longwood's survey, as shown in Exhibit 4-H on the next page.

Exhibit 4-H
U.S. TRAVEL DECISION HIERARCHY

	Percentage of Responses
TRAVEL CRITERIA	
Travel Cost	35%
Safety	32%
Popularity of Destination	25%
Excitement	23%
Entertainment	20%
Food & Accommodations	20%
Sports & Recreation	18%
Sun & Sand	14%
Sightseeing	14%
Outdoor Activities	10%
Culture	10%

SOURCE: Longwoods Travel, 1994

Japanese Travel Decision Hierarchy. The travel decision hierarchy for the Japanese market displays similar attributes to its U.S. counterpart, although we should note that the survey was based on travel for all destination types. As Exhibit 4-I demonstrates, natural and social factors dominate the top ten criteria for travel by the Japanese market.

Exhibit 4-I
JAPANESE TRAVEL DECISION HIERARCHY

	Percentage of Responses
TRAVEL CRITERIA	
Nature & Scenery	72%
Historical Sites	56%
Local Cuisine & Foods	46%
Shopping	43%
Relaxation	36%
Experience Cultures	34%
Art Galleries & Museums	34%
Stay at Famous Hotels	20%
Meet Local People	15%
Water Sports	12%

SOURCE: Japan Travel Bureau Foundation, 1992

The criteria in Exhibit 4-I above are even more interesting when compared to perceived barriers to travel by the Japanese:

Exhibit 4-J
JAPANESE HIERARCHY OF BARRIERS TO TRAVEL

	Percentage of Responses
TRAVEL BARRIERS	
Too Expensive	53%
No Vacation Time	27%
Language Barrier	26%
Safety	23%
Care for Dependents	15%
Fear of Flying	14%
Dislike of Foreign Food	14%
Overseas Travel Too Extravagant	13%
Health Concerns	12%
Cumbersome Travel Applications	12%
Dislike Foreign Travel	9%
Travel Only if Someone Else Pays	8%
Dislike Group Tours	5%
No Travel Companion	5%
Lack of Initiative	4%
Dislike Foreign Customs	4%
Transiting through Airports	4%

SOURCE: Japan Travel Bureau Foundation, 1992

It is interesting that, when comparing barriers to travel and criteria for traveling, the subject of airports surfaces only as a minimal barrier to travel. Therefore, for the Japanese market at least, it appears clear that tourism infrastructure concerns, and more specifically airport inconvenience, are of minimal impact to the travel decision making process. (This is in line with the historical evidence, that passenger traffic, by Westbound travelers, grew steadily during the 1980s despite inadequate terminal facilities at Kahului.)

Maui Travel Experience. The survey results in Exhibit 4-K on the following page are based on the 1991 HVB Visitor Satisfaction Report. We believe the analysis is useful as it highlights what visitors found the most and least attractive of Maui. Although 1991 was the last time this survey was completed for Maui, past surveys have found little variation from responses given.

Exhibit 4-K
MAUI TRAVEL EXPERIENCE

	Percentage of Responses
WESTBOUND	
POSITIVE TRAVEL EXPERIENCE	
Scenery/Beauty	31%
Relaxing/Peaceful	23%
Beaches/Ocean	21%
Attractions	18%
Weather/Climate	15%
Water Sports/Activities	12%
Accommodations	10%
Friendly People	8%
Variety of Activities	7%
Sightseeing Tours	5%
Hawaiian Spirit	2%
NEGATIVE TRAVEL EXPERIENCE	
Overall Expensive	19%
Food/Restaurant Expensive	13%
Weather/Climate	12%
Too Congested/Traffic	8%
Too Crowded/Tourists	8%
Flight/Airport-Related	6%
EASTBOUND	
POSITIVE TRAVEL EXPERIENCE	
Beaches/Ocean	17%
Scenery/Beauty	16%
Relaxing/Peaceful	16%
Friendly People	12%
Weather/Climate	7%
NEGATIVE TRAVEL EXPERIENCE	
Expensive Food	7%
Weather/Climate	5%
Overall Expensive	3%
Too Crowded	3%
Flight/Airport-Related	1%

SOURCE Hawaii Visitors Bureau, 1992e

It is interesting that the criteria desired by the visitor match fairly well with the favorable results exhibited in the Maui visitor satisfaction report. It is also interesting that negative comments regarding airport-related issues were made by only 1.1% of the Japanese surveyed, especially in view of the fact that they would have had to use interisland air service to arrive in Maui. Westbound visitors, who enjoy limited nonstop service, actually had a slightly higher response rate. We further note that the 1991 survey revealed that Japanese ranked Maui either first or second in preferred island destination despite having to transit through Oahu. When asked if their Maui experience was better or worse than expected, only 4% of Japanese responded negatively, again after having to transit through to Oahu. Lastly, 85% of Japanese

who visited Maui would choose Maui again for their next Hawaii destination, while others would opt for other neighbor islands.

Ranking of Air Transportation/Travel Factors in Decision Hierarchy. As had been demonstrated throughout the travel criteria hierarchy analyses above, airport and air transportation were non-existent factors in formulating travel decisions, and were very minor detractors in barriers to travel. Travel cost, however, was a concern in making travel plans. These findings are highly consistent with academic studies (Edgell and Smith, 1993) that found leisure travelers to be more concerned with dollar cost of travel, but less concerned with actual travel time costs. The more important the leisure aspects of the visitor's motivations, the less importance were time costs of travel. Conversely, business travelers were more time-cost conscious and less concerned regarding actual dollar travel costs.

An interesting note is the time cost of immigration and how it impacts the decision to return to Hawaii. Hawaii has had a growing reputation for extremely lengthy immigration lines, with some reports of waits of up to one hour to clear customs. Indeed, the 1991 HVB Visitor Industry Satisfaction Report (the last survey which researched immigration) revealed that almost 30% responded negatively to Hawaii's immigration procedures and timeliness. However, that same survey also asked whether the immigration procedures would deter them from returning to Hawaii. Only 2% of the respondents replied negatively. This again supports both the consumer and academic research suggests that travel time costs, airports, and air transportation were minimal issues in making the travel decision for leisure travel.

4.4.3 Role of Air Travel Distributions Systems

This sub-section discusses the role of the air travel distribution system and impact of nonstop flights.

Role of Airports

Based on the above research, it appears that airports serve as accommodators of air travel demand. The decision to travel appears to be made outside the context of the airport facility itself. Indeed, research indicates that those on leisure educational travel (e.g. to learn new cultures or experience new surroundings and activities) will actually travel to that destination despite poor or difficult accessibility including air infrastructure and inadequate tourism facilities (Hu and Ritchie, 1993). In other words, research indicates that criteria for leisure travel decisions far outweigh consideration for travel time costs, method of travel, and travel distribution infrastructure, except perhaps in extreme cases where air service or other transportation is completely lacking.

Role of Nonstop Flights

Air access is an important link in the travel distribution system. This is particularly true for long-haul destinations such as Hawaii. Nonstop flights are essential for gateway cities into countries (Inskeep, 1991). For larger countries, there may be a need to have several gateway cities for international nonstop flights due to geographical spread. The need for additional gateway cities for nonstop flights diminishes as the geographical area shrinks and there is an extensive domestic or commuter air transportation system.

Based on academic research and interviews with air transportation specialists, there appears to be an inverse need or impact for direct flights to secondary locations from distant points of origins. In other words, the longer the flight from the point of origin to the gateway city, and the shorter the distance from the gateway city to the secondary city, the less need or impact there would be from nonstop flights from the point of origin to the secondary city. This of course also assumes that the secondary city is small relative to the gateway city and there is existing and frequent air transport between the gateway and secondary cities.

The primary logic is that the incremental time cost of transiting through the gateway city to a nearby secondary city is minimal and not perceived as an impediment to travel by the traveler. Establishing nonstop service from the distant point of origin to the secondary city would primarily make the distribution system more efficient for those passengers whose destination point is the secondary city. However, the farther the secondary city is from the gateway, the more the incremental time cost becomes a factor.

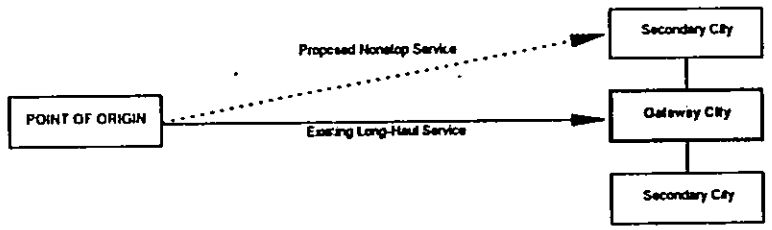
Impact Hierarchy of Nonstop Flights

Exhibit 4-L (next page) illustrates the needs hierarchy for nonstop flights. Under Scenario A, long-haul travel to the gateway city is characterized by frequent service to secondary cities in close proximity that can be serviced by frequent short-haul air service. Examples of city pairings would be Tokyo-Honolulu-Kahului, Hong Kong-San Francisco-San Jose, or Tokyo-Chicago-Milwaukee. Establishing direct service to a small regional center such as Kahului, San Jose, or Milwaukee from the point of origin would likely cause a shift of passengers already traveling in the distribution channel as the distribution channel has become more efficient for these passengers.

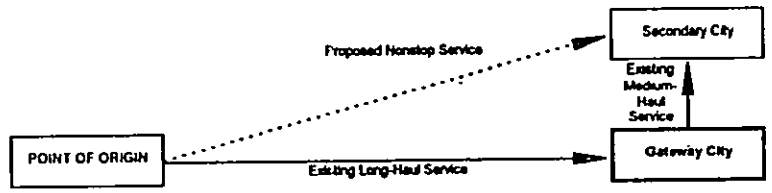
However, because of the frequent commuter service from these gateways to the end destinations and the minimal incremental time cost, the current transit through the gateway to the secondary city is not considered a barrier to travel. Therefore, establishing direct flights from the point of origin to secondary destinations, in close proximity and with frequent service, would not necessarily mean more new inflows of visitors to the end destinations.

Exhibit 4-L
IMPACT HIERARCHY OF NONSTOP FLIGHTS

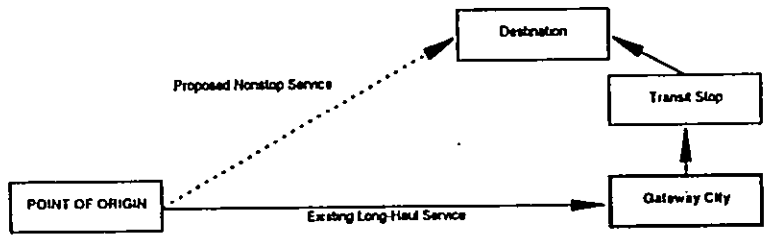
SCENARIO A: LOW IMPACT OF NONSTOP FLIGHTS TO SECONDARY CITY (1)



SCENARIO B: MEDIUM IMPACT OF NONSTOP FLIGHTS (2)



SCENARIO C: HIGH IMPACT OF NONSTOP FLIGHTS (3)



NOTES (1) Incremental time cost of travel low, characterized by frequent, short-haul commuter service to secondary cities
(2) Incremental time cost of travel medium
(3) Incremental time cost of travel high

We should note, however, that there may be other compelling reasons to have nonstop flights, such as establishing regional airports to relieve congestion at the primary gateway airport, or for marketing considerations for direct flights to the

secondary destination. For example, regional airports such as Oakland and San Jose provide relief for the San Francisco airport, and have created better access to markets for their respective business communities.

Scenarios B and C would potentially create greater impacts from nonstop service to secondary cities, as the nonstop flights would be reaching into farther geographical regions. As such, there could potentially be more marketing opportunities for passengers desiring more direct access to the new region rather than having to first transit through the primary gateway city. Given the higher time costs involved, and therefore the potentially higher time cost savings, visitor arrival impacts could be greater under Scenarios A and B.

Applicability to Hawaii. Because Hawaii is considered to be an extremely geographically small area, travel markets outside of Hawaii continue to view Honolulu as its primary gateway city despite the availability of limited nonstop service from the U.S. mainland to other Hawaiian islands. In fact, an international comparative study of five leisure destinations — consisting of Hawaii, Australia, Greece, France, and China — found that Hawaii consistently ranked the highest in terms of perceived accessibility and local transportation, including frequent regional air transportation (Hu and Ritchie, 1993). Accessibility concerns for the other countries appear to be related to the greater geographical distances for secondary destinations from the gateway cities, and also due to perceived less developed travel infrastructure. As discussed previously, the incremental travel time costs to other island destinations within Hawaii compared to other long-haul destinations appears to be minimal. Given the availability of frequent interisland air service, this does not appear to be of major concern to the traveler.

4.4.4 Analysis of Comparable Airports (National/International)

As part of this study, we analyzed several airports with different development issues to assess the applicability of their respective impacts to the proposed Kahului Airport runway expansion. The issues we analyzed were:

1. Impact of airport runway expansions on visitor arrivals. Observed impacts from the airports at Bangkok (Thailand), St. Thomas (U.S. Virgin Islands), and Puerto Rico were analyzed for this purpose.

2. Impact of development of new regional airports on visitor arrivals. The gateway and regional airports used for this analysis were Bangkok and Phuket.

3. Impact of development of a state of the art airport with accommodation for all types of aircraft. The Singapore Airport was analyzed for this scenario.

4. Impact from no change of the airport. The airport in Hong Kong was used for this example. While the Hong Kong airport can accommodate all types of aircraft, we wanted to analyze a situation where an airport had over capacity to determine if there were any inferences that could be made to the Kahului Airport.

Exhibit 4-M
VISITOR ARRIVALS FOR SELECTED REGIONS
WITH RECENT AIRPORT EXPANSIONS

	Thailand		Singapore		Hong Kong		St. Thomas (1)		Puerto Rico	
	Total (2)	Change	Total (2)	Change	Total (2)	Change	Total (2)	Change	Total (2)	Change
YEAR										
1983	2,191	N/A	2,667	N/A	2,754	N/A	354	N/A	1,530	N/A
1984	2,347	7.1%	3,001	4.7%	3,108	12.9%	370	4.5%	1,496	-2.2%
1985	2,438	3.9%	3,043	1.4%	3,370	8.4%	412	11.4%	2,062	37.8%
1986	2,818	15.6%	3,201	5.2%	3,733	10.8%	470	14.1%	2,145	4.0%
1987	3,783 (4)	34.2%	3,695 (4)	15.4%	4,502	20.8%	580	23.4%	2,619	22.1%
1988	4,231	11.8%	4,201	13.7%	5,589	24.1%	556	-4.1%	3,004	14.7%
1989	4,810	13.7%	4,830	15.0%	5,994	7.2%	450 (3)	-19.1%	3,221	7.2%
1990	5,299	10.2%	5,323	10.2%	6,590	9.9%	463	2.9%	3,426	6.4%
1991	5,122	-3.3%	5,415	1.7%	6,800	3.2%	470	1.5%	3,504 (4)	2.3%
1992	5,136	0.3%	5,960	10.6%	8,011	17.8%	487 (4)	3.6%	3,703	5.7%
1993	5,761	12.2%	6,426	7.3%	8,938	11.6%	570	17.0%	N/A	N/A

NOTES (1) Includes arrivals to St. Croix
(2) All totals in thousands
(3) U.S. Virgin Islands affected by Hurricane Hugo in 1989
(4) Airport expansion completed.

SOURCES: World Tourism Organization, 1993, 1992a, 1992b, Pacific Asia Travel Association

The analyses and our conclusions were as follows:

- **Bangkok/Phuket.** The new Bangkok Airport opened in 1988 with expanded runway and terminal facilities. Analysis of Exhibit 4-M above shows relatively marginal increases in arrivals after the opening of the airport. Much of the growth was reflective of the overall growth for the region rather than specifically only to Bangkok. We should note that 1991 through 1992 showed flat growth due to civil unrest due to a military coup.

  As an interesting note, Japanese tourists traveling to the beach resorts of Phuket previously had to travel to Bangkok from Japan, and then fly to Phuket on domestic airlines or travel by train or bus. Beginning in 1992, Thai Airways began to fly directly from Tokyo to Phuket. According to the Tourism Authority of Thailand, for 1993 Japanese visitors to Thailand only showed a modest 1.3% increase, but a 14.2% decrease in Japanese arrivals into Bangkok. The majority of the decrease in Japanese Bangkok arrivals flew directly to Phuket on these new direct routes. This shift had the modest benefit of increasing the length of stay of Japanese in Phuket and increasing visitor expenditures, but overall Japanese visitors to Thailand and to Phuket itself had only a slight increase.

- **St. Thomas.** In St. Thomas, the airport expansion program involved a new terminal completed in 1990 and a new 7,000 foot runway completed in December 1992. The new runway was designed to accommodate DC-10s which could not land on the island previously. However, since the completion of the runway, none of the carriers (American, Delta, Continental, and USAir) have started DC-10 service to the island. In addition, according to the U.S. Virgin Islands Port Authority, there have been no unusual increases in air traffic volume that could be attributed to the new runway. In the opinion of the Authority, private airlines decide whether to increase aircraft volume and size to the airports based on the availability of demand generators, primarily hotel rooms. Additionally, the previous runway was sufficient to service the existing demand. Had there been some unaccommodated demand prior to the increased runway size, there would have been an immediate impact.

- **Puerto Rico.** In Puerto Rico, the airport expansion program involved the construction of a new international ramp. Phase I was begun in January 1990 and finished in May 1991. At this point, not fully operational, the ramp was utilized for national flights and military planes. Phase II, completed in early 1993, will finish the 600,000-square-foot expansion of the terminal and enable the airport to accommodate six to seven additional international gates. Other recent improvements include repaving of the taxiways and various support areas. According to the Puerto Rico Port Authority, there has not been an expansion that has allowed the airport to accommodate larger aircraft, however, the ongoing upgrade programs have had only a slight impact on volume. While the expansion did not involve expansion of the runway, nevertheless, expansion of the passenger capacity did not lead to corresponding increases in visitor arrivals. This example demonstrates that despite capacity and ability to facilitate long-haul aircraft, the anticipated surge in traffic did not materialize.

- **Singapore.** Singapore boasts one of the most modern airports in Asia and had expanded its runways to accommodate long-haul aircraft in the mid-1980s. Despite the state-of-the-art facilities, capacities and aircraft accommodation, visitor arrival growth for most of the 1990s has been modest compared to other airports such as Bangkok and Hong Kong during the same period. Because of the lackluster visitor arrivals, Singapore has embarked on a five-year $5 billion restoration project which will create new tourism infrastructure to develop a more stable tourism base

- **Hong Kong.** The existing Kai Tak Airport in Hong Kong is second only to London's Heathrow in the number of international passengers handled each year. Major expansion to the airport has not occurred during our analysis period. Existing passenger terminal capacity is strained, with aircraft having to park on the over-crowded tarmac. Runway capacity is therefore already constrained for a long number of hours during the day. Despite the constrained capacity, Kai Tak is faced with a situation of growing demand and is expected to accommodate 31 million passengers by 1997. This will further exacerbate the already constrained and arguably unsafe conditions.

  This situation illustrates how the demand in the market as represented by passenger flow is independent of the type and size of airport facilities available. The visitor arrivals are reflective of the dynamic growth in the region for both business- and tourism-related travel.

The above analysis of comparable cases shows only weak causal relationships between airport expansions, including runway extensions, and tourism growth. Tourism markets are dynamic, and the factors determining travel are complex. While airport improvements and improvement in tourism distribution efficiencies (such as the proposed Kahului Airport runway expansion) may arguably create new markets through creative marketing and product packaging, these are more likely serving an already existing market. A few benefits, such as longer lengths of stay for some market segments, could be realized, but the overall impact will likely be marginal.

4.4.5 Conclusions (Coopers & Lybrand)

Based on the foregoing discussion, airports serve only as accommodators of travel, not generators of demand. The decision to travel for leisure purposes has been demonstrated by both academic and consumer research to be well outside the concerns of the airport environment. Time costs to leisure travelers have been found to be of less importance to the travel decision making process. Primary travel decision factors relate to experiential criteria sought by the traveler once the traveler has reached his or her destination. Nonstop long-haul flights would appear to gain importance only when time costs are reduced substantially.

However, as time costs to leisure travelers are much less important, nonstop long-haul flights to secondary destinations within a small geographical area (including Hawaii) may have minimal impact over the long term. While such nonstops may have the impact of making the travel distribution more efficient for the traveler seeking the secondary destination rather than transiting through the gateway city, under Scenario A of Exhibit 4-L there would most likely be a shifting of an already existing market to the new nonstop flight. While strong marketing initiatives may induce travelers to travel to the secondary location, the long term would most likely see natural market growth as opposed to hyper visitor growth due to the new nonstop flight. More dramatic visitor arrivals could be possible under Scenarios B and C as both scenarios involve more geographical depth beyond the gateway city — but these scenarios do not apply to Maui.

4.5 HAWAII-BASED RESEARCH ON GROWTH-INDUCING POTENTIAL IMPACT

The preceding Section 4.4 represented Coopers & Lybrand's "expert" assessment, based primarily on national and international sources. In this Section 4.5, CRI presents its own "naive" (i.e., not influenced by any significant previous involvement in airline or tourism marketing activities) research, utilizing primarily Hawaii-based research components:

- Review of comparable Hawaii airport situations;
- Review of relevant local written studies;
- Interviews with tourism and airline executive on cause-effect relationships between aviation factors and tourism growth outcomes.

Based on these research activities, CRI also feels the single best would be "little or no impact." However, we do find enough points of uncertainty to warrant the follow-up sensitivity analysis later in Section 4.6.

4.5.1 Case Studies of Comparable Hawaii Airport Situations

Case studies of other Hawaii airports were developed to identify possible implications of extending Kahului Airport's runway. These include:

(1) Hilo Airport — This is perhaps the single best "comparable" situation which has enough historical information to permit a clear sense of outcomes. The introduction of nonstop overseas service to Hilo Airport produced a temporary surge of tourism growth, but this was in the context of a regulated aviation industry. Following deregulation, market forces resulted in the eventual total elimination of nonstop overseas service to Hilo, even though the airport retains full capacity for such direct flights to this day.

(2) Ke-ahole (Kona) Airport — Kona's resort plant is perhaps the most comparable to that of West Maui. Because limited nonstop services began only in 1994, it is still too early to have a clear sense of outcomes. However, there has been limited (if any) impact on tourism growth to date, and airline

executives indicate that their willingness to provide more nonstop services will depend on market response.

(3) Kapalua Airport — This small interisland airport is a "comparable" only in the sense that it has provided more direct access (from Honolulu) to West Maui resorts since 1987. However, visitor counts do not indicate that West Maui tourism grew any more rapidly than the rest of the island following this improved access.

(4) Honolulu International Airport — has runways which allow nonstop overseas service from as far away as the East Coast. Yet long-haul nonstop flights to Honolulu, as a function of airline economics, represent only a small and possibly declining percentage of Mainland flights.

These case studies were developed from interviews with airline and travel industry executives (Appendix C, Persons Contacted and Interviewed for this Report) and information from published material (Appendix D, References).

Hilo Airport. Originally named General Lyman Field, the Hilo Airport was renamed in 1989 by the Hawaii Legislature to reorient the Airport's image and provide consistency with all other State airports named for their geographic location. When one of Hilo Airport's two runways was extended to 9,800 feet in 1965, it became the State's second overseas gateway. Only Honolulu International Airport's runway then surpassed it

Passenger data and industry experts both indicate that overseas airlines showed strong interest in Hilo from October 1967 (when overseas flights actually began) through the 1970s. However, by the early 1980s interest had diminished and scheduled overseas flights were eventually discontinued in 1986. According to experts and available published sources, several events were key turning points in Hilo's history as an overseas airport — including the runway extension itself, introduction of the common-fare structure, airline deregulation, and market response to the Hilo visitor industry product.

History of Overseas Passenger Services. In 1967, United Airlines and Pan American World Airways began overseas services. During that same year, the common-fare structure was introduced. The common-fare structure allowed overseas passengers to travel to neighbor islands at a nominal additional cost to their overseas ticket. Passengers were required to arrive at one of Hawaii's two existing overseas airports, Hilo or Honolulu, and depart through the other.

Prior to overseas service to Hilo and the common-fare structure, most passengers traveled from other islands to the Big Island by way of Hilo and returned from Ke-ahole (then Kona Airport). However, the introduction of

overseas flights and the common-fare structure reversed this trend. Passengers began to arrive at Ke-ahole (from Oahu or other neighbor islands) and depart on overseas flights from Hilo.

In 1968, the number interisland passengers deplaned at Ke-ahole Airport increased by 40%. Interisland passengers enplaned at Ke-ahole Airport decreased by 8%, compared to a 22% increase the year before. These data indicate that passengers were choosing to arrive on the Big Island at Ke-ahole, but depart the island from Hilo.

During the same year, interisland passengers deplaned at Hilo Airport decreased by 10% and interisland passengers enplaned increased by only 2%. However, the total number of passengers enplaned (interisland and overseas) increased by 50%. This data indicates that the majority of passengers leaving from Hilo Airport were visitors returning to the Mainland (Peat, Marwick, Livingston & Co., 1969).

In January 1969, Northwest Orient Airlines began overseas services That same year, the Civil Aeronautics Board approved requests by Braniff International Airlines, Continental Airlines, Trans World Airlines, and Western Airlines to operate direct flights. Routes to Hilo from Atlanta, Chicago, Cleveland, Dallas, Houston, Los Angeles, Miami, New Orleans, New York, Philadelphia, Portland, St. Louis, San Francisco, Seattle, and Alaska were proposed. Reportedly, only a few of the airlines actually scheduled the routes they proposed.

Overseas passenger volume (enplaned and deplaned) peaked in 1971 at approximately 320,000 passengers. However, in 1972 volume began to drop and Hilo accommodated fewer than 300,000 overseas passengers For the remainder of the 1970s, overseas passengers fluctuated between 220,000 to 290,000 per year (Belt Collins & Associates, 1991).

Following deregulation of the airline industry in 1978, United and Continental Airlines served Hilo direct from the Mainland. However, demand for services continued to decline significantly, and demand for services to Ke-ahole emerged as the West Hawaii visitor plant expanded. In 1981, overseas passengers to Hilo fell to 98,776 — the first time volume dropped below 100,000 in a decade (Belt Collins & Associates, 1991).

Overseas passenger volume continued to decline until overseas services were totally discontinued in December 1986. United Airlines was the last overseas carrier to serve Hilo. During its last 11 months of service it carried only 20,914 overseas passengers (Belt Collins & Associates, 1991)

Marketing Efforts. Airline and tourism industry experts interviewed for this study disagreed on the role of marketing in Hilo's unsuccessful position as a visitor destination.

One view is that very little was done to market Hilo as a visitor destination and take advantage of Hilo's airport capacity. If Hilo had been marketed properly, it would have found its niche in the tourism industry, using the Volcanoes National Park as its major attraction.

The opposing view is that extension of Hilo Airport's runway in 1965 was the result of extensive lobbying for Hilo as a visitor destination, despite the lack of visitor demand. Expansion of Hilo Airport was intended to give Hilo an edge in competition with Kona. The common-fare structure created the *appearance* of demand for Hilo, and the dismantling of that system during deregulation of the airline industry led to Hilo Airport's demise as an overseas airport.

Tourism Growth. Visitor plant inventory and hotel occupancy data indicate that tourism in Hilo flourished prior to deregulation of the airline industry in 1978. From 1966 to 1978, Hilo's visitor plant inventory grew from 501 to 1,954 units. Between 1966 and 1974, Hilo hotel occupancies ranged from 60% to 70%, indicating that visitor demand during those years kept pace with increasing inventory.

In 1968, Hilo hotel occupancies peaked at 77% — which remains Hilo's record hotel occupancy since 1966. Also, prior to deregulation, Hilo Airport overseas passenger volume (enplaned and deplaned) reached its highest in 1971, approximately 320,000 passengers.

After deregulation of the airline industry in 1978, Hilo hotel occupancy and visitor plant inventory suffered great losses. In 1980, Hilo hotel occupancy dropped to 34% — a record low for the period from 1965 to 1993. Between 1978 and 1986 (overseas services to Hilo were terminated in 1986), Hilo visitor plant inventory decreased by approximately 48%. Since that period, Hilo regained approximately 13% of its visitor plant inventory and hotel occupancies have stabilized between 50% and 60%. Hilo tourism has improved since its dramatic decline, but not to the peak level it exhibited during the late 1960s and early 1970s.

Implications for Kahului. Hilo's experience indicates that the basic visitor market appeal of a destination can determine the degree to which airport infrastructure improvements such as runway extensions are actually utilized.

Prior to deregulation of the airline industry in 1978, when market forces were more subject to manipulation, overseas flights and the common-fare

structure increased visitor arrivals at Hilo and created a tourism boom. Following deregulation, overseas carriers initially continued to show strong interest in Hilo. However, adequate passenger demand for overseas service to Hilo failed to emerge. By 1986, all but United Airlines had discontinued its overseas flights to Hilo. After 11 months of low bookings, United terminated its overseas services as well. Despite a lengthy runway and initially successful overseas flights, future overseas service to Hilo now appears unlikely, though capacity for such service still exists.

Ke-ahole Airport. The Ke-ahole Airport opened in 1970, replacing the old and much more limited Kona Airport. The airport's 6,500-foot runway allowed overseas flights to land, but not to take off with a full load of passengers. Daily overseas flights have serviced the airport since September 1983.

In January 1994, the airport's runway was extended from 6,500 feet to 11,000 feet, enabling fully loaded aircraft servicing any U S Mainland or Canadian destination to take off from the airport. The extension made Ke-ahole's runway the second longest in the state, after Honolulu International.

DOT has requested Federal "Port of Entry" status for the airport, which includes the establishment of Federal facilities and services for processing foreign passengers.

Currently, United Airlines has two daily flights to Ke-ahole: nonstop service from San Francisco, and direct service from Los Angeles (with a stopover at Honolulu International Airport).

The airport's new capacity, along with marketing and incentives, has stimulated more interest by airlines. However, because the extension was completed recently, interest by airlines must be considered preliminary and long-term outcomes of these events are uncertain.

History of Overseas Passenger Service. On March 2, 1994, United Airlines began using 747 aircraft (369-passenger capacity) for its daily nonstop flight to Ke-ahole from San Francisco, increasing its passenger capacity by 84. Previously, DC-10 aircraft (285 passenger capacity) were used for the flight.

The flight arrives in the morning and returns nonstop to San Francisco in the early afternoon. The timing of the flight allows travelers from as far east as Denver to arrive at Ke-ahole by noon. Returning passengers reach the West Coast the same evening.

United specifically increased the flight's seating capacity for the peak spring travel season. News articles (Mattoch, 1994; *West Hawaii Today*, 1994) have quoted United officials as stating that the airline has not made a long

term commitment to continue 747 service to Kona and that customer response to the flights will have a great influence on scheduling decisions. Larger passenger planes to Ke-ahole also mean increased fuel costs, landing fees, and crew requirements, so there must be assurance of additional revenues (i.e., a near-full load on the larger planes) to justify these costs.

Chartered flights, specifically for State Farm Insurance Agents, by America Trans Air Flights from 23 U.S. cities began on March 22, 1994, using L-1011 aircraft (Thompson, 1994).

Canada 3000, a Vancouver based charter airline company, agreed to begin air service from Washington to Ke-ahole starting December 7, 1994. According to the agreement, the airline will fly Boeing 757 aircraft (capacity for 226 passengers) once a week from December 1994 through March 1995. If the flights prove successful, the company will double its flights in April 1995. In general, sources view charter flights as a test for scheduled flights (Stephl, 1994).

Marketing Efforts. The Kona tourism officials interviewed for this study said that expansion of the airport's capacity is beneficial only if accompanied by marketing efforts.

In news articles (Stephl, 1994; *Honolulu Advertiser*, 1994), officials of the Big Island chapter of the Hawaii Visitors Bureau stated that charter flights by Canada 3000 to Ke-ahole are the result of marketing efforts by their organization. HVB began talks with Fiesta West, one of Canada's largest tour wholesalers, the previous year.

Because Ke-ahole Airport does not have Federal Inspection Services facilities (required to accommodate many foreign carriers), HVB has made the Canadian market its "international" target. (Unlike most other foreign visitors, Canadian passengers can be precleared in Canada and cleared by temporary Federal Inspections Services at Ke-ahole provided by agents from Honolulu.)

The Hawaii Visitors Bureau and the Hawaii County Mayor Steven Yamashiro have commenced on a campaign to attract flights from Japan. In February 1994 they met with JAZ, the charter arm of Japan Airlines, to discuss nonstop flights to Ke-ahole (Stephl, 1994; Rohr, 1994).

Tourism Growth. Because the runway extension at Ke-ahole is very recent, data indicating impacts on tourism are not available. Tourism officials interviewed for this study stated that it is too early to say if the availability of flights on aircraft with larger passenger capacity (United Airlines' 747

aircraft) or increased flights will result in more tourists visiting the region. However, they feel certain that the airport's extended runway has provided them a new marketing tool for appealing to a larger market.

Implications for Kahului Airport. Implications of Ke-ahole's experience are limited because its runway extension is very recent. It is clear that a combination of marketing, incentives, and the runway extension (which allows aircraft to operate at 100% passenger capacity for takeoffs) has increased the interest of airlines. However, it is also clear that airlines' final decisions will depend on market demand, and that airlines themselves have not made extensive promotional efforts to increase that demand It is important to note that marketing efforts to attract new flights to Ke-ahole were by the HVB's Big Island Chapter. The airlines themselves did not initiate negotiations on marketing, and it is unclear how the new flights will be affected by the outcome of HVB's marketing campaign.

United Airlines and Canada 3000 officials have clearly stated that new services to Ke-ahole are preliminary and any decision to continue them will depend largely on passenger response. Seating capacity for United Airlines flights was specifically increased for the peak spring travel season only, and United has not made a long-term commitment to continuing these flights with larger airplanes.

Canada 3000's charter flight agreement for service to Ke-ahole specifies that December 1994 through March 1995 will function as a test period for the new services. Only if the flights are successful will the airline make a longer-term commitment to increased services.

Kapalua-West Maui Airport. The Kapalua-West Maui Airport was selected as a case study because it provided more direct air access to a Maui resort area. Prior to 1986, only one small interisland airline (Royal Hawaiian) used the old Kaanapali Airport. When the new airport was opened in 1987, it was eventually utilized by all interisland carriers (*Honolulu Star-Bulletin*, 1994).

Thus, prior to development of this interisland airport, almost all West Maui visitors arrived on Maui by way of the Kahului Airport and then took a 45-minute drive to West Maui. (Many still do, but the Kapalua-West Maui Airport provides the option of a more direct route from Honolulu, for those willing to fly in smaller aircraft.)

In October 1992, the DOT purchased the privately-owned airport from former joint owners Hawaiian Airlines and Maui Land and Pineapple. The airport has a single 3,000-foot runway and services interisland flights by propeller air carrier and commuter/air taxi aircraft.

When Maui County granted zoning for the airport on a former pineapple field, it imposed restrictions on the airport's operations and future development. Restrictions include: a ban on helicopters, night flights, and jets; a limited number of flights; and no future expansion of the airport's runway, apron and other facilities. Due to this agreement, the airport has not been expanded.

Tourism Growth. Kaanapali/West Maui hotel occupancy rates during 1985-1993 indicate that occupancies decreased during the years following the opening of the new airport. Prior to the opening of the airport (1985-1987) hotel occupancies decreased and continued to do so after the airport opened (1988-1993). However, occupancies alone do not tell the full story, because they may reflect the effects of increasing visitor unit inventory as well as the number of visitors. Therefore, CRI estimated average visitor census for the Kaanapali/ West Maui area in the years just before and after the Kapalua Airport initiation:

Exhibit 4-N
KAANAPALI VS. MAUI COUNTY AVERAGE VISITOR CENSUS, 1985-1993

Year	Kaanapali (1)		Maui County	
	AVC (2)	% Change	AVC (2)	% Change
1985	13,632	N/A	31,910	N/A
1986	13,546	-0.6%	34,330	7.6%
1987 (3)	12,655	-6.6%	33,860	-1.3%
1988	13,375	5.7%	33,870	0.0%
1989	13,930	4.1%	44,020	30.0%
1990	14,169	1.7%	39,500	-10.3%
1991	13,832	-2.4%	40,240	1.9%
1992	14,025	1.4%	42,220	4.9%
1993	14,386	2.6%	42,280	0.1%

NOTES (1) Includes Lahaina, Kaanapali, Napili, and Kapalua areas.
(2) Kaanapali estimated by CRI based on hotel occupancies and visitor plant inventory data, assuming an average party of 2.0 per occupied room. County visitor counts are from HVB. Kaanapali visitors probably comprise a larger percentage of Maui County than indicated here, but annual percentage changes are of value to the analysis than absolute numbers.
(3) Kapalua Airport began operations during this year.

SOURCES Hawaii Visitors Bureau, 1994a, 1994b, 1993a, 1993b, 1992a, 1992b, 1991a, 1991b, 1990a, 1990b; Hawaii State DBEDT, 1994a, 1993, 1992; Pannell Kerr Forster, 1985-1993

Exhibit 4-N indicates no evidence of any strong impact on average visitor census, in light of countywide changes which were occurring anyway. Kaanapali visitor census did go up slightly in 1988 while the County figures held steady. However, if this was due to the airport, the effect was very short-lived, in 1989, the County figures shot up dramatically, while the Kaanapali/West Maui region increased only slightly.

Implications for Kahului. The provision of direct air service to the Kaanapali resort area did not result in increased hotel occupancies or visitor arrivals. Data indicate that decreases in Kaanapali hotel occupancies continued after direct air service was introduced. In the case of Kapalua-West Maui Airport, improved access due to airport facilities had little, if any, impact on Kaanapali/West Maui resort area tourism.

Honolulu International Airport. As mentioned previously, the case of Honolulu International Airport (HIA) is examined because it is the State's primary gateway for domestic and international overseas flights. Its runways can accommodate nonstop flights to and from long-haul destinations, as might Kahului Airport with an extended runway. Therefore, current utilization of HIA by airlines, especially for nonstop flights, has implications for future use of Kahului as an overseas airport.

Currently, HIA is the State's primary airport for overseas (domestic and international) and interisland flights. Interisland flight service from HIA began in 1929 and overseas flights in 1935, when seaplanes landed on Keehi Lagoon. During World War II, the U.S. military connected the HIA's airfield with the Hickam Air Force Base airfield. Part of HIA's airfield is located on Hickam Air Force Base. The airport continues to accommodate military flight operations and functions as a military and civilian joint-use facility.

In 1959, airlines began to use jet aircraft for Hawaii overseas routes. The airport's 12,000-foot reef runway was completed in 1977. The new runway was constructed to increase field capacity, reduce aircraft delay, and mitigate noise impacts on Waikiki and Kalihi-Palama. In addition to the reef runway, the airport has three other runways of different lengths: 12,360 feet; 9,000 feet; and 6,948 feet.

Utilization of HIA for Long-Haul Nonstop Flights. HIA runway lengths allow aircraft to operate at 100% capacity and to fly to Mainland destinations of their choice. However, approximately 75% of flights from HIA to the Mainland stop at West Coast airports before proceeding to more distant destinations (Belt Collins & Associates, 1993). Some airlines have cut back on the number of long-haul nonstop flights from origin points such as Denver or further east.

According to airline experts interviewed for this study, airlines prefer short- or medium-haul flight segments because these provide more opportunity for passengers to board, thus assuring more seats will be filled over the entire route. In addition, airlines are most concerned with the total number of seats to and from a destination; it is a relatively minor issue whether or not these are on nonstop flights. Airline and tourism experts agreed that the added convenience of nonstop flights have a marginal impact on generating new

demand. Rather, nonstop flights provide an additional tool for tapping existing markets.

Airlines generally schedule nonstop flights between major airline carrier hubs, which allow them to serve passengers making connections from many points of origin. The majority of nonstop flights between Hawaii and the Mainland are between HIA (Hawaii's major hub) and the Mainland hubs of major carriers. Nonstop flights include flights between HIA and the following Mainland hubs: Atlanta (Delta Airlines); Dallas (Delta and American Airlines); Chicago (United Airlines); Los Angeles (United Airlines); San Francisco (United Airlines); and St. Louis (TWA).

Implications for Kahului. Airline economics, not the simple availability of a longer runway, will determine the likelihood that many nonstop long-haul flights will be initiated. Airlines respond to passenger demand, but demand for long-haul nonstops will have to be very strong and pronounced to overcome concerns about the greater riskiness of nonstop long-haul flights vs. "direct" service consisting of shorter flight segments and stopovers on the West Coast.

4.5.2 Studies on Impacts of Runway Extensions on Hawaii Tourism

CRI reviewed three major studies (in addition to the previous EIS) which might suggest some degree of growth-inducing impact from runway extension. We found all three studies to have limitations in their applicability to the present EIS analysis. At the same time, we recognize that all studies have limitations, and the results of the following studies contributed to our decision to proceed with the follow-up sensitivity analysis in Section 4.6.

University of Hawaii Economics Study. Three University of Hawaii Economics Department professors (Fujii, Im, and Mak, 1992) published a statistical study in the *Journal of Travel Research* which dealt specifically with the question of impacts of direct flights on Neighbor Island tourism. (The same study, in an earlier form, was cited in the previous EIS.) The university professors used autoregressive time-series techniques to examine the presumed effect of introducing direct flights (whether nonstop or with Honolulu stopovers) from West Coast destinations to the three Neighbor Island airports as of 1983. Arrivals data from the years 1973 to 1988 were utilized, along with the key assumption that changes in patterns following 1983 could be attributed solely to the introduction of direct flights.

Results led to the conclusion that " ... while direct flights increased the overall level of demand for travel to the Neighbor Island, their primary impact was to accommodate and facilitate existing demand for travel to Hawaii's Neighbor

Islands" (pp. 40-41). The general thrust of this conclusion is very much in line with the foregoing Coopers & Lybrand analysis. However, Fujii, Im, and Mak did find small but definite changes in the number of westbound visitors (which they attributed to direct flights), and the largest of these changes was on Maui:

> "Maui's [westbound] visitor volume increased annually by 3% to 9%, while Kauai showed annual growth of less than 2% during the period when direct flights were in operation. Hawaii [Island]'s visitor volume increased by approximately 3%." [p. 40]

CRI's concerns about the validity of this finding relate to the underlying assumption that post-1983 changes can appropriately be attributed simply to the initiation of direct flights from the West Coast. The study authors stated:

> "We chose to analyze shares of visitors in order to mitigate potential estimation problems stemming from factors common to all islands and other exogenous events, such as the pilots' strike against United Airlines (May 17-June 14, 1985) and the surge in terrorist activities in western Europe in 1986, which may have affected the aggregate volume of tourist travel to Hawaii but not the relative shares of visitors to each island. We know of no other factors that might have influenced the visitors' choice of travel destinations in the Hawaiian travel market during this period." [p. 39]

However, there was in fact another and very fundamental factor which "might have influenced the visitors' choice of travel destinations in the Hawaiian travel market during this period" — there was a surge of new hotel development on the Neighbor Islands, and particularly on Maui, which (along with attendant promotions) could easily explain a shift in relative market share away from Oahu and toward Maui. Figures in the 1981 and 1989 *Hawaii State Data Books* show that the statewide inventory of visitor units during this period grew by 11,265 units — with 42% of that growth occurring on Maui (vs. only 22% on Oahu).

The relatively greater importance of hotel, as opposed to airport, development was underscored by the University of Hawaii authors themselves when they wrote:

> "Rapid rates of tourism growth on the Neighbor Islands occurred before the initiation of direct flights in 1983, suggesting that prevention of runway extension cannot ensure that tourism will not continue to grow rapidly on the Neighbor Islands in the future. For their residents who are concerned about the effects of additional tourism growth on the quality of life, we suggest that county officials can control the pace of tourism growth on their islands more effectively by exercising direct

control over county land use, zoning, and taxation than by opposing the extension of airport runways on their islands." [p. 41]

Maui Economic Development Board Study. The Maui Economic Development Board, Inc. commissioned a study (Fields, 1992) which produced independent estimates of the impact of an extended Kahului runway on agriculture, construction & high technology, and — most pertinent to the present discussion — tourism. In the tourism section, the study concluded:

- An additional 182,000 visitors per year (26% of them Japanese) would come to Maui with a 9,600-foot runway. The study did not specify what year this might be, and whether the figure might change over time.

- Maui would also gain visitor days "lost to Honolulu." The combined increase in visitor days (new visitors plus those "lost to Honolulu") would exceed 2.2 million visitor days, generating an additional $365.7 million in expenditures and increased hotel occupancies of about 11 percentage points.

The heart of this analysis was an input assumption that visitor arrivals would increase by 10% over 1991 counts for states with one-stop connections and by 20% for Japanese counts.

CRI spoke with the study author and determined that this set of assumptions was made on a judgmental basis. We appreciate the need to base such assumptions on informed judgments. The complexity and situation-specific aspects of this situation make it inappropriate to base analysis purely on econometric or textbook theoretical bases. CRI's subsequent quantitative sensitivity analysis derives from initial judgmental assumptions.

However, given our own immersion in the evidence — working with Coopers & Lybrand, reviewing Hawaii case studies, conducting the expert interviews discussed in the following pages — we see no clear basis for the assumed 10% westbound and 20% eastbound increases, and suspect it is probably an overstatement. (We do note the similarity in the 10% westbound increase assumed by Fields and derived by Fujii, Im, and Mak; this figure will be used in our subsequent sensitivity analysis.)

**Hawai'i - La`ieikawai Association Study.** In response to the previous Draft EIS, Hawai'i - La`ieikawai Association, Inc. funded an EIS critique by Haiku Design and Analysis (1991) which considered a number of points. The possibility of growth-inducing impacts was central to this critique. The study did not attempt to produce its own estimate of growth-inducing impacts, but offered a number of conceptual arguments (pp. 5-7) as to why such impacts seem reasonable. The

points in this critique are repeated here, because they provide a concise and cogent set of concerns for response in this study.

(1) "Lengthening the runways at the airport will enable and encourage more direct overseas flights from an increased distribution of mainland departure points and will allow departures of larger aircraft with larger passenger loads."

CRI Comment: This is an accurate description of change in capacity, but it does not address the question of actual likely outcomes — whether nonstop flights will actually occur or, if so, whether they would attract new passengers who would not otherwise be coming.

(2) "Currently, it is substantially less expensive to fly to Honolulu from mainland cities than it is to fly to the outer islands... [Following runway lengthening], the cost of direct flight airfare from the mainland would be expected to be more approximately equivalent to fares to Honolulu [thereby increasing Maui's competitive appeal]."

CRI Comment: CRI took up this issue with industry experts in the interviews to be described shortly, as well as considering it ourselves. In brief, this appears to be a rather marginal factor. The cost differential (including the cost of both overseas and interisland travel) amounts to less than one percent of a round trip fare from the Mid West; it applies only to the minority of travelers who visit only one island, and there are even reasons to doubt whether the difference would be eliminated by nonstop service to Maui. See following Section 4.5.3.

(3) "The availability of more economical direct flights from a wider distribution of originating departure flights and the accommodation of larger, more fully loaded aircraft will affect the relative attractiveness and economics of charter tour operations."

CRI Comment: While probably accurate, this also appears to be a marginal factor. See following Section 4 5.3.

(4) "Removal of ... constraints [relating to congestion, delays, and inconvenience would] affect the quality and experience of travel to Maui compared to other islands and affect visitors' decisions regarding choice of Hawai'i destinations."

CRI Comment: CRI took this contention seriously, both in our expert interviews and in our sensitivity analyses It was the reason for designing a complicated two-step analysis involving both a "Constrained" and a separate "Unconstrained" No-Action Future. While our best judgment is that these

sort of constraints will not significantly affect travel decisions by 2010, there is enough uncertainty on this point to warrant the follow-up sensitivity analysis.

(5) "[Alternatives involving] provisions of international passenger handling facilities would establish a new market for international travelers with direct flights to Kahului." Given logistical problems at Honolulu International Airport, this would make Kahului an appealing option.

CRI Comment: We agree in principle, although (a) we do not know of logistical problems at Honolulu sufficient to make it an onerous destination, and (b) this still does not establish whether nonstop flights would bring new, vs. simply rerouted, eastbound passengers to Kahului. However, this is an issue for discussion in Section 7.

(6) "At least some percentage of international travelers visit only one Hawai'ian island. Direct flights to Maui would increase Maui visitor arrivals by some fraction of this percentage."

CRI Comment: Again, this is an issue for Section 7, since the current Master Plan proposed actions do not include internationalization.

4.5.3 Interviews with Industry Experts

The final component of CRI's effort was to identify and interview about two dozen experts in Hawaii tourism marketing, tour wholesaling, and airline carriers. The purpose of these interviews was not to learn whether/why such people were "for" or "against" the improvements (although such views inevitably emerged) — since it would be inappropriate to limit that sort of inquiry to one set of stakeholders and since the question of public issues and concerns was already addressed in Section 2.5.2.

Rather, the purpose was to obtain and report a wide range of expert applied knowledge about cause-and-effect relationships between airport/aviation factors and tourism growth outcome factors.

Methods. Exhibit 4-O contains a list of persons interviewed for this section alone (as distinct from the wider list of interviewees in Appendix C). About one-third of these people were interviewed in person; the remainder, by telephone. As is the customary practice for such "executive interviews," interviewees were assured that nobody would be quoted by name, in order to increase the likelihood of candor.

Exhibit 4-O
PERSONS INTERVIEWED FOR MARKET GROWTH ANALYSIS

Name	Position/Organization
Greg Barbour	Tourism Development & Promotion Coordinator, Hawaii State DBEDT
Randy Christensen	Vice President, Hawaii Operations, MTI Vacations, Inc
Fred Collison	Transportation Professor, University of Hawaii-Manoa
Roger Dubin	Vice President, Marketing, Outrigger Hotels Former Executive Director, Maui Visitors Bureau
Paula Helfrich	Hawaii Island Economic Development Board
Peter Jenkins	Vice President, Marketing, Hawaiian Airlines
Kevin Kalbfleisch	Marketing Director, Canada 3000
Tom Kiely	President, The Kiely Company, Inc
Caroline Kwan	Customer Service Manager, Hawaii Office, Canadian Airlines
Ron Letterman	President, Classic Hawaii Tours
Nani Mahoe	Director, District Sales, Northwest Airlines
Alan Moore	Manager, Strategic Planning, Qantas (Sydney)
Tom Sakata	President, Hawaii Visitors Bureau
Mei Sam	Marketing Director, China Airlines
William Specher	Senior Vice President Hawaii - Emeritus, United Airlines
Sharon Tommitsu	President, Tommitsu and Company
Geoffrey Tudor	Director of International Public Relations, Japan Airlines
Stephanie Uyeda	Regional Sales Manager, American Airlines
Paul Van Ert	Airport Affairs, Executive Offices (Chicago), United Airlines
Michael White	Manager, Kaanapali Beach Hotel
Marsha Wienert	Executive Director, Maui Visitors Bureau Former Maui destination resort executive
Tim Winship	Manager, Gold Pass Frequent Flier Program, All Nippon Airways
Ron Wright	Director, Sales & Marketing, Hawaii Division, Continental Airlines
Gerald Zander	CEO, Aloha Airlines

For airlines, local sources often said the most knowledgeable interviewees would be people in regional or corporate headquarters outside Hawaii, most such non-Hawaii interviewees proved to be highly conversant with the dynamics of the Hawaii market, though some spoke based on more generalized experience. The interviews touched on the potential for both domestic long-haul nonstop service

and also for service by foreign carriers, though results of the latter discussions are generally deferred to Section 7.

Interviews were semi-structured. That is, a general questionnaire was prepared, but actual questions and responses varied from person to person depending on the nature of interviewees' expertise and assessments of the relevance of the question. Thus, this was in no sense a "scientific survey," but a much more journalistic approach to determining basic factual knowledge.

However, whenever appropriate, CRI interviewers went beyond broad initial questions with specific "push" questions on potential growth impacts. That is, we created a number of hypothetical ways in which a Kahului runway extension might conceivably result in tourism growth, and asked for response to these specific scenarios (as well as additional scenarios which interviewees might themselves suggest). The four CRI hypothetical scenarios used for the interviews were:

(1) "There is an existing market of people who are already strongly motivated to come to Maui and only to Maui, but who are deterred from coming at all because so few (or no) direct flights are now available. That is, addition of one or two Honolulu-Maui legs to main trip discourages them from coming to Maui/Hawaii."

(2) "Not extending the runway will eventually result in increasing delays, thereby reducing the number of visitors, even those going through Honolulu to Maui." (As time went on, due to comments made by initial interviewees, this scenario shifted from "delays" to "inconvenience.")

(3) "The availability of an extended runway [and/or international customs facilities] will cause airlines to offer new or more direct nonstop flights services, with an attendant marketing campaign. This marketing campaign will bring new and additional people to Maui who are not part of the present market."

(4) "Some existing Maui visitors may now spend an extra night or two on Oahu only because so few (or no) nonstop flights are now available to their home areas. With some or more direct nonstops, they would spend the extra nights on Maui, thereby increasing the Maui average visitor census and decreasing the Oahu visitor census."

(NOTE: Another hypothetical mechanism by which the runway might induce Maui visitor growth — elimination of the current small pricing differential between fares to Oahu vs. Maui — was usually addressed in general opening questions about likely overall project impacts.)

The interviews thus produced two types of information:

- General knowledge about factors influencing tourism growth, aviation service to Hawaii, and links between them — i.e., <u>context</u> for expert assessment of Kahului Airport improvement impacts;

- Actual assessment of likely growth impacts from Kahului runway extension.

Context for Assessments of Airport Impacts. The experts interviewed for this report based their ultimate comments about potential impacts on their knowledge (or perceptions) of the basic underlying nature of both the tourism and the aviation industries. The following are some key conceptual statements which were made:

<u>Maui's Competitive Situation</u>

- Like all of Hawaii, Maui now faces an explosion of competitive resort destinations in areas such as Mexico and Southeast Asia. Consistent with the Coopers & Lybrand analysis in previous pages, marketing experts interviewed for this report felt that Hawaii's "hyper-growth" period from 1985 to 1990 was an anomaly unlikely to be repeated in the foreseeable future.

- The statewide tourism slump of the early 1990s has hurt Maui's visitor industry along with those of other Hawaiian islands, although Maui and the Big Island benefited a little from Kauai's misfortune in closing down hotels due to Hurricane Iniki.

- In regard to future growth prospects — of all non-Waikiki Hawaii destinations, Maui is generally considered to have the most name recognition and visitor appeal in the westbound market. Thus, it has the best prospects for economic viability (and some growth) in the face of increasing competition.

- Nevertheless, Maui's ultimate growth potential may be limited by several factors:

  - Because of high investment costs to develop many of Maui's self-contained destination resorts, rooms are relatively expensive. Much of Maui cannot economically appeal to the "mass" tourism market.

- Since Maui has not been planned as an urban tourism destination, it cannot compete with Waikiki for even the well-heeled visitor seeking nightlife or other forms of "action" tourism.

- Although there was not consensus on this point, many local tourism experts felt that Maui, as an inherently "rural" destination, cannot afford to grow much more without damaging the fundamental basis of its appeal to most visitors.

- The segment of Maui visitors potentially most interested in nonstop flights would be those going to Maui only. While Maui fares better than other Neighbor Islands in attracting such loyal clientele, most visitors still prefer to spend some time on another island ... usually Oahu, due to its wider variety of activities.

  HVB figures for the last few years indicate that about 40% of Maui's tourists were "one-island-only" visitors — higher than for the Big Island (about 30%), but still considerably lower than for Oahu (about 65%). And of all "one-island-only" visitors anywhere in Hawaii, Maui has managed to attract only about 20%.

Maui's Potential for Augmenting Basic Market Appeal

- For many tourism marketing executives, the perceived challenge now is not tourism growth, but maintaining (or re-achieving) a healthy status for the existing industry.

- Whether for market growth or market protection, there are two broad mechanisms: effective marketing and maintaining/improving the quality of Maui's tourism product. Some people saw airport improvements as potentially useful (though rarely central) for both concerns:

  - **Marketing** — Nobody believed that domestic carriers would make substantial expenditures to market new nonstop flight services to Maui without some clear indication of passenger demand. However, many tourism marketers believed that an extended runway provided an option or tool, either for negotiating with airlines about shared-cost limited marketing campaigns or for justifying Maui's own (public- or private-funded) targeted marketing efforts. For example, in times when the economy is poor in California, Maui hoteliers would at least have the option of attempting to attract more visitors for a while from the Mid West, if that region were more prosperous.

  - **Quality of Product** — There is a general sense that Maui infrastructure has failed to keep pace with visitor and resident population growth. The airport situation is seen as one small part of that larger picture.

- Marketing is considered the basic tool for sustaining or increasing tourism business. However, there is considerable uncertainty about the extent to which local government is willing to increase public expenditures on tourism promotion. Competitive destination areas generally have much more public financial support for marketing than does Hawaii. Government decision makers here have been more inclined to believe that tourism marketing should be primarily funded by the private sector. Candidates in the 1994 gubernatorial race have differing views, and results of that election could affect the likelihood that additional marketing dollars would be made available for Maui over the next four to eight years

Airline Economics and Technology

- The history of the aviation industry has been marked by sudden changes in fundamental character — regulation and de-regulation; new technology affecting markets and economics; shifts in ownership patterns; etc. Attempting to predict long-term (or even short-term) aviation patterns can be very risky.

- The economics of air service to Hawaii are considered shaky at best, making predictions about future service to Hawaii particularly risky. Some of the issues include these:

  - The vast majority of passengers to Hawaii are leisure travelers, who are far more price-sensitive than business travelers. Consequently, fares are highly competitive and often discounted heavily.

  - Large percentages of passengers to Hawaii are using frequent-flier mileage awards — i.e., are not paying passengers, although the cost of their flights to Hawaii is part of an airline's investment in retaining the business of loyal customers on higher-profit routes.

  - Some airline experts interviewed for this study believe certain carriers have been losing enough money on Hawaii routes that they may actually suspend service here in the near future. The alternative, of course, would be generally higher ticket prices — e.g., raising current prices to the West Coast of about $250 up to a reported break-even level of about $350. Either action could

greatly reduce visitor counts to Hawaii, although to different degrees.

- Given these reported economics, some interviewees spoke of political tensions between airlines and State officials, the latter being perceived as not understanding (or being skeptical of) the financial problems faced by the airlines. These people spoke of frustrations over additional costs to airlines imposed by the State for improvements such as the new HIA terminal improvements. Such costs are in the form of higher landing fees which, given the competitive nature of the Hawaii routes, supposedly cannot be passed on to consumers. (NOTE: Landing fees in Hawaii reflect statewide system expenditures and are imposed uniformly at all airports.)

  Airlines' response to improvements at places like Kahului will unfold in this political and economic context. Interestingly, with one or two exceptions, industry critics of past State airport expenditures were not opposed to the Kahului improvements. One view was that airlines have already been tapped to help pay for a new Kahului terminal and so should not be denied the flexibility of deciding to fly nonstop to Maui if it makes financial sense for them to do so.

  Among the very few people who did express overt opposition to the Kahului Airport improvements, expressed reasons included concerns about lost business for interisland airlines and perceived State pressure on overseas carrier to increase their financial risk by dividing service among several Hawaii "hubs" rather than just one at HIA.

- There was some disagreement among the airline executives interviewed for this report about the marketing advantages inherent in offering nonstop long-haul flights. Most felt that customers' preferences for nonstop flights to Hawaii were not all that marked — "Lots of people from Chicago like to get off and stretch their feet in L.A." However, others felt that established Mainland preferences for nonstops on relatively shorter flights (e.g., New York to San Francisco) would carry over to the longer Hawaii flights (e.g., New York to Honolulu).

  Nevertheless, there was general agreement that the thin or nonexistent profit margin on Hawaii flights would cause airlines to exercise caution in maintaining long-haul Hawaii nonstops which did not quickly result in full loads. As previously noted, shorter flight segments pose less risk in filling seats.

- Some new aircraft — such as Boeing 757s and 767s — can fly long distances yet take off from shorter runways. However, few airline executives believed that entire fleets would be converted to the newer technology in the near future ... particularly for Hawaii, since it makes financial sense to invest in expensive new planes for more profitable routes first and for less profitable routes (such as to Hawaii) last.

Public Policy (Issues Other Than Tourism or Aviation)

- Uniformly, tourism and airline executives interviewed for this report believed that local growth control efforts could most effectively be focused on limiting the supply of new hotel rooms or other attractions.

- They believed that public policy which focuses on after-the-fact restriction of infrastructure for permitted tourism uses both damages the quality of the visitor industry product and impairs quality of life for residents.

Interviewees' Assessments of Potential Growth Impacts from Runway Extension. Results about actual likely impacts can be discussed under three categories: (A) Likelihood that many/any nonstop flights will actually be attracted to Maui; (B) General comments about potential for additional market growth if such flights do occur; and (C) Response to CRI's specific hypothetical "growth impact" scenarios.

Potential for Actual Runway Utilization by Long-Haul Nonstop Flights:
Expert interviewees had no clear "consensus" position, but virtually nobody thought a runway extension would generate any sudden burst of nonstop flights. More specifically:

(1) Since West Coast service already exists, the ability to take off with full loads to the West Coast would be an opportunity that airlines would naturally seize. However, that would not necessarily result in many additional nonstops to or from the West Coast — though this at least seems more probable than nonstop service to points even farther away.

(2) Past the West Coast, the only consensus was that it seems unlikely that very many nonstop flights would go to points such as Denver, Chicago, or (runway length permitting) the East Coast. Some thought there would definitely be enough market demand to generate some regularly scheduled flights from the Mid West (perhaps a few a week per airline); others doubted even that

  At the same time, it should be noted that several airline executives interviewed for this report expressed definite interest in nonstop routes

to Kahului from points east of the West Coast — subject to the previously stated caveats about prompt market response and clear profitability.

(3) Perhaps the only other point of consensus was that any initiation of long-haul westbound nonstop service would be experimental; airlines would not invest start-up funds without solid indications of market demand, and they would not continue investing in Maui ground offices and personnel if that market demand was not continuing and consistent.

(4) Airlines might be more likely to fly to Maui if that were cheaper than flying to Honolulu (e.g., lower landing fees). However, Hawaii landing fees are set on a statewide basis, such that the same overseas airplane will play the same fee for landing at Kahului, Honolulu, or Ke-ahole.

(5) Charter operations may be somewhat more likely than regularly scheduled airlines to make occasional nonstop long-haul flights to and from Maui. Modest increases in charter operations may be one of the initial effects of runway extension (as has been the case in Kona). However, some of the charter services already flying to Maui (such as Canada 3000) use newer planes which can land on the existing runway and thus have an established market lead over other companies. Depending on their financial situations, charter operations are expected to be even more likely than major air carriers to shift eventually to similar new, smaller aircraft — planes which can make fully-loaded long-haul flights and land on short runways. This will make the runway extension less important to them as time goes by.

(6) As discussed further in Section 7, there was general agreement that internationalization at Kahului Airport would likely tempt foreign (particularly Japanese) airlines more than domestic carriers to experiment with nonstop flights to an extended runway at Kahului Airport.

General Comments About Prospects for Induced Market Growth If Nonstop Flights ARE Initiated: Again, there was no 100% "consensus" position. Many people said they were unsure. However, the clear majority thought nonstop flights would have only marginal or nonexistent effects in creating additional visitors to Maui who would not have come anyway. More specifically:

(1) Because of partnerships between overseas and interisland carriers, the dollar cost to passengers of flying to Maui via Honolulu would probably not exceed the ticket cost on a nonstop to Maui. For example, even today, package tour prices from the Mainland to Maui are virtually

identical whether or not there is a Honolulu stopover, and regular fares to Maui are identical whether or not there is a Honolulu stopover.

Airlines today do charge about $60 more for a round trip to Kahului (only) than for a round trip to Honolulu (only). Interviewees tended to doubt that this difference would necessarily be eliminated by more nonstop service to Kahului. Although overseas carriers have in the past expressed interest in competing with interisland carriers, the majority of expert interviewees felt that overseas carriers now accept the need for maintaining an interdependent relationship with interisland carriers and therefore "protect" them in determining Hawaii fare structures. Even if the difference were to be eliminated, the interviewees felt that the differential would not significantly affect travel choices between Oahu and Maui.

(2) While West Coast people coming to Maui anyway would probably be particularly inclined to fly nonstop, Maui is so well known on the West Coast that the introduction of nonstop service would probably have very little ability to induce new people to visit the island.

(3) As previously noted, many tourism marketers see the extended runway as a potential tool for dealing with short-term crisis situations, to keep existing rooms filled through temporary marketing campaigns in more distant locations when usual markets are soft. This suggests an impact in particular years, but one which prevents loss of market — not a long-term strategy for increasing market.

(4) People who did see a long-term effect also tended to believe they were fighting a long-term trend toward an eroding market base, due to increased competition from elsewhere. While some of them hoped the growth effects they postulate will eventually result in even more visitors on Maui, they also thought the effect might simply be long-term (not just short-term crisis) maintenance of current numbers.

(5) Those who foresaw some long-term effect of nonstop service on westbound visitor counts tended to focus on particular niches, rather than mainstream mass tourism — for example:

- Group meeting organizers could be more attracted to Maui if they could avoid any nonproductive "dead" time stopping over on Oahu
- People coming to Maui anyway might conceivably extend length of stay by a night or so, adding to visitor nights and visitor expenditures without actually increasing the visitor count

For an industry which has been (in the words of one interviewee) "devastated" by a 10% drop in average visitor census, these small effects are meaningful. However, they are not the sort of thing to reproduce the "hyper-growth" rates of the late 1980s.

(6) Again, as to be discussed more in Section 7, interviewees tended to feel that an extended runway plus permanent customs facilities would have more of an impact on inducing eastbound (especially Japanese) rather than westbound growth.

(7) Finally, it should be noted that a minority of interviewees did believe that nonstop flights would — eventually rather than immediately — have a definite growth-inducing impact on westbound Maui tourism. Few were willing to venture a guess as to the magnitude of that impact. Of the few who did, the largest estimate was a 10% increase for the Mid West market.

Responses to CRI Hypothetical Growth Impact Scenarios: Of the four scenarios listed at the beginning of this Section 4.5.3, the first two are versions of "constrained" impacts (i.e., not extending the runway constrains growth). The second two are, arguably, "unconstrained impacts" (i.e., impacts above and beyond simply removing a barrier to growth).

(1) The great majority of expert interviewees gave **little credence** to the idea that there is a significant present-day westbound market demand for Maui which is deterred or constrained by the simple need to change planes at Honolulu. They tended to point to the factors identified by Coopers & Lybrand in Section 4.4 — e.g., the limited time costs involved in catching one of the abundant, brief interisland flights after a long overseas flight.

(2) However, interviewees tended to give **somewhat more credence** to the idea that future demand for Maui could be at least slightly more affected if nonstop flights are not initiated. The usual rationale was not CRI's first suggestion, the prospect of increasing delays, since these delays still amount to a matter of only a few minutes. Rather, the rationale was that, in a tourism environment which will offer increasing numbers of options to the seasoned traveler, even minor inconveniences could have subtle effects on travel decisions. The probable effect was not considered likely to be major, since it would involve small numbers of repeat, Maui-only visitors — i.e., the sort of person who had visited Maui several times and developed just enough of a subconscious sense of "hassle" from previous visits that some other destination looks more appealing this time.

(3) Interviewees gave **limited credence** to the idea that nonstop flights would trigger major new marketing campaigns, and these marketing campaigns would attract visitors who would not have otherwise come. The sense was that this was very likely for short periods — at the initiation of nonstop service or in any later years when the Mid West is targeted for a promotional campaign to compensate for a "soft" West Coast market. However, on a long-term basis, marketing in the Mainland U.S. or Canada was seen as a device to maintain basic underlying demand rather than create large amounts of new demand.

(4) Finally, interviewees gave **substantial credence but little weight** to the idea that some people would extend their length of stay on Maui due to nonstop service. That is, interviewees felt that this would definitely happen, but with a fairly small number of people — only a limited percentage of those who would otherwise be part of the "Maui-only" market now spend nights on Oahu simply because of the need to change planes there. (According to HVB figures for 1993, the average Maui visitor who also visits Oahu spends 4.4 days on Oahu, this length of Oahu stay is far in excess of what would be expected from people who did not really care to see Waikiki but nonetheless decided to book a hotel there just because of a Honolulu plane connection.)

Most of the above scenarios were generally thought to be more meaningful if applied to eastbound market growth, and that will be discussed in Section 7.

4.5.4 Conclusions (CRI)

CRI's conclusions are independent of those reported by Coopers & Lybrand in Section 4.4, but fairly similar. Based strictly on our own research — Hawaii comparables, local published studies, interviews with (primarily local) tourism and airline executives — we feel the preponderance of evidence suggests no or little lasting long-term growth-inducing impact from a runway extension to serve westbound flights.

(This conclusion applies to the timeframe which all EIS consultants were asked to use — i.e., by the year 2010. Obviously, it is theoretically possible that at some point in time past 2010 demand might further increase and the County might permit additional visitor units. In this case, the additional capacity provided by airport improvements would — along with other needed infrastructure such as highway widening or sewage treatment plant construction — facilitate the theoretically permitted additional growth.)

It is not even certain that a significant number of westbound nonstop flights from origin points past the West Coast would actually utilize the runway on a

permanent basis. Several carriers are clearly interested in Maui routes, but always subject to proven market response and profitability. In an independent study for this EIS, P&D Aviation has concluded that perhaps three nonstop flights a day from past the West Coast might utilize an extended 9,600-foot Kahului runway by the year 2010. Nothing in our study suggests this number would be exceeded, and some comments suggest it could be an overstatement.

We note that small percentage impacts (less than 10%) could have considerable meaning for the volatile tourism industry without materially affecting the long-term general level of visitor or resident population on Maui.

We also note that the Hawaii-based evidence is not completely clear. The studies reviewed in Section 4.5.2 (while in our opinion problematic) do suggest a growth-inducing impact. Some industry expects think there could be real, if limited, real long-term effects.

Both the visitor industry and the airline industry are in a constant state of change. Attempting to predict outcomes involving both industries is not a matter of precise scientific calculation; it is a matter of judgment informed by the weight of overall evidence.

As stated at the beginning of this Section 4, our strategy has been to present our best conclusion about actual likely impact, and that is stated above. However, because our best conclusion includes an acknowledgment of some degree of uncertainty, we will now proceed with a second step — a sensitivity analysis to estimate maximal reasonable impacts if they do exist after all by the year 2010 timeframe.

4.6 LIKELY EXTENT OF IMPACTS IF ADDED DEMAND IS ACTUALLY INDUCED

There are two possible reasons why our basic conclusion of "no impact" is sufficiently tentative to warrant a follow-up sensitivity analysis:

(1) Both the aviation and the tourism industries are subject to sudden, major shifts in fundamental structure, and such shifts could invalidate conclusions based on today's structures. However, it is difficult to conduct analyses of ways that growth implications could change if events similar to past discontinuities — e.g., drastic revision of dollar-yen exchange rates, or complete restructuring of the airline industry through deregulation — occur in the future. Their nature, timing, and implications are simply too speculative.

(Additionally, we would note that most of the potential "wild cards" which can now be envisioned — things like substantial reduction of airline service to Hawaii or total fleet conversion to smaller aircraft — would have negative rather than positive implications for runway-induced growth.)

Therefore, the sensitivity analyses to be conducted here must take place in the framework of the current economic structure.

(2) Although most Hawaii-based research evidence suggests little or no growth-inducing impact will occur, there are at least a few indications to the contrary. That is, despite their limitations, some statistical studies do suggest possible growth impacts (see Section 4.5.2), and a minority of our expert interviewees also thought there may be long-term prospects for growth-inducing impacts.

This second reason is the basis for the analysis to be conducted in this Section 4.6. The analysis is in five parts:

- Assumed "No-Action" Year 2010 Market Shares
- Specification of "Scenarios Related to Added Demand."
- Specification of "Scenarios Related to Constraint Removal."
- Results: Tourism Growth Levels
- Results: Residential Growth Levels.

4.6.1 Assumed "No-Action" Year 2010 Market Shares

The basic logic of any presumed growth-inducing impacts from runway extensions is that more visitors would come from those geographical areas newly served by nonstop flights. If the runway were to permit nonstop flights from Denver, this would not generate more visitors from New York. If all of North America could be served by nonstop flights, this would not generate more eastbound visitors from Asia.

Because different alternative proposed runway lengths would have different implications for various geographical areas, it is necessary to make assumptions about the year 2010 geographical market shares for areas potentially affected by new nonstop flights. The analysis will then consist of adjusting these "No-Action" figures for various impact scenarios, then calculating the residential growth implications.

Exhibit 4-P
CURRENT & ASSUMED FUTURE MAUI COUNTY VISITOR ARRIVAL SHARES

	1993 Actual		Assumed 2010 ("No-Action" Scenario)
TOTAL	2,260,940	100.0%	100.0%
Westbound	1,790,480	79.2%	70.0%
Eastbound	470,460	20.8%	30.0%
EASTBOUND ONLY, JAPAN VS OTHER			
Total	470,460	100.0%	100.0%
Japan	303,060	64.4%	75.0%
Other	167,360	35.6%	25.0%
WESTBOUND ONLY, USA, CANADA VS. OTHER			
Total	1,790,480	100.0%	100.0%
USA	1,494,000	83.4%	83.4%
Canada	129,930	7.3%	7.3%
Other	166,550	9.3%	9.3%
USA ONLY, COMBINED EASTBOUND/ WESTBOUND REGIONAL SHARES (1)			
Total	1,576,052	100.0%	100.0%
West Coast	776,040	49.2%	40.0%
Rocky Mountains	91,180	5.8%	7.0%
Mid West	385,302	24.4%	30.5%
East/South	325,530	20.6%	22.5%
COMBINED & COLLAPSED CATEGORIES (apportions all westbound, including Canada and others, to U.S. regions according to percentages above)			
Westbound Subtotal	1,790,480	79.2%	78.8%
West Coast	660,505	36.9%	26.0%
Rocky Mountains	103,454	4.6%	4.9%
Mid West	437,189	19.3%	21.4%
East/South	369,351	16.3%	15.8%
Eastbound Subtotal	470,460	20.8%	30.8%
Japan	303,060	13.4%	22.5%
Other	167,360	7.4%	7.5%
TOTAL	2,260,940	100.0%	100.0%

NOTES (1) These categories were created by CRI and do not generally match HVB regional categories. They allocate states based on likelihood of using "hub" airports LA or San Francisco for West Coast, Denver for Rocky Mountains, Chicago or Dallas for Mid West, etc. For assignment of states to regions, see Appendix B-6.

Exhibit 4-P shows both actual 1993 Maui County visitor shares (according to Hawaii Visitors Bureau figures) and assumed 2010 "No-Action" shares. The year 2010 assumptions are based on a combination of trends and of a deliberate attempt to maximize potential impacts, both in the present analysis and in the subsequent Section 7 analysis of internationalization impacts:

- Consistent with previous assumptions in this section, the eastbound share is assumed to increase to 30% (and, additionally, the Japanese portion of that eastbound share is assumed to increase to 75%). This

assumption will have significant implications in the Section 7 analysis of internationalization impacts.

The basis for these assumptions is both the desire to maximize internationalization impacts and also HVB figures indicating rapid increases in non-U.S. market shares. The HVB projects that, on a statewide basis, more than 50% of Hawaii's visitors will be "international" (including some Canadians and Europeans) by the late 1990s.

- Within the westbound component, the West Coast share is assumed to decrease and other areas (particularly the Mid West) to increase. Again, this reflects both the desire to maximize impacts in this analysis and also HVB efforts to increase market shares for areas of the U.S. past the West Coast (personal communication, HVB Research Director Barbara Okamoto, October 1994).

4.3.2 Scenarios Related to Added Demand

CRI identified two hypothetical mechanisms by which the addition of nonstop flights could add to visitor demand, above and beyond the levels anticipated by the DOT forecasts (Aries, 1994):

(1) Nonstop flights could help trigger a sustained new marketing campaign in affected market areas, to some extent by the airlines themselves and to some extent by local government and/or Maui's visitor industry.

(2) 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, purely because of a needed plane change at Honolulu.

(Additionally, although it is considered unlikely, the small price differential between Mainland-Honolulu and Mainland-Maui fares might someday be eliminated, with marginal consequences for converting some "Oahu-only" travelers to becoming "Maui-only" visitors.)

Based on our discussions with airline and tourism marketing experts, CRI expects the second effect to be real but of little consequence — principally because it is difficult to imagine that many people schedule time on Oahu only because they must change planes there. For example, if the 1993 average length of stay (6.6 days) were presumed equal for both "Maui-only" visitors and visitors staying on other islands as well, and if as many as 25% of the 1993 "Maui-only" visitors (who in turn represented 42% of all Maui visitors) added one day to their

Maui stay, this would have meant an addition of only 2% to the total number of visitor-days. Even this impact seems unreasonably high — the average 1993 Maui visitor who also spent time on Oahu spent not just one day there, but rather four days.

Thus, the more critical effect would come from sustained new marketing campaigns triggered by new nonstop services. The key word here is "sustained," since a short-term marketing effort could be expected to have a temporary effect just around the time new services are initiated.

Estimating the magnitude of sustained new marketing campaigns and their success is complicated by several factors:

- Uncertainties over the likelihood it would actually occur — as previously noted, airline promotional investments are likely to be only at the initial stage, and there is considerable uncertainty as to future policies of local government regarding increases in tourism advertising.

- Uncertainties as the actual efficacy of such efforts if they do occur — according to both the current and previous HVB research directors (personal communications, Barbara Okamoto and George Willoughby, October 1994), no reliable method has yet been devised to track the impact of specific marketing efforts on actual visitor arrivals. Effectiveness measures to date rely on "proxies," such as inquiries made to travel agents in areas targeted by promotions, not actual visits to Hawaii.

Given these factors, and given the outcomes of our discussions with airline and tourism marketing experts, CRI feels the following are reasonable assumptions about the maximal likely added demand which nonstop flights could attract for various markets:

(1) For the Rocky Mountain and Mid West areas, 10% increase for situations allowing unrestricted full loads (and 5% for restricted loads). The 10% figure for the Mid West was the largest specific estimate made by any of our interviewees.

(2) For the West Coast, a nominal 2%. Although CRI feels an extended runway may generate additional nonstop flights to and from the West Coast, these will probably simply involve rerouting passengers who would come anyway. Maui is already well known on the West Coast, and current government policy is to focus new marketing dollars on other parts of the country.

(3) For the East Coast, an estimated 5%. The potential for increase on the East Coast is more limited than in the Mid West due to distance and formidable competition from the Caribbean.

(4) For westbound traffic, there would of course be 0% increase, since runway extension without internationalization would not permit any westbound nonstop flights.

Exhibit 4-Q shows the overall implications of these assumptions, expressed as percentages of the Year 2010 DOT forecast levels. For the Preferred Alternative (runway of 9,600 feet), the overall forecast level would increase by 3%. For a 10,500-foot runway, the forecast level would increase by 4%.

Exhibit 4-Q
LIKELY EFFECTS OF DOMESTIC NONSTOP FLIGHTS ON VISITOR ARRIVALS: ASSUMING "NO-ACTION" FUTURE IS UNCONSTRAINED

(All Numbers Expressed as Percentage of Forecast Levels)

NATURE OF IMPACT	No Action (Unconstrained)	7,000'		8,500' (West Coast full load & Denver restricted load)		9500'/9600' (MidWest full load)		10,500' (East Coast full load)	
	Assumed % of Forecast Level	Max Likely Addl Effect	New % of Forecast	Max Likely Addl Effect	New % of Forecast	Max Likely Addl Effect	New % of Forecast	Max Likely Addl Effect	New % of Forecast
ADDED DEMAND									
West Coast	100%	0%	100%	2%	102%	2%	102%	2%	102%
Rocky Mountains	100%	0%	100%	5%	105%	10%	110%	10%	110%
Mid West	100%	0%	100%	0%	100%	10%	110%	10%	110%
East/South	100%	0%	100%	0%	100%	0%	100%	5%	105%
Westbound Wtd Avg	100%		100%		101%		101%		104%
Japan	100%	0%	100%	0%	100%	0%	100%	0%	100%
Other International	100%	0%	100%	0%	100%	0%	100%	0%	100%
Eastbound Wtd Avg	100%		100%		100%		100%		100%
TOTAL WTD AVG	100%		100%		101%		101%		104%
IMPACT									
West Coast			0%		2%		2%		2%
Rocky Mountains			0%		5%		10%		10%
Mid West			0%		0%		0%		5%
East/South			0%		0%		0%		5%
Westbound Wtd Avg			0%		1%		1%		4%
Japan			0%		0%		0%		0%
Other International			0%		0%		0%		0%
Eastbound Wtd Avg			0%		0%		0%		0%
TOTAL WTD AVG			0%		1%		1%		4%

NOTE Weighted averages based on assumed 2010 Visitor Arrival Shares from Exhibit 4-P

Because westbound traffic is assumed to increase for some of the runway alternatives with no matching increase in eastbound traffic, the relative proportion (westbound/eastbound share) is very slightly affected, as shown in Exhibit 4-R.

Exhibit 4-R
LIKELY EFFECTS OF DOMESTIC NONSTOP FLIGHTS ON 2010 VISITOR ARRIVAL SHARE: ASSUMING "NO-ACTION" FUTURE IS UNCONSTRAINED

	Assumed "No-Action" Share	Changes in Share Associated with Added Demand for Unconstrained "No-Action" Future			
	(from Exhibit 4-P)	7,000'	8,500'	9,500'/9,600'	10,500'
Westbound Subtotal:	78.8%	78.8%	78.2%	78.9%	71.1%
West Coast	28.0%	28.0%	26.3%	27.7%	27.5%
Rocky Mountains	4.9%	4.9%	5.1%	5.2%	5.2%
Mid West	21.4%	21.4%	21.2%	22.8%	22.6%
East/South	15.8%	15.8%	15.6%	15.3%	15.9%
Eastbound Subtotal:	30.8%	30.8%	29.8%	29.1%	28.8%
Japan	22.5%	22.5%	22.3%	21.8%	21.6%
Other	7.5%	7.5%	7.4%	7.3%	7.2%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

4.6.3 Scenarios Related to Removal of Constraints

As discussed in Section 3.1, the logic of a "Constrained No-Action Future" is that *not* extending the runway or otherwise improving the airport would choke off or "constrain" some of the growth that the DOT forecasts assume will happen by 2010. Thus, the impact analysis would require a starting point lower than the DOT forecast levels, and runway impacts could involve both added demand from the foregoing factors and the removal of assumed constraints to growth.

CRI and expert interviewees identified two mechanisms by which *not* extending the runway might reduce or constrain future growth in visitor counts:

(1) There may be an existing pent-up demand for Maui tourism which is deterred by the need to change planes at Honolulu.

(2) 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.

Interviewees gave little credence to the first hypothesis, but somewhat more credence to the second. At CRI, we are doubtful about the second scenario as well. However, we will assume a maximal "constraint effect" of 10% — i.e., the "Constrained No-Action Future" would have just 90% of the visitor arrivals from each geographical market assumed in the "Unconstrained No-Action Future" of the DOT forecasts. The 10% constraint factor comes from three separate sources:

- The study by Fujii, Im, and Mak (1992) found no supposed Maui impact of the introduction of West Coast flights in 1983 to exceed 10%;
- Fields (1992) used the 10% figure for affected westbound markets;
- In our executive interview process, among those who thought there might be a constraint-related impact, 10% was the highest specific level suggested.

Exhibit 4-S
LIKELY EFFECTS OF DOMESTIC NONSTOP FLIGHTS ON VISITOR ARRIVALS: ASSUMING "NO-ACTION" FUTURE IS CONSTRAINED

(All Numbers Expressed as Percentage of Forecast Levels)

NATURE OF IMPACT	No Action (Constrained) Assumed % of Forecast Level	7,000' Max Likely Addl Effect	7,000' New % of Forecast	8,500' (West Coast full load & Denver restricted load) Max Likely Addl Effect	8,500' New % of Forecast	9500'/9600' (MidWest full load) Max Likely Addl Effect	9500'/9600' New % of Forecast	10,500' (East Coast full load) Max Likely Addl Effect	10,500' New % of Forecast
REMOVAL OF CONSTRAINTS									
West Coast	90%	0%	90%	10%	100%	10%	100%	10%	100%
Rocky Mountains	90%	0%	90%	5%	95%	10%	100%	10%	100%
Mid West	90%	0%	90%	0%	90%	10%	100%	10%	100%
East/South	90%	0%	90%	0%	90%	0%	90%	10%	100%
Westbound Wtd Avg	90%		90%		94%		99%		100%
Japan	90%	0%	90%	0%	90%	0%	90%	0%	90%
Other International	90%	0%	90%	0%	90%	0%	90%	0%	90%
Eastbound Wtd Avg	90%		90%		90%		90%		90%
TOTAL WTD AVG	90%		90%		93%		96%		97%
ADDED DEMAND									
West Coast		0%	90%	2%	102%	2%	102%	2%	102%
Rocky Mountains		0%	90%	5%	100%	10%	110%	10%	110%
Mid West		0%	90%	0%	90%	10%	110%	10%	110%
East/South		0%	90%	0%	90%	0%	90%	5%	105%
Westbound Wtd Avg			90%		95%		102%		104%
Japan		0%	90%	0%	90%	0%	90%	0%	90%
Other International		0%	90%	0%	90%	0%	90%	0%	90%
Eastbound Wtd Avg			90%		90%		90%		90%
TOTAL WTD AVG			90%		94%		99%		101%
IMPACT (COMBINED)									
West Coast			0%		12%		12%		12%
Rocky Mountains			0%		10%		20%		20%
Mid West			0%		0%		20%		20%
East/South			0%		0%		0%		15%
Westbound Wtd Avg			0%		6%		12%		15%
Japan			0%		0%		0%		0%
Other International			0%		0%		0%		0%
Eastbound Wtd Avg			0%		0%		0%		0%
TOTAL WTD AVG			0%		4%		8%		11%

NOTE Weighted averages based on assumed 2010 Visitor Arrival Shares from Exhibit 4-P

Thus, for purposes of this analysis, we assume that the "constraint removal" effect of nonstop flights to a given geographical market area would be to increase the visitor count for that area from 90% to 100% of the DOT forecast level by the year 2010. (If only restricted loads are permitted, we assume a 5% rather than full 10% differential.) Only westbound markets show the 10% differential, since the additional effects of internationalization are separately discussed in Section 7.

Exhibit 4-S on the previous page shows the overall implications of these assumptions, again expressed as percentages of the Year 2010 DOT forecast levels — including combined (or "cumulative") impact of the effects of added demand discussed in the preceding Section 4.6.2. For the Preferred Alternative (runway of 9,600 feet), there would be an increase over the "No-Action Future" of nine percentage points (9% of the full DOT forecast level) due to combined effects. For a 10,500-foot runway, the increase would be 11% of the full DOT forecast level.

In other words, the analysis suggests that the combined effects of constraint removal and added demand from major runway extensions would simply move the visitor arrivals back up from the hypothesized "constrained" levels to about the full levels specified in the DOT forecast for year 2010. Again, there is a slight associated shift in the westbound/eastbound share of visitor arrivals, as indicated in Exhibit 4-T on the next page.

4.6.4 Sensitivity Analysis: Tourism Growth Levels

The next steps of the analysis are to:

(1) Use the results from Exhibit 4-C to specify visitor levels for the "Unconstrained No-Action Future."

(2) Use similar assumptions and calculations (from Section 4.3 and associated appendices) to specify visitor levels for the "Constrained No-Action Future."

(3) Based on the immediately foregoing analyses, calculate adjusted visitor arrival figures for each runway alternative related to each "No-Action" scenario (Unconstrained or Constrained); from these, calculate associated average visitor census and occupied visitor figures as was done in Section 4.3.

(4) Subtract assumed "No-Action" figures from figures for each runway alternative to calculate impact.

Exhibit 4-T
LIKELY EFFECTS OF DOMESTIC NONSTOP FLIGHTS ON 2010 VISITOR ARRIVAL SHARE: ASSUMING "NO-ACTION" FUTURE IS CONSTRAINED

	Assumed "No-Action" Share	Changes in Share Associated with Added Demand for Unconstrained "No-Action" Future			
	(from Exhibit 4-P)	7,000'	8,500'	9,500'/9,600'	10,500'
Westbound Subtotal:	76.8%	76.9%	71.8%	71.7%	72.2%
West Coast	28.0%	28.0%	30.1%	29.3%	28.9%
Rocky Mountains	4.9%	4.9%	5.0%	5.1%	5.1%
Mid West	21.4%	21.4%	20.7%	22.4%	22.0%
East/South	15.8%	15.8%	15.2%	14.9%	16.2%
Eastbound Subtotal:	30.8%	30.8%	28.8%	28.3%	27.8%
Japan	22.5%	22.5%	21.8%	21.2%	20.9%
Other	7.5%	7.5%	7.3%	7.1%	7.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

	Changes Including Effects of Added Demand			
Westbound Subtotal:	76.8%	71.2%	72.8%	73.3%
West Coast	28.0%	30.4%	29.0%	28.3%
Rocky Mountains	4.9%	5.2%	5.5%	5.3%
Mid West	21.4%	20.5%	23.8%	23.3%
East/South	15.8%	15.1%	14.4%	16.4%
Eastbound Subtotal:	30.8%	28.8%	27.4%	26.7%
Japan	22.5%	21.6%	20.5%	20.1%
Other	7.5%	7.2%	6.8%	6.7%
TOTAL	100.0%	100.0%	100.0%	100.0%

Results from the first three steps of the sensitivity analysis are summarized in Exhibit 4-U, while Exhibit 4-V shows results from the final impact calculations for both the Unconstrained and Constrained No-Action futures (see following pages for these exhibits).

Impacts Assuming Unconstrained No-Action Future. This analysis assumes that the "No-Action Future" is equivalent to the DOT forecast levels for the year 2010, and any impacts are due solely to added (westbound-only) demand triggered by runway extensions of various lengths.

As shown in the upper part of Exhibit 4-V, the estimated impact is zero for alternatives retaining the present 7,000-foot runway length; around 1% for an 8,500-foot runway; 3% to 4% for 9,500- or 9,600-foot runway lengths, and up to 5% for a 10,500-foot runway.

Exhibit 4-U
SENSITIVITY ANALYSIS RESULTS:
YEAR 2010 MAUI TOURISM GROWTH LEVELS (1)

	No-Action Future (2)	RUNWAY ALTERNATIVES 7,000' %	7,000' Adjusted #	8,500' %	8,500' Adjusted #	9500'/9600' %	9500'/9600' Adjusted #	10,500' %	10,500' Adjusted #
UNCONSTRAINED									
VISITOR ARRIVALS									
Total Maui County	3,901,360		3,901,360		3,932,770		4,025,620		4,056,340
Westbound	2,730,950	100%	2,730,950	101%	2,762,360	105%	2,855,210	106%	2,885,930
Eastbound	1,170,410	100%	1,170,410	100%	1,170,410	100%	1,170,410	100%	1,170,410
Maui Island (3)	3,667,280		3,667,280		3,696,690		3,791,540		3,822,260
Westbound	2,567,090		2,567,090		2,596,500		2,691,350		2,722,070
Eastbound	1,100,190		1,100,190		1,100,190		1,100,190		1,100,190
AVERAGE VISITOR CENSUS									
Total Maui County	69,690		69,690		70,350		72,280		72,920
Westbound	56,860		56,860		57,520		59,450		60,090
Eastbound	12,830		12,830		12,830		12,830		12,830
Maui Island (3)	65,510		65,510		66,170		68,100		68,740
Westbound	53,450		53,450		54,110		56,040		56,680
Eastbound	12,060		12,060		12,060		12,060		12,060
OCCUPIED VISITOR UNITS									
Total Maui County	24,890		24,890		25,130		25,810		26,040
Maui Island (3)	23,400		23,400		23,630		24,320		24,550
CONSTRAINED									
VISITOR ARRIVALS									
Total Maui County	3,511,230		3,511,230		3,661,430		3,847,130		3,939,300
Westbound	2,457,860	90%	2,457,860	96%	2,608,060	102%	2,793,760	106%	2,885,930
Eastbound	1,053,370	90%	1,053,370	90%	1,053,370	90%	1,053,370	90%	1,053,370
Maui Island (3)	3,277,150		3,277,150		3,427,350		3,613,050		3,705,220
Westbound	2,294,000		2,294,000		2,444,200		2,629,900		2,722,070
Eastbound	983,150		983,150		983,150		983,150		983,150
AVERAGE VISITOR CENSUS									
Total Maui County	62,720		62,720		65,840		69,710		71,630
Westbound	51,180		51,180		54,300		58,170		60,090
Eastbound	11,540		11,540		11,540		11,540		11,540
Maui Island (3)	58,540		58,540		61,660		65,530		67,450
Westbound	47,770		47,770		50,890		54,760		56,680
Eastbound	10,770		10,770		10,770		10,770		10,770
OCCUPIED VISITOR UNITS									
Total Maui County	22,400		22,400		23,510		24,900		25,580
Maui Island (3)	20,910		20,910		22,020		23,400		24,090

NOTES (1) Percentage of assumed change, as calculated in Exhibit 4-Q for Unconstrained and Exhibit 4-S for Constrained, adjusts the No-Action Future visitor arrivals.
(2) Based on 100% and 90% of the Annex 1994 visitor arrivals for Unconstrained and Constrained, respectively
(3) Total assumed change (i.e., 100%) caused by the various runway alternatives is allocated to Maui Island

Exhibit 4-V
SENSITIVITY ANALYSIS RESULTS:
YEAR 2010 MAUI TOURISM GROWTH IMPACT CALCULATIONS (1)

	No-Action Future (2)	RUNWAY ALTERNATIVES 7,000' Difference	8,500' Difference	9500'/9600' Difference	10,500' Difference
UNCONSTRAINED					
VISITOR ARRIVALS					
Total Maui County	3,901,360	0	31,410	124,260	154,980
Westbound	2,730,950	0	31,410	124,260	154,980
Eastbound	1,170,410	0	0	0	0
Maui Island (3)	3,667,280	0	31,410	124,260	154,980
Westbound	2,567,090	0	31,410	124,260	154,980
Eastbound	1,100,190	0	0	0	0
Percentage Increase		0%	1%	3%	4%
AVERAGE VISITOR CENSUS					
Total Maui County	69,690	0	660	2,590	3,230
Westbound	56,860	0	660	2,590	3,230
Eastbound	12,830	0	0	0	0
Maui Island (3)	65,510	0	660	2,590	3,230
Westbound	53,450	0	660	2,590	3,230
Eastbound	12,060	0	0	0	0
Percentage Increase		0%	1%	4%	5%
OCCUPIED VISITOR UNITS					
Total Maui County	24,890	0	240	920	1,150
Maui Island (3)	23,400	0	240	920	1,150
Percentage Increase		0%	1%	4%	5%
CONSTRAINED					
VISITOR ARRIVALS					
Total Maui County	3,511,230	0	150,200	335,900	428,070
Westbound	2,457,860	0	150,200	335,900	428,070
Eastbound	1,053,370	0	0	0	0
Maui Island (3)	3,277,150	0	150,200	335,900	428,070
Westbound	2,294,000	0	150,200	335,900	428,070
Eastbound	983,150	0	0	0	0
Percentage Increase		0%	5%	10%	13%
AVERAGE VISITOR CENSUS					
Total Maui County	62,720	0	3,120	6,990	8,910
Westbound	51,180	0	3,120	6,990	8,910
Eastbound	11,540	0	0	0	0
Maui Island (3)	58,540	0	3,120	6,990	8,910
Westbound	47,770	0	3,120	6,990	8,910
Eastbound	10,770	0	0	0	0
Percentage Increase		0%	5%	12%	15%
OCCUPIED VISITOR UNITS					
Total Maui County	22,400	0	1,110	2,500	3,180
Maui Island (3)	20,910	0	1,110	2,500	3,180
Percentage Increase		0%	5%	12%	15%

NOTES (1) Calculated as the difference between the No-Action Future and the assumed change from Exhibit 4-U
(2) Based on 100% and 90% of the Annex 1994 visitor arrivals for Unconstrained and Constrained, respectively
(3) Total assumed change (i.e., 100%) caused by the various runway alternatives is allocated to Maui Island

The meaning of these impacts can be seen in two ways:

- Taking the results for "Occupied Visitor Units" at face value, the maximal likely impact can be interpreted as equivalent to new hotel construction: one small additional hotel for an 8,500-foot runway, two or three mid-sized hotels for a 9,600-foot runway, and three or four mid-sized hotels for a 10,500-foot runway.

- However, as stressed in Section 3, socio-economic forecasts and impact estimates are not to be considered as totally accurate predictions, but rather as approximate, order-of-magnitude "best guesses" about the future. For this reason, the "significance criteria" for this assessment were generally set at the 5% level (and CRI considers this a restrictive figure for this sort of estimating purpose).

  In this light, only the visitor industry impacts of a 10,500-foot runway approach the "significance" criterion.

Impacts Assuming Constrained No-Action Future. This analysis assumes that the "No-Action Future" starting point would be at a lower level — 90% of the DOT forecast levels — and impacts are the result of both added demand and removal of constraints to growth in particular geographical markets affected by nonstop flights which could use extended runways of various lengths.

As shown in the lower part of Exhibit 4-V, the estimated combined impacts of added demand and constraint removal on various visitor industry level measurements are 5% for an 8,500-foot runway; 10% to 12% for a 9,600-foot runway; and 13% to 15% for a 10,500-foot runway.

Technically, this means that visitor industry growth impacts for all three runway extension alternatives (8,500, 9,600, and 10,500 feet) would exceed the 5% "significance" criterion. However, it should also be remembered that these are percentage increases over a lower starting point, such that the maximal "impact" of a 10,500-foot runway is simply to bring the estimated year 2010 visitor activity levels back to about the same levels contained in the DOT forecast.

4.6.5 Sensitivity Analysis: Residential Growth Levels

The final steps in the analysis are to:

(1) Use the results from Exhibit 4-E to specify residential growth levels (jobs, population, housing units) for the "Unconstrained No-Action Future."

(2) Use similar assumptions and calculations (from Section 4.3 and associated appendices) to specify residential growth levels for the "Constrained No-Action Future."

(3) For each runway alternative related to each "No-Action" scenario (Unconstrained or Constrained), calculate associated residential growth figures as was done in Section 4.3.

(4) Subtract assumed "No-Action" figures from figures for each runway alternative to calculate impact.

Results from the first three steps are summarized in Exhibit 4-W (below), while Exhibit 4-X (next page) shows results from the final impact calculations for both the Unconstrained and Constrained No-Action futures.

Exhibit 4-W
SENSITIVITY ANALYSIS RESULTS:
YEAR 2010 RESIDENTIAL GROWTH LEVELS (1)

	No-Action Future (2)	RUNWAY ALTERNATIVES 7,000'	8,500'	9500'/9600'	10,500'
UNCONSTRAINED					
CIVILIAN JOBS					
Total Maui County	73,460	73,460	73,980	75,500	76,000
Maui Island	69,080	69,080	69,600	71,120	71,630
RESIDENT POPULATION					
Total Maui County	138,160	138,160	139,140	142,000	142,950
Maui Island	129,880	129,880	130,860	133,720	134,670
HOUSING UNITS					
Total Maui County	50,020	50,020	50,380	51,410	51,760
Maui Island	47,020	47,020	47,380	48,420	48,760
CONSTRAINED					
CIVILIAN JOBS					
Total Maui County	67,100	67,100	69,560	72,610	74,130
Maui Island	62,710	62,710	65,180	68,230	69,750
RESIDENT POPULATION					
Total Maui County	126,190	126,190	130,820	136,570	139,420
Maui Island	117,910	117,910	122,540	129,290	131,140
HOUSING UNITS					
Total Maui County	45,690	45,690	47,370	49,450	50,480
Maui Island	42,690	42,690	44,370	46,450	47,480

NOTES (1) See Appendices B-4 and B-5 for detailed assumptions and calculations used to produce these figures. All figures rounded to nearest ten.
(2) Based on the Ames 1994 Projections, as shown in Exhibit 4-E.

Exhibit 4-X
SENSITIVITY ANALYSIS RESULTS:
YEAR 2010 RESIDENTIAL GROWTH IMPACT CALCULATIONS (1)

	No-Action Future (2)	RUNWAY ALTERNATIVES 7,000'	8,500'	9500'/9600'	10,500'
UNCONSTRAINED					
CIVILIAN JOBS					
Total Maui County	73,460	0	520	2,040	2,540
Maui Island	69,080	0	520	2,040	2,540
Percentage Increase		0%	1%	3%	4%
RESIDENT POPULATION					
Total Maui County	138,160	0	960	3,840	4,790
Maui Island	129,880	0	960	3,840	4,790
Percentage Increase		0%	1%	3%	4%
HOUSING UNITS					
Total Maui County	50,020	0	360	1,390	1,740
Maui Island	47,020	0	360	1,390	1,740
Percentage Increase		0%	1%	3%	4%
CONSTRAINED					
CIVILIAN JOBS					
Total Maui County	67,100	0	2,460	5,510	7,030
Maui Island	62,710	0	2,460	5,510	7,030
Percentage Increase		0%	4%	9%	11%
RESIDENT POPULATION					
Total Maui County	126,190	0	4,630	10,360	13,230
Maui Island	117,910	0	4,630	10,360	13,230
Percentage Increase		0%	4%	9%	11%
HOUSING UNITS					
Total Maui County	45,690	0	1,680	3,760	4,790
Maui Island	42,690	0	1,680	3,760	4,790
Percentage Increase		0%	4%	9%	11%

NOTES (1) Calculated as the difference between the No-Action Future and the assumed change from Exhibit 4-W.
(2) Based on the Aries 1994 Projections, as shown in Exhibit 4-E.

Impacts Assuming Unconstrained No-Action Future. Again, this analysis assumes that the "No-Action Future" is equivalent to the DOT forecast levels for the year 2010, and any impacts are due solely to added (westbound-only) demand triggered by runway extensions of various lengths.

As shown in the upper part of Exhibit 4-X, the estimated impact is zero for alternatives retaining the present 7,000-foot runway length; around 1% for an 8,500-foot runway; 3% for 9,500- or 9,600-foot runway lengths; and 4% for a 10,500-foot runway. (The residential population growth impacts can be slightly less in percentage terms than the visitor population growth impacts because a certain proportion of Maui's employment and population is not affected by tourism growth.)

Thus, none of the residential population growth impacts meet the 5% "significance" criterion.

Impacts Assuming Constrained No-Action Future. Again, this analysis assumes that the "No-Action Future" starting point would be at a lower level — 90% of the DOT forecast levels — and impacts are the result of both added demand and removal of constraints to growth in particular geographical markets affected by nonstop flights which could use extended runways of various lengths.

As shown in the lower part of Exhibit 4-X, the estimated combined impacts of added demand and constraint removal on various visitor industry level measurements are 4% for an 8,500-foot runway; 9% for a 9,600-foot runway; and 11% for a 10,500-foot runway.

And, again, these impacts meet the 5% "significance" criterion for the 9,600- and the 10,500-foot runway alternatives ... but the practical effect of this "significant" growth over a lower presumed starting point is simply to raise projected year 2010 residential growth levels to roughly the same as (or very slightly more than) the levels implicit in the full DOT forecast.

4.6.6 Conclusions from Sensitivity Analysis

Overall. CRI's best conclusion was that the runway extensions would probably have little or no effect on Maui growth levels. However, because the evidence was not completely clear, we followed up with a sensitivity analysis to determine the greatest reasonable level of impact that might be expected if growth-inducing effects do occur (assuming no radical shifts in the underlying structure of the aviation or tourism industries).

The sensitivity analysis was complicated by the need to specify two different possible "No-Action" futures. However, our basic conclusions would be:

- If the DOT forecast levels are taken as the best possible indication of the "No-Action" future, then our sense of the most reasonable maximal effects of runway growth-inducing impacts still suggests only marginal impact. The 5% significance criterion is even approached only for a 10,500-foot runway.

- If, on the other hand, the DOT forecast levels ignore the possibility that *not* building a runway would constrain some tourism growth, then the effects of building a 9,600- or a 10,500-foot runway would generate "significant" visitor and residential growth (in excess of 5%). The practical implications of that finding are still debatable, since the level of

growth generated would be only enough to raise the levels back up close to the DOT forecast levels.

With such equivocal results from a sensitivity analysis, CRI sees little need to revise our initial conclusion: The most likely growth impact of runway extensions, without internationalization, would be "little or none."

Implications for Other Hawaii Resort Destinations. The basic conclusion, generally reinforced by this sensitivity analysis, has been "little or no growth-inducing impact." This implies little or no effect on visitor activity in other Hawaiian islands. A few visitor nights now being spent on Oahu might be switched to Maui, but not many.

If, however, the "Constrained No-Action Future" hypothesis is accepted, it necessarily implies that not improving the airport would divert some potential Maui visitors to other destinations. It is difficult to say for certain how many of those diverted travelers would go to other Hawaiian islands rather than resorts elsewhere in the world. However, the Hawaii destination most likely to benefit from any such constraint on Maui growth would be Kona, since it is the only other Neighbor Island destination now serviced by direct flights.

4.7 PROJECT IMPLICATIONS FOR AGRICULTURAL GROWTH ON MAUI

The ability to export products overseas is vital to the development of diversified agriculture in Hawaii. Ease of shipment allows the marketing of Hawaii's agricultural products as high-quality items and to distant markets. This section was developed from discussions with growers and air cargo shippers (listed in Appendix C) about existing conditions and likely future conditions.

Existing Conditions. During 1993, Kahului Airport handled approximately 12,500 tons of overseas cargo (enplaned and deplaned) and 22,700 tons of interisland cargo (enplaned and deplaned) (Hawaii State DBEDT, 1994a). The majority of agricultural air cargo shipped from Kahului is pineapple. Maui Land and Pineapple (MLP) flies approximately 6,000 tons of fresh pineapple a year overseas. To a much lesser extent, flowers and miscellaneous goods, such as Maui onions, are shipped by air. Flowers require "door-to-door" services and Federal Express is Maui's primary flower shipper (personal communication, Kevin Yokomaya, Hawaii Agriculture Statistics Service, October 1994; and Craig Masumiya, Federal Express, October 1994).

United Airlines is the only airline that flies nonstop to the U.S. Mainland — San Francisco and Los Angeles. United has one flight to Chicago, which stops in Honolulu to refuel and pick up passengers. All other airlines with flights from

Kahului stop in Honolulu (personal communication, General Manager Jim Gusukuma, United Airlines, October 1994).

Maui growers and air cargo shippers identified several limitations of air cargo service from Kahului:

1. Because air carriers make little profit on cargo shipments, it takes fourth priority after (and may be "bumped" for) passengers, baggage, and mail.
2. Cargo capacity decreases during peak visitor periods and the Christmas mailing season.
3. With few nonstop flights, delivery delays and damage from increased handling and improper storage (i.e. containers sitting in the sun for hours on the tarmac) occur regularly.
4. Only three overseas carriers (American Airlines, United Airlines, and Delta Airlines) fly DC-10 or larger aircraft, which are necessary for container shipping to be profitable.
5. The combination of aircraft weight restrictions (due to the existing runway length and weather conditions) and few Mainland flights from Kahului can result in a backlog of cargo and consequent spoilage.

MLP officials have identified limited air cargo capacity at Kahului as a major barrier to operating at full potential during its peak summer season. (Peak production occurs during summer when school students and other seasonal workers can work double shifts.) Past experience has demonstrated that a maximum of about 102 LD3 (1.5-ton) cargo containers can be effectively shipped from Kahului weekly. When MLP has attempted to increase shipments to approximately 117 containers per week, it has experienced severe backlogs and spoilage. MLP officials estimate that the company could easily produce 30%-40% more pineapple for export by air during the summer peak season, if airlines could take additional cargo containers (personal communication, Joe Kikiwi, Maui Land and Pineapple, October 1994).

MLP records show that it shipped 3,980 LD3 containers between January to October 6, 1994. Of that total, approximately 84% (3,341) containers arrived at their destination on time. Most of the remaining containers arrived late and a few were not delivered at all due to spoilage. Delays in delivery decrease the market value of fruit due to lack of freshness (personal communication, Joe Kikiwi, Maui Land and Pineapple, October 1994).

United Airlines officials have reported that the carrier bumped a total of 727 passengers and 1.6 million pounds of cargo (an average of approximately 30,700

lb. per week) during 1992 due to weight restrictions at Kahului. Cargo bumped was primarily pineapple. United officials estimated that delayed cargo caused the airline to lose $800,000 in revenue during 1992 (Perry, 1993).

Kahului is Federal Express's busiest neighbor-island airport, shipping approximately 25,000 lb. of freight a day for a total of about 175,000 lb. per week. Due to limited airport facilities, Federal Express does not have permanent space for its aircraft or on-site offices and uses small feeder aircraft for pickups and deliveries. As mentioned earlier in this section, Federal Express is Maui's primary flower shipper. Flowers are mainly shipped on Monday and Tuesday in order to make it to market by the weekend (personal communication, Craig Masumiya, Federal Express, October 1994).

Likely Future Conditions Independent of Actions. Total cargo shipped to and from Kahului is expected to grow to 128% of the 1992 level by the year 2010 (Aries, 1994). That estimate is based on historical trends and covers all types of cargo, not just agricultural exports. To estimate potential future demand for export cargo space, CRI asked shippers how large an increase in exports could occur if problems currently limiting production — including, but not limited to water and cargo space — were solved. CRI concluded that agricultural exports could grow to as much as 150% of current levels by 2010. This figure represents an outside estimate of future demand for air cargo space.

Without the project, Maui Airport's capacity to handle cargo is not expected to grow. To the extent that air carrier traffic is constrained without the project (as explored in the sensitivity analysis of Section 4), air cargo capacity would also be affected.

Impacts of Proposed Actions. Expansion of air cargo facilities proposed under all alternatives is planned to allow the Airport to accommodate cargo demand forecasted through 2010. The remaining question is whether the airport improvements affect the amount of freight that air carriers would ship out of Maui.

Federal Express officials have stated that airport improvements would allow them to use more efficient jet aircraft which would provide for faster delivery, more flexible pick-up times (especially important for perishable cargo such as flowers), and less damage to cargo due to reduced handling (personal communication, Craig Masumiya, Federal Express, October 1994).

Runway improvements would allow large overseas aircraft to take off with additional weight, some of which could be devoted to cargo. CRI has developed an estimate of the increase in cargo capacity associated with runway extension, as shown in Exhibit 4-Y. (Actual changes in cargo capacity will depend on factors such as the mix of aircraft serving Kahului. See Appendix M for further analysis.)

Exhibit 4-Y
ESTIMATED CHANGE IN CARGO CAPACITY BY RUNWAY LENGTH (1)

Runway Length Alternatives (ft.)	Average Increase in Allowable Aircraft Weight per Flight (lbs.)	Estimated Additional Weight Available for Cargo (lbs.) (2)	Estimated Additional Cargo Capacity per Week (lbs.) (3)	Estimated Additional Cargo Capacity per Year (tons)
7,000	0	0	0	0
8,500	5,000	1,250	33,750	878
9,500/9,600	10,000	2,500	67,500	1,755
10,500	15,000	3,750	101,250	2,633

NOTES (1) Estimated change in cargo capacity based on allowable takeoff weight for DC-10 aircraft flying to the West Coast For other aircraft, allowable takeoff weight and additional cargo capacity with runway length alternatives are greater
(2) Twenty-five percent of additional weight assumed to be available for cargo
(3) Based on number of flights (27) shipping cargo from Kahului to the West Coast of the U S Mainland during the week of November 7-13, 1994

SOURCES CRI analysis based on Tanaka, 1991, and personal communication, S Allison, P&D Aviation, November 1994

This analysis suggests that runway extension could affect cargo operations significantly. For instance, the estimated additional cargo capacity with any of the alternatives involving runway extension — all except Alternative 1 — would cover the 1.6 million lb. of cargo which United Airlines was forced to bump in 1992 due to aircraft weight restrictions. Similarly, the added cargo capacity shown here for a 9,600-foot runway would easily cover MLP's potential increase in summer pineapple shipments. However, even if much more pineapple could be shipped by air, the increased tonnage would be a small percentage of Maui's total product. Hence the resulting growth is not a significant change for Maui's pineapple industry.

The calculations shown in Exhibit 4-Y may well show only part of the impact of runway extension. They deal with additional weight that could be carried by one type of aircraft. They do not take into account either the use of larger aircraft or possible increases in the number of flights, both of which could occur with a longer runway. It is quite possible — but by no means certain — that runway extension and improved cargo facilities at Kahului will allow export of all the agricultural cargo that Maui can sell overseas through 2010.

CRI concludes that runway extension would increase the potential for increased cargo capacity, if the runway extension results in more outbound direct flights. However, actual cargo shipped on any given flight depends on the various factors discussed previously, and runway extension is unlikely to change any of these. Therefore, it is ultimately uncertain as to what extent the easing of aircraft weight restrictions would actually impact cargo shipped from Maui.

4.8 SOCIO-CULTURAL CONSEQUENCES OF GROWTH

The following discussion looks at probable future Maui growth-related social conditions — things such as population composition, social relations, and stress factors (crime, divorce, etc.). Since 1970, Maui has witnessed very substantial changes in these socio-cultural factors. If tourism-related growth continues, some of the factors will continue to change, although it is by no means clear that everything will keep changing.

However, growth is not considered to be effectively related to airport improvements in the timeframe of this analysis, and therefore the airport improvements are unlikely either to add or detract much from the various potential socio-cultural consequences of growth. On the other hand, the airport proposal has already had significant impacts of a socio-political nature, given public perceptions about growth and the airport's function as a symbol (to some) of growth on Maui.

4.8.1 Evidence from Outside Hawaii

For the most part, CRI believes that the best evidence about social impacts of continued growth on Maui comes from actual past growth experiences on Maui or Hawaii itself. The remainder of Section 4.8 will therefore focus primarily on Maui/Hawaii evidence. However, results of sociological studies from other places also merit some attention.

The bulk of the academic literature on growth-related social impacts has focused on consequences of sudden economic change and rapid growth for small rural communities — in fact, the focus has been on small communities more comparable in size to, say, Makawao or Hana than to Maui Island as a whole.

Early studies of "boomtowns" (small Western communities impacted by mining or energy development) in the 1970s tended to reflect academic theories that speed of change and shifts in social structure were primary factors leading to a wide variety of social ills such as crime, mental illness, drug/alcohol abuse, and a general breakdown in "community" (c.f., Kohrs, 1974; Gold, 1974; Gilmore and Duff, 1975; Cortese and Jones, 1977; Weisz, 1979).

These early studies were eventually criticized as being based more on "anti-growth" ideology than solid data (Wilkinson et. al., 1982). More recent studies (including those set in other countries) have been more carefully designed and have led to more complex conclusions (c.f., Forsythe, 1980; England and Albrect, 1984; Krannich and Greider, 1984; Stangeland, 1984; Israel and Wilkinson, 1987; Krannich et. al., 1989; Berry et. al, 1990):

- In general, questionnaire measures of subjective community satisfaction decline in high-growth communities — people say that life was more relaxed or better before the sudden changes.

- However, objective measures of things such as mental health and crime often do not bear out this sense of community decline. Resident dissatisfaction, while real, apparently is not serious enough to interfere with everyday normal life functioning in most cases.

- Similarly, there has sometimes been substantial resentment expressed toward newcomers by longtime residents. However, patterns of "neighboring" or "community" have not often broken down under the weight of rapid growth and in-migration. In some cases, they were strengthened.

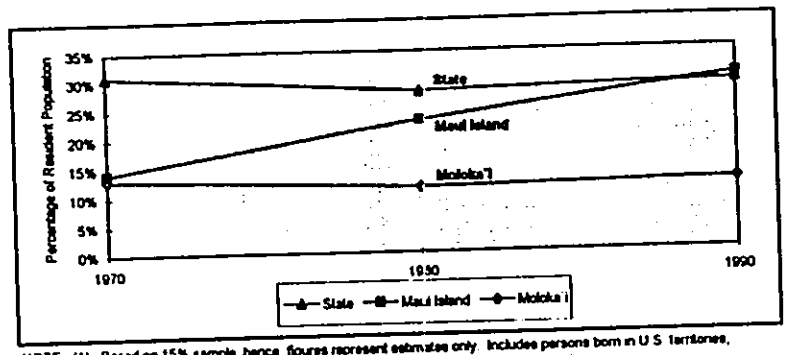
4.8.2 Current Situation and Trends

Economic and Population Changes. As discussed in Section 2, Maui's tourism industry has grown rapidly since 1970. The ratio of visitors to residents on any given day changed from around 1:10 in 1970 to around 4:10 in the early 1990s — i.e., the tourist population has grown about four times more rapidly than the resident population (Exhibit 2-K). However, the residential population growth in Maui County, and Maui Island in particular, has been substantial in and of itself. The residential population more than doubled from 1970 to 1990, a growth rate substantially higher than for the state as a whole (Exhibit 2-B).

With this economic and population growth have come changes in the structure of Maui's society. As noted earlier (Exhibit 2-C), Caucasians now form a larger share of Maui Island's population than of the overall state population. Additionally, Exhibit 4-Z (following page) shows that Maui Island's proportion of Mainland-born residents increased markedly from 1970 to 1990, whereas it remained roughly level for the state as a whole and for nearby Moloka'i. (Some exhibits in this section include Moloka'i as a sort of "control" — a Maui County island which has been economically struggling and which has not been growing rapidly.)

Although it cannot be said for sure to what extent longtime residents (as opposed to newcomers) have benefited economically from the growth, economic indicators for the Maui Island population as a whole show positive conditions, particularly when compared to the state as a whole. Until the recent tourism downturn, Maui Island generally had lower unemployment rates and rates of food stamp utilization than the state as a whole (see Exhibits 2-D and 2-E — although not shown on those exhibits, it may also be noted that Moloka'i's unemployment and food stamp utilization rates were much higher than for the state as a whole).

Exhibit 4-Z
MAINLAND-BORN RESIDENTS, 1970-1990 (1)

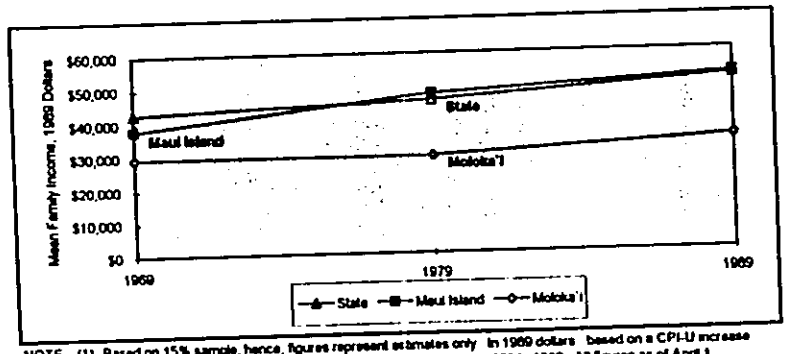


NOTE (1) Based on 15% sample, hence, figures represent estimates only Includes persons born in U S territories, and persons born abroad or at sea to American parents All figures as of April 1.

SOURCES U S Bureau of the Census, 1992, 1983, 1981b, 1972, 1971, DPED, 1973.

Exhibit 4-AA further shows that mean Maui Island family income (in inflation-adjusted constant dollars) substantially increased from 1970 to 1990, bringing Maui incomes up to statewide levels. (By contrast, little change occurred on Moloka'i, although residents there often supplement cash income with subsistence activities.)

Exhibit 4-AA
MEAN FAMILY INCOME (1989 DOLLARS), 1969-1989 (1)



NOTE (1) Based on 15% sample, hence, figures represent estimates only In 1989 dollars based on a CPI-U increase of 226 65% from 1969 to 1989, and an increase of 73 22% from 1979 to 1989 All figures as of April 1

SOURCES U S Bureau of the Census, 1992, 1983, 1981b, 1972, 1971.

Political Structure and Social Group Relationships. The increase in Mainland Caucasian population on Maui has been associated with a more conservative political profile, particularly in the resort areas which host large concentrations of the newcomer population. Although Maui County as a whole turned heavily Democratic in the 1950s, West and South Maui residents have recently elected a number of Republican legislative representatives. And a Mainland-born Caucasian candidate in 1990 became Maui County's first Republican mayor in some three decades.

Cultural conflicts between incoming Mainlanders and longtime residents have ranged from different values over things such as marijuana and nude beaches to recent fierce political debates about appropriate treatment of animals in residential areas. It should be noted that, for the past hundred years or more, Hawaii has always been undergoing adjustment problems relating to some ethnic group of "newcomers," and that cultural adjustment issues today also involve smaller groups of immigrant Filipinos and Asians, not just Mainland Caucasians However, because of Hawaii's history of economic domination by Caucasians extending from the 19th century to the mid-20th century, the recent Caucasian influx to Maui has social class and political overtones which may be missing in the case of other groups.

Throughout the state, Native Hawaiian political activity and calls for some form of sovereignty and self-determination have been on the rise in recent years. Maui has been no exception, and concerns about impacts on traditional sites have affected tourism-related activities ranging from a hotel in Kapalua to a proposed golf course in Waihe'e. Moloka'i, meanwhile, has been growing more "Hawaiian," both demographically and culturally, due to Hawaiian Home Lands development on that island. Throughout Maui County and the state, Native Hawaiians have expressed strong concern that further growth and change will overwhelm both rural pockets of predominantly Native Hawaiian lifestyle and also remaining aspects of Hawaiian culture and influence in the overall society.

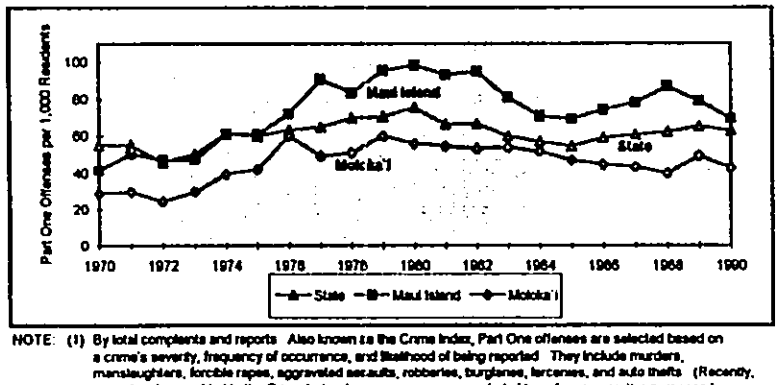
Housing and Social Stress Indicators. Housing cost and availability have been problems throughout Hawaii, and Maui's rapid population growth have made housing a particular concern there. The last U.S. Census indicated that the median rental figure for Maui County was about 10% higher than the statewide median. And while the median value of owner-occupied homes was still lower than the statewide figure for Maui County as of 1990, values (and costs) had been increasing at a more rapid rate since 1970 in Maui than statewide.

According to anecdotal reports from social workers, stress from housing cost and crowding is often a key factor in family and individual pathology CRI has extensively examined social stress indicators for the various islands of Maui County in another study (Community Resources, Inc., 1994), and we found that various parts of Maui County often had higher social stress rates than the rest of

the state, particularly during the high-growth period of the later 1980s. Exhibits 4-AB to 4-AE[2] provide selected examples for crime, child abuse, nonmarital births, and marriage dissolution.

"Serious" (Part One) Crime Rates: "Part One" criminal offenses are those defined as "serious crime" by the federal government. Total numbers are composed primarily of larcenies and burglaries in Hawaii, but also include smaller numbers of auto theft, robbery, aggravated assault, and murder. Exhibit 4-AB shows the number of such crimes per 1,000 residents on Maui Island has generally greatly exceeded comparable rates for Moloka'i or for the state as a whole:

Exhibit 4-AB
PART ONE OFFENSES, 1970-1990 (1)



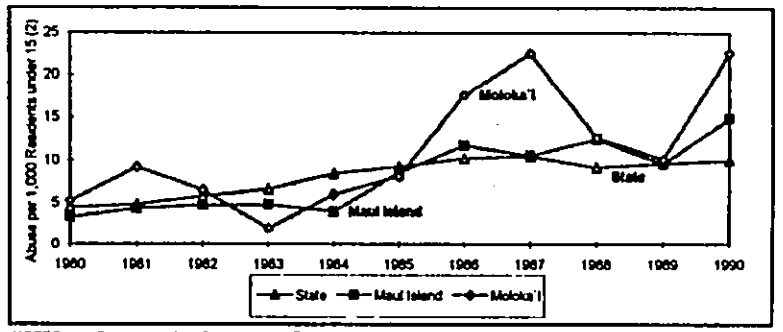
NOTE: (1) By total complaints and reports. Also known as the Crime Index, Part One offenses are selected based on a crime's severity, frequency of occurrence, and likelihood of being reported. They include murders, manslaughters, forcible rapes, aggravated assaults, robberies, burglaries, larcenies, and auto thefts. (Recently, arson has been added to the Crime Index, however, arsons are excluded here for comparative purposes.)

SOURCES: Maui County Police Department, 1994, Honolulu Police Department, 1971-94, Hawaii County Police Department, 1971-94, Kauai County Police Department, 1971-94, Hawaii State DBED, 1994a, 1993, 1992, 1985, 1971-91

(NOTE: Much of the apparent high crime rate on Maui is explained by the fact that more people generate more crime, and Maui has a particularly high number of visitors on island who are not included in the crime rate calculations. Because of data limitation problems, it is possible to compute both the Maui Island and statewide "de facto" crime rate — including tourists — for only four years, from 1987 through 1990. In two of those four years, Maui Island's de facto crime rate was actually lower than the statewide rate.)

Reported Child Abuse/Neglect (Confirmed Cases): Exhibit 4-AC shows rates per under-15 population from 1980 through 1990. (Records kept before 1980 are not comparable.) In the latter 1980s, Maui Island began to exceed statewide rates — although the increases were even more pronounced on Moloka'i, where little or no growth was occurring:

Exhibit 4-AC
CHILD ABUSE & NEGLECT, 1980-1990 (1)



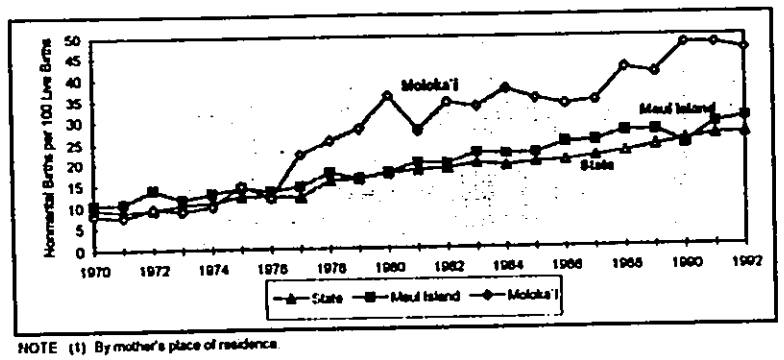
NOTES: (1) By number of confirmed reports. Total confirmed reports were tabulated into four sub-categories: Abuse, Abuse & Neglect, Neglect, and Sexual Exploitation. Each incident is counted in only one sub-category.
(2) Child abuse reports are counted for persons under 18. Since no annual population counts for persons under 18 are available, we have used the Department of Health's Health Surveillance Survey category of persons under 15 as the closest population base for the rates from 1980 to 1989. For 1990, we have applied the 1990 Census share of persons under 15 to each geographic region's annual population estimate.

SOURCES: Hawaii State Department of Human Services, 1994, 1992a, 1992c, 1991, 1989, 1988, Hawaii State Department of Health, 1994

Nonmarital Births: Rates are increasing throughout the state (and nation), but Exhibit 4-AD (next page) shows that Maui Island's rate has consistently exceeded the statewide rate. Since the late 1970s, rates have been even higher on Moloka'i, possibly reflecting cultural values on that island.

[2] Exhibits 4-AB and 4-AC show data only through the year 1990, because that is the last year for which island population estimates are available. Previously, the State of Hawaii produced inter-censal population estimates for sub-county levels each year. These make it possible to calculate population rates, which cannot be computed without the population figures. Exhibit 4-AE shows only the U.S. Census years of 1970, 1980, and 1990, because these are the only years with data on the number of married couples. Exhibit 4-AD extends through 1992 because it computes nonmarital birth rates as a function of total births, not of general population.

Exhibit 4-AD
NONMARITAL BIRTHS, 1970-1992 (1)

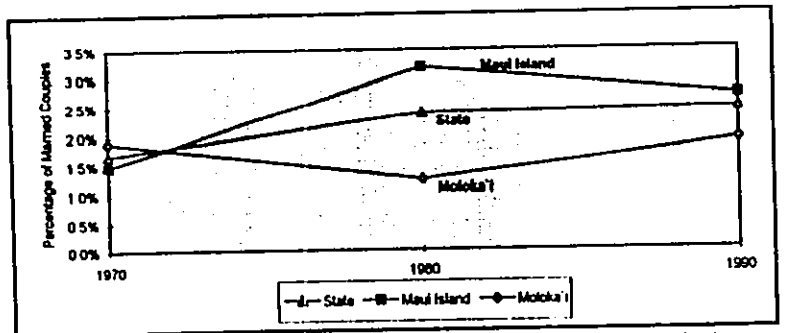


NOTE (1) By mother's place of residence

SOURCES Hawaii State Department of Health, 1993, 1992, 1971-92

Marriage Dissolution: Exhibit 4-AE shows divorces (and annulments) as a percentage of married couples in 1970, 1980, and 1990. In the U.S. Census years for the last two decades, Maui Island's rate has exceeded those of Moloka`i and the state as a whole.

Exhibit 4-AE
MARRIAGE DISSOLUTION, 1970-1990 (1)



NOTES (1) Counted when at least one of the divorcees is a resident of the geographic area Includes annulments

SOURCES U S Bureau of the Census, 1931, 1961a, 1971, Hawaii State Department of Health, 1971-92

4.8.3 Future Situation with "No Action" on Airport Improvements

If growth occurs at rates implied by the 1994 DOT forecast, the ratio of visitors to residents will continue to increase somewhat (as previously indicated in Exhibit 4-D), and demand for labor will exceed supply — not only in Maui, but throughout Hawaii. This could lead to some importation of additional foreign immigrant labor, but the more likely labor source would be, as in the past, the U.S. Mainland. For the decades from 1970 to 1990, net in-migration has accounted for 70% to 75% of Maui's population increase. This proportion would probably decline somewhat in the future, but would still exceed 50%.

Consequently, Maui's population would continue to grow increasingly Caucasian and/or Mainland-born. Political and social-relationship changes associated with such population shifts would continue, and possibly intensify.

(These trends probably would not continue indefinitely. The state as a whole in the past several decades has witnessed little or no change in terms of proportions of Mainland-born and/or Caucasian people, and Maui would probably follow suit as its growth rate slows. Additionally, some cultural conflicts will be softened through adaptation of both groups, as occurred in the past when various waves of immigrants learned to live with one another in the agricultural economy. In the short term, however, the continued growth suggested by the DOT forecasts would fuel trends toward more of the same social structural changes which have occurred in the past two decades.)

It is less clear what will happen to the sort of social conditions charted in Exhibits 4-AB to 4-AE. There are several reasons for this uncertainty. First, the cause-and-effect linkage between growth and these social conditions is uncertain. For two of the four charted indicators (and for other indicators not discussed here, such as attempted suicides), rates were generally higher on the low-growth and economically dormant island of Moloka`i. In many cases, social problems associated with economic stagnation can outweigh problems associated with rapid growth.

Second, growth anticipated by the DOT forecasts is still substantial, but it is less than the rates which actually occurred on Maui in the 1970s and 1980s. For the most part, the upward shifts in social problem indicators on Maui correlated with the initial spurt of tourism development. The most recent trends indicate that social problems were leveling off or even dropping during the last growth spurt prior to the downturn of the early 1990s, suggesting that supplemental growth has produced little or no additional impact on social problem rates. For example, despite current public perceptions, Part One crime rates actually peaked around 1980 and have since fallen — a function of the changing age structure of the population.

(NOTE: Crime is generally considered the prime example of a social problem which may be particularly sensitive to the growth of tourism, not just rapid growth of residential population. However, the stability of Maui's crime rates during the growth spurt of the late 1980s calls this assumption into question. A variety of statistical studies — both in Hawaii (Fujii and Mak, 1979, 1980; Fujii, Mak, and Nishimura, 1978; Chesney-Lind and Lind, 1984) and elsewhere (c.f., Pizam, 1982; Jud, 1975; McPheters and Stronge, 1974) — have all produced indications of some sort of tourism-crime linkage, but they also lead to contradictory conclusions about exactly what type and how much effect there may be. Thus, it remains a very open question whether continued tourism growth on Maui would have any effect on crime rates there.)

Finally, some social pathologies could be mitigated by more effective societal actions in the future. For example, to the extent that social problems are a function of housing stress, these will be relieved if local government discovers a more successful policy to stimulate affordable housing construction. (Whether this policy would involve more vs. less governmental intervention in the marketplace is a political question we will not attempt to address.)

Perhaps the most reasonable conclusion is simply that, if Maui continues to bear a disproportionate share of rapid growth occurring in the state, its social problem indicators will probably continue to exceed statewide figures. Those indicators may not necessarily grow worse than they are now, and might even improve — but any improvements on Maui would likely lag behind statewide improvements.

4.8.4 Impact of Airport Improvements

The impact of airport improvements on growth-related social factors is, by definition, dependent on whether the airport improvements will induce any more growth than would occur anyway. Because CRI concluded that airport improvements are unlikely to have much if any impact on growth, we necessarily conclude they are unlikely to have much if any impact on growth-related social factors.

For purposes of the sensitivity analysis in Section 4.6, we entertained the possibility of a "Constrained No-Action Future" — one in which not improving the airport might constrain or choke off some growth. Again, simply by definition, such a "Constrained No-Action Future" means that some growth-related social changes would be constrained from occurring. The rate of structural change — shifts in demographics and related socio-political issues — would be slightly slowed. However, it is not clear that this would mean any particular difference in Maui's crime rates or other social stress indicators. Additionally, the social cost of any such "constraint" on growth would include gradually increasing interisland

flight delays, which would disproportionately affect and inconvenience Maui and other Hawaii residents.

Another form of abbreviated impact was suggested by some of our expert tourism marketing interviewees — i.e., that a runway extension provides a tool for targeted, short-term marketing efforts in years when, say, the West Coast economy is poor but times are better in the Mid West or on the East Coast. If this is actually true, then the runway would have short-term positive social impacts in preventing family or personal stresses related to periods of unemployment.

However, our primary conclusion is that airport improvements, in and of themselves, will cause no appreciable impact on socio-cultural outcomes of continued long-term growth on Maui in general. (Section 5 will discuss social impacts related to more specific on-site or near-site airport factors.)

4.8.5 Post-Script: Socio-Political (Perceptual) Impacts of Project Proposal

The preceding discussion has been about probable "actual impacts" expected in the future. However, much of the past and present social impact of the (proposed) project relates more to opinions and perceptions, and thus we close with some discussion of those topics.

Context: Public Opinions about Tourism-Related Growth. Opinions about proposed projects technically are not "project impacts," although they can be said to reflect "proposal impacts" (see Section 3.1.6). The nature of conflicting opinions about the runway extension was summarized in Section 2.5.2, where it was also noted that the most recent opinion poll on the runway extension showed a majority of Maui residents in favor (Appendix A-14). However, it is also worth noting that opinions about the Kahului Airport proposal exist in a broader socio-political context of opinions about tourism-related growth in general. This context is actually statewide, not restricted to Maui alone.

The most comprehensive study in recent years on Hawaii residents' perceptions of tourism impacts was the "1988 Statewide Tourism Impact Core Survey" (STICS), sponsored by the Hawaii State Department of Business and Economic Development (study report prepared by Community Resources, Inc., 1989). The survey's statewide sample of nearly 4,000 residents included more than 1,000 respondents from Maui County. This survey was conducted at the height of a tourism growth increase. A few of the same questions were repeated in a late 1993 survey prepared for the Hawaii Tourism Congress (Community Resources, Inc., and Market Trends Pacific, Inc., 1993b) — although the second survey did not contain a large enough Maui sub-sample to permit a Maui breakout. The 1993 survey was conducted in a period when tourism counts were declining rather than building.

The 1988 survey contained questions on many topics. Exhibit 4-AF below presents results for selected questions relevant to tourism growth. As may be seen, Hawaii residents overwhelmingly felt that tourism has been beneficial to their islands, but that the economy has become too tourism-dependent and that it is time to stop building new hotels. (There was, however, a little more uncertainty when tourism "growth" was defined in terms of new jobs rather than new hotels.) A substantial minority felt their island was "being run for tourists at the expense of local people." Maui residents were slightly more anti-growth on several of these questions than were people statewide. Interestingly, the statewide results either did not change, or else became slightly more anti-growth, during the 1993 period of tourism decline.

Exhibit 4-AF
SELECTED TOURISM GROWTH SURVEY RESULTS, 1988 & 1993

	1988		1993 (1)
	Maui County (N=1,067)	State (N=3,904)	State (N=424)
"Overall, tourism has brought more benefits than problems to this island"			
Agree	72%	74%	75%
Disagree	20%	18%	18%
Don't Know	8%	8%	7%
"It is time to stop building new hotels on this island"			
Agree	67%	68%	74%
Disagree	29%	27%	21%
Don't Know	4%	5%	5%
"This island is being run for tourists at the expense of local people."			
Agree	47%	43%	45%
Disagree	47%	49%	45%
Don't Know	6%	8%	10%
"We need more tourism jobs on this island"			
Agree	38%	43%	N/A
Disagree	56%	47%	N/A
Don't Know	6%	10%	N/A
"The island economy is too dependent on tourism"			
Agree	77%	78%	N/A
Disagree	20%	19%	N/A
Don't Know	3%	4%	N/A

NOTE (1) The 1993 survey was brief and repeated only a few questions from the 1988 survey Also, the total sample for the 1993 survey was too small to permit a breakout of Maui opinions

SOURCES Community Resources, Inc and Market Trends Pacific, Inc , 1993b, Community Resources, Inc , 1989

Some other results of relevance from the 1988 survey.

- People who lived in communities with little tourism development were more inclined to say life in their area had grown "better" rather than "worse" over the preceding five years. By contrast, people living in major resort areas such as West Maui or Waikiki were more likely to say life had grown "worse" in the past five years. This was true for lifetime residents of these areas, not just relative newcomers. (These findings are consistent with the previously mentioned Mainland studies which found that subjective measures of community satisfaction declined in high-growth communities.)

- Residents of Maui and other Hawaiian islands did not generally feel either that "too many tourists" was a major community problem or that tourism had a strongly negative impact on the number of people living in their immediate communities. However, they did feel that certain growth-related issues -- particularly cost of housing and traffic — were very major community problems, and they felt that tourism had made these problems worse. The things that people felt had been made better by tourism — such as availability of jobs or of shopping/entertainment facilities — were no longer considered important community problems. Thus, the study concluded, tourism growth had satisfied old community priorities but was now perceived as interfering with remaining priorities.

Again, these results are not directly relevant to "actual impacts" of the proposed airport improvements, but they are critical to understanding the impact of a proposal which some have perceived as facilitating more tourism growth.

Airport Proposal Impacts on Maui. Although CRI believes the actual airport improvements will cause little or no growth-related social impacts, we recognize that the proposal has generated substantial political and social controversy on Maui. People on both sides of the issue have disrupted their personal lives in order to attend acrimonious meetings, public hearings, and court proceedings over a period of many years.

Clearly, the proposed airport improvements on Maui have become a symbol to both sides, although of different things. Many opponents see it as emblematic of harmful growth, of government decisions which have already altered the character of life on Maui and which will continue to do so in the future. Proponents see it as a symbol of needed government commitment to the island's tourism and construction industries during a period of economic downturn.

As impact analysts charged with estimating future outcomes, CRI views the runway extension as having far less actual impact (whether for "good" or "bad") than most stakeholders — of either side — apparently believe will be the case. The proposal has served a socio-political function of crystallizing public debate over issues of growth on Maui. But, we believe, in actuality it is largely irrelevant to that debate.

At this point, the most critical factors affecting tourism growth on Maui are ones which are largely outside local control — the marketplace factors affecting general demand for leisure travel; the ability of other destinations to compete for larger shares of that demand; and aviation industry factors which influence airlines' interest in serving or promoting Hawaii routes. Of the factors under local control, the most important involve marketing strategies and, particularly, land use approvals for future accommodations.

These are the arenas in which questions of future tourism growth on Maui will be determined. The role of airport improvements — even if that role proves twice as large as CRI thinks, at the outside, it *might* be — is negligible compared to the roles of those other factors.

4.9 COMMENTS ON "CUMULATIVE IMPACT"

Normally, an EIS analysis includes some supplementary discussion on "cumulative impacts" — how the proposed actions would interact with other planned or proposed activities to create possibly larger effects than might be expected from the project alone.

However, it should be noted that this entire Section 4 analysis constituted a "cumulative impact assessment" in and of itself, in that it considered potential combined effects of:

- Runway extension and possible new nonstop flights;
- Future permitted growth in resort accommodations;
- Future growth in visitor demand.

No other factors on Maui are likely to make significant additional contributions to "cumulative growth impacts." As acknowledged, both the aviation and tourism industries are subject to sudden shifts and discontinuities, and a variety of exogenous changes can be imagined (most of them more likely to reduce than to augment growth). However, none of them seem specifically clear and/or sufficiently likely to permit meaningful discussion in any additional "cumulative impact" discussion above and beyond the foregoing one.

Section 5
IMMEDIATE SOCIO-ECONOMIC IMPACTS

This section deals with impacts of various alternatives on people and activities on-site at Kahului Airport and in the surrounding area. While the last section dealt with impacts distributed throughout Maui, this section focuses on the immediate area. Separate discussions deal with construction employment and income, on-site operations employment and income, impacts on nearby businesses, and impacts on surrounding residential areas.

This section goes on to address impacts of the proposed actions on air travelers and interisland airlines. While these impacts are not necessarily experienced at Kahului Airport, they could flow from both growth-inducing and immediate aspects of the proposed actions, and are hence considered here.

(Impacts of various alternatives on permanent jobs, population, and housing are part of the overall impacts estimated in Section 4; these are not additional impacts. They are identified here in order to develop an account of all the specific impacts of each alternative, taking into consideration all the actions in the various alternatives.)

5.1 OVERVIEW AND SUMMARY

Section 4 showed that the airport improvements will result in little or no impact on Maui's overall economy and society overall. This section similarly shows only limited impacts on Maui from operations.

Some impacts do appear significant. Land acquisition and construction will have major impacts. In addition, runway extension could lead to a decrease in the growth of interisland flights to and from Kahului. See Exhibit 5-A, which summarizes the analyses in this section. The exhibit follows the organization of this section, dealing with actions at the airport first, then with nearby areas, and then with statewide effects.

Changes affecting Spreckelsville are perhaps most important, as these would affect neighborhood character in West Spreckelsville and lead to displacement of some residents in East Spreckelsville. In addition, a significant number of construction jobs would be created. Impacts on some nearby businesses and on interisland airlines could also be significant.

Exhibit 5-A
SUMMARY OF IMMEDIATE IMPACTS

	Range of Impacts (All Alternatives)		Potential Significance
Construction Employment	649 to 2,018	Direct jobs (all years)	
	125	Direct jobs (annual, Pref Alt)	>5% of construction jobs on Maui (Pref Alt & Alts 3 to 6)
	267	Total Maui Island jobs (Direct, indirect and induced, annual)	
Operations Employment	-70 to +70	Direct jobs (annual)	
Population & Housing	-126 to +126	Maui Island residents	
	-43 to +55	Maui Island households	
Nearby Businesses		Improved traffic	Loss of site advantage for small Dairy Road businesses
Nearby Residential		Land acquisition	Displacement (East Spreckelsville)
		Connection to Alahao St.	Change in neighborhood character (West Spreckelsville)
		Possible closing of Old Stable Road	
Impacts on Air Travelers	Up to $0.19	Maximal 2010 increase in interisland fare	
Impacts on Interisland Air Carriers	0 to 12%	Fewer interisland operations to and from Kahului	>5% of Kahului interisland operations (Pref Alt & Alts 3 to 5)

5.2 EMPLOYMENT AND INCOME

A project can generate or support several different sorts of jobs:

- Construction jobs are short-term, while
- Operations jobs, made possible by new facilities or activities, are usually permanent.

For both construction and operations, direct, indirect, and induced jobs can be created.

- Direct jobs are ones directly involved with construction of a site or its operations. Direct jobs need not be on-site: construction supports the

jobs of construction company personnel in offices and base yards, as well as on-site.

- Indirect jobs are created as businesses directly involved with a project purchase goods and services in the local economy; and

- Induced jobs are created as workers spend their income for goods and services.

For this study, direct jobs can be estimated on the basis of construction costs and extrapolation from current levels of employment at the airport. Indirect and induced employment in Hawaii are estimated using models of the economy developed by State researchers.

Construction and operations involve very different impact calculations of employment. In the No-Action Future, no construction takes place. Hence any action involves a substantial increase in construction jobs over the No-Action Future.

Operations, however, depend on the number of passengers and operations at the airport. In the No-Action Future, there will still be many passengers and operations. The impact of improvements on operations jobs has to do with (a) changes in the absolute number of flights and passengers, and (b) changes in the location of some flights and passengers (if, as in some of the alternatives, helicopters or general aviation moves to another site on Maui).

5.2.1 Construction Employment and Income

All the alternatives under study involve complex changes at Kahului Airport over a period of many years. Construction jobs can be estimated from construction costs. (See Appendix B-13 for calculations of construction costs for each alternative.) Exhibit 5-B shows the construction-related employment for the Preferred Alternative. Between 1995 and 2010, this alternative would create:

- A total of 1,882 person-years of full-time direct employment — about 125 jobs per year, on average, over a 15-year period;

- About twice as many indirect and induced jobs in Hawaii; and

- On Maui, a total of direct, indirect, and induced jobs amounting to about 4,000 person-years — nearly 270 jobs per year over the entire period.

Exhibit 5-B
CONSTRUCTION JOBS & INCOME, PREFERRED ALTERNATIVE

	Phase I	Phase II	Phase III	TOTAL PROJECT
CONSTRUCTION COSTS (Million $s) (1)	$114.0	$30.9	$149.2	$294.0
STATEWIDE CONSTRUCTION JOBS				
Direct Jobs (2)	729	198	955	1,882
Indirect & Induced Jobs (3)	1,437	390	1,881	3,707
TOTAL	2,166	588	2,835	5,589
Maui Island Share of Total (4)				4,012
STATEWIDE INCOME (Thousand $s)				
Direct Income (5)	$30,622	$8,307	$40,083	$79,011
Indirect & Induced Income (6)	$37,843	$10,266	$49,536	$97,644
TOTAL	$68,465	$18,572	$89,619	$176,656
Maui Island Share of Total (4)				$133,647

NOTES (1) See Appendix B-13 for detailed construction costs by component and phase
(2) Based on the 1993 ratio of construction spending to construction jobs, adjusted slightly to 6.4 jobs per million dollars of construction spending to allow for additional outer island associated costs and the relatively low labor-intensive nature of airport construction
(3) Based on 1.97 jobs for every direct construction job, from employment multipliers for "Other Construction" in the Hawaii State Input-Output Model
(4) CRI estimates that 95% of statewide direct jobs and income, and 60% of statewide indirect & induced jobs and income remain on Maui Island
(5) Based on average 1992 statewide construction earnings of $39,921, adjusted to 1993 dollars by applying the 1992 to 1993 change in the labor cost component of the Honolulu High-Rise Building Construction Cost Index
(6) Based on average 1992 statewide earnings of $25,532 for all industries, adjusted to 1993 dollars by applying the 1992 to 1993 change in the Honolulu Consumer Price Index

SOURCES Bank of Hawaii, 1994, Hawaii State DBEDT, 1994a, 1994b, Hawaii State DLIR, 1993

As shown in Exhibit 5-B above, about three-quarters of total income associated with project construction would go to workers on Maui.

Exhibit 5-C on the next page shows the construction employment and incomes associated with each of the alternatives under study. The exhibit shows total person-years of employment, and total workers' incomes, over a period of some 15 years.

If construction takes 15 years, then the average number of direct jobs would be 125 annually. The exhibit shows that construction jobcounts would be slightly higher with Alternative 4 — the 10,500 foot runway — than with the Preferred Alternative. Again, only about a third as many construction jobs would be

generated with Alternative 1 — with no extension and no general aviation or helicopter facilities built at Kahului Airport — than with the Preferred Alternative. (See Exhibit 1-B for the list of actions involved in each alternative.)

Exhibit 5-C
CONSTRUCTION JOBS & INCOME, MASTER PLAN ALTERNATIVES

	Preferred	MASTER PLAN ALTERNATIVES					
	Alt. (1)	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
CONSTRUCTION COSTS (Million $s) (2)	$294.0	$101.5	$177.0	$278.5	$315.3	$269.2	$242.7
STATEWIDE CONSTRUCTION JOBS (in Person-Years, over the entire construction period)							
Direct Jobs (3)	1,882	649	1,133	1,783	2,018	1,851	1,553
Indirect & Induced Jobs (4)	3,707	1,279	2,232	3,512	3,975	3,646	3,059
TOTAL	5,589	1,929	3,364	5,294	5,993	5,496	4,612
Maui Island Share of Total (5)	4,012	1,385	2,415	3,801	4,302	3,945	3,311
STATEWIDE INCOME (Thousand $s)							
Direct Income (6)	$79,011	$27,268	$47,561	$74,847	$84,718	$77,698	$65,205
Indirect & Induced Income (7)	$97,644	$33,696	$58,778	$92,498	$104,697	$96,021	$80,582
TOTAL	$176,656	$60,961	$106,339	$167,344	$189,414	$173,719	$145,787
Maui Island Share of Total (5)	$133,647	$46,120	$80,450	$126,603	$143,300	$131,425	$110,294

NOTES
(1) From "Total Project" column in Exhibit 5-B, which shows a three-phase breakout for the Preferred Alternative
(2) See Appendix B-13 for detailed construction costs by component and phase
(3) Based on the 1993 ratio of construction spending to construction jobs, adjusted slightly to 6.4 jobs per million dollars of construction spending to allow for additional outer-island associated costs and the relatively low labor-intensive nature of airport construction
(4) Based on 1.97 jobs for every direct construction job, from employment multipliers for "Other Construction" in the Hawaii State Input-Output Model
(5) CRI estimates that 95% of statewide direct jobs and income, and 80% of statewide indirect & induced jobs and income remain on Maui Island.
(6) Based on average 1992 statewide construction earnings of $39,921, adjusted to 1993 dollars by applying the 1992 to 1993 change in the labor cost component of the Honolulu High-Rise Building Construction Cost Index
(7) Based on average 1992 statewide earnings of $25,532 for all industries, adjusted to 1993 dollars by applying the 1992 to 1993 change in the Honolulu Consumer Price Index.

SOURCES: Bank of Hawaii, 1994, Hawaii State DBEDT, 1994a, 1994b, Hawaii State DLIR, 1993

(Construction jobs are estimated for work at Kahului Airport only. Should facilities be relocated, new construction at other sites would no doubt be needed. However, CRI cannot estimate employment for construction jobs of unknown size at unnamed sites.)

The significance of the figures in Exhibit 5-C can be assessed by comparing them to recent and forecast island jobcounts. Exhibit 5-D shows that annual direct construction jobs would amount to about 5% of the recent island construction jobcount for the Preferred Alternative and Alternative 4. It could amount to a slightly larger fraction of future annual island construction jobcounts, according to the projections developed for the County Planning Department (Community Resources, Inc., 1993a). In relation to estimated future jobcounts, airport construction will be significant for the Preferred Alternative and Alternatives 3, 4, 5, and 6.

The total Maui annual employment impact associated with Kahului Airport construction would be a very small part of island jobs.

Exhibit 5-D
CONSTRUCTION-RELATED JOBS IN RELATION TO MAUI ISLAND JOBS

A MAUI ISLAND JOBS, 1990 TO 1993 (1)	1990	1991	1992	1993			
Construction Jobs	3,000	3,150	2,700	2,450			
Total Wage & Salary Jobs	45,850	47,550	49,650	53,250			
B MAUI ISLAND LAND-USE CONSTRAINED FORECAST JOBS, 1995 TO 2010 (2)	1995	2000	2005	2010			
Construction Jobs	1,834	2,099	2,293	2,366			
Total Wage & Salary Jobs	50,354	56,787	61,877	64,469			
C AVERAGE ANNUAL AIRPORT CONSTRUCTION-RELATED JOBS, MAUI ISLAND (3)	Preferred Alt.	Alt. 1	Alt. 2	Alt. 3	Alt 4	Alt. 5	Alt 6
Direct Jobs	119	41	72	113	128	117	98
As % of 1993 Construction Jobs (from A)	4.9%	1.7%	2.9%	4.6%	5.2%	4.8%	4.0%
As % of 1995 Construction Jobs (from B)	6.5%	2.2%	3.9%	6.2%	7.0%	6.4%	5.4%
Total Jobs	267	92	161	253	287	263	221
As % of 1993 Total Jobs (from A)	0.5%	0.2%	0.3%	0.5%	0.5%	0.5%	0.4%
As % of 1995 Total Jobs (from B)	0.5%	0.2%	0.3%	0.5%	0.6%	0.5%	0.4%

NOTES
(1) Estimates from the Hawaii State DLIR. Shaded area shows low construction jobs figure used to calculate significance in C
(2) Land-Use Constrained Forecast jobs from CRI. Shaded area shows low construction jobs figure used in C
(3) From calculations used in Exhibit 5-C, namely, CRI estimates that 95% of statewide direct jobs, and 60% of statewide indirect & induced jobs will remain on Maui Island. Assumes a construction period of 15 years

SOURCES: Hawaii State DLIR, 1994a, Community Resources, Inc., 1993a

5.2.2 Operations Employment and Income

Growth in operations jobs will occur over the coming years as traffic at Kahului Airport increases. Currently, about 1,360 direct jobs are located at the airport. These include jobs in airlines, helicopter companies, government and support organizations, concessions and — the largest single sector — rental car operations.

Operations Jobs and Income in 2010. By 2010, jobs at Kahului Airport could number well over 2,000, as the number of operations and passengers increases to forecast levels. Exhibit 5-E on the following page shows the distribution of those direct jobs and the way in which future numbers of jobs have been estimated from current levels.

The 2,050 airport operations direct jobs in 2010 could support another 1,500 jobs statewide. The total Maui direct, indirect, and induced jobcount associated with forecast 2010 operations at the airport is estimated in Exhibit 5-F (on page 5-9) as 3,161.

In order to estimate the Kahului Airport jobs associated with the different Master Plan alternatives, operations estimates are needed. P&D Aviation (1994) has studied the passenger and operations impacts of alternatives proposed for Kahului Airport, and came to the conclusions that:

- The number of passengers arriving and departing is not affected by runway length, but
- The number of air carrier operations is affected, with fewer flights on longer runways. (The more passengers come to Maui directly on DC-10s and the like, the fewer aircraft are needed to carry them.)

Exhibit 5-G on page 5-10 adapts the P&D Aviation estimates of 2010 operations to yield airport operations job estimates for the various alternatives. (See Appendix B-14 for calculations of direct jobs.) The No-Action job totals are higher than that shown for the Aries (1994) forecast in Exhibits 5-E and 5-F, because the forecast used an estimate of operations appropriate for a longer runway. The Aries forecast is realized at Kahului with Alternatives 3 and 5. The Preferred Alternative involves relocation of some operations off-site (as do Alternatives 1 and 2), so on-site jobs are significantly fewer than in the No-Action future.

Exhibit 5-E
DIRECT OPERATIONS JOBS, ARIES FORECAST, 2010

	1993 ACTUAL (1)		ARIES FORECAST, 2010	
	RATIOS Jobs-to-Pass or Jobs-to-Air Ops	Air Carrier Passengers or Aircraft Operations & Share (in thousands)	Air Carrier Passengers or Aircraft Operations (in thousands) (2)	Direct Operations Jobs
A: Jobs Based on Air Carrier Passengers				
PRIVATE FIRMS		5,358	7,988	
Fixed Base	0.004	100%	7,988	30
Interisland Airlines	0.044	100%	7,988	350
Overseas Airlines	0.011	100%	7,988	90
Rental Cars	0.096	100%	7,988	770
Concessions	0.011	100%	7,988	90
Flight Kitchen (3)	0.003	100%	7,988	30
GOVERNMENT (4)	0.036	100%	7,988	290
B: Jobs Based on Aircraft Operations				
FIXED BASE		172	254	
	0.093	100%	254	20
GENERAL AVIATION		37	49	
Fixed Wing	0.644	90%	44	30
Helicopter	3.127	10%	5	20
COMMUTER/AIR TAXI		77	112	
Fixed Wing	3.367	10%	11	40
Helicopter	2.517	90%	101	250
GOVERNMENT (4)		172	254	
	0.157	100%	254	40
TOTAL (A + B)				2,050

NOTES: (1) Calls to existing Airport employers in September 1994 provided on-site workforce estimates for each industry in 1993. These estimates have been converted into ratios of jobs-to-air carrier passengers or jobs-to-aircraft operations, depending on the type of industry.
(2) Forecasts for 2010 air carrier passengers and aircraft operations (from Aries Consultants, Ltd.) are applied to the 1993 ratios in order to estimate direct operations jobs in 2010.
(3) The flight kitchen was actually located off-site in 1993, but CRI assumes it to be on site for the 2010 forecast.
(4) Some government facilities at Kahului Airport, such as the Department of Agriculture's inspection station, are passenger-based. Other government facilities, such as the Federal Aviation Administration's control tower, are aircraft operations based.

SOURCE: Aries Consultants, Ltd., 1994.

Exhibit 5-F
TOTAL OPERATIONS JOBS & INCOME, ARIES FORECAST, 2010

	Aries Forecast, 2010
OPERATIONS JOBS	
Direct Jobs (1)	2,050
Indirect & Induced Jobs (2)	1,517
TOTAL	3,567
Maui Island Share of Total (3)	3,161
INCOME (Thousands $s) (4)	
Direct Income	$49,977
Indirect & Induced Income	$40,882
TOTAL	$90,859
Maui Island Share of Total (3)	$80,184

NOTES (1) From Exhibit 5-E
(2) Based on employment multipliers in the Hawaii State Input-Output Model, for the following industries

Fixed base	1.41
Interisland airlines	1.41
Overseas airlines	1.41
General aviation	1.41
Commuter/air taxi	0.49
Rental cars	0.50
Concessions/flight kitchen	0.89
Government agencies (Federal only)	0.37

(3) CRI estimates that 95% of statewide direct jobs and income, and 80% of statewide indirect & induced jobs and income remain on Maui Island
(4) Based on average 1992 statewide earnings, adjusted to 1993 dollars by applying the 1992 to 1993 change in the Honolulu Consumer Price Index, for the following industries

Fixed base	$32,875
Interisland airlines	$32,875
Overseas airlines	$32,875
General aviation	$32,875
Commuter/air taxi	$15,525
Rental cars	$19,514
Concessions/flight kitchen	$12,056
Government agencies	$29,451

SOURCES Hawaii State DBEDT, 1994a, 1994b, Hawaii State DLIR, 1993

Exhibit 5-G on the next page also shows the total statewide and island-level jobs associated with the various alternatives.

The operations moved away from Kahului for the Preferred Alternative and Alternatives 1 and 2 would still exist on Maui, and would still generate operations jobs. Hence the impacts shown in Exhibit 5-F are locational, not absolute. If operations jobs at new sites were added to the jobs shown here, there would likely be very little difference in jobs for the different alternatives. Accordingly, the total jobs (direct, indirect, and induced) associated with aviation on Maui are not likely to vary significantly for any alternative.

Exhibit 5-G
TOTAL OPERATIONS JOBS & INCOME, RUNWAY ALTERNATIVES, 2010 (1)

	No Action	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
OPERATIONS JOBS								
On-Site Direct Jobs (2)	2,050	1,810	1,760	1,810	2,050	2,050	2,050	2,050
Indirect & Induced Jobs	1,517	1,382	1,322	1,382	1,517	1,517	1,517	1,517
TOTAL	3,567	3,192	3,082	3,192	3,567	3,567	3,567	3,567
Maui Island Share of Total	3,161	2,825	2,730	2,825	3,161	3,161	3,161	3,161
INCOME (Thousands $s)								
Direct Income	$49,977	$45,632	$43,971	$45,632	$49,977	$49,977	$49,977	$49,977
Indirect & Induced Income	$40,882	$38,165	$36,140	$38,165	$40,882	$40,882	$40,882	$40,882
TOTAL	$90,859	$83,797	$80,112	$83,797	$90,859	$90,859	$90,859	$90,859
Maui Island Share of Total	$80,184	$73,882	$70,685	$73,882	$80,184	$80,184	$80,184	$80,184

NOTES (1) Also see footnotes to Exhibit 5-E for full explanation of categories and calculations used in this exhibit
(2) See Appendix B-14 for detailed assumptions and calculations used to estimate direct jobs

Sensitivity Analysis. The sensitivity analysis of potential growth-inducing impacts developed in Section 4 can be extended to the analysis of operations jobs. Factors affecting the number of jobs at Kahului Airport could well include.

- Runway length, if either the removal of constraints or creation of new demand leads to increased passenger counts (as discussed in Section 4);
- Location of fixed-wing general aviation and/or helicopter facilities; and
- Location of a flight kitchen and other operations in new space created on-site for air cargo and ground operations.

The sensitivity analysis of Section 4 allows estimation of the maximum impact of passenger count increases with various alternatives in comparison to the Unconstrained and Constrained No-Action Futures. Appendix B-15 shows detailed assumptions used to adapt the sensitivity analysis, while Appendices B-16 and B-17 provide direct jobs estimates for Kahului Airport and for any relocation facility. Potential impacts are summarized in Exhibit 5-H.

Exhibit 5-H
SENSITIVITY ANALYSIS: DIRECT OPERATIONS JOBS, 2010

	RUNWAY ALTERNATIVES, 2010 DIRECT OPERATIONS JOBS							
	No Action	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
UNCONSTRAINED (1)								
TOTAL JOBS								
On-Site	2,020	1,800	1,670	1,760	2,110	2,120	2,110	2,070
Off-Site	30	290	360	290	0	0	0	0
TOTAL	2,050	2,090	2,030	2,050	2,110	2,120	2,110	2,070
IMPACT								
Locational (2)	N/A	260	330	260	-30	-30	-30	-30
Share of Total Jobs, No Action	N/A	12.7%	16.1%	12.7%	-1.5%	-1.5%	-1.5%	-1.5%
Absolute (3)	N/A	40	-20	0	60	70	60	20
Share of Total Jobs, No Action	N/A	2.0%	-1.0%	0.0%	2.9%	3.4%	2.9%	1.0%
CONSTRAINED (4)								
TOTAL JOBS								
On-Site	2,020	1,800	1,660	1,760	2,110	2,120	2,110	2,070
Off-Site	20	280	320	270	0	0	0	0
TOTAL	2,040	2,080	1,980	2,030	2,110	2,120	2,110	2,070
IMPACT								
Locational (2)	N/A	260	300	250	-20	-20	-20	-20
Share of Total Jobs, No Action	N/A	12.7%	14.7%	12.3%	-1.0%	-1.0%	-1.0%	-1.0%
Absolute (3)	N/A	30	-70	-20	60	70	60	20
Share of Total Jobs, No Action	N/A	1.5%	-3.4%	-1.0%	2.9%	3.4%	2.9%	1.0%

NOTES (1) From Appendix B-16 See Appendix B-15 for assumptions.
(2) Each alternative's off-site jobs minus the No Action Forecast's off-site jobs
(3) Each alternative's total jobs minus the No Action Forecast's total jobs
(4) From Appendix B-17. See Appendix B-15 for assumptions.

In the sensitivity analysis, "off-site" aviation jobs at an alternate airport are counted. This approach allows calculation of all the aviation jobs at Kahului or sites that take over activities now located at Kahului.

In sum, the sensitivity analysis shows that the number of direct operations jobs could vary from forecast in two ways:

- **Locational Impact.** Placement of particular operations off-site could move as many as 330 jobs to other sites (for helicopters and general aviation); and

- **Absolute Impact.** Potential growth in operations could lead to a maximal increase of up to 70 direct jobs at the airport and/or at other facilities for operations now at Kahului.

For both the Unconstrained and Constrained Futures, no alternative involves significant absolute impacts on operations employment. In quantitative terms, locational differences in operations employment are potentially significant for the Preferred Alternative and Alternatives 1 and 2. The Alternative 1 impact is 15% of the No-Action on-site jobcount.

5.3 POPULATION AND HOUSING

Population and housing impacts are estimated as a consequence of employment. Construction is not normally held to generate such impacts, since construction jobs on a given project are temporary, and construction workers usually do not affect local housing markets. (However, construction jobs do support existing population and housing units.)

Exhibit 5-I
POPULATION & HOUSING IMPACTS ASSOCIATED WITH KAHULUI AIRPORT OPERATIONS JOBS, 2010

	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Maximal Direct Operations Employment Impact (1)	40	-70	-20	60	70	60	20
Future(s) used for maximal impact (1)	Uncon	Con	Con	Both	Both	Both	Both
Workforce-Supported Population (2)	72	-126	-36	108	126	108	36
Workforce Households (3)	24	-43	-12	36	43	36	12
Potential New Housing Demand (4)	7	N/A	-4	11	13	11	4
Total Potential Households Affected by Actions	32	-43	-16	47	55	47	16

NOTES (1) From Exhibit 5-H estimates of absolute impact If the Unconstrained (or Constrained) Future showed greater impact, that value was used, and the future with the larger impact is noted in the column
(2) Based on Maui Island 1990 Census data with 49,780 employed workers and 89,908 persons in households, some 1 81 persons are supported by each job
(3) Based on Maui Island 1990 average population per household (2 97)
(4) An estimated 30% of workers could establish additional households (This is a high factor new household formation is often estimated by CRI as a range, with 30% the upper limit of the range)

Impacts Associated with Total Direct Airport and Aviation Jobs. Since the proposed actions do not have significant absolute impacts on aviation operations jobs, they will not have significant impacts on population and housing.

Exhibit 5-I on the preceding page calculates the population and housing impacts associated with an absolute change of 70 operations jobs (the largest absolute difference estimated). The results are not significant for Maui or the Wailuku-Kahului Community Plan Area (assuming that all of the employees lived in that one area). (See Appendices B-9 to B-12 for estimated future population of the island and area.)

Impacts associated with Relocation of General Aviation and/or Helicopters. Locational employment impacts do not necessarily imply population and housing impacts. So long as a worker is relocated to a site reasonably near his or her home, the only change involves commuting time and routes. (In order to estimate impacts of changes in total direct airport and aviation jobs, the calculations in Exhibit 5-I are derived from the sensitivity analysis summarized in Exhibit 5-H, not the impact analysis of Exhibit 5-G. This was necessary to avoid the incorrect assumption that changes of the location of jobs on Maui would necessarily bring new population to the island.)

The eventual relocation site is unknown. Qualitative comments on potential impacts given different relocation areas, rather than calculations, are possible:

- **Central Maui.** Aviation workers with jobs in a new Central Maui facility might find their commute to work slightly shorter or longer. The difference would be small, in either case.

- **West Maui.** A West Maui secondary air facility would be closer to many hotels than Kahului, but farther from the homes of most Maui residents. Housing studies have shown that Central, West and South Maui are parts of a single market (SMS Research and Locations, 1988, 1993). Over the long term, relocation of airport facilities could lead to an increase in West Maui regional housing demand. Such an increase would not be significant.

- **Hana.** In the unlikely event that general aviation and/or helicopter operations were moved from Kahului Airport to Hana, the new workers, population, and housing demand could be significant. In 1990, the Hana Community Plan Area had a population of 1,895 in 589 households. An influx of 300 or so specialized workers and their dependents would bring massive disruption to the area's sense of isolation. However, such an influx is simply not credible, since operations in Hana would be out of reach of the customers — notably the tourists — who support them.

5.4 IMPACTS ON NEARBY BUSINESSES

Kahului Airport is near major business and industrial areas of Central Maui. These are currently changing, independent of the proposed actions. New commercial development is bringing many residents and visitors to shop near the airport. Current businesses on or near Dairy Road between Keolani Place and Hana Highway include a major new retailer, a car dealer, windsurfing stores, and retail and eating places in multi-tenant buildings.

Small factory outlets and warehouses are located farther down Hana Highway, and a relatively new small strip mall is situated along Dairy Road, only one block from Hana Highway. Light industrial lots can be found along Haleakala Highway behind Kmart.

Three of the most important components of the airport expansion are the new access road, the various runway alternatives, and the possible relocation of general aviation and helicopter operations. The first component could have especially strong implications for area businesses.

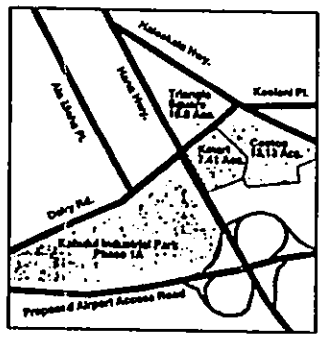
NOTE: This discussion omits the impact of the proposed actions on sugar lands surrounding the airport. Dashiell (1994) analyzes the impacts of various proposed actions on cane lands near the airport.

5.4.1 Probable and Possible Changes Regardless of Project

Major changes in the area are under way, independent of the project

New Developments. The largest developments planned for the near-term include Alexander & Baldwin's Triangle Square and Kahului Industrial Park, and a Costco center next to the existing Kmart. Phase One of Triangle Square is underway and should be completed by mid-1995; Phase Two should come on-line by the end of 1995 (A&B Properties, Inc., 1994). Several factory outlets have already committed to lease space at the site, which will consist of 110,000 square feet of retail space upon buildout (Pacific Business News, 1994)

Construction of the nearby 76-acre Kahului Industrial Park should begin in mid-1995 and finish in mid-1996 (A&B Properties, Inc., 1994). Costco will build on Alexander & Baldwin land and become operational in 1995. Along with Kmart, these new projects will create a major discount retail and industrial hub centered on Triangle Square:



SOURCE: Pacific Business News, 1994

Road Improvements. Alexander & Baldwin will help alleviate the overall increase in traffic from these projects by widening Dairy Road in two stages — firstly from Keolani Place to Hana Highway to precede Costco construction, and secondly from Hana Highway to Puunene Avenue to precede Kahului Industrial Park construction. In addition, Alexander & Baldwin will signalize the Dairy Road-Haleakala Highway intersection (A&B Properties, Inc., 1994).

Effect on Existing Businesses. The rapid changes occurring in the area will benefit many surrounding businesses by expanding their customer base. Kmart has expressed optimism in the increasing trend towards erecting several discount outlets. The synergistic effects of having a variety of bargain choices at one location (such as Waikele's factory outlets on Oahu) could attract shoppers from all over the island. According to Kmart's manager, many Maui residents in distant areas like West Maui, Makena, and Hana may not be inclined to travel to Kahului just to visit Kmart. With new businesses, it may become worthwhile to make the occasional shopping trip to stock up on affordable items. (CRI interviewed several local business owners and employees, who are listed in Appendix C. In addition, this section draws on research by Dashiell (1994).)

The possible effect on small businesses nearby is more difficult to gauge. Some could thrive if their merchandise differs from the larger companies. Most of the present businesses along Hana Highway are specialty stores or eateries, and should profit from the spin-off effects of their new neighbors.

In order to make way for Costco, two small tourist-oriented businesses on the property will need to relocate. (A third non-tourist-related business previously on-site has already relocated to central Kahului). One operation has secured a lease across the road at Triangle Square, but the other has not yet secured a site.

5.4.2 Impacts Associated with Access Road

The airport access road will alleviate existing traffic problems. Traffic congestion ranks as the worst problem for most area businesses. The bulk of visitor traffic travels to and from the airport along Dairy Road — presently the most direct route from the airport to all major destinations except Wailuku.

Businesspersons in the area generally agree that a nearby alternative route to the airport should improve congestion, especially in light of the impending new projects. The large retail outlets target Maui residents as their primary market and so stand to gain by creating a more convenient environment for their customers. They also claim that tourists will continue to frequent their stores because of their proximity to the proposed access road route, their physical visibility, and their name recognition.

But the traffic relief afforded by the access road will not benefit all area business interests. Location is key for several of the smaller stores that rely heavily on incoming visitors (such as windsurfing boutiques) and outgoing visitors (such as souvenir shops). Such stores would be adversely affected if the access road redirects most visitors away from Dairy Road and Triangle Square. Some store owners in the area have intimated that up to 95% of their total trade is generated by tourists.

The small retail operations on land owned by Alexander and Baldwin (in what is technically an industrial area) are often on inexpensive, short-term leases (personal communication, Eugene Dashiell, AICP, September 1994). These leases could well be phased out or rents increased if these operations compete with lessees in Triangle Square. Hence it is not certain that these businesses would still be near the airport by the time the access road is built. (CRI knows of no reason why lessees now paying low rents for space on a major road can expect to continue to enjoy this advantage.)

The Airport Access Road will bring major changes in traffic patterns near the airport. Tourists will no longer pass by several lots where businesses now depend on tourist traffic. Should these businesses be permitted to stay where they are, construction of the new road would force them to consider relocation or continuing advertising to lure tourists off the beaten track. This potential impact would be significant for them, since no other site is likely to combine the advantages of low rents, access to nearly all the island's tourists, and hence low advertising costs. However, as Dashiell (1994) notes, the new road and commercial area nearby could bring enough additional customer traffic to the area to compensate for traffic lost with the opening of the new road.

5.4.3 Impacts of Relocating General Aviation and/or Heliport

All of the Airport Expansion's six alternatives include building the access road, but only three of the alternatives involve relocation of the heliport, and only one considers relocation of general aviation. Thus, the potential impact of moving these facilities may not apply, depending upon which particular alternative is implemented.

Not all of the visitor traffic along Dairy Road is comprised of inbound and outbound tourists. Many tourists commute between the resorts and the airport's tour helicopters. Relocation of the heliport would result in substantially fewer tourists visiting small shops and restaurants in the area after helicopter rides.

5.5 IMPACT ON NEARBY RESIDENTIAL AREAS

Residential areas in East and West Spreckelsville could be affected by several different components of the airport improvements. West Spreckelsville is now relatively isolated, with a single, poorly paved road (Old Stable Road) access. East Spreckelsville is a larger, more conventionally laid-out residential area.

All of West Spreckelsville and much of East Spreckelsville is now inside the 60 Ldn contour, and strongly affected by aviation noise. The County Planning Director has proposed creating an "overlay district" defined by that contour, in which new land uses incompatible with airport operations would not be permitted. If passed, this new regulation could limit residents' ability to expand or modify their homes.

Land Acquisition for Parallel Runway. In Phase II of the Preferred Alternative (and in alternatives 3 and 5), some 515 acres of land east of the present Airport boundary would be acquired for the parallel runway and its runway protection zone. "Several" homes in East Spreckelsville would be affected, according to the 1993 Master Plan. (However,. the Master Plan map shows only two buildings within the area of acquisition (Belt Collins, 1993, Figure 6-2).) In addition, the intersection of Old Stable Road and Hana Highway appears to be in the acquisition area. Hence, land acquisition could cut off the existing access to West Spreckelsville, necessitating construction of a new access.

In Alternative 4, a 10,500-foot parallel runway is proposed. The land acquisition area for this alternative would be greater. The parallel runway itself would be placed over the existing Old Stable Road/Hana Highway intersection. Perhaps 20 homes in East Spreckelsville would be in the runway protection zone, and potentially in the acquisition area for this alternative.

Roadway between Alahao Street and Old Stable Road. This roadway is being planned as an emergency road only. It could function as a bikeway, as proposed by Maui County Planning Department. This would involve less impact on residents than a through road.

Under one option studied, the road through Airport land would be opened up for vehicular traffic. So long as Old Stable Road is open, this would create a bypass around the Airport to Kanaha Beach Park, allowing substantial additional traffic on a road that now is little traveled. West Spreckelsville would appear to visitors to be a continuation of Kanaha Beach Park, with the result that parking problems and conflict over beach access — already a problem, as many "Private Property" and "No Parking" signs indicate — would multiply.

Operations on Extended Runway 2-20 and on Parallel Runway. Changes in operations will change the noise contours in the surrounding area. (The new noise contours are shown in EIS Figures 3-2 to 3-5.) Noise contours depend on airport infrastructure, operating procedures, and the mix of aircraft using Kahului Airport. Potential impacts include not only noise and changes in the quality of residential life, but also changes in landowners' rights to develop their property, if the proposed Overlay District is enacted. Changes in noise contours could include:

- Less noise in Spreckelsville, if most operations on the main runway move to the southwest once the runway is lengthened in that direction, away from the residential area; and/or
- Expansion of the contour and increase of noise in parts of East Spreckelsville, with new operations on a parallel runway. With a parallel runway, a residential zone that now is outside the 60 dBA contour could be inside the 60dBA contour associated with the new runway. Residents would be subject to increased noise and, if an Overlay District is enacted, could be restricted in their ability to develop their property.

A special study by Belt Collins Hawaii (incorporated in the EIS as Appendix N) will result in both new noise contours and recommendations for mitigation. This brief account of noise impacts simply indicates that the issue exists and could entail social impacts. For precise definition of noise impacts and detailed mitigation measures, readers are directed to the FAR 150 study.

Significance. Any displacement of residents from their homes is considered significant. In addition, the changes brought to West Spreckelsville by creating a new access road and by eventually cutting off its existing access to Hana Highway count as potentially significant changes in neighborhood character.

Assessment of the significance of changes in aircraft noise is outside the scope of this report.

5.6 IMPACTS OF IMMEDIATE AREA CHANGES ON INTERISLAND AIR TRAVEL

5.6.1 Impacts on the Cost of Air Travel for Passengers

Some Maui residents have expressed concern that the cost of proposed airport improvements would be borne by air travelers, and that interisland travel would soon become prohibitively expensive. (For detailed discussion, see Haiku Design & Analysis, 1991.) Their expectation that DOT-A capital costs could be easily passed to the airlines, and then to air travelers is not shared by airline executives (as discussed in Section 4.5 of this report).

The executives argue that fares between the Mainland U.S. and Hawaii are low due to price competition, making it impossible for the airlines to recoup costs, much less pass on new costs to travelers. Interisland airlines have recently begun a new price war (with discount coupons and other special offers), so the same argument could apply to them.

Even if the executives' point is accepted, airline economics could conceivably change, so that future costs would be borne by passengers. In this uncertain situation, an estimate of the maximal impact of the proposed airport improvements for air travelers is wanted. Exhibit 5-J calculates that cost by allocating all capital costs not borne by concessions to the airlines; and then assuming that all those costs, while covered by landing fees, rentals, and fuel taxes, will eventually be passed to the air traveler.

Costs of improvements are calculated in 1993 dollars in Appendix B-13. As much as 68% of those costs might eventually be borne by air travelers, if the State continues to demand that the Airport System pay for itself. In Part C of Exhibit 5-J, the costs are allocated to interisland and overseas passengers, estimating that the cost per interisland passenger would be about 35% of the cost per overseas passenger (by analogy to reported landing fees). Then costs per passenger are estimated by dividing total annual costs by passenger counts, yielding costs per passenger per trip in the range of $0.40 to $0.55 for overseas passengers and $0.15 to $0.20 for interisland passengers for the Preferred Alternative.

Exhibit 5-J
MAXIMAL ESTIMATE OF COST PER AIR TRAVELER OF PROPOSED KAHULUI AIRPORT IMPROVEMENTS

A. COST OF IMPROVEMENTS — Millions of 1993 Dollars (1)

Preferred	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
$302.9	$101.6	$180.4	$287.4	$326.2	$298.0	$249.8

B. SHARE OF COST COVERED BY AIRLINE USER FEES AND TAXES

i Share of Airport Revenues not from Concessions (2)
Average, 1990-1993 10.4%

ii Reported State Proposal for Landing Fee Share (3)
1995 38.0%

iii Reported Share of Near-Term Future Revenues not from Duty Free Concession (3)
1995 68.0%

iv Maximal Future Share Potentially not from Concessions
1996-2010 68.0%

v Maximal Cost per Year of Proposed Kahului Airport Improvements (15 years, Excluding Concessions Payments) in Millions of 1993 Dollars

Preferred	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
$13.7	$4.6	$8.2	$13.0	$14.8	$13.5	$11.3

C. ALLOCATION OF COST PER PASSENGER

i Interisland Fees/Pound as share of Overseas Fees/Pound of Maximum Landing Weight (4)
1991 30.0%
1994 32.0%

ii Estimate of Maximal Future Interisland Cost per Passenger, as Share of Overseas Cost per Passenger
1996-2010 40.0%

iii Future Passengers, Statewide Airport System, per 1994 Forecast (5)

	Overseas	Interisland
2000	17,559,000	22,348,000
2005	20,198,000	24,683,000
2010	22,930,000	26,919,000

iv Cost per Passenger — Preferred Alternative, 1994 Forecast

	Overseas	Interisland
2000	$0.54	$0.22
2005	$0.48	$0.19
2010	$0.42	$0.17

v Cost per Interisland Passenger, 2010, for All Alternatives at Maximal Realization of Forecast (6)

Preferred	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
95%	90%	93%	95%	97%	95%	93%
$0.18	$0.06	$0.11	$0.17	$0.19	$0.18	$0.15

NOTES This exhibit shows a simplified estimate of maximal costs per passenger. Airlines pay the State fuel taxes, landing fees (assessed by weight) and rentals. This analysis assumes, for the sake of maximal calculation, that all airline costs are passed on to passengers.
(1) From Appendix B-13, with Phase II land costs included
(2) From State Comprehensive Annual Financial Reports, FY 1990-1993
(3) From Glauberman, 1993
(4) Assumptions in State Department of Transportation, 1991, 1994
(5) Statewide Low Passenger Forecast, Ares, 1994
(6) Potential passengers, given Constrained Future (in Exhibit 4-S)

Costs would vary somewhat for the other alternatives, as shown in Part C (v.) of the Exhibit 5-J. These costs are less than 1% of the lowest fare prices in Hawaii, and are hence not significant.

(Passenger counts in Exhibit 5-J are taken from the Constrained Future sensitivity analysis of Section 4 in order to limit the number of passengers paying for improvements, and hence maximize the cost.)

5.6.2 Impacts on Interisland Airlines

The basic conclusion of the growth-inducing impact analysis is that runway extension will result in little or no growth in tourism. However, it could result in changes in the route some tourists take to Maui, and hence in impacts on interisland air carriers.

An increase in nonstop Kahului-Mainland flights will bring a decrease in passengers needing interisland connections, and hence interisland flights. This is clear in the estimate of operations developed by P&D Aviation for different runway lengths (1994). For 2010, P&D shows the following interisland operations for air carriers at Kahului:

Runway Length	Operations of Small Two-Engine Air Carriers	
	2010 Count (1)	Difference from No-Action
7,000 feet	86,339	0.0%
8,500 feet	84,570	2.0%
9,500/9,600 feet	78,802	8.7%
10,500 feet	75,835	12.2%

NOTE. (1) Adjusted to eliminate effects of international flights (discussed in Section 7).

These figures strongly suggest that future interisland operations would grow significantly more slowly with runway extension. Operations would not actually decrease — estimates of year 2000 and 2010 operations for all runway lengths are greater than historical counts.

CRI recognizes that 46% of current Westbound travelers to Maui do not visit other islands (Hawaii Visitors Bureau, 1994a). Hence, there are many travelers with little reason to want to stop at Honolulu International Airport. However, tourism data do not suffice to provide an independent estimate of the size of the impact of runway extension on interisland travel.

Even if the Unconstrained Future sensitivity analysis assumptions turned out to be nearly correct, interisland carriers might be little affected. If a combination of runway extension, new flights, and active marketing of Maui resulted in many more visitors coming directly to Maui, (a) new visitors to Maui could well also visit other islands and (b) Maui as a destination, rather than direct flights, will be marketed. New demand for travel to Maui will not all be funneled through a few direct flights, but could easily result in increased passenger counts on existing Mainland flights to Maui and to Honolulu (with interisland connection to Maui).

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Section 6
PUBLIC FACILITIES

This section assesses impacts of the proposed actions on selected public facilities — police, fire, and medical services, recreation, and education. Impacts are analyzed on the basis of the estimates of population impacts in Sections 4 and 5.

Section 4 indicated that islandwide population impacts of proposed improvements would be small at best. Hence, islandwide impacts on demand for public facilities are also marginal. (Between now and 2010, much expansion of services and facilities will be needed to accommodate likely growth. The point at issue here, however, is the impact of the airport improvements.)

Some additional impacts on public facilities will occur at specific locations, such as Kanaha Beach Park, or because of specific improvements apart from growth-inducing impacts. These are noted in this section.

Impacts on public facilities associated with possible internationalization are discussed in Section 7.

6.1 POLICE

Existing Facilities and Services. Maui Police Department (MPD) headquarters is located in Wailuku at the Hale Makai Police Station. The station serves all of Maui island, except the Hana and Lahaina, which have their own stations.

The Kahului Airport area is part of a police beat which includes East Kahului, Puunene, Spreckelsville, and the Keahua areas. The beat is staffed by one officer per eight hour shift, with assistance from officers assigned to adjacent beats when necessary. The airport terminal area is monitored by MPD vice personnel.

Planned Services. The State and County engaged in discussions about providing a MPD detachment exclusively for airport cases. However, discussions have since been suspended and the future of the detachment is uncertain. The airport unit discussed consisted of one sergeant and five patrol officers. The officers would be on duty during airport operation hours, generally 6:00 a.m. through 11:00 p.m.

The U.S. Department of Justice, Drug Enforcement Administration (DEA) has established a full-time agent position for Maui Island, but the position has not been filled (correspondence, Chief Howard H. Tagomori, October 18, 1994).

Crime Rates. Between the 1970s and 1980, the rate of "serious crimes" in Maui County climbed to a high of 75.9 confirmed reports per 1,000 in the de facto population. Since then, the rate has decreased to about 50 reports per 1,000 people annually.

Most frequently reported crimes at the airport include theft of baggage and other personal property, motor vehicle accidents and delinquent return of rental vehicles. Less frequently reported crimes include assaults and domestic violence cases. Drug trafficking cases (by way of passenger, baggage, freight, or mail) has also been reported.

Anticipated Needs Independent of Actions. Need for increased police services is expected as Maui's resident and visitor populations grow. A recent report estimated that some 120 additional officers would be needed by the year 2010 (R.M. Towill Corporation, 1992). That estimate was based on the "M-K Series" projections. More recent estimates have indicated that the M-K Series may have overestimated growth likely to occur by the year 2000.

The MPD monitors the growth and character of resident and de facto populations to analyze police service needs and allocate resources. The department is especially concerned about significant population increases over relatively short periods of time. In general, increased property crimes and need for traffic safety services are associated with visitor population growth.

In the future, the MPD would like to establish decentralized, autonomous police district stations in the Kihei, Makawao, Napili and Haiku areas to expand islandwide services (correspondence, Chief Howard H. Tagomori, October 18, 1994).

Project Impacts. Inasmuch as the proposed improvements are intended to make airport operations more efficient, and are not likely to lead to significant increases in the numbers of either residents or visitors, project impacts will be minimal.

Much concern has been voiced over potential increases in crime with greater numbers of direct flights, especially direct international flights. No increase in the number of international flights is anticipated with the actions alone. Nor is the total number of overseas visitors to Maui expected to increase greatly. Hence, the actions are not expected to have a significant impact on the level and nature of crime on Maui.

6.2 FIRE

Existing and Planned Facilities and Services. The State Department of Transportation, Airports Division operates an Aircraft Rescue and Firefighting (ARFF) station located at the Kahului Airport. The ARFF crew provides aircraft, water rescue and medical emergency services to the Kahului Airport. Airport plans call for assistance from other agencies such as the Maui County Fire Department, Maui County Police Department, the Coast Guard and private bus companies, which would provide transportation to hospitals, in the case of emergency.

The ARFF station is staffed by sixteen crew members, who are divided into two shifts of eight crew members. Station facilities consist of a new ARFF facility completed in January 1994 and located on the East Ramp, and an older facility located on the western side of Holdrooms "E" and "F".

Use of the old facility is temporary, until DOT has contracted private emergency medical services. A skeleton crew is assigned to the old facility during peak medical emergencies hours because it provides quicker access to the airport's main terminal. Once medical services have been contracted, the crew will discontinue use of the old facility and serve as medical back up. During non-peak hours all crew members are assigned to the new facility.

The location of the new facility has improved the crew response time, especially for emergencies at the end of the East Ramp where aircraft takeoff. The new facility is designed for a staff of twenty-four or two shifts of sixteen crew members each. ARFF sources expect that the ARFF staff will increase in the future to fully utilize the new facility designed for 24 crew members.

The new facility is equipped with two 3,000 gallon fire fighting trucks, two 1,500 gallon fire fighting trucks, one rescue truck, and one 4-wheel drive utility vehicle.

A makeshift ARFF training facility is located on the west side of Runway 5-23. The station has received complaints about smoke from the facility. However, the crew has continued use of the facility to fulfill FAA training requirements, which include at least one "live burn" a year. Funding for travel to training facilities on other islands is unavailable. A permanent facility, which will mitigate smoke concerns, is being planned (personal communications, Chief Patrick Favella and Captain Don Mitagawa, August 1994).

Three Maui County fire stations located in Wailuku, Kahului, and Paia, serve the Wailuku-Kahului region. Other County stations on Maui Island include the Kihei, Makawao, Kula, Napili, Lahaina, and Hana stations (personal communication, Deputy Chief Ronald DeMello, August 29, 1994).

Existing and Anticipated Needs Independent of Actions. New fire stations at Wailea and Haiku are planned for completion by the year 2000. A Waiehu station is planned for completion by the year 2003. Plans to replace the Wailuku station with a new station at Waiale have been terminated. The existing Wailuku station will continue to serve the western portions of Wailuku-Kahului.

The Maui County Fire Department uses a 5.0 mile radius as a standard fire station service area. Based on this standard, all areas of the Wailuku-Kahului region have adequate fire protection. However, national fire protection standards are stricter and require specific services levels based on the type of structures and activities in an area.

In its 1992 Maui Public Facilities Assessment, R.M. Towill Corporation (RMTC) recommended the Maui County Fire Department use national fire protection standards to plan Maui Island fire services for the next 20 years. Based on national standards, RMTC recommended the location of a new station at Waikapu or Wailuku Heights to meet existing needs. In addition, RMTC recommended upgrading the existing Kahului and Wailuku Stations to include ladder companies.

Maui County Fire Department officials have stated that the department lacks the resources to meet national standards. The department will continue to use the 5.0 mile radius service standard, which is accepted by the Hawaii Insurance Rating Bureau (personal communication, Deputy Chief Ronald DeMello, August 29, 1994).

According to ARFF sources, impacts on the ARFF facility depend on the size of aircraft using the airport and the number of daily departures from the airport. Should aircraft size and daily departures increase, FAA facility and staff requirements will change. The number and type of structures built would also impact ARFF services (personal communication, Chief Patrick Sevella, August 1994).

Project Impacts. The Airport Access Road proposed in the master plan will decrease travel time in and out of the airport, allowing ARFF and County fire crews to more effectively assist one another. The proposed Access Road would also mitigate Maui County Fire Department concern about increased traffic on Dairy Road due to expansion of the airport. The Kahului fire station is located on Dairy Road and traffic congestion could interfere with its ability to respond quickly to service calls (personal communication, Deputy Chief Ronald DeMello, August 29, 1994).

6.3 MEDICAL FACILITIES

Existing and Planned Facilities and Services. Hospitals on Maui Island include Maui Memorial Hospital located in Wailuku-Kahului, Hale Makua Kahului and Hale Makua Wailuku, and Kula Hospital. Maui Island has a total of nearly 500 hospital beds:

Exhibit 6-A
MAUI ISLAND HOSPITAL BEDS, 1990

	Licensed Beds (1)					
	O/P	CC	AC	LTC	O/SC	Total
MAUI ISLAND HOSPITALS						
Maui Memorial	23	8	114	0	0	145
Hale Makua Kahului	0	0	0	120	0	120
Hale Makua Wailuku	0	0	0	124	0	124
Kula Hospital	0	0	2	95	8	105
TOTAL	23	8	116	339	8	494

NOTES (1) O/P = Obstetrics and pediatrics
CC = Critical care
AC = Acute care
LTC = Long term care
O/SC = Other/specialty care

SOURCE R.M. Towill Corporation, 1992

In 1992, Maui Island average daily occupancy for acute care and long term care patients exceeded State averages. The average acute care occupancy at Maui hospitals was the highest among all the islands at 88.2%. The State average was 71.1%. Like the majority of islands in the State, Maui's long-term care occupancy was high, averaging at 97.7%. The State average was 96.2%.

In addition, the 1992 average length of stay for long-term care patients on Maui was much higher than other islands and the State average. Maui long-term care patients remained hospitalized for an average of 627 days. The State average for long-term care patients was 375 days (Hawaii State DBEDT, 1994a).

Maui Memorial Hospital provides the widest range of services, which include obstetrics and pediatrics, critical, and acute care. Recently, an adolescent psychiatric facility, magnetic resonance imaging capabilities, a new emergency room, a cancer center, an angiocardiography suite, four intensive care beds, and a helicopter program have been added (personal communication, Chief Executive Officer C. Timothy Maloney, September 1994).

Hale Makua Kahului and Hale Makua Wailuku are exclusively long term care facilities. Kula Hospital is also primarily a long term care facility, although it is licensed for a few acute and specialty care beds (R.M. Towill Corporation, 1992).

A Disaster Management Action Team (DMAT) Plan for Maui County addresses airport emergency medical needs. The plan utilizes approximately 25-40 doctors, nurses, and psychiatrists from all of Maui County. The team is considered one of the best qualified in the country and able to meet the needs of present and future airport emergencies (personal communication, Chief Executive Officer C. Timothy Maloney, September 1994).

Existing Needs. Like other Hawaii hospitals, Maui Memorial Hospital is operating with limited resources. Despite recent improvements, the hospital lacks the capacity to meet existing demands. To meet existing needs, the hospital requires additional beds, intensive care units and surgery suites. Due to the hospital bed shortage it is unable to conform to hospital standards and patients are doubled up in rooms. Patients unable to get care at Maui Memorial postpone or seek treatment at off-island facilities usually in Honolulu.

A shortage of long-term care beds at Hale Makua Kahului, Hale Makua Wailuku, and Kula Hospital contribute to the bed shortage at Maui Memorial. Patients cannot be transferred from Maui Memorial to long term care facilities until beds become available. Currently, patients are put on waitlists for admission to these facilities due to a bed shortage.

The bed shortage has diminished the hospital's ability to respond to emergencies and the needs of visitors. Emergencies require the unscheduled admission of patients and visitors create additional demand for medical care, especially critical and acute care.

A lack of funds and cumbersome funding policies have prevented Maui Memorial from keeping pace with service needs. The hospital plans to request approximately $7 million in State funding during the 1995 legislative session. Additional hospital beds (particularly isolation and acute care) and parking facilities will be priority once funding becomes available.

According to Maui Memorial Hospital officials, the hospital in its current state would not be able to fulfill its role in the DMAT plan. The hospital's bed shortage does not allow for the unscheduled admission of patients required by emergencies. In addition, the hospital is not equipped for the efficient movement of emergency patients within the facility itself (personal communication, Chief Executive Officer C. Timothy Maloney, September 1994).

It should be noted that responses demonstrated by Oahu and local personnel to disasters (such as Hurricane 'Iniki on Kauai), indicate that statewide

resources can be mobilized for emergency situations, although less quickly and efficiently than on-site resources. While limited facilities can seriously impede the fast delivery of medical services, skilled providers can and do respond to emergencies.

Anticipated Needs Independent of Actions. According to estimates by RMTC in 1992, Maui Island will need 415 new hospital beds by the year 2010. Of the new beds, approximately 77% (320) long term care beds and 20% (84) acute care beds are needed. However, more recent estimates of future visitor arrivals suggest that the basis for RMTC's estimates (M-K projections for 2010) may be overly aggressive.

Project Impacts. CRI has concluded that airport improvements are unlikely to have much, if any, impact on resident and de facto population growth. Therefore, they are unlikely to have much if any impact on medical facilities and services.

Improvements proposed in the master plan would improve emergency access to the airport. The proposed Airport Access Road would decrease travel time in and out of the airport, thus improving emergency vehicles ability to respond to airport emergencies. Proposed additional runway and taxiway space would also improve access to airport emergencies. Should an emergency force closure of a runway, runway extension and the parallel runway would help the airport stay open able to receive emergency help from off-island or to send patients to off-island hospitals.

6.4 RECREATION

Existing and Planned Facilities and Services. Maui Island recreational facilities and services are largely provided by County mini-parks, neighborhood parks, district parks, and regional parks. (Exhibit 6-B on the following page summarizes parks on Maui Island.)

Kanaha Beach Park, operated by the County, is located to the east of the Airport. The park is a popular windsurfing beach with both residents and visitors. Due to its popularity, the park's existing 130 car parking lot and picnic areas are heavily used (personal communication, Projects Manager Leonard Costa, September 1, 1994).

Exhibit 6-B
MAUI ISLAND PARKS, 1990

	Mini, Neighborhood, & District Parks (Acres)	Regional & Special Use Parks (Acres) (1)	Total
MAUI ISLAND REGIONS			
Wailuku-Kahului	125	114	239
Makawao-Pukalani-Kula	64	0	64
Kihei-Makena	80	0	80
Lahaina (2)	72	0	72
TOTAL	341	114	455

NOTES: (1) Regional and Special Use Parks serve islandwide residents.
(2) Excludes Ukumehame Firing Range, which is a regional use facility

SOURCE: R.M. Towill Corporation, 1992

Current Maui County Capital Improvement Program (CIP) plans for the Kahului-Wailuku region include the following:

- A swimming pool at Kahului Community Center;
- Additional parking at Kanaha Beach Park;
- Maui War Memorial Center baseball stadium improvements; and
- Development of Papohaku Park.

In the future, the Maui County Parks and Recreation Department plans to develop additional ballfields at Maui Central Park. The Maui Central Park is also being considered as a site for the annual Maui County Fair (personal communication, Projects Manager Leonard Costa, September 1, 1994).

Maui Island has several parks and monuments under jurisdiction of the State of Hawaii. The Iao Valley State Park and Holikii-Piihana Heiau State Monument are located West of the Wailuku-Kahului region. Other State parks on Maui Island include Polipoli Spring State Recreation Area in South Maui and the Waianapanapa State Park near Hana.

Haleakala National Park, located in the Makawao-Pukalani-Kula region, is operated by the United States Department of the Interior, National Park Service (NPS). The park spans over 27,350 acres and received 1,346,521 visitors in 1993. Park facilities consist of a visitor center, park headquarters, and three cabins and two campgrounds located in the crater. The park's staff offer lectures

about the park at the crater summit, as well as guided tours and hikes (personal communication, Superintendent Donald Reeser, September 29, 1994).

In February 1994, the NPS published a Draft General Management Plan/Environmental Impact Statement for Haleakala National Park, which describes proposed land acquisitions for expanding the park. Proposed Land acquisitions include the completion of acquisitions proposed in 1951, 1969 and 1976, as well as newly proposed acquisitions. The NPS seeks the acquisitions so the park may protect significant scenic and natural resources within or adjacent to the park; provide space for the development of needed facilities; and enhance visitor access and safety.

Proposed additions to the park consist of:

- Completion of the acquisition of 51 acres of lands originally proposed in 1951;
- Completion of the acquisition of 404 acres at lower Kipahulu Valley originally proposed in 1969;
- Completion of the acquisition of 181 acres of Oheo coastal land originally proposed in 1976;
- 229 acres at the southwest of lower Kipahulu Valley, which includes a canyon formed by Kaukauai Stream and a small portion of forest;
- 6,600 acres owned by Kaupo Ranch;
- 613 acres west side of Haleakala Crater; and
- 110 acres, which include nearly all of the historically significant Hosmer Grove and a short section of the Halemauu Trail (both are heavily used by park visitors, although outside the park's boundary).

In addition, future park improvements may include expansion of the visitor center and restrooms.

Existing and Anticipated Needs Independent of Actions. Additional park lands will be needed to meet the needs of resident and de facto populations projected for Maui Island for the year 2010. The following are estimates of additional park lands need by the 2010. Facilities such as tennis courts, tot lots, playing fields, community centers, gyms, and sports courts will also be needed, as indicated in Exhibit 6-C on the following page.

Exhibit 6-C
ADDITIONAL PARK SPACE NEEDED BY 2010

	Regional Parks (Acres)	Sub-Regional Parks (Acres)
MAUI ISLAND (1)	2,524	1,661
MAUI ISLAND REGIONS (2)		
Wailuku-Kahului	N/A	324
Makawao-Pukalani-Kula	N/A	169
Kihei-Makena	N/A	175
Lahaina	N/A	160
Hana	N/A	N/A
REGIONAL TOTAL	N/A	828

NOTES: (1) Estimates based on projected de facto population
(2) Estimates based on projected resident population

SOURCE: R.M. Towill Corporation, 1992

Recommendations by RMTC for increasing Maui's island's supply of recreational parks and facilities include:

- Completely developing existing parks with land available for facility development or preparation as open space;
- Incorporating underutilized semi-public and private parks, State and Federal natural reserve areas, and private beach facilities into the County's park program; and
- Making facilities provision and smaller sub-neighborhood park development priority.

The planning priorities of the County Parks and Recreation Department are to maintain the safety of current facilities and respond to community needs, usually voiced through community associations. Limited funding has been a constraint on implementing plans to expand County park facilities. The Maui County Planning Department has recently proposed doubling the park dedication fee demanded of housing developers in order to support expansion of park services for residents.

Project Impacts. Improvements to Kanaha Beach Park proposed in the Airport Master plan, include additional vehicular parking and passive recreational facilities such as picnic areas. According to County park officials, the proposed park improvements will help accommodate current high use of the park.

Further development of the park is expected to provide access to parts of the shoreline which are now inaccessible. In the past, beachusers have used four-wheel drive vehicles to gain access to portions of the beach, which has raised safety concerns (personal communication, Projects Manager Leonard Costa, September 1, 1994).

Airport improvements are not expected to have an impact on other County park facilities because improvements will have little, if any, impact on population growth.

Concern about the impacts of airport improvements on Haleakala National Park are well documented in public testimony submitted by park officials. Park officials do not expect airport improvements to increase visitors to the park (personal communication, Superintendent Donald Reeser, September 29, 1994).

Park officials anticipate that proposed airport improvements may increase Maui's potential for exposure to alien species. The potential introduction of alien species to the park is considered its most serious external threat. The protection and restoration of native plants and animals by controlling non-native species is an important part of the park's mission (personal communication, Superintendent Donald Reeser, September 29, 1994).

Park officials have argued that Haleakala National Park is at risk for infestation by alien species for the following reasons:

- The area immediately around the airport and Maui Island provide a rural and wet climate in which alien species are likely to survive;
- Wind currents travel from Kahului Airport toward the park, which increases its potential for exposure to alien insects; and
- Existing methods for controlling the arrival of alien species in Hawaii are inadequate.

An interagency task force has been developing an Alien Species Action Plan (ASAP), to be shared with the public by the end of 1994. The plan gives priority to identification of "open doors" through which alien species enter Hawaii and methods of inspection which can close those accesses. The DOT-A Division is participating in the task force and will support implementation of the ASAP as much as possible. The National Park Service is a participant in the task force, and has reviewed and accepted the Action Plan.

6.5 EDUCATION

Existing and Planned Facilities and Services. The State Department of Education (DOE), Maui District includes schools on the islands of Maui, Moloka`i and Lana`i. In September 1994, Maui District schools enrolled over 20,000 students.

By 1999, enrollment is expected to increase to more than 23,000 students (DOE, 1994). Several new schools are scheduled for completion on Maui Island in the near future:

Completion Date	School	Location
1995	Kekaulike High	Makawao-Pukalani
1996	Kihei II Elementary	South Kihei
	Maui Lani Elementary	Kahului
1997	Waiakū II Elementary	Wailuku

Sites for other future schools have been designated in Villages of Leiali`i and Pu`ukoli`i Villages — major housing developments located in West Maui.

Existing and Anticipated Needs Independent of Actions. Maui island's population is expected to grow by the year 2010. Existing DOE plans address projected educational facility and service needs based on expected economic growth and housing growth independent of the actions.

Project Impacts. CRI has concluded that airport improvements will have little, if any, impact on growth. Therefore, airport improvements are unlikely to have much, if any, impact on educational facilities and services.

Section 7
THE ISSUE OF INTERNATIONAL FACILITIES

7.1 OVERVIEW AND SUMMARY

7.1.1 Purpose and Background

A court order of March 12, 1991 requires consideration of international facilities and operations in the EIS, even though the Master Plan includes no such facilities:

> "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."

As a result, the EIS will assess impacts of internationalization.

As noted in Section 1, "internationalization" involves regular scheduling of flights from foreign countries, with federal inspection of international arrivals and departures at Kahului. Currently, occasional charter flights come to Kahului, and federal agents travel to Kahului to deal with these. Flights come from Canada with passengers and baggage "precleared" by U.S. agents at Canadian airports. "Internationalization" involves more flights, more often, to and from more foreign destinations.

Construction of separate international facilities could occur only after an environmental review, because it would involve expenditure of government funds. A separate environmental assessment, with a separate occasion for public review and comment, would be needed before such facilities were built. Hence, a preliminary assessment of eventual impacts of internationalization is needed now. A final assessment of proposed facilities would take into account specific facilities and detailed plans for using them, not just a projection that some number of international passengers might use Kahului in 2010 if facilities were available.

Scheduled "international" flights (to Japan and other destinations) could take off with a full load of passengers and baggage from a 7,000-foot runway only with one aircraft, the Boeing 747-400 (according to analyses by P+D Aviation, in Appendix M of the EIS). This forms only a small part of the fleet used by international carriers, making international use of a 7,000-foot runway highly unlikely. International flights are possible with longer runways. Hence the sensitivity analysis developed in this chapter covers 8,500-foot and longer runways.

7.1.2 Overview and Summary

Growth Impacts. Much of this section examines the potential "growth-inducing" effects of internationalization (comparable to the Section 4 analysis for improvements permitting additional domestic flights), along with briefer consideration of impacts on the immediate area (comparable to Section 5 for domestic flights) and public facilities impacts (comparable to Section 6). *All analysis is cumulative in nature, building upon prior discussion of impacts or potential impacts from those proposed airport improvements which could generate more domestic nonstop flights.*

In Section 4, CRI took a two-stage approach to the analysis. After reviewing available evidence, we stated our single best conclusion — that airport improvements without internationalization would lead to little or no growth-inducing impacts. Because of a few indications to the contrary, we proceeded to a second stage — a sensitivity analysis of the maximal reasonable impacts which we could identify if growth impacts did occur. These generally proved small, reinforcing our initial "no-impact" conclusion.

For internationalization, however, we must somewhat alter the two-step pattern:

(1) **We could not come to a single best conclusion (even a tentative one) about whether internationalization would result in growth-inducing impacts.** We feel the evidence is too mixed. On the one hand, no case study in Hawaii or elsewhere supports the growth impact hypothesis; some experts (including the DOT's forecast consultants and our own subcontractor Coopers & Lybrand) reject the possibility; and the overall Japanese tourism market on Maui has been growing slowly but is still very limited. On the other hand, other local experts feel there is a definite if uncertain likelihood of growth impacts; reasonable arguments can be made as to why Japanese visitors (or carriers) would be more attracted than U.S. visitors (or carriers) to nonstop Maui flights; and there is some quantitative evidence that Maui's visitor market (particularly the eastbound segment) is shifting more toward a "Maui-only" profile, which would strengthen the demand for nonstop international service.

The best statement we can make is that we see more possibility that impacts will occur, although they would be quite small in initial stages due to the small numbers of Japanese visitors on Maui. However, we have no solid basis for saying if growth-inducing impacts really will occur, or to what extent. We believe such answers *cannot be known*, because they depend on a mix of marketing effectiveness, political factors related to route approval, and future Japanese consumer response to the (future) Maui tourism product.

(2) **Therefore, the "sensitivity analysis" procedures of Section 4 are repeated, but with a subtle difference in meaning.** In Section 4, they were used in effect to answer the question, "If we were wrong in our initial conclusion, how wrong could we realistically be?" In this Section 7, they will be used to answer the question, "Since we believe the impact is unknowable, what's the most that we think it realistically could be?"

As before, our analysis focuses on likely growth by 2010, with the acknowledgment that internationalization could theoretically facilitate further growth past 2010 — if there is additional demand and if local government permits construction of additional visitor units.

Also as before, and at the acknowledged risk of adding a layer of complexity to our study, we use the analytic structure laid out in Section 3. That is, we calculate impacts two different ways: first, as a simple function of added demand above and beyond an "Unconstrained No-Action Future" (defined by the DOT/Aries 1994 forecast figures) ... second, as the combined effect of both added demand and removal of growth constraints over a lower starting point, the "Constrained No-Action Future" (equivalent to just 90% of the DOT forecast figures).

This is done in response to conceptually separate issues raised in the previous EIS process. In effect, some people asked the State, "How do you know the runway won't bring in more visitors than your forecasts say?" while others asked, "How do you know that we couldn't choke off ('constrain') some of that forecasted growth by *not* improving the airport?" These questions are perhaps particularly relevant to the DOT's 1994 forecasts, because they specifically state internationalization would affect the number and origin of aircraft flying in to Kahului, but not the number of eastbound passengers.

Although there is substantial uncertainty as to whether nonstop Japanese flights to Kahului would actually occur, would continue if initiated, and/or would generate new visitors to Maui, our analyses suggest that maximal likely impacts of such occurrences would be as follows:

- *"Unconstrained" Analysis:* Looking only at the effects of added demand over and beyond the DOT forecast levels, alternatives involving a 9,600- or 10,500-foot runway could increase Maui Island's average year 2010 visitor census by about 5,500 to 6,200 people (an 8% to 9% growth impact), resulting in 6,350 to 6,850 more jobs (9% to 10% impact) and a residential population gain of about 12,000 to 12,900 people (9% to 10% impact). For an 8,500-foot runway, the average visitor census would increase only by 6%, the island jobcount by 7%, and the resident population by 7% (9,050 persons in 2010). These figures indicate the cumulative potential effect of both westbound and eastbound increases, although eastbound visitor impacts are responsible for roughly 50% of the estimated impact on average visitor census and (because eastbound visitors spend more), about two-thirds of residential growth impacts in employment and population.

- *"Constrained" Analysis:* Accepting the hypothesis that year 2010 growth levels without airport improvements would actually be lower than the DOT thinks, then alternatives involving a lengthened runway could both remove those constraints to growth and also possibly stimulate added demand. Our analysis suggests the cumulative effects of eastbound and westbound nonstop flights could produce, for an 8,500-foot runway, an increase of 7,050 in the average visitor census (12% over the "Constrained" baseline for 2010), resulting in 6,150 more jobs (13% over the baseline) and 15,400 more residents on Maui (again, 13% over the 2010 population with the "Constrained" No-Action baseline). For a 9,600-foot runway, the sensitivity analysis suggests a maximal effect on average visitor census of 19% (10,900 more people), and increases in jobcount and resident population of 18% (11,200 jobs and 21,100 residents). For a 10,500-foot runway, the maximal impact estimates are an average visitor census increase of 22% (12,800 visitors), and increases in jobcount and resident population of 20% (12,750 jobs and 23,950 residents). About a third of this cumulative impact on visitor census, and about half of the residential growth impact, would be attributed to international flights from Japan.

It is important to reiterate that these are considered maximal potential impact levels. Additionally, they are year 2010 estimates. Virtually all industry experts believed that effects would be gradual, and that initial results would be much more modest — perhaps one or two flights a week.

Perhaps an even more critical qualification is that **these impacts largely could not occur without additional resort development approvals**, since they would imply a level of visitor unit development beyond that for which land use permits have already been issued. In fact, it might be more appropriate to consider them as "impacts" of hypothetical future land use approvals than as impacts of the airport improvement process, since visitors are motivated to come to Hawaii more by the nature of lodgings and attractions on the ground than the nature of the air travel experience.

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, its most likely impact will be to help stabilize demand for Maui products.

Socio-Cultural. Issues of increased Japanese tourism and investment have sometimes been sensitive ones in Hawaii, involving racial and nationalistic political overtones along with more straightforward concerns about growth and economic opportunities. However, experiences to date on Oahu — where Japanese expenditures rival or outweigh U.S. expenditures — suggest that increased Japanese tourism does not inevitably convert destination areas into "little Tokyos."

The Japanese visitor component is increasing on Maui even without nonstop flights. However, even with the significant added growth envisioned in the foregoing figures, Japanese visitors would still comprise only around 15% of the average daily visitor census as of 2010. This is not likely to trigger significant political or cultural crises on Maui.

Immediate Construction Employment. Construction of international facilities at Kahului Airport could involve about 90 direct person-years of employment (i.e., the equivalent of 90 full-time jobs for one year, or 45 for two years). These jobs would be in addition to the jobs involved in construction of one or another of the Master Plan Alternatives. If construction of international facilities took two years, then the airport construction jobcount would climb from an average of 125 direct jobs (for the Preferred Alternative) to 170 direct jobs for the two years in which international facilities were built.

The total number of jobs supported on Maui by international facilities construction and construction-related spending could come to about 190 person-years (in addition to the total jobs associated with master plan improvements.)

Immediate Operational Employment. When and if international flights are regularly scheduled at Kahului, separate facilities would be needed to handle international arrivals and departures. These facilities would keep international passengers and baggage away from others, and would include inspection areas and offices for Federal agencies. (International arrivals and departures are inspected by the U.S. Customs Service, Immigration and Naturalization Service, Public Health Service, and Department of Agriculture.)

CRI interviewed Federal officials (listed in Appendix C) in September 1994 to estimate the staffing needed for Kahului Airport in 2010 if international flights occurred regularly. If international traffic reached the 2010 level projected as possible for Kahului in the recent update (Aries, 1994), federal inspection services would need some 50 employees at Kahului. (At present, the Department of Agriculture has a small staff at Kahului, and the other agencies have no staff there.)

Public Facilities. Impacts on police, fire, medical, recreation, and education facilities follow from resident and visitor population growth, rather than from any

characteristics of international visitors or flights. (The one exception is that an existing but unfilled position for drug control would likely be staffed if international flights are regularly scheduled. It might be filled by a federal or local agent.)

Since the sensitivity analysis showed significant increases in resident and visitor populations with internationalization (added to airport improvements), it is reasonable to expect demand for public services to increase significantly. 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 — except perhaps fire — would be significantly higher than anticipated. (The recent projection 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.)

7.2 PRESENT PATTERNS OF INTERNATIONAL TOURISM ON MAUI

7.2.1 International Airline Passenger Service to Maui and Hawaii

Although occasional nonstop Japanese charter flights land at Kahului Airport, no carrier currently provides regularly scheduled service from non-U.S. origin points to Maui. As discussed in Section 7.3.1, Japan Airlines (JAL) has rights to serve Kahului via Honolulu, but does not currently do so. In the early 1990s, the airline did briefly offer such service (using a Hawaiian Airlines plane with a JAL flight number, after visitors were cleared by customs in Honolulu), but the experiment coincided with a tourism downturn and was discontinued.

Of all airlines, JAL currently provides the most frequent service between Honolulu and Japan, which is Hawaii's most important international market. As of October 1994, it offered 56 wide-bodied flights to Hawaii each week from Japan, scheduled to increase to 64 per week when the peak winter season begins.

As shown in Exhibit 7-A on the next page, 13 carriers currently provide some level of nonstop service between Honolulu and foreign destinations, five of these to Japanese cities. All but one of the foreign destinations served are in Asia, Australia, or other points west, so that visitors originating from these destinations would be flying "eastbound" to Hawaii. (The sole exception would be Canadian Airlines' service to Vancouver and Toronto, Canada. Again, Canadian visitors are "precleared" for customs and so do not require the sort of international facilities here being discussed for Kahului Airport.)

Some Asian carriers have rights to land in Honolulu, but have ceased service. Most of these are Southeast Asian carriers primarily serving business travelers to the U.S., and new airline technology has allowed them to overfly Hawaii without stopping to refuel. (However, one Japanese carrier, All Nippon Airways, is among those which have suspended Hawaii service, although it is expected to resume service from Nagoya at some future point.) Because of "cabotage" laws forbidding one country's carrier to compete in the internal domestic routes of another country, airlines primarily serving routes from, say, Hong Kong to Los Angeles may find it difficult to refill seats on the continuing flight if a number of passengers deplane in Honolulu.

Exhibit 7-A
AIRLINES SERVING HAWAII FROM INTERNATIONAL ORIGIN POINTS (1)

Airline	Fly from Japan		Other Eastbound	International Westbound
	Nonstop	Stopover		
Air New Zealand			New Zealand (stops at Pacific Islands)	
Asiana Airlines			Korea (nonstop)	
Canadian Airlines				Canada (Toronto, Vancouver nonstop)
China Airlines	Tokyo		Taiwan (nonstop)	
Continental Airlines		Tokyo, Osaka, Sapporo, Sendai, Okinawa (Guam stopovers)	Indonesia, Pacific Islands (Guam stopovers)	
EVA Airways Corp.			Taiwan (nonstop)	
Garuda Indonesia			Indonesia (nonstop)	
Hawaiian Airlines			Tahiti, Pacific Islands (nonstop)	
Japan Airlines	Tokyo, Fukuoka, Osaka, Sapporo, Nagoya, Sendai			
Korean Airlines			Korea (nonstop)	
Northwest Airlines	Tokyo, Osaka			
Philippine Airlines			Philippines (nonstop)	
Qantas Airways			Australia (nonstop)	
United Airlines	Tokyo, Osaka			

NOTE: (1) As of November 1994.

7.2.2 International Visitors to Maui and Hawaii

Tourism activities are usually measured by three different types of statistics:

- Visitor Arrivals (or "Visitor Counts") — Numbers of visitors staying at least one night. In Hawaii, visitor arrivals are overwhelmingly by air.

- Visitor-Days and/or Average Visitor Census — "Visitor-Days," an annualized measure, equals total visitor count times length of stay, while "Average Visitor Census" divides this number by 365 to give an estimate of the average number of tourists present on any one day. Because the latter idea is more intuitively easy to understand, this report generally discusses Average Visitor Census (AVC) rather than Visitor-Days.

- Visitor Expenditures — Amount of money which visitors inject into the local economy. This could be either an annual total or an average daily figure.

Airline economics are primarily a function of the first measure, which in Hawaii is virtually equivalent to the number of air passengers. By contrast, local economies are more affected by the second and third measures, the number of people present and spending money on any one day, no matter what the annual visitor count. For example, hotels would prefer to see a fewer number of visitors annually if they stayed longer periods, whereas airlines would profit more from a large number of people coming and going daily.

Appendices A-15 to A-19 contain detailed information about visitor arrivals and average visitor census for the State of Hawaii and for Maui Island. The following discussion provides an overview and selected additional information.

Statewide Patterns. International tourism to Hawaii was greatly affected by the falling value of the dollar in the mid 1980s — particularly the weakening of the dollar against the Japanese yen. These changes in currency exchange rates stemmed from increasing American federal budget deficits and imbalances in U.S.-Japan trade. Consequently, both American real estate and American travel appear cheaper to the Japanese, resulting in an influx of Japanese tourists and Japanese investment — particularly to Hawaii, the state closest to Japan.

Japanese tourism slowed in 1991 as a function of the Gulf War; increased in 1992; and leveled off again in 1993, at least partly a function of the slowing Japanese economy (which has also sharply reduced Japanese investment in Hawaii). However, the weak U.S. dollar has also stimulated smaller increases in Hawaii tourism from other international origin countries — e.g., Korea, Taiwan, Germany, and the United Kingdom. In its most recent *Annual Research Report*, the Hawaii Visitors Bureau (1994b, p. 20) notes that the U.S. share of statewide visitor arrivals has fallen from 71% in 1984 to 55% in 1993. If this trend line continues, the HVB estimates foreign arrivals will outnumber U.S. arrivals by 1997

or 1998. However, because U.S. visitors stay longer, they would still comprise a majority of the average visitor census for some years afterward.

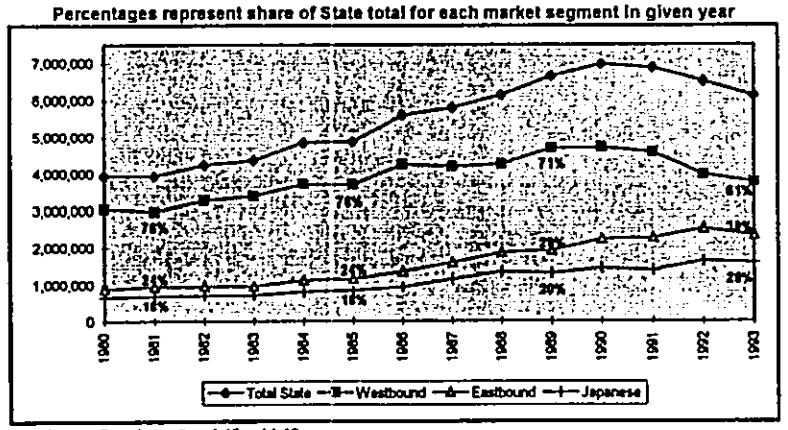
Most international visitors to Hawaii arrive on eastbound flights, and any international service to Kahului Airport in the foreseeable future would consist of eastbound flights. However, it should be noted that **"eastbound visitors" are not synonymous with "Japanese visitors," nor do all Japanese visitors arrive on eastbound flights:**

- Eastbound visitors may include returning Americans, Canadians, or Europeans, as well as Australians, Koreans, etc. In the last five years, eastbound Japanese visitors have comprised only around 60% to 65% of all eastbound visitors, both statewide and on Maui.

- Some Japanese visitors come on westbound flights, stopping over in Hawaii as they return to Japan. In the 1990s to date, about 5% of Japanese visitors (both statewide and on Maui) have arrived on westbound flights. (On Maui, westbound Japanese tend to stay longer, and therefore comprise about 10% of the total number of Japanese visitors to Maui on any given day.)

Exhibit 7-B
TRENDS IN STATEWIDE VISITOR ARRIVALS, 1980-1993 (1)

Percentages represent share of State total for each market segment in given year

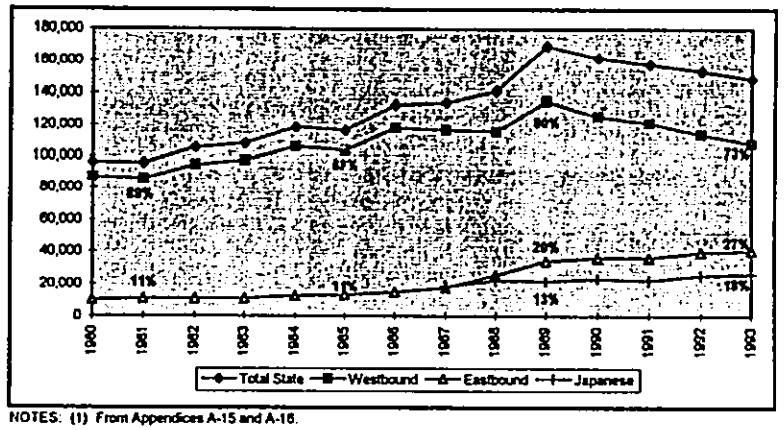


NOTES: (1) From Appendices A-15 and A-16.

SOURCES: Hawaii Visitors Bureau, 1994a, 1993a, 1992e, 1991a, 1993d, 1992d, 1991d, 1991e, 1990a, 1989, 1988; Hawaii State DBEDT, 1994a.

Exhibit 7-B above charts trends since 1980 in total, eastbound, and Japanese visitor arrivals to Hawaii. Exhibit 7-C below charts similar trends, but in terms of average visitor census (AVC) rather than total visitor counts. Because both eastbound and Japanese visitors tend to stay in Hawaii for shorter periods of time, it is apparent that the relative eastbound and Japanese increases in AVC have been somewhat muted compared to the increases in total visitor counts.

Exhibit 7-C
TRENDS IN STATEWIDE AVERAGE VISITOR CENSUS, 1980-1993 (1)



NOTES: (1) From Appendices A-15 and A-16.

SOURCES: Hawaii Visitors Bureau, 1994a, 1993a, 1992e, 1991a, 1993d, 1992d, 1991d, 1991e, 1990a, 1989, 1988; Hawaii State DBEDT, 1994a.

Exhibit 7-D (next page) shows other countries contributing to Hawaii's 1993 visitor count and average visitor census.

As is apparent, despite growth in some international markets, no other country (with the distant exception of Canada) yet seriously rivals Japan as a market for Hawaii tourism — and hence as a possible source of international flights to Maui.

Exhibit 7-D also shows the percentage of visitors from each country who are "repeat visitors," coming to Hawaii for the second or more time. (The market for international direct flights to Maui is generally thought to be much stronger among repeat Hawaii visitors. It would be stronger yet among repeat Maui visitors, but no data are currently available on that.) More than 60% of American visitors to Hawaii are now repeat visitors. For Japanese, the proportion has been growing and has now reached 44%.

Exhibit 7-D
STATEWIDE VISITOR DISTRIBUTION BY COUNTRY OF ORIGIN, 1993

	Total State Visitors			Average Visitor Census	
	Number	% of State	% Who Are Repeat Visitors	Number	% of State
TOTAL:	6,124,230	100%	56%	148,750	100%
United States	3,391,800	55%	64%	92,230	62%
Canada	311,900	5%	60%	11,010	7%
Japan	1,591,920	26%	44%	27,040	18%
Australia	156,560	3%	41%	2,890	2%
Germany	91,120	1%	31%	2,910	2%
United Kingdom	67,200	1%	30%	2,130	1%
Korea	92,990	2%	35%	1,400	1%
Taiwan	75,780	1%	29%	1,400	1%
All Other	325,160	5%	N/A	7,740	5%

SOURCE: Hawaii Visitors Bureau, 1994a.

Since the 1970s, Japanese visitors have generally outspent Mainland U.S. tourists by factors in the magnitude of 2.5:1 to 3:1. Japanese spending fell briefly around 1990, picked up again just as Mainland expenditures plummeted in 1992, and then joined the Mainland downward tendency in 1993. Expenditure declines in both markets are probably due in large part to reduced room rates offered by increasingly anxious Hawaii hoteliers. However, there is also a possibility that Hawaii may now be drawing more middle-income rather upper-income Japanese visitors, such that future average daily expenditures may further decline.

As of 1993, the median daily Japanese statewide Japanese expenditure was $307 (down from $345 in 1992). The Mainland daily expenditure was $116 (about what it was in 1992), so that the ratio of Japanese to Mainland daily expenditures was 2.6:1, one of the lower ratios in recent years (Hawaii Visitors Bureau, 1994c).

The Hawaii Visitors Bureau estimates that Japanese expenditures accounted for 28% of the $9.9 billion spent in Hawaii by tourists in 1991, increasing as a percentage to 34% of the (reduced) total $9.6 billion in 1992, and then to 35% of the (further reduced) total $8.7 billion in 1993 (Hawaii Visitors Bureau, 1992c, 1993b, 1994c). Total Japanese expenditures have outpaced total U.S. expenditures on Oahu for some years, and in 1992 this was also true on a statewide basis (due to the large Oahu difference — U.S. visitor expenditures still far outpaced Japanese expenditures on all Neighbor Islands). However, in 1993, Japanese total expenditures again fell slightly behind U.S. total expenditures statewide.

Maui Island Patterns. Because Hawaii tourism used to be primarily a function of westbound visitors to Oahu, the Hawaii Visitors Bureau did not begin publishing detailed information about Japanese visitors until 1987, or about Maui

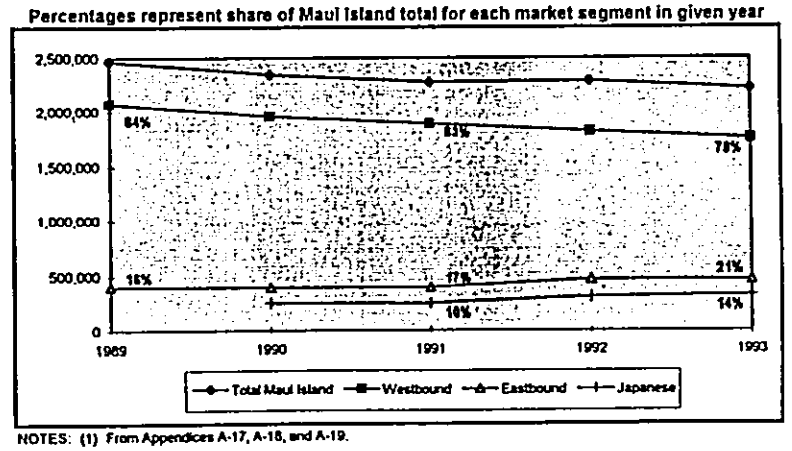
Island until 1989 — in fact, a completely consistent set of data for eastbound Maui AVC is available only from 1991. (Some longer-term information is available for Maui County, and was discussed in Section 2.) Thus, Maui Island statistics tend to date from tourism's 1989 peak or the beginning of its downturn.

Maui was particularly affected by the 1991 downturn, although the island benefited in 1992 both from the statewide increase in eastbound tourism that year and from the "overflow" of Kauai visitors due to the destruction of units on that island by Hurricane Iniki. In 1993, the eastbound visitor count dropped slightly, but there was a compensating increase in length of stay, such that eastbound average visitor census actually increased a little.

Since 1989, Maui's visitor count has generally been about 35% of the statewide count. However, people spend less time on Maui than in the state as a whole, so Maui's AVC has been only about 25% of the state total. (Both figures have inched up a little in the last few years, less because of any growth on Maui than just because Oahu has suffered even more than Maui from the downturn.)

Exhibits 7-E below and 7-F on the following page present visitor count and AVC information comparable to the statewide data in Exhibits 7-B and 7-C (although, as noted, some information is available for shorter periods of time.)

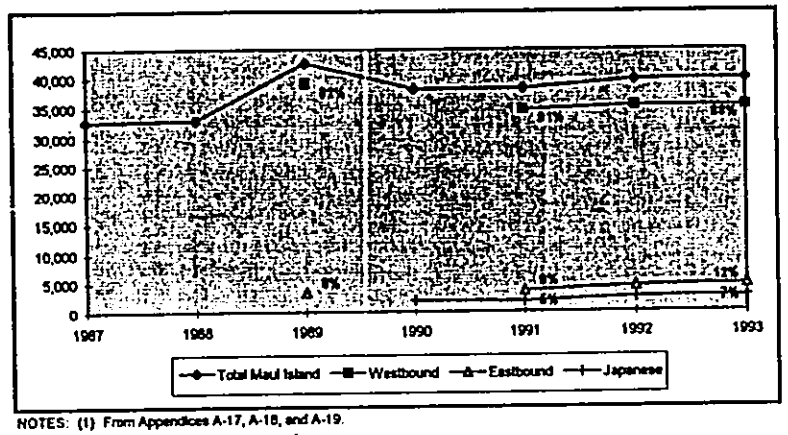
Exhibit 7-E
TRENDS IN MAUI ISLAND VISITOR ARRIVALS, 1989-1993 (1)



NOTES: (1) From Appendices A-17, A-18, and A-19.

SOURCES: Hawaii Visitors Bureau, 1993d, 1992d, 1991a, 1991d, 1989, 1988; Community Resources, Inc., 1993a; Hawaii State DBEDT, 1994a.

Exhibit 7-F
TRENDS IN MAUI ISLAND AVERAGE VISITOR CENSUS, 1987-1993 (1)



NOTES: (1) From Appendices A-17, A-18, and A-19.

SOURCES: Hawaii Visitors Bureau, 1993d, 1992d, 1991a, 1991d, 1989, 1988; Community Resources, Inc., 1993a; Hawaii State DBEDT, 1994a.

Exhibit 7-G shows the 1993 breakdown in Maui visitor statistics by various major national tourism markets for Hawaii:

Exhibit 7-G
MAUI ISLAND VISITOR DISTRIBUTION BY COUNTRY OF ORIGIN, 1993

	Total Maui Visitors				Average Visitor Census				
	Number	% of Maui	% of Each Category's State Total	% of Total State Figure	Length of Stay	Estimated AVC	% of Maui	% of Each Category's State Total	% of Total State Figure
TOTAL:	2,209,960	100%	36%	36%	8.6	39,900	100%	27%	27%
United States	1,529,480	69%	45%	25%	7.1	29,800	75%	32%	20%
Canada	135,120	6%	43%	2%	10.0	3,700	9%	34%	2%
Japan	317,870	14%	20%	5%	3.1	2,700	7%	10%	2%
Australia	26,020	1%	16%	0%	4.5	300	1%	10%	0%
Germany	40,230	2%	44%	1%	7.8	800	2%	27%	1%
United Kingdom	25,770	1%	30%	0%	6.4	500	1%	23%	0%
Korea	18,930	1%	20%	0%	3.4	200	1%	14%	0%
Taiwan	21,880	1%	29%	0%	2.5	100	0%	7%	0%
All Other	92,680	4%	29%	2%	7.1	1,800	5%	23%	1%

SOURCE: Hawaii Visitors Bureau, 1994a.

Compared to the statewide figures (Exhibit 7-D), it may be seen that, despite the growth in eastbound and Japanese tourism, **Maui is still much more dependent on U.S. visitors than is the state as a whole, and much less dependent on Japanese visitors.** On any given day in 1993, one-third of U.S. visitors present in Hawaii were on Maui --- but only 10% of Japanese visitors to Hawaii were on Maui.

The Hawaii Visitors Bureau does not publish individual Neighbor Island daily visitor expenditure figures, due to small sample sizes. However, aggregated figures for all Neighbor Islands indicate that spending by Mainland visitors is higher on Neighbor Islands than on Oahu, while the reverse is true for Japanese. This means that Japanese visitors on Neighbor Islands outspend Mainland visitors by "only" a 2:1 factor, rather than the 3:1 factor seen on Oahu:

	U.S. MAINLAND VISITORS	JAPANESE VISITORS
1992 Daily Expenditures		
Oahu	$105	$348
Neighbor Islands	$131	$273
1993 Daily Expenditures		
Oahu	$109	$309
Neighbor Islands	$127	$276

SOURCE: Hawaii State DBEDT, 1994a, p. 185; Hawaii Visitors Bureau, 1994c, pp. 13,33

(NOTE: The difference in Japanese expenditures on Oahu vs. the Neighbor Islands is basically due to shopping in Duty Free stores on Oahu. If nonstop international flights from Japan served Maui, it may be assumed that Duty Free stores would also serve Maui and this differential would therefore not apply.)

Additionally, the Hawaii Visitors Bureau estimated that, of the $2.1 billion spent by visitors on Maui Island in 1993, 18% was spent by all eastbound visitors and 13% was spent by all Japanese visitors. These percentages represent increases from the 1991 levels of 12% and 8.5% respectively, reflecting the growth of eastbound and/or Japanese tourism on Maui (Hawaii Visitors Bureau, 1992c, 1994c).

One-Island-Only Visitation Patterns. A major market for nonstop flights to or from a particular Hawaiian island might well consist of people who spend time only on that island. That is not to say the success of international flights to Maui would depend solely on these people, since some visitors may want to fly into Maui and out of another island, or vice-versa. However, "Maui-only" visitors would clearly be more interested in nonstop service than would most others.

Exhibit 7-H shows 1993 one-island-only visitor count patterns for the major source countries. **For all countries, the great majority of visitors visit only one island — but for U.S. visitors, that one island is now most often a Neighbor Island (most likely Maui), whereas for Japanese and other eastbound visitors that one island is still overwhelmingly likely to be Oahu (88%).** (On the other hand, among those few Japanese visitors who do visit just a Neighbor Island, the majority choose Maui.)

Exhibit 7-H
ONE-ISLAND-ONLY VISITOR DISTRIBUTION BY COUNTRY OF ORIGIN, 1993

	Statewide Patterns				Maui Island Patterns			
	Statewide: One Island Only	% of Total State Visitors	Statewide: Neighbor Island Only	N.I. Only As % of State 1-Isle Only	Maui-Only Number	% of Total Maui Visitors	% of State One Island Only	% of State N.I. Island Only
TOTAL:	4,387,150	72%	1,619,340	37%	920,050	42%	21%	57%
United States	2,307,000	68%	1,241,310	54%	708,320	46%	31%	57%
Canada	224,900	72%	102,300	45%	66,260	49%	29%	65%
Japan	1,237,300	78%	145,800	12%	75,740	24%	6%	52%
Australia	128,000	82%	10,480	8%	6,220	22%	5%	59%
Germany	57,850	83%	24,140	42%	13,030	32%	23%	54%
United Kingdom	66,750	77%	16,900	25%	9,950	39%	15%	59%
Korea	75,630	82%	19,460	26%	6,020	32%	8%	31%
Taiwan	46,170	81%	5,260	11%	1,470	7%	3%	28%
All Other	243,350	75%	53,690	22%	33,040	36%	14%	62%

SOURCE: Hawaii Visitors Bureau, 1994a.

Put another way, 46% of U.S. visitors to Maui in 1993 said they were visiting only Maui, while just 24% of Japanese visitors to Maui said they were visiting Maui only. Such comparisons can, of course, be read in several ways: Either Japanese are inherently disinclined to visit Maui alone, or else there is tremendous potential for growth in the Japanese Maui-only market.

(NOTE: Available data do not permit any analysis of "one-island-only" average visitor census or expenditure levels.)

7.3 CONTRASTING EVIDENCE ABOUT ACTUAL LIKELY IMPACT

This portion of the study summarizes evidence (or, in many cases, informed judgments) suggesting that internationalization would not have growth-inducing impacts, along with contradictory evidence that it would (or could) have such effects. The final part of this Section 7.3 will include CRI comments on the contrasting evidence and arguments.

7.3.1 Evidence That Growth-Inducing Impacts WOULD NOT Occur

(1) **Limited Number of Countries Potentially Interested:** In CRI's interviews with airline and tourism marketing experts (Section 4.5.3), there was unanimous agreement that no "international" market other than Japan would be even potentially interested in nonstop service to Maui for the foreseeable future. Simply put, no other foreign market sends enough visitors to Hawaii for their carriers to consider nonstop service to any port of entry except Honolulu.

This conclusion also applies to Canada, although it should be reiterated that Canadian visitors are "precleared" for U.S. travel by a special international agreement, such that provision of customs facilities at Maui would not affect decisions by carriers about establishing regular Canada-Kahului nonstop service. (Canadians have a fairly high level of visibility on Maui, since many have second homes there. However, for exactly that reason, their average length of stay is quite long. In other words, Canadians form a relatively significant part of Maui's average visitor census at some times of year, but a relatively insignificant number of passengers coming to Maui.)

(2) **Expert Subcontract Analysis:** Coopers & Lybrand, the CRI subcontractor mandated to approach this issue from the perspective of experts in tourism marketing, concluded there would be no growth-inducing impact. Their analysis (Section 4.4) applied to both westbound and eastbound flights. Among other things, their conclusion reflects the following evidence:

- **Case studies** of comparable airports — including situations involving Japanese visitors, such as in Thailand — show no clear effect.
- **Literature on leisure traveler motivations** (including studies of Japanese visitors in Hawaii) suggest that time costs of transportation (e.g., such as plane changes at Honolulu) are minimal factors in affecting travel choices.

(3) **Uncertainty of Government Approvals for New International Routes to Maui:** The following discussion of bilateral agreements was also prepared by Coopers & Lybrand as part of its subcontract work for CRI on this project.

In discussing the role of nonstop flights, it is useful to gain a brief understanding of bilateral air agreements, which govern city pair air rights between nations. Nonstop international air routes such as those envisioned for Maui cannot occur without a bilateral air agreement in place.

Although lengthening of the runway would permit long-haul non-stop flights from Asia/Pacific destinations to Maui, only Japan Airlines has a bilateral treaty for

Maui at this time. These Maui landing rights, however, also require a stopover in Honolulu. Therefore, any Maui nonstop flights from Asia would have to apply for bilateral air agreements to permit nonstop flights from foreign destinations into Maui.

This process is extremely complicated and costly, given the high potential of such nonstop routes. As an overview, governments negotiate bilateral agreements to determine city pairs between countries for nonstop flights, as well as the frequency of flights between the negotiating countries. For the U.S., the Federal government negotiates with other countries, but states such as Hawaii can lobby for the air routes.

Currently, there is a perception among other U.S. cities vying for these coveted routes that Hawaii already has a disproportionate number of Japanese air routes. [CRI Note: Several of our interviewees made the same point.]

Should Maui seek new routes, it would be competing with other cities such as Dallas, Seattle, and Chicago, which may be perceived as more economically viable both by Japan and the U.S., given that these cities are airport hubs that can service a greater geographical area. Other foreign carriers not servicing Hawaii would most likely seek to establish nonstop air routes with Honolulu first as its primary Hawaii city, rather than opting for a regional market first. Airlines such as Singapore, Cathay Pacific, and Malaysian Air all have established air agreements with Honolulu, but have not obtained routes into Maui or any other Neighbor Island.

Therefore, while the lengthening of the runway may permit nonstop long-haul flights, the process in establishing them on a large scale international level would be difficult.

(4) **Historically Limited Number of Japanese Visiting Maui:** As discussed in Section 7.3.2, Japanese visitors historically have not been as visible or as economically important on Maui as on Oahu. In 1993, they comprised only 14% of all Maui visitors and only 7% of average visitor census. It is true that both percentages represent slight increases over the preceding several years, but the increases were in line with statewide growth in Japanese visitors. There is no clear trend for greater percentages of all Japanese visitors to be visiting Maui. In the few years for which data are available, there is no evidence for any large overall surge in Japanese tourism to Maui in particular, more than other islands.

(5) **Industry Doubts As to Potential Future Extent of Japanese Interest in Maui:** A minority of airline and tourism marketing experts interviewed for this study by CRI (Section 4.5.3) doubted that Japanese visitors will develop enough of an exclusive interest in Maui to justify ongoing nonstop air service.

Their feeling was that most Japanese visitors will always want to spend a portion of their Hawaii stay on Oahu, because:

- The Japanese visitor market has historically focused not just on relaxation and beauty (considered Maui strengths), but as much or more on entertainment, nightlife, and other forms of "action" (considered Oahu strengths).

- For cultural reasons, Japanese visitors are heavy shoppers, buying gifts for family and friends at home. Shopping opportunities are considered more abundant and enticing on Oahu.

Particularly for the latter reason, some interviewees thought that Japanese visitors might indeed want to fly nonstop into Maui, but would generally want to fly home out of Honolulu. Airline profitability would be reduced if outbound Maui flights were not full and/or if flights from Kahului had to stop over in Honolulu, leading to doubts about carriers' willingness to continue nonstop service under such conditions.

7.3.2 Evidence That Growth-Inducing Impacts COULD or WOULD Occur

Much of the evidence for potential growth-inducing impacts comes from "conventional wisdom" gleaned in CRI interviews with airline and tourism marketing experts (Section 4.5.3). However, it is also possible that at least some of the following perspectives may be based on proprietary market research not available to CRI or the public.

(1) **Known Interest of Japan Airlines in Maui Routes:** It appeared to be common knowledge in the tourism and airline communities that Japan Airlines (JAL) is strongly interested in establishing nonstop service to Maui, assuming appropriate amendments to its bilateral agreement rights. It was further expected that, if JAL's experience is successful, other Hawaii carriers with Hawaii-Japan routes — such as Continental and Northwestern — could attempt to enter the Maui nonstop-flight market. (All Nippon Airways is considered a more distant prospect for Maui service, since it has currently suspended even its Honolulu service.)

Such interest does not guarantee the needed international approvals ... or the market response needed for continued service ... or that "success" might not simply be limited to serving passengers coming anyway (with no additional induced demand). However, it is clearly a precondition for any growth-inducing impacts, and most expert interviewees seemed to assume that JAL would be more likely to move quickly toward long-haul nonstop service than would many U.S. carriers from Mainland long-haul origin points.

(2) **Potential for Japanese Visitor Patterns to Follow U.S. Patterns:** A number of expert interviewees believed that history will repeat itself — just as U.S. visitors have become more attracted to Maui with repeated exposure to Hawaii, so will Japanese visitors come to Maui more and more in the future. One prerequisite for this is a growing number of repeat visitors to Hawaii as a whole. According to figures provided by the HVB Research Department, the percentage of Japanese visitors on repeat trips was 32% in 1989, increasing to the high 30%s in the very early 1990s, and to 44% in 1993 (Exhibit 7-B).

(3) **Initial Indications of a Developing "Maui-Only" Japanese/Eastbound Market:** Several airline executives said that repeat Japanese visitors are now "Waikiki'd out," and are increasingly using Honolulu strictly as a gateway to Kona or, particularly, Maui. This suggests a tendency toward the sort of "Maui-only" (or at least Neighbor Island-only) market which could refute the idea that "Japanese will always want to spend time in Waikiki and fly home from Honolulu."

HVB data provides some evidence of a recent spurt in "Maui-only" visitors — for all market segments, but particularly Japanese and eastbound:

Exhibit 7-I
PERCENTAGES OF MAUI MARKET SEGMENTS VISITING MAUI ONLY (1)

% "Maui-Only" Among:	1990	1991	1992	1993
TOTAL MAUI VISITORS	31%	35%	37%	42%
Westbound Maui Visitors	35%	39%	41%	46%
Eastbound Maui Visitors	9%	16%	21%	26%
Japanese Maui Visitors	7%	6%	11%	24%
Eastbound Japanese Maui Visitors	6%	5%	10%	23%

NOTE: (1) From Appendices A-15 to A-19.

Thus, in 1990, only 6% of eastbound Japanese visitors to Maui were visiting only Maui, but by 1993 24% of Maui's eastbound Japanese visitors were visiting only Maui. From 1990 to 1993, the number of eastbound Japanese visitors to Maui increased from 232,490 to 301,940 — an increase of 69,450 in this category. In the same period, the number "Maui-only" eastbound Japanese increased from 13,440 to 69,130 — an increase of 55,690. This increase of 55,690 therefore represents 80% of the total growth in Maui's eastbound Japanese visitors for the three-year period.

As will be discussed shortly, there are other ways to look at the same data which are less compelling. However, these figures obviously suggest that

those Japanese visitors who do come to Maui are becoming more like U.S. visitors who come to Maui.

(4) **Greater Relevance of Time Cost Factors for Japanese Visitors:** If the traveler's intent is to go directly to Maui, then the time and inconvenience costs of going first to Honolulu may be greater for Japanese visitors than for U.S. visitors. That is because Japanese visitors are often more fatigued and jet-lagged from overnight eastbound flights than are westbound visitors, and they must undergo the added strain of customs inspections before walking to another terminal and connecting to a Maui flight. (Any flight delays associated with Kahului Airport congestion might also become more irritating, affecting future travel decisions and recommendations to friends.)

Tourism and airline experts interviewed for this study said great progress has been made in facilitating U.S. customs inspections at Honolulu International Airport in the last few years. However, many Japanese travelers still remember times when inspections required up to three or four hours, making immediate connections to Neighbor Islands difficult to make. And there were fears that this situation could develop again if eastbound tourism growth outstrips the capacity of Honolulu customs officers.

Another aspect of the same issue is the perception among airline experts that "Japanese simply don't like a lot of flight segments between islands." There is a feeling that the Neighbor Island cannot be further "opened up" without removing these perceived inconveniences.

The monetary cost of interisland travel (while relatively lower for Japanese visitors due to the exchange rate) may also be marginally more important, since independent travelers must pay for two one-way interisland fares going Honolulu-Maui and then Maui-Honolulu. By contrast, westbound visitors already have the option of leaving from Kahului, though they must stop over on the West Coast if they are traveling farther.

(If emphasis is placed on the claim that time and cost advantages of nonstop service to Maui are greater for Japanese visitors than for Mainland ones, it is reasonable to conclude that a "Constrained" analysis would be reasonable with regard to Japanese visitors, and an "Unconstrained" analysis would be reasonable for Mainland travelers. Such a mixed model would show impacts smaller than those of a fully "Constrained" analysis. Hence it is not used in this chapter, which is intended to model maximal potential impacts.)

(5) **Greater Airline Incentive to Invest in Marketing:** International routes are considered more profitable than domestic routes to Hawaii. Thus, some interviewees said, airlines will have more incentive to undertake relatively

sustained promotional campaigns for new routes. (At present, JAL is already conducting a marketing campaign focusing on Hawaii's Neighbor Islands.)

Of course, airlines would not continue investing in advertising indefinitely without concrete results. But — the reasoning goes — they would be less likely than carriers on U.S. routes to retreat quickly if initial results are not glowing, and their initial marketing efforts would probably be considerably more substantial.

There was also a "gut feeling" among many travel executives that awareness of Maui in Japan is now reaching the sort of threshold level required for marketing investments to have substantial results. That is, far more Japanese have heard of Maui today without having gone there, and the island may be developing a cachet value for those wanting to see the new "in" destination.

(6) **Possible Greater Japanese Tolerance for Developed Areas:** Some interviewees thought that a Maui which may seem increasingly "overdeveloped" from a U.S. perspective could be relatively more attractive to Asians, who supposedly are used to denser populations and enjoy a sense of high activity. From this viewpoint, more Japanese tourism could have a "snowball" effect, leading to more development in order to compete more effectively with Waikiki.

Others did not agree, saying Maui must preserve its rural character just as much for the Japanese market as for the U.S. market.

7.3.3 Discussion and Conclusions

For runway lengthening plus internationalization to have growth-inducing impacts on Maui, two things must happen:

- Nonstop flights would actually have to be implemented, which requires both political and market factors to be favorable.

- If implemented, these flights must not only serve the market of Japanese visitors to Maui, but must also grow the market of Japanese visitors to Maui.

Predicting the outcome of these factors means predicting not only market response to a new commercial venture, but also the outcome of national and international political processes. This is roughly similar to predicting the market shares of Japanese vs. American computer chips as of 2010, even while trade

negotiators are still at the bargaining table and while researchers are still developing new technology.

CRI is struck by a number of fundamental uncertainties in this situation:

(1) **Uncertainties about International Political and Economic Conditions.** As Coopers & Lybrand notes above, it is by no means certain that Japan Airlines (or anyone else) would obtain the needed amendments to their bilateral agreement rights in order to serve Kahului with nonstop flights. Nor is it certain that the American dollar will always remain weak, continuing to attract high-spending foreign tourists to Hawaii.

As this report was being finalized, an Asia-Pacific Economic Cooperation (APEC) forum involving 18 nations — including the U.S. and Japan — announced conceptual approval of a master plan to abolish most trade barriers between participating developed countries by 2010 (and developing countries by 2020). The approval of this plan, the "Bogor Declaration," is uncertain. The implications of the plan — or even anticipation of its reality — for tourism are uncertain.

(2) **Uncertainties and Disagreements among Local Experts.** Some of our expert interviewees saw little likelihood of, or impacts of, Japanese flights to Maui. However, an apparent majority of our expert interviewees (including many who are most familiar with the Japanese market) saw some potential to "grow" the Japanese market through nonstop service —though few thought the magnitude of that growth could be easily predicted.

In these discussions, it was often difficult to separate out what people thought would happen and what they wanted to happen. In fact, for many people in business and government, that distinction may not be critical. For them, the future is not a mechanical consequence of decisions made today, but an ongoing process of yet-to-be-seen human decisions and actions. Most seemed to support the idea of internationalization at Maui, but not because they believed it would lead to any certain outcome. Rather, they felt it provided "insurance" against changing conditions, a "tool" for dealing with an inherently uncertain tourism future, and a "chance" to divert future growth from a potentially burdened infrastructure on Oahu and at Honolulu International Airport.

CRI makes no judgment as to the wisdom of these objectives. However, we do concur with the wisdom of regarding future Japanese market events as things which are highly dependent on a myriad of international political, economic, and consumer factors — not as things which are knowable years in advance.

(3) **Uncertainties about the Meaning of Trends in Japanese Tourism to Maui.** Exhibit 7-I earlier presented some data which could be interpreted as evidence that Maui is "taking off" as a unique destination, separate from the rest of Hawaii, and likely to need its own international airport. However, even these numbers regarding the "Maui-only" market are ambiguous, for the following reasons:

- They are based on the results of a voluntary in-flight survey asking about "intentions" to spend time on various islands. Intentions do not always reflect actual behavior. Surveys are subject to non-response, sampling error, and respondent confusion. (In fact, this survey has consistently produced estimated average visitor census figures for Lana'i and Moloka'i which far exceed the capacities of those islands' visitor plants.) All economic, social, and market research is subject to such measurement problems.

- Most of the apparently dramatic changes for Japanese visitors has come just in the past one or two years. It is worth waiting to see if this is really a long-term trend or just a "blip."

- While the percentage increases in Exhibit 7-I look persuasive, it is worth remembering that overall Japanese tourism on Maui is just growing roughly in proportion to its statewide growth. That means it is still a fairly small market in absolute terms. In fact, the estimated 1993 number of eastbound Maui-only Japanese visitors (69,130) — while nearly six times the number it was just two years before — still represents only:

  - 15% of all Maui eastbound visitors;
  - 5% of all statewide Japanese visitors, and 3% of all statewide eastbound visitors;
  - 3% of all Maui visitors.

  Assuming 300 persons per flight (about what DC-10s hold, though 747s can hold more), all 69,130 "Maui-only" eastbound Japanese visitors could have been accommodated in less than 4.5 flights per week, less than one a day. The westbound "Maui-only" visitor count has also been growing; its much greater 1993 level of 800,270 could theoretically have been accommodated in about seven Mainland flights a day — which is exactly the number of regularly scheduled direct flights actually serving Kahului Airport today, without any runway extension.

Basic Conclusion: One thing can be said with some certainty — given the small numbers in the primary market segment which would be affected (eastbound Japanese, particularly if not exclusively the "Maui-only" portion), any

effects of internationalization would not be immediately great. Most of the interviewees for this report were reluctant to guess long-term impacts, but virtually all felt the initial effect would involve just a few flights a week.

Because of its current small base, this is a market which could be "grown" for a long time before it would be greatly visible on Maui.

However, for all the reasons noted above, CRI does not feel there is enough clear evidence to support any "one best conclusion" about growth-inducing impacts of internationalization. There is evidence that the eastbound market is growing anyway, but the evidence about additional, induced growth from nonstop flights is too mixed to permit any definite statement.

Under these conditions, it is most appropriate to:

- Acknowledge the potential for growth-inducing impacts;

- Repeat the "sensitivity analysis" procedures from Section 4 to give a sense of reasonable maximal impacts.

7.4 SENSITIVITY ANALYSIS — ASSESSMENT OF MAXIMAL IMPACTS

The analysis here follows the conceptual framework previously laid out in Sections 3.1 and 4.6. That is, it assesses possible impacts in two different ways:

- Assuming the proper reference point is an "*Unconstrained No-Action Future*" defined by the DOT forecast levels for 2010, such that any impacts would be a function of things not anticipated in those forecasts (i.e., added demand due to marketing spin-offs and increased length of stay on Maui); and

- Assuming the proper reference point is a lower "*Constrained No-Action Future*" in which not improving the airport would "constrain" (choke off) some growth. This future without the project is defined as 90% of the DOT forecast levels for 2010. Impacts would be the combined function of both removal of these growth constraints and also the added demand addressed in the first impact assessment.

The following analysis is a cumulative impact assessment, in that it builds upon impacts of domestic nonstop flight service set forth in Section 4.6.

7.4.1 Assumptions

(1) Obviously, it is assumed that international approvals are granted for flights, and that these are successfully initiated.

(2) Only alternatives involving a 9,500, 9,600-, or 10,500-foot runway are affected, since shorter runway lengths are insufficient for nonstop international service.

(3) For reasons discussed previously, the only international market likely to be affected by 2010 (or at any time in the foreseeable future) would be the Japanese market.

(4) As specified in Exhibit 4-P, based on both growth trends and also the desire to maximize rather than minimize impact results, it is assumed that even without international nonstop service:

- The eastbound share of Maui's visitor arrivals will grow to 30% (from the present 21%); and
- The Japanese proportion of the eastbound visitors will grow to 75% (from the present 65%) — i.e., the Japanese share of the total Maui visitor market will grow from 13% to 22.5%.

(5) Several assumptions about expenditure patterns would maximize employment and population impacts of growth in eastbound visitors:

- It is assumed that historically high daily Japanese expenditure patterns will continue, despite some possibility that expenditures may decline as larger numbers of middle-income Japanese enter the market.
- It is further assumed that all eastbound visitors will exhibit the same high expenditure profiles as do Japanese, even though this has not always been the case.

(6) The DOT forecast levels are assumed to be an accurate basis for specifying the "No-Action Futures," despite some evidence (Section 4.3.4) that actual growth could be slower.

(7) As in the Section 4.6 analysis, it is assumed that the impact of removing growth constraints (for the "Unconstrained No-Action Future") would be to increase the visitor arrivals from 90% back to the full 100% of DOT forecast levels — but only for the affected market(s). That is, if lack of nonstop flights are truly a constraint to growth, initiating such flights from Japan would not remove constraints to growth in the Australian market.

(8) It is assumed that the maximal likely impact of added demand (primarily from sustained new marketing efforts) would be 30% for the Japanese market, with a nominal 2% spill-over effect for citizens of other countries who might connect to Hawaii flights in Japan. The 30% figure was the highest estimate provided by any of the few interviewees willing to hazard a quantified guess about extent of impact.

7.4.2 Sensitivity Analysis: Visitor Shares for Different Scenarios

Impacts Assuming Unconstrained No-Action Future. Exhibit 7-J shows the combined effects of all assumptions about increases in domestic markets, Japanese markets, and other international eastbound markets due to added demand alone: a total visitor arrival increase of 10% for a 9,600-foot runway and 11% for a 10,500-foot runway.

Exhibit 7-J
LIKELY EFFECTS OF JAPANESE & DOMESTIC NONSTOP FLIGHTS ON VISITOR ARRIVALS: ASSUMING "NO-ACTION" FUTURE IS UNCONSTRAINED

(All Numbers Expressed as Percentage of Forecast Levels)

	No Action (Uncon-strained)	7,000'		8,500' (West Coast full load & Denver restricted load)		9500'/9600' (Japan and Mid/West U.S.A. full load)		10,500' (Japan and East Coast U.S.A. full load)	
NATURE OF IMPAC	Assumed % of Forecast Level	Max. Likely Add Effect	New % of Forecast	Max. Likely Add. Effect	New % of Forecast	Max. Likely Add. Effect	New % of Forecast	Max. Likely Add. Effect	New % of Forecast
ADDED DEMAND									
West Coast	100%	N/A	N/A	2%	102%	2%	102%	2%	102%
Rocky Mountains	100%	N/A	N/A	5%	105%	10%	110%	10%	110%
Mid West	100%	N/A	N/A	0%	100%	10%	110%	10%	110%
East/South	100%	N/A	N/A	0%	100%	0%	100%	5%	105%
Westbound Wtd. Avg	100%	N/A	N/A		101%		105%		106%
Japan	100%	N/A	N/A	30%	130%	30%	130%	30%	130%
Other International	100%	N/A	N/A	2%	102%	2%	102%	2%	102%
Eastbound Wtd. Avg	100%	N/A	N/A		123%		123%		123%
TOTAL WTD. AVG.	100%	N/A	N/A		108%		110%		111%
IMPACT									
West Coast		N/A	N/A		2%		2%		2%
Rocky Mountains		N/A	N/A		5%		10%		10%
Mid West		N/A	N/A		0%		10%		10%
East/South		N/A	N/A		0%		0%		5%
Westbound Wtd. Avg.		N/A	N/A		1%		5%		5%
Japan		N/A	N/A		30%		30%		30%
Other International		N/A	N/A		2%		2%		2%
Eastbound Wtd. Avg.		N/A	N/A		23%		23%		23%
TOTAL WTD. AVG.		N/A	N/A		8%		10%		11%

NOTE: Weighted averages based on assumed 2010 Visitor Arrival Shares from Exhibit 4-P.

Exhibit 7-K indicates that the combined effect of these assumptions would have only minimal effect on the initial assumed westbound/eastbound visitor shares of 70%/30%:

Exhibit 7-K
EFFECTS OF JAPANESE & DOMESTIC NONSTOP FLIGHTS ON 2010 VISITOR ARRIVAL SHARE: ASSUMING "NO-ACTION" FUTURE IS UNCONSTRAINED

	Assumed "No-Action" Share	Changes in Share Associated with Added Demand for Unconstrained "No-Action" Future			
	(from Exhibit 4-P)	7,000'	8,500'	9,500'/9,600'	10,500'
Westbound Subtotal:	70.0%	N/A	69.5%	69.5%	69.7%
West Coast	28.0%	N/A	27.7%	27.1%	26.9%
Rocky Mountains	4.9%	N/A	5.0%	5.1%	5.1%
Mid West	21.4%	N/A	20.7%	22.3%	22.1%
East/South	15.8%	N/A	15.3%	14.9%	15.6%
Eastbound Subtotal:	30.0%	N/A	31.2%	30.5%	30.3%
Japan	22.5%	N/A	22.3%	21.8%	21.6%
Other	7.5%	N/A	9.0%	8.8%	8.7%
TOTAL	100.0%	N/A	100.0%	100.0%	100.0%

Impacts Assuming Constrained No-Action Future. Exhibit 7-L on the following page shows combined effects for all domestic and international visitor arrivals due both to added demand and to removal of growth constraints: a total visitor arrival increase of 18% for a 9,600-foot runway and 20% for a 10,500-foot runway. This is an increase over a beginning point that was assumed to be lower than the "Unconstrained" beginning point.

Exhibit 7-M (see page 7-29) indicates that the combined effect of these assumptions would result in a slight increase in the assumed eastbound share of total visitors, up from 30% to about 33% for both runway lengths.

Exhibit 7-L
LIKELY EFFECTS OF JAPANESE AND DOMESTIC NONSTOP FLIGHTS ON VISITOR ARRIVALS: ASSUMING "NO-ACTION" FUTURE IS CONSTRAINED

(All Numbers Expressed as Percentage of Forecast Levels)

NATURE OF IMPAC	No Action (Constrained)	7,000'		8,500' (West Coast full load & Denver restricted load)		9500'/9600' (Japan and MidWest U.S.A. full load)		10,500' (Japan and East Coast U.S.A. full load)	
	Assumed % of Forecast Level	Max. Likely Addl. Effect	New % of Forecast	Max. Likely Addl. Effect	New % of Forecast	Max. Likely Addl. Effect	New % of Forecast	Max. Likely Addl. Effect	New % of Forecast
REMOVAL OF CONSTRAINTS									
West Coast	90%	N/A	N/A	10%	100%	10%	100%	10%	100%
Rocky Mountains	90%	N/A	N/A	5%	95%	10%	100%	10%	100%
Mid West	90%	N/A	N/A	0%	90%	10%	100%	10%	100%
East/South	90%	N/A	N/A	0%	90%	0%	90%	10%	100%
Westbound Wtd. Avg.	90%	N/A	N/A		94%		98%		100%
Japan	90%	N/A	N/A	10%	100%	10%	100%	10%	100%
Other International	90%	N/A	N/A	0%	90%	0%	90%	0%	90%
Eastbound Wtd. Avg.	90%	N/A	N/A		95%		98%		99%
TOTAL WTD. AVG.	90%	N/A	N/A		95%		98%		99%
ADDED DEMAND									
West Coast		N/A	N/A	2%	102%	2%	102%	2%	102%
Rocky Mountains		N/A	N/A	5%	100%	10%	110%	10%	110%
Mid West		N/A	N/A	0%	90%	10%	110%	5%	105%
East/South		N/A	N/A	0%	90%	0%	102%		106%
Westbound Wtd. Avg.		N/A	N/A		130%		130%		130%
Japan		N/A	N/A	30%	130%	30%	130%	30%	130%
Other International		N/A	N/A	2%	92%	2%	92%	2%	92%
Eastbound Wtd. Avg.		N/A	N/A		121%		121%		121%
TOTAL WTD. AVG.		N/A	N/A		103%		108%		110%
IMPACT (COMBINED)									
West Coast		N/A	N/A		12%		12%		12%
Rocky Mountains		N/A	N/A		10%		20%		20%
Mid West		N/A	N/A		0%		20%		20%
East/South		N/A	N/A		0%		0%		15%
Westbound Wtd. Avg		N/A	N/A		6%		12%		16%
Japan		N/A	N/A		40%		40%		40%
Other International		N/A	N/A		2%		2%		2%
Eastbound Wtd. Avg		N/A	N/A		31%		31%		31%
TOTAL WTD. AVG.		N/A	N/A		13%		18%		20%

NOTE: Weighted averages based on assumed 2010 Visitor Arrival Shares from Exhibit 4-P.

Exhibit 7-M
EFFECTS OF JAPANESE & DOMESTIC NONSTOP FLIGHTS ON 2010 VISITOR ARRIVAL SHARE: ASSUMING "NO-ACTION" FUTURE IS CONSTRAINED

	Assumed "No-Action" Share	Changes in Share Associated with Added Demand for Unconstrained "No-Action" Future			
	(from Exhibit 4-P)	7,000'	8,500'	9,500'/9,600'	10,500'
Westbound Subtotal:	70.0%	N/A	69.3%	70.1%	70.5%
West Coast	26.0%	N/A	29.4%	28.7%	28.2%
Rocky Mountains	4.9%	N/A	4.9%	5.0%	4.9%
Mid West	21.4%	N/A	20.2%	21.9%	21.5%
East/South	15.8%	N/A	14.9%	14.5%	15.9%
Eastbound Subtotal:	30.0%	N/A	30.7%	29.8%	29.5%
Japan	22.5%	N/A	23.6%	23.0%	22.7%
Other	7.5%	N/A	7.1%	6.9%	6.8%
TOTAL	100.0%	N/A	100.0%	100.0%	100.0%

	Changes Including Effects of Added Demand			
Westbound Subtotal:	N/A	64.9%	66.8%	67.2%
West Coast	N/A	27.7%	26.5%	25.9%
Rocky Mountains	N/A	4.6%	5.0%	4.9%
Mid West	N/A	18.7%	21.8%	21.3%
East/South	N/A	13.8%	13.2%	15.0%
Eastbound Subtotal:	N/A	35.1%	33.8%	32.8%
Japan	N/A	28.4%	27.1%	26.6%
Other	N/A	6.7%	6.4%	6.3%
TOTAL	N/A	100.0%	100.0%	100.0%

7.4.3 Sensitivity Analysis: Tourism Growth Levels

Exhibit 7-N presents estimated total visitor arrivals, average visitor census, and occupied visitor units for both scenarios — constrained and unconstrained — while Exhibit 7-O shows the growth "impact" (the difference between the levels with the runway extensions and the various "No-Action" levels). All results in Exhibits 7-N and 7-O (see following pages) are calculated following the same procedures discussed in Sections 4.3 and 4.6.

Exhibit 7-N
SENSITIVITY ANALYSIS RESULTS: YEAR 2010 MAUI INTERNATIONAL & DOMESTIC TOURISM GROWTH LEVELS (1)

	No-Action Future (2)	RUNWAY ALTERNATIVES 7,000' %	7,000' Adjusted #	8,600' %	8,600' Adjusted #	9500'/9600' %	9500'/9600' Adjusted #	10,500' %	10,500' Adjusted #
UNCONSTRAINED									
VISITOR ARRIVALS									
Total Maui County	3,901,360		N/A		4,301,960		4,294,810		4,329,530
Westbound	2,730,950	N/A	N/A	101%	2,782,360	105%	2,855,210	106%	2,885,930
Eastbound	1,170,410	N/A	N/A	123%	1,439,600	123%	1,439,600	123%	1,439,600
Maui Island (3)	3,657,280		N/A		3,967,880		4,000,730		4,091,450
Westbound	2,567,090		N/A		2,568,500		2,661,350		2,722,070
Eastbound	1,100,190		N/A		1,399,380		1,399,380		1,399,380
AVERAGE VISITOR CENSUS									
Total Maui County	69,600		N/A		73,300		75,230		75,870
Westbound	56,880		N/A		57,520		59,450		60,090
Eastbound	12,820		N/A		15,780		15,780		15,780
Maui Island (3)	65,510		N/A		69,120		71,050		71,690
Westbound	53,490		N/A		54,110		56,040		56,680
Eastbound	12,050		N/A		15,010		15,010		15,010
OCCUPIED VISITOR UNITS									
Total Maui County	24,800		N/A		26,180		26,870		27,100
Maui Island (3)	23,400		N/A		24,690		25,380		25,600
CONSTRAINED									
VISITOR ARRIVALS									
Total Maui County	3,511,230		N/A		4,018,400		4,204,100		4,296,270
Westbound	2,457,860	N/A	N/A	98%	2,808,060	102%	2,793,780	106%	2,885,930
Eastbound	1,053,370	N/A	N/A	121%	1,410,340	121%	1,410,340	121%	1,410,340
Maui Island (3)	3,277,150		N/A		3,784,320		3,970,020		4,062,190
Westbound	2,294,000		N/A		2,444,200		2,629,900		2,722,070
Eastbound	983,150		N/A		1,340,120		1,340,120		1,340,120
AVERAGE VISITOR CENSUS									
Total Maui County	62,720		N/A		69,780		73,630		75,550
Westbound	51,180		N/A		54,300		58,170		60,090
Eastbound	11,540		N/A		15,460		15,460		15,460
Maui Island (3)	58,540		N/A		65,580		69,450		71,370
Westbound	47,770		N/A		50,800		54,760		56,680
Eastbound	10,770		N/A		14,690		14,690		14,690
OCCUPIED VISITOR UNITS									
Total Maui County	22,400		N/A		24,910		26,300		26,980
Maui Island (3)	20,910		N/A		23,420		24,800		25,490

NOTES (1) Percentage of assumed change, as calculated in Exhibit 7-K for Unconstrained and Exhibit 7-M for Constrained, adjusts the No-Action Future visitor arrivals
(2) Based on 100% and 90% of the Ames 1994 visitor arrivals for Unconstrained and Constrained, respectively
(3) Total assumed change (i.e., 100%) caused by the various runway alternatives is allocated to Maui Island

Exhibit 7-O
SENSITIVITY ANALYSIS RESULTS:
INTERNATIONAL & DOMESTIC GROWTH IMPACT CALCULATIONS (1)

	No-Action Future (2)	7,000' Difference	8,500' Difference	9500'/9600' Difference	10,500' Difference
UNCONSTRAINED					
VISITOR ARRIVALS					
Total Maui County	3,801,360	N/A	300,600	393,450	424,170
Westbound	2,730,950	N/A	31,410	124,260	154,980
Eastbound	1,170,410	N/A	269,190	269,190	269,190
Maui Island (3)	3,667,280	N/A	300,600	393,450	424,170
Westbound	2,567,090	N/A	31,410	124,260	154,980
Eastbound	1,100,190	N/A	269,190	269,190	269,190
Percentage Increase		N/A	8%	11%	12%
AVERAGE VISITOR CENSUS					
Total Maui County	69,690	N/A	3,610	5,540	6,180
Westbound	56,950	N/A	660	2,590	3,230
Eastbound	12,830	N/A	2,950	2,950	2,950
Maui Island (3)	65,510	N/A	3,610	5,540	6,180
Westbound	53,450	N/A	660	2,590	3,230
Eastbound	12,060	N/A	2,950	2,950	2,950
Percentage Increase		N/A	6%	8%	9%
OCCUPIED VISITOR UNITS					
Total Maui County	24,690	N/A	1,290	1,980	2,210
Maui Island (3)	23,400	N/A	1,290	1,980	2,210
Percentage Increase		N/A	6%	8%	9%
CONSTRAINED					
VISITOR ARRIVALS					
Total Maui County	3,511,230	N/A	507,170	692,870	785,040
Westbound	2,457,860	N/A	150,200	335,900	428,070
Eastbound	1,053,370	N/A	356,970	356,970	356,970
Maui Island (3)	3,277,150	N/A	507,170	692,870	785,040
Westbound	2,294,000	N/A	150,200	335,900	428,070
Eastbound	983,150	N/A	356,970	356,970	356,970
Percentage Increase		N/A	15%	21%	24%
AVERAGE VISITOR CENSUS					
Total Maui County	62,720	N/A	7,040	10,910	12,830
Westbound	51,180	N/A	3,120	6,990	8,910
Eastbound	11,540	N/A	3,920	3,920	3,920
Maui Island (3)	58,540	N/A	7,040	10,910	12,830
Westbound	47,770	N/A	3,120	6,990	8,910
Eastbound	10,770	N/A	3,920	3,920	3,920
Percentage Increase		N/A	12%	19%	22%
OCCUPIED VISITOR UNITS					
Total Maui County	22,400	N/A	2,510	3,900	4,580
Maui Island (3)	20,910	N/A	2,520	3,900	4,580
Percentage Increase		N/A	12%	19%	22%

NOTES (1) Calculated as the difference between the No-Action Future and the assumed change from Exhibit 7-N
(2) Based on 100% and 90% of the Ames 1994 visitor arrivals for Unconstrained and Constrained, respectively
(3) Total assumed change (i.e., 100%) caused by the various runway alternatives is allocated to Maui Island

Impacts Assuming Unconstrained No-Action Future. The numbers in the upper portions of Exhibits 7-N and 7-O show these results. They suggest substantial impacts on eastbound visitor levels; less substantial but still significant impacts on cumulative (total) visitor figures:

- *Visitor Arrivals:* Given all the foregoing assumptions, the table indicates annual eastbound arrivals might increase by as much as 269,200 people, a 24% increase over the number without nonstop flights.

  However, the cumulative impact of international and domestic increases would be 300,600 for an 8,500-foot runway, 393,450 for a 9,600-foot runway and 424,200 for a 10,500-foot runway. These figures represent increases in the range of 8% to 12% over the total expected without nonstop flights. (The difference in figures between the two runway lengths all stems from domestic U.S. impacts, not international effects.) The cumulative percentage increase is much less than the eastbound-only percentage increase because eastbound visitors represent a smaller share of the market and (as discussed in Section 4.6) the expected impacts on westbound visitors would be much less.

- *Average Visitor Census:* Exhibit 7-O shows an increase of 2,950 eastbound visitors on Maui each day, which again represents a 24% increase over the number expected without nonstop flights.

  However, because eastbound visitors spend less time on island, the cumulative domestic and international impact on average visitor census is less than the proportionate increase for total visitor arrivals — 6% to 9% rather than the above 8% to 12%.

- *Occupied Visitor Units:* The combined domestic and international maximal impact of 2,210 visitor units is nearly twice as large as the 1,150-unit impact from domestic increases alone (Exhibit 4-V). It represents a 9% cumulative increase in visitor units. The cumulative impact for the preferred alternative of 9,600 feet is slight less — 1,980 units, representing an 8% increase. Assuming 70% occupancy levels, this means 2,830 total units, which is approximately equivalent to about six fairly large hotels.

However, it is important to note that — for all the foregoing measures — estimated growth in visitor activity would exceed the estimated capacity of Maui Island's existing plus approved visitor units:

	Levels with Nonstop Flights (Exhibit 7-N)		Maui Island Land Use Constrained Forecast (Appendix B-10)
	8,500-Ft Runway	9,600-Ft. Runway	
Visitor Arrivals	3,967,880	4,060,730	3,982,878
Average Visitor Census	69,120	71,050	66,682
Occupied Visitor Units	24,690	25,380	23,668

This means that little or none of the potential growth impacts specified in the "Unconstrained" portions of Exhibits 7-N and 7-O could happen unless additional land use permits are authorized for more resort development than are already approved for the future. In fact, this was even true for the visitor growth levels projected back in Exhibit 4-U for impacts associated strictly with domestic nonstops. However, that excess was so small that it did not seem worth stressing. For the cumulative effects of domestic and international flights the difference is more substantial and worth emphasizing.

(It should be noted that there is a slight "apples-and-oranges" comparison problem in the above figures, because the County's Land Use Constrained Forecast was based on different assumptions about visitor mix — i.e., fewer eastbound visitors, who, because they stay for a shorter period of time, have less impact on average visitor census. However, the key numbers here are really those for visitor units, and these are valid comparisons. The same number of visitor units could hold more annual visitors if the visitors tend to stay less time, but they would hold the same number of daily visitors.)

Impacts Assuming Constrained No-Action Future. The numbers in the lower portions of Exhibits 7-N and 7-O show these results. They suggest even greater proportionate impacts on eastbound visitor levels; and proportionately less but still very significant impacts on cumulative (total) visitor figures.

At the same time, it must be remembered that this analysis assumes a lower starting point — a "No-Action Future" in which growth is constrained by lack of airport improvements. Consequently, the absolute value of the projected visitor activity levels is virtually identical in the "Constrained" and "Unconstrained" analyses. The "greater impact" in the Constrained scenario refers only to proportionate increases over a lower starting point.

Specific results include these:

- *Visitor Arrivals:* An increment of some 357,000 annual eastbound visitors, representing a 36% increase over the assumed constrained no-action alternative. The cumulative international and domestic impact would represent a 21% increase for the preferred (9,600-foot runway) alternative, and a 24% increase for the longest runway alternative.

- *Average Visitor Census:* An increment of 3,920 eastbound visitors daily, also representing a 36% increase over the constrained no-action future. The cumulative international and domestic (proportionate) impact would be lower — 19% for the preferred alternative and 22% for the longest runway.

- *Occupied Visitor Units:* The cumulative figures in Exhibit 7-O are some 1,400 units larger than the similar figures for domestic impacts alone (Exhibit 4-V). The (proportionate) cumulative impact is again 19% and 22% for the two different runway lengths. For the preferred alternative, the 3,900-occupied-unit impact translates, at 70% occupancy, to 5,570 units, which amounts to 11 or 12 fairly large hotels.

Again, all these "impacts" represent increases over an assumed "No-Action Future" which is, by definition, lower for the Constrained than for the Unconstrained scenario. For each runway alternative in Exhibit 7-N, the absolute values of projected year 2010 tourism activity levels are almost the same for the two scenarios.

Consequently, the growth levels and impacts specified in the "Constrained" portions of Exhibits 7-N and 7-O also largely could not be realized unless additional land use permits are authorized for more resort development than are already approved for the future.

Summary. The purpose of this analysis was to explore maximal reasonable potential impacts of internationalization, in conjunction with any impacts from domestic nonstop flights. CRI believes there is a substantial potential for eastbound tourism on Maui to grow from nonstop international flights. The amount to which it could grow would be roughly equal under both the Constrained and Unconstrained scenarios, though one of these implies more proportionate "impact" than the other.

However, this overall conclusion is subject to two important qualifications:

- Because eastbound tourism is still a small if growing part of Maui's overall visitor levels, big impacts in the eastbound component can still mean only small to moderate total impacts.

- Most of the impacts could not occur without additional resort development approvals. This reinforces the emphasis given in Section 4 to the relative importance of land use approvals vs. runway extension as a growth-control mechanism.

7.4.4 Sensitivity Analysis: Residential Growth Levels

Exhibit 7-P (next page) presents estimated total civilian jobs, population, and housing unit levels associated with the cumulative impacts of both domestic and international nonstop flights — for both the "Unconstrained" and the "Constrained No-Action Futures." (These numbers flow from the preceding numbers and are calculated by similar procedures as in Sections 4.3 and 4.6.) Exhibit 7-Q (page 7-

36) then shows the growth "impact" (the difference between the levels with the runway extensions and the various "No-Action" levels).

Exhibit 7-P
SENSITIVITY ANALYSIS RESULTS (INTERNATIONAL CUMULATIVE): YEAR 2010 RESIDENTIAL GROWTH LEVELS (1)

	No-Action Future (2)	RUNWAY ALTERNATIVES 7,000'	8,500'	9500'/9600'	10,500'
UNCONSTRAINED					
CIVILIAN JOBS					
Total Maui County	73,490	N/A	78,270	79,800	80,300
Maui Island	69,080	N/A	73,900	75,420	75,930
RESIDENT POPULATION					
Total Maui County	134,160	N/A	147,220	150,090	151,040
Maui Island	129,680	N/A	138,940	141,810	142,760
HOUSING UNITS					
Total Maui County	50,020	N/A	53,300	54,340	54,690
Maui Island	47,020	N/A	50,310	51,340	51,690
CONSTRAINED					
CIVILIAN JOBS					
Total Maui County	67,100	N/A	75,270	78,320	79,840
Maui Island	62,710	N/A	70,890	73,950	75,450
RESIDENT POPULATION					
Total Maui County	126,190	N/A	141,570	147,310	150,180
Maui Island	117,910	N/A	133,290	139,030	141,880
HOUSING UNITS					
Total Maui County	45,690	N/A	51,290	53,340	54,370
Maui Island	42,690	N/A	48,260	50,340	51,370

NOTES (1) See Appendices B-4 and B-5 for detailed assumptions and calculations used to produce these figures. All figures rounded to nearest ten.
(2) Based on the Ares 1994 Projections, as shown in Exhibit 4-E.

Impacts Assuming Unconstrained No-Action Future. The numbers in the upper portions of Exhibits 7-P and 7-Q show these results. They indicate cumulative potential growth impacts of 7% for the 8,500-foot runway, 9% for the 9,600-foot runway, and 10% for the 10,500-foot runway (the slight difference being due to domestic, not international, effects). These percentages apply to all three residential growth measures — jobs, population, and housing units. For residential population, the absolute number of additional people, on a cumulative basis, would be 9,060 for the 8,500-foot runway, 11,930 for the 9,600-foot runway and 12,880 for the 10,500-foot runway.

Although not explicitly shown in Exhibit 7-Q, comparison with Exhibit 4-X indicates that international flights add the following increments to each impact figure:

- 4,300 jobs;
- 8,090 resident population;
- 2,930 housing units.

Exhibit 7-Q
SENSITIVITY ANALYSIS RESULTS (INTERNATIONAL CUMULATIVE): RESIDENTIAL GROWTH IMPACT CALCULATIONS (1)

	No-Action Future (2)	RUNWAY ALTERNATIVES 7,000'	8,500'	9500'/9600'	10,500'
UNCONSTRAINED					
CIVILIAN JOBS					
Total Maui County	73,490	N/A	4,810	6,340	6,840
Maui Island	69,080	N/A	4,810	6,340	6,840
Percentage Increase		N/A	7%	9%	10%
RESIDENT POPULATION					
Total Maui County	134,160	N/A	9,060	11,930	12,880
Maui Island	129,680	N/A	9,060	11,930	12,880
Percentage Increase		N/A	7%	9%	10%
HOUSING UNITS					
Total Maui County	50,020	N/A	3,280	4,320	4,670
Maui Island	47,020	N/A	3,280	4,320	4,670
Percentage Increase		N/A	7%	9%	10%
CONSTRAINED					
CIVILIAN JOBS					
Total Maui County	67,100	N/A	8,170	11,220	12,740
Maui Island	62,710	N/A	8,170	11,220	12,740
Percentage Increase		N/A	13%	18%	20%
RESIDENT POPULATION					
Total Maui County	126,190	N/A	15,380	21,120	23,970
Maui Island	117,910	N/A	15,380	21,120	23,970
Percentage Increase		N/A	13%	18%	20%
HOUSING UNITS					
Total Maui County	45,690	N/A	5,570	7,650	8,680
Maui Island	42,690	N/A	5,570	7,650	8,680
Percentage Increase		N/A	13%	18%	20%

NOTES (1) Calculated as the difference between the No Action Future and the assumed change from Exhibit 7-P.
(2) Based on the Ares 1994 Projections, as shown in Exhibit 4-E.

The addition of eastbound visitors to average daily visitor census tends to generate significantly more jobs and population than does the addition of westbound visitors. That is because of their higher daily expenditure levels. Thus, the above potential impacts attributed strictly to international flights make up about two-thirds of the projected maximal cumulative impacts from both domestic and international flights.

As noted above, these "potential" impacts largely could not occur without additional resort development land use permits.

Impacts Assuming Constrained No-Action Future. The numbers in the lower portions of Exhibits 7-P and 7-Q show these results. They indicate cumulative growth impacts of 13% (8,500-foot runway), 18% (9,600-foot runway), and 20% (10,500-foot runway) for all three measures — jobs, population, and housing. (Once more, the slight difference between figures for different runway lengths reflects small domestic impacts, not international impacts.) For residential population, the absolute number of additional people, on a cumulative basis,

would be 15,380 for the 8,500-foot runway, 21,120 for the 9,600-foot runway and 23,970 for the 10,500-foot runway.

Although not explicitly shown in Exhibit 7-Q, comparison with Exhibit 4-X indicates that international flights add the following increments to each measure:

- 5,710 jobs;
- 10,740 resident population;
- 3,890 housing units.

These numbers comprise about 45% to 50% of the total cumulative impacts in the lower part of Exhibit 7-Q. The international share of the cumulative impacts is less for the "Constrained" than for the "Unconstrained" scenario because there are more hypothetical impacts from domestic flights if one accepts the argument that growth would be constrained without such flights.

In considering these figures, three things must again be remembered:

(1) The "Unconstrained No-Action Future" assumes a lower reference point without nonstop flights, one in which some growth would be constrained without runway extension. Thus, the absolute value of the projected residential employment and population levels is virtually identical in the "Constrained" and "Unconstrained" analyses. The "greater impact" in the Constrained scenario refers only to proportionate increases over the lower starting point.

(2) The sensitivity analysis in this chapter estimates maximal impacts that might occur given particular assumptions -- rather than likely impacts, calculated in relation to a well-established future situation without the proposed development.

(3) Once more, little of this "potential" growth impact could occur without additional resort development land use permits. In fact, this might as well be considered the impact of any future resort approvals as of airport improvements.

7.4.5 Impacts on Agriculture

For international flights to have a significant impact on Maui's agriculture, much marketing and other preparatory work would be needed to support regular exports. As a result, any estimate of the volume of future demand for Maui products or of exports is highly speculative. In principle, the Japanese market might be important for Maui's flower and pineapple growers. With as many as three nonstop flights per day, nonstop flights to Japan might be able to ship some

15,000 tons of outbound cargo a year (rough estimate by CRI, based on analyses of payloads for DC10-30, B747-400, and B767 aircraft with lengthened runways, by P+D Aviation, EIS Appendix N). Should Maui's agricultural industry fill even *half* that space, the result would be a major, and likely a significant, impact.

Growth in exports may be less important than stability of demand for exports. The creation of an additional market for Maui products could add to the stability of demand for those products, just as the development of new tourist markets is tending to make Hawaii's visitor industry less dependent on economic cycles in any particular area overseas.

7.4.6 Socio-Cultural Impacts of Growth from International Flights

Social aspects of tourism-related growth on Maui were discussed at length in Section 4.8. Simple additional population and visitor unit growth from international flights would be essentially covered by that discussion. Still, the increase in Japanese visitor presence might arguably have unique and additional aspects.

The sudden heavy infusion of both Japanese tourists and Japanese capital in the late 1980s generated a certain level of public anxiety over whether Hawaii might someday be economically or politically "controlled" by outside interests in Tokyo or Osaka. Because there has been far less apparent public anxiety over the extent to which Hawaii is now "controlled" by outside interests in New York or Los Angeles, this led to some public soul-searching by politicians and newspaper columnists as to whether the difference was a function of racial/nationalistic feelings or of the simple suddenness and unfamiliarity of the Japanese presence.

However, social impacts of Japanese tourism in Hawaii (as distinct from other types of tourism) have never been systematically studied. Some anecdotal issues include:

- Concerns about erosion of Hawaiian (or American) "sense of place" as Japanese-language signs, architecture, and other amenities are developed to make travelers feel more at home;
- Concerns about Japanese vertical integration (of airlines, hotels, tour activities, etc.) minimizing economic benefits for local residents;
- Reports that local residents of Japanese ancestry feel "looked down upon" by incoming Japanese business executives, and/or that such executives do not share local values about things such as charitable contributions and employee benefits;

- Concerns about local residents' opportunities for employment or promotion if they do not immerse themselves in Japanese language and cultural styles.

Based on all these concerns, it is certainly possible to create hypothetical scenarios involving serious socio-political conflicts — for example, as the Japanese visitor market grows increasingly important to Maui, might there be pressure to create an urban "action center" in Lahaina or Kihei, drenched in neon signs with Japanese characters, to improve Maui's competitive position relative to Waikiki?

For each such alarming speculation, a more appealing one could be proposed. For example, might the exposure of Japanese executives to Maui's meeting facilities and scientific amenities (such as the new supercomputer) increase the likelihood that Hawaii in general and Maui in particular might finally be taken seriously as a "Pacific center" for financial and technological activities?

It may also be noted that many of the common concerns about Japanese tourism have yet to be realized on Oahu. The visitor industry and the Honolulu City government have worked together to minimize Japanese signage in Waikiki. Anecdotal comments and some HVB survey research suggest that Japanese tourists themselves dislike coming to places with "too many Japanese" or "too Japanese a feeling." Many Japanese companies or individual businessmen with high and somewhat strident profiles have faded from the scene with the changing economy. And Japanese airlines which own Hawaii hotels have not all rushed to consolidate their position and expand their properties — e.g., the fairly quiescent Makaha resort owned by All Nippon Airways.

Without more definitive research and systematic study, statements about the socio-political and/or socio-cultural impacts are likely to remain strictly in the realm of speculation.

However, a few conclusions do follow from the logic of the analysis in the foregoing Sections 7.4.1 through 7.4.4:

- Eastbound (and, specifically, Japanese) tourism is gradually increasing in importance on Maui.
- That increase is expected to continue, even without nonstop flights.
- If the sort of maximal impacts discussed in the previous quantitative analysis actually come to pass, then Japanese tourism would play a greater economic role for Maui.

- However, the figures in Exhibit 7-N indicate that, for the preferred 9,600-foot runway alternative, the maximal potential impacts would result in all eastbound tourists (including some non-Japanese) comprising just 20% of the average daily visitor census.

  Japanese tourists themselves would be just about 15% of the average visitor census (assuming 75% of eastbound tourists are Japanese). Although this is twice the current percentage, it still is not the sort of level to produce sweeping cultural or political change on Maui.

- Further increases in the Japanese presence could always continue after the 2010 timeframe of this study. However, what happens in Maui's economic and political structure has always reflected the broader statewide situation. The sorts of national and international variables which determine international tourism in Hawaii as a whole will probably swamp any Maui-specific effects of nonstop flights from Japan.

7.5 IMMEDIATE IMPACTS OF INTERNATIONALIZATION

As in Section 5, this sub-section deals with activities on site at the airport or nearby. It shows much smaller effects than discussed in connection with growth-inducing impacts, because internationalization involves only a single new facility (in addition to the various facilities in the Master Plan alternatives).

7.5.1 Employment and Income

Construction. With regularly scheduled flights, special facilities would be needed to handle passengers, baggage and cargo on international flights (U.S. Customs Service, 1991; FIS Facilities Guideline Committee, 1990). A 1990 feasibility study identified four alternative ways to develop separate facilities at Kahului Airport (Project Managers Hawaii, 1990). It was not finalized, and must be viewed as only preliminary. For present purposes, the 1990 study is useful as identifying likely construction costs.

Construction of international facilities could involve about 90 direct person-years of employment (i.e., 90 full-time jobs for one year, or 45 for two years.) The total number of jobs supported on Maui by international facilities construction and construction-related spending could come to about 190 person-years, as shown in Exhibit 7-R on the following page.

Exhibit 7-R
CONSTRUCTION COST & EMPLOYMENT ESTIMATES FOR INTERNATIONAL FACILITIES, KAHULUI AIRPORT

A: CONSTRUCTION COST ESTIMATES, 1990 (Million $s) (1)	
1. Expansion of Holdroom "F"	$15.745
2. Addition to Holdroom "F"	$9.355
3. New International Facility Makai of Holdroom "A"	$10.755
4. New International Facility Kahului-side of Holdroom "A"	$14.945
Average (1990 $s)	$12.700
Average (1993 $s) (2)	$13.565

B: CONSTRUCTION EMPLOYMENT IMPACTS (3)	
JOBS (Person-Years)	87
Direct Jobs	171
Indirect and Induced Jobs, Statewide	258
Total Construction-Related Jobs	185
Maui Share of Total Jobs	
INCOME (Millions $s)	$3.551
Direct Income	$4.508
Indirect and Induced Income, Statewide	$6.078
Maui Share of Income	

NOTES: (1) Estimated in Project Managers Hawaii, Inc., 1990.
(2) Adjusted from 1990 estimates using the Construction Cost Index for all components of construction of high-rise buildings.
(3) Multipliers used to estimate construction impacts are as shown in Exhibit 5-C.

The additional construction jobs estimated here would add to the demand for construction workers and to total workforce demand estimated in Section 5. The cumulative workforce demand involves no significant change. Airport construction would still involve a significant share of Maui's construction workers, and the total workforce impact would be a very small share of Maui's total jobcount during the one or two years of international facilities construction, as throughout the construction period.

Operations. With international facilities, operational jobs would be affected in two ways:

- Federal agencies would bring staff to Maui to handle international flights; and

- Changes in maximal passenger counts and operations, as estimated in the sensitivity analysis, could lead to changes in the immediate and aviation-related jobcount.

Federal agents interviewed in October 1994 estimated that a total staff of about 50 would be needed at Kahului for some 511,000 direct arrivals per year in 2010 (according to the Aries, 1994 estimate). New federal employees would be distributed as shown in Exhibit 7-S:

Exhibit 7-S
ESTIMATED NEW INSPECTIONS JOBS WITH INTERNATIONALIZATION OF KAHULUI AIRPORT, 2010

Agency	Full-Time	Part-Time
Customs Service	16	8
Immigration & Naturalization Service:		
Inspectors	12	0
INS Substation on Maui (1)	11	0
Public Health Service	0	1 (2)
Department of Agriculture	7	0
TOTAL	46	9

NOTES: (1) Possibly needed for processing naturalization and deportation cases. Location would be near courts; need not be at airport. (Need for INS agents already exists; substation could be created with or without international flights. International flights are viewed here as a catalyst that might lead to creation of a substation, not as the sole reason for a substation.
(2) Contracted medical staff.

Exhibit 7-T (next page) indicates the direct operations employment at Kahului Airport itself for various alternatives with internationalization, and estimates the total jobs created, both on Maui Island and statewide. As in earlier analysis of operations jobs (Exhibit 5-G), the Preferred Alternative airport direct jobcount is significantly lower than the No-Action jobcount. This is because helicopter traffic is moved off-airport in the Preferred Alternative, not because of any new impact associated with internationalization.

To estimate maximal impacts of airport improvements plus internationalization, a sensitivity analysis much like that used in Section 5 was conducted for operations jobs. In Exhibit 7-T, the growth analysis shown earlier in this section has been used, and the federal jobs listed in Exhibit 7-S have been counted as 50 full-time government jobs.

The total salaries for these agents would come to about $1.65 million annually (1993 dollars).

Exhibit 7-T
TOTAL OPERATIONS JOBS & INCOME, RUNWAY ALTERNATIVES WITH INTERNATIONALIZATION, 2010 (1)

	No Action	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
STATEWIDE OPERATIONS JOBS								
Direct Jobs (2)	2,050	1,843	N/A	1,800	2,100	2,100	2,100	2,100
Indirect & Induced Jobs	1,517	1,383	N/A	1,405	1,536	1,536	1,536	1,536
TOTAL	3,567	3,223	N/A	3,255	3,636	3,636	3,636	3,636
Maui Island Share of Total	3,161	2,855	N/A	2,882	3,224	3,224	3,224	3,224
STATEWIDE INCOME (Thousands $s)								
Direct Income	$49,977	$46,508	N/A	$47,170	$51,496	$51,496	$51,496	$51,496
Indirect & Induced Income	$40,882	$38,136	N/A	$39,048	$41,443	$41,443	$41,443	$41,443
TOTAL	$90,859	$84,644	N/A	$86,218	$92,939	$92,939	$92,939	$92,939
Maui Island Share of Total	$80,184	$74,691	N/A	$76,049	$82,078	$82,078	$82,078	$82,078

NOTES (1) Also see footnotes to Exhibit 5-E for full explanation of categories and calculations used in the exhibit.
(2) See Appendix B-18 for detailed assumptions and calculations used to estimate direct jobs

Exhibit 7-U
SENSITIVITY ANALYSIS (WITH INTERNATIONALIZATION): DIRECT OPERATIONS JOBS, 2010

	RUNWAY ALTERNATIVES, 2010 DIRECT OPERATIONS JOBS							
	No Action	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
UNCONSTRAINED (1)								
TOTAL JOBS								
On-Site	2,020	1,990	N/A	1,930	2,330	2,330	2,330	2,250
Off-Site	30	310	N/A	300	0	0	0	0
TOTAL	2,050	2,300	N/A	2,230	2,330	2,330	2,330	2,250
IMPACT								
Locational (2)	N/A	280	N/A	270	-30	-30	-30	-30
Share of Total Jobs, No Action	N/A	13.7%	N/A	13.2%	-1.5%	-1.5%	-1.5%	-1.5%
Absolute (3)	N/A	250	N/A	180	280	280	280	200
Share of Total Jobs, No Action	N/A	12.2%	N/A	8.8%	13.7%	13.7%	13.7%	9.8%
CONSTRAINED (4)								
TOTAL JOBS								
On-Site	2,020	1,980	N/A	1,930	2,320	2,330	2,320	2,250
Off-Site	20	300	N/A	290	0	0	0	0
TOTAL	2,040	2,280	N/A	2,220	2,320	2,330	2,320	2,250
IMPACT								
Locational (2)	N/A	280	N/A	270	-20	-20	-20	-20
Share of Total Jobs, No Action	N/A	13.7%	N/A	13.2%	-1.0%	-1.0%	-1.0%	-1.0%
Absolute (3)	N/A	230	N/A	170	270	280	270	200
Share of Total Jobs, No Action	N/A	11.3%	N/A	8.3%	13.2%	13.7%	13.2%	9.8%

NOTES (1) From Appendix B-18
(2) Each alternative's off-site jobs minus the No Action Forecast's off-site jobs
(3) Each alternative's total jobs minus the No Action Forecast's total jobs
(4) From Appendix B-20

In Exhibit 7-U (preceding page), the relocation of helicopters off-airport shows up as a locational impact (for the Preferred Alternative only). The total number of direct operations jobs is appreciably higher with all alternatives considered than with the No-Action future in both the Unconstrained and Constrained runs of the sensitivity analysis. Hence there is a significant absolute impact on operations jobs with internationalization.

7.5.2 Population and Housing

Population and housing impacts associated with direct operations jobs are calculated in Exhibit 7-V below. As many as 500 people, and 200 to 220 households, could be affected by the combination of airport improvements and internationalization. These are not significant in relation to either island or regional populations and household counts.

Exhibit 7-V
POPULATION & HOUSING IMPACTS ASSOCIATED WITH KAHULUI AIRPORT OPERATIONS JOBS (WITH INTERNATIONALIZATION), 2010

	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Maximal Direct Operations Employment Impact (1)	250	N/A	180	280	280	280	200
Future(s) used for maximal impact (1)	Uncon.	N/A	Uncon.	Uncon.	Both	Uncon.	Both
Workforce-Supported Population (2)	462	N/A	325	506	506	506	361
Workforce Households (3)	152	N/A	109	170	170	170	122
Potential New Housing Demand (4)	46	N/A	33	51	51	51	36
Total Potential Households Affected by Actions	198	N/A	142	221	221	221	158

NOTES (1) From Exhibit 7-U estimates of absolute impact. If the Unconstrained (or Constrained) Future showed greater impact, that value was used, and the future with the larger impact is noted in the column.
(2) Based on Maui Island 1990 Census data with 49,780 employed workers and 89,906 persons in households, some 1.81 persons are supported by each job.
(3) Based on Maui Island 1990 average population per household (2.97)
(4) An estimated 30% of workers could establish additional households. (This is a high factor; new household formation is often estimated by CRI as a range, with 30% the upper limit of the range.)

7.5.3 Impacts on Nearby Businesses

If internationalization leads to growth, then it could expand the customer base for stores near the airport. As noted earlier, Japanese tourists tend to spend more in Hawaii than American tourists. Much of that spending is on gifts for friends at home. With non-stop flights, Maui could probably support additional duty-free stores and stores offering name-brand European luxury goods, similar to

the stores now in the middle of Ala Moana Shopping Center. A duty-free store could be located at the airport. Luxury stores might be located near the airport (in Triangle Square), near the center of the island's road system (perhaps at Kaahumanu Center), or in West Maui (perhaps at Whaler's Village, Kaanapali). Since only one such shopping area would likely be needed, it is not certain that the impact would be felt near the airport.

7.5.4 Impacts on Nearby Residential Areas

Impacts on residential areas follow from various proposed improvements (runway extension, land acquisition, and changes in roadways) unconnected with international flights and facilities. Internationalization in addition to development of direct flights to Mainland destinations could increase somewhat the number of visitors and residents using Kanaha Beach Park or traveling through West Spreckelsville on a newly opened road. The increased impact would likely be small, involving no significant change over the impacts discussed in Section 5.

7.5.5 Impacts on Interisland Travel

Runway extension to 9,500 feet or longer was estimated in 5.6.2 as having significant impacts on the number of interisland air carrier flights (based on operations estimates by P & D Aviation). With international flights to and from Kahului, the need for interisland flights would further decrease by about 6,600 flights in 2010 — 7.6% of the current number of interisland flights to and from Kahului. The resulting cumulative impact would then be:

RUNWAY LENGTH	OPERATIONS OF SMALL TWO-ENGINE AIR CARRIERS	
	2010 Count	Difference from No-Action
No-Action	86,339	N/A
8,500 feet	78,000	9.7%
9,500/9,600 feet	72,232	16.3%
10,500 feet	69,265	19.8%

This amounts to a significant change in the amount of growth expected in operations. It does not involve a decrease below current operations — estimates of year 2000 and 2010 operations for all runway lengths are greater than historical counts.

As for the cost of airport improvements to the traveler, the changes in passenger numbers involved in internationalization of Kahului Airport have extremely small impacts. There would be more overseas travelers, who pay more per person than interisland travelers, but no great change in the number of travelers in the State airport system.

7.6 IMPACTS OF INTERNATIONALIZATION ON PUBLIC FACILITIES

As mentioned earlier in this section, there is substantial uncertainty that nonstop Japanese flights to Kahului would actually occur, continue if initiated, and/or generate new visitors to Maui. Industry experts interviewed for this study believed that impacts would be gradual with modest initial results.

CRI's sensitivity analysis of possible unconstrained and constrained growth impacts due to internationalization estimates maximal potential growth impact levels for the year 2010. Because the sensitivity analysis shows significant increases in the resident and visitor populations for all alternatives with internationalization (as shown in Exhibits 7-N and 7-P), public facilities and services demand for those populations would likely be significantly affected.

As maximal population growth estimated in this chapter could only occur if new Maui County and State permits were issued for hotels. **The impacts calculated here are impacts of internationalization plus new resort expansion, not just of international flights.**

Interviews with public agency representatives (listed in Appendix C) confirmed the expectation that need for public services grow with population. However, no precisely quantified multipliers were identified.

Maui County Police officials have stated that direct flights (domestic and international) to Kahului increase the potential for drug trafficking by way of passenger, baggage, freight, or mail. However, the extent to which internationalization would actually increase drug trafficking through Kahului Airport is unknown. In the past, drug trafficking cases have constituted only a small part of crime reported at the airport and have been associated with direct flights from the U.S. Mainland, not direct flights from foreign points of origin (correspondence, Chief Howard H. Tagomori, October 18, 1994).

International passengers, baggage, and freight are subjected to inspection by Federal Inspection Services (FIS). Therefore, inspection by FIS personnel enable better control over passengers and items transported from foreign countries than those from domestic points of origin.

Should direct international flights begin to fly to Kahului, the Maui Police Department would recommend expansion of the existing multi-agency task force (including the U.S. Department of Justice, Drug Enforcement Administration; U.S. Customs; Hawaii State Narcotics; and the Maui County Police Department) to address concerns about drug trafficking at Kahului Airport (correspondence, Chief Howard H. Tagomori, October 18, 1994).

CORRECTION

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

the stores now in the middle of Ala Moana Shopping Center. A duty-free store could be located at the airport. Luxury stores might be located near the airport (in Triangle Square), near the center of the island's road system (perhaps at Kaahumanu Center), or in West Maui (perhaps at Whaler's Village, Kaanapali). Since only one such shopping area would likely be needed, it is not certain that the impact would be felt near the airport.

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A recent study for the Maui County Planning Department can be used in combination with the sensitivity analysis to yield maximal impact calculations for public facilities. The maximum estimated combined resident and visitor populations for the 9,500'/9,600' and 10,500' runway alternatives is about 15% higher than estimates used by R.M. Towill Corporation (RMTC) in its 1992 Maui Public Facilities Assessment. Exhibit 7-W (shown on the next page) compares maximal public service demand with internationalization with recent planning estimates by RMTC for the year 2010. RMTC's method for calculating police and medical facility needs were based on project resident population growth only, although visitors utilize these services as well. Education needs were also based on resident population, while demand for regional parks was based on both resident and visitor populations.

Based on the methods used by RMTC, maximum growth with internationalization would result in demand for:

- A police force with about 388 to 399 officers. This amount is 47 to 58 officers more than RMTC's estimate of 341 police officers required by the year 2010;
- Hospital facilities with 988 to 1,058 hospital beds by the year 2010 (84 to 154 beds more than RMTC's estimate of 904 hospital beds required by the year 2010);
- Allocation of some 2,913 to 3,009 acres of additional regional park land by the year 2010 (This is 318 to 414 acres more than RMTC's estimate of 2,595 acres of park land required by the year 2010); and
- About 1,232 to 1,266 public school classrooms by the year 2010 (150 to 184 more than the 1,082 classrooms RMTC estimated for 2010).

Criteria for estimating fire protection needs are based on land use considerations, including building structure characteristics and density of development. Because future development is unknown, fire service needs with internationalization were not calculated. RMTC's estimate of future fire protection needs was based on the assumption that future development would occur at the maximum potential allowed under 1992 zoning. To meet fire protection needs for the 2010, RMTC recommended changing service standards to a 2.0 miles radius per fire station, and the construction of four new fire stations (in addition to six planned stations).

Exhibit 7-W
DIFFERENCE BETWEEN MAXIMAL PUBLIC SERVICES DEMAND (WITH INTERNATIONALIZATION) & R.M. TOWILL ESTIMATES, 2010

	RMTC (2)	RUNWAY ALTERNATIVES (1) Pref. Alt.	Alt. 1 7,000'	Alt. 2 8,500'	Alt. 3 9,500	Alt. 4 10,500'	Alt. 5 9,600'	Alt. 6 8,500'
UNCONSTRAINED FUTURE								
Visitor Population	64,869	71,050	N/A	69,120	71,050	71,690	71,050	69,120
Difference		6,181	N/A	4,251	6,181	6,821	6,181	4,251
% of RMTC		10%	N/A	7%	10%	11%	10%	7%
Resident Population	122,013	141,810	N/A	138,940	141,810	142,760	141,810	138,940
Difference		19,797	N/A	16,927	19,797	20,747	19,797	16,927
% of RMTC		16%	N/A	14%	16%	17%	16%	14%
Police Force (3)	341	396	N/A	388	396	399	396	388
Difference		55	N/A	47	55	58	55	47
% of RMTC		16%	N/A	14%	16%	17%	16%	14%
Hospital Beds (4)	904	1,051	N/A	1,029	1,051	1,058	1,051	1,029
Difference		147	N/A	125	147	154	147	125
% of RMTC		16%	N/A	14%	16%	17%	16%	14%
Regional Parks (5)	2,595	2,985	N/A	2,913	2,985	3,009	2,985	2,913
Difference		390	N/A	318	390	414	390	318
% of RMTC		15%	N/A	12%	15%	16%	15%	12%
DOE Classrooms (6)	1,082	1,257	N/A	1,232	1,257	1,266	1,257	1,232
Difference		175	N/A	150	175	184	175	150
% of RMTC		16%	N/A	14%	16%	17%	16%	14%
CONSTRAINED FUTURE								
Visitor Population	64,869	69,450	N/A	65,580	69,450	71,370	69,450	65,580
Difference		4,581	N/A	711	4,581	6,501	4,581	711
% of RMTC		7%	N/A	1%	7%	10%	7%	1%
Resident Population	122,013	139,110	N/A	133,290	139,110	141,880	139,110	133,290
Difference		17,097	N/A	11,277	17,097	19,867	17,097	11,277
% of RMTC		14%	N/A	9%	14%	16%	14%	9%
Police Force (3)	341	388	N/A	372	388	396	388	372
Difference		47	N/A	31	47	55	47	31
% of RMTC		14%	N/A	9%	14%	16%	14%	9%
Hospital Beds (4)	904	1,031	N/A	988	1,031	1,051	1,031	988
Difference		127	N/A	84	127	147	127	84
% of RMTC		14%	N/A	9%	14%	16%	14%	9%
Regional Parks (5)	2,595	2,920	N/A	2,775	2,920	2,991	2,920	2,775
Difference		325	N/A	180	325	396	325	180
% of RMTC		13%	N/A	7%	13%	15%	13%	7%
DOE Classrooms (6)	1,082	1,233	N/A	1,182	1,233	1,258	1,233	1,182
Difference		151	N/A	100	151	176	151	100
% of RMTC		14%	N/A	9%	14%	16%	14%	9%

NOTES (1) Population estimates for Unconstrained & Constrained Runway Alternatives from Exhibits 7-N and 7-P.
(2) Data from RMTC (R.M. Towill Corporation).
(3) RMTC formula: resident population multiplied by 0.00278 plus 1.69505.
(4) RMTC method for estimating future hospital facility needs: resident population multiplied by .007409
(5) RMTC method for estimating future regional park needs: 15 acres of regional park land per 1,000 residents and visitors.
(6) RMTC method for estimating future education facility needs: 5 regular and supplemental classrooms per 100 students. Student population assumed to be approximately 18% of resident population

SOURCE: R.M. Towill Corporation, 1992.

It is worth emphasizing that little evidence supports the hypothesis that internationalization will cause significant visitor and resident population growth. Maximum growth estimates depend on many factors besides airport

improvements, including additional visitor demand and local government approvals for the construction of more visitor units. Therefore, impacts of internationalization could well be much less than maximum estimates suggest, and could likely fall within existing estimates of expected growth. Also maximal impacts could only occur with additional county land use permits.

Section 8
SIGNIFICANCE OF POTENTIAL ACTIONS

The analysis of potential impacts in this report has been designed to be exhaustive and responsive to a wide range of concerns. Because the discussion has covered so much ground, it is helpful to summarize the assessment made of whether those impacts are potentially significant.

Exhibits 8-A and 8-B provide an overview of the various impacts discussed in this report. Exhibit 8-A (on the next page) summarizes the discussion of potential impacts associated with airport improvements in the 1993 Master Plan. Exhibit 8-B (on page 8-5) summarizes cumulative impacts of airport improvements plus internationalization. In both exhibits, significant impacts are highlighted.

8.1 SIGNIFICANCE OF MASTER PLAN ALTERNATIVES

CRI's analysis of growth-inducing impacts led to the conclusion that 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 — the "Unconstrained Future," then increases in the average visitor count and occupied visitor units could be considered significant by the strict standards used in this report.

- In the "Constrained Future" sensitivity analysis, significant impacts were effectively built into the model. The airport's potential constraint on growth was presumed to be 10% of demand, i.e., to be well over the 5% boundary used to judge significance. As a result:

  - 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.

  - The visitor figures estimated in the sensitivity analysis (but not the resident figures) were also significant for the 8,500-foot runway alternatives.

- Direct construction jobs would be a significant addition to the island construction jobcount (for the Preferred Alternative and Alternatives 3 through 6).

Exhibit 8-A
SUMMARY OF IMPACT SIGNIFICANCE: MASTER PLAN ALTERNATIVES

Runway Length:	Pref. 9,600'	Alt. 1 7,000'	Alt. 2 8,500'	Alt. 3 9,500'	Alt. 4 10,500'	Alt. 5 9,500'	Alt. 6 8,500'
GROWTH-INDUCING IMPACTS							
MOST PROBABLE							
Overall	NO LONG-TERM IMPACT FOR ANY ALTERNATIVE. Possible tool in specific tourism recession years for temporary augmentations of some regional markets. Possible effect after 2010 and/or in conjunction with unforeseeable future structural shifts in the nature of either tourism or aviation.						
Agriculture/Cargo	Cargo handling capacity significantly improved with new facilities, all alts. Runway extension makes significant increase in exports possible (depending on airlines):						
	PS		PS	PS	PS	PS	PS (1)
Socio-Cultural	No significant impact any alternative, though continued socio-political change expected.						
ALTERNATIVE ANALYSIS (MAXIMUM POTENTIAL IMPACTS)							
"Unconstrained" No-Action Future							
Visitor Arrivals	3%	0%	1%	3%	4%	3%	1%
Visitor Census	3%	0%	1%	4%	5%	4%	1%
Occupied Visitor Units	3%	0%	1%	4%	5%	4%	1%
Civilian Jobs	3%	0%	1%	3%	4%	3%	1%
Resident Population	3%	0%	1%	3%	4%	3%	1%
Housing Units	3%	0%	1%	3%	4%	3%	1%
"Constrained" No-Action Future (Lower Starting Point for Analysis; Percentages Below Actually Result in Absolute Numbers Similar to "Unconstrained" Analysis)							
Visitor Arrivals	10%	0%	5%	10%	13%	10%	5%
Visitor Census	12%	0%	5%	12%	15%	12%	5%
Occupied Visitor Units	12%	0%	5%	12%	15%	12%	5%
Civilian Jobs	9%	0%	4%	9%	11%	9%	4%
Resident Population	9%	0%	4%	9%	11%	9%	4%
Housing Units	9%	0%	4%	9%	11%	9%	4%
IMMEDIATE-AREA IMPACTS							
ON-SITE							
Construction Jobs							
Direct Jobs	7%	2%	4%	6%	7%	6%	5%
Total Maui Jobs	1%	0%	0%	1%	1%	1%	0%

Exhibit 8-A (continued)

Runway Length:	Pref. 9,600'	Alt. 1 7,000'	Alt. 2 8,500'	Alt. 3 9,500'	Alt. 4 10,500'	Alt. 5 9,500'	Alt. 6 8,500'	
Operations Maximal Potential Change in Direct Jobs								
Absolute Impact:								
Unconstrained Future	2%	-1%	0%	3%	3%	3%	1%	
Constrained Future	2%	-3%	-1%	3%	3%	3%	1%	
Locational Impact:	Relocation of some activities would move a significant share of jobs off-site:							
Unconstrained Future	13%	16%	13%	-2%	-2%	-2%	-2%	
Constrained Future	13%	15%	12%	-1%	-1%	-1%	-1%	
Population & Housing Associated with Jobs	Not significant (all alternatives) at island or community levels.							
NEAR AIRPORT								
Businesses	Much improved traffic (all alternatives); fewer tourists on Dairy Road.							
Residential	East Spreckelsville residents displaced for parallel runway:							
	S			S	S	S		
	West Spreckelsville opened to through traffic:							(1)
	S							
INTERISLAND AIR TRAVEL								(1)
Cost for Passengers	0%	0%	0%	0%	0%	0%	0%	
Flights to/from Kahului	9%	0%	2%	9%	12%	9%	2%	
PUBLIC FACILITIES	Since no impact on both average visitor census and resident population is likely, no impact on public facilities is anticipated.							

NOTES: (1) Where non-quantitative judgements of significance are shown, no distinction is made between marginally and highly significant impacts. Abbreviations used above.
S = Significant (not quantified); and
PS = Potentially significant (not quantified).

- 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 (Preferred and Alternatives 1 and 2) in which helicopter and/or general aviation were relocated to another site.

- The number of interisland flights to and from Kahului could be significantly smaller if the runway is extended to 9,500 feet or longer (Preferred Alternative and Alternatives 3, 4, and 5).

Other impacts were not easily quantified, but clearly significant:

- 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.

- East Spreckelsville would be significantly affected if land acquisition for a parallel runway resulted in displacement (Preferred Alternative and Alternatives 3 through 5).

In sum, the likely socio-economic impacts of the various proposed Master Plan alternatives include some serious immediate impacts — notably on Spreckelsville — but few significant impacts on Maui as a whole. The sensitivity analysis (developed to estimate maximal impacts) effectively underscores this finding. It shows significant impacts mainly where significant constraints have been assumed.

8.2 SIGNIFICANCE OF INTERNATIONALIZATION

The combination of airport improvements and direct flights to and from international destinations could yield much more significant impacts than the improvements alone. However, CRI stresses that the likely future volume of direct traffic is unknowable at this time. Also, the maximal visitor numbers estimated for a future with internationalization could not be realized without new hotel permits. The associated impacts are hence impacts of County-level decisions to grant land use permits as well as of airport improvements.

The sensitivity analysis showed highly significant impacts on visitors and residents alike with international flights (in addition to the Preferred Alternative or any of Alternatives 3 through 5). With appreciably greater populations than in the No-Action Futures, significantly more demand for public facilities would arise.

Impacts on construction and operations jobs could be significant with internationalization. Again, the number of interisland flights to and from Kahului would be significantly lower if direct flights could be scheduled to international destinations as well as to Mainland ones.

Spreckelsville could be significantly affected by proposed airport improvements. Internationalization would not appreciably add to the impact on that community.

Exhibit 8-B
SUMMARY OF IMPACT SIGNIFICANCE: INTERNATIONALIZATION
(CUMULATIVE IMPACTS)

Runway Length:	Pref. 9,600'	Alt. 1 7,000'	Alt. 2 8,500'	Alt. 3 9,500'	Alt. 4 10,500'	Alt. 5 9,500'	Alt. 6 8,500'
GROWTH-INDUCING IMPACTS							
MOST PROBABLE							
Overall	UNKNOWABLE AT THIS TIME. Depends on too wide an array of external factors (including international political and economic conditions, airline economics, and future Japanese consumer response to a future set of commercial products) to warrant development of any specific scenarios for analysis. However, probably MORE POTENTIAL FOR GROWTH IMPACTS than with domestic flights, due to earlier stage of Japanese tourism development in Hawaii and greater potential airline incentives and interest in growing this market.						
Agriculture/Cargo	Potentially significant increases in cargo capacity independent of internationalization. New international market could eventually help stabilize demand for Maui products.						
Socio-Cultural	Likely small: Japanese still just 15% of visitors on any given day.						
ALTERNATIVE ANALYSIS (MAXIMUM POTENTIAL CUMULATIVE IMPACTS, DOMESTIC + INTERNATIONAL) (NOTE: All potential impacts assume additional future Maui resort approvals. Without them, this level of cumulative impact could not occur.)							
"Unconstrained" No-Action Future							
Visitor Arrivals	12%	N/A	8%	11%	12%	11%	8%
Visitor Census	8%	N/A	6%	8%	9%	8%	6%
Occupied Visitor Units	8%	N/A	6%	8%	9%	8%	6%
Civilian Jobs	9%	N/A	7%	9%	10%	9%	7%
Resident Population	9%	N/A	7%	9%	10%	9%	7%
Housing Units	9%	N/A	7%	9%	10%	9%	7%
"Constrained" No-Action Future (Lower Starting Point for Analysis; Percentages Below Actually Result in Absolute Numbers Similar to "Unconstrained" Analysis)							
Visitor Arrivals	21%	N/A	15%	21%	24%	21%	15%
Visitor Census	19%	N/A	12%	19%	22%	19%	12%
Occupied Visitor Units	19%	N/A	12%	19%	22%	19%	12%
Civilian Jobs	18%	N/A	13%	18%	20%	18%	13%
Resident Population	18%	N/A	13%	18%	20%	18%	13%
Housing Units	18%	N/A	13%	18%	20%	18%	13%
IMMEDIATE-AREA IMPACTS							
ON-SITE							
Construction Jobs							
Direct Jobs	9%	N/A	7%	9%	9%	9%	7%
Total Maui Jobs	1%	N/A	1%	1%	1%	1%	1%

Exhibit 8-B (continued)

Runway Length:	Pref. 9,600'	Alt. 1 7,000'	Alt. 2 8,500'	Alt. 3 9,500'	Alt. 4 10,500'	Alt. 5 9,500'	Alt. 6 8,500'
Operations Maximal Potential Change in Direct Jobs							
Absolute Impact:							
Unconstrained Future	12%	N/A	9%	14%	14%	14%	10%
Constrained Future	11%	N/A	8%	13%	14%	13%	10%
Locational Impact:							
Unconstrained Future	14%	N/A	13%	-2%	-2%	-2%	-2%
Constrained Future	14%	N/A	13%	-1%	-1%	-1%	-1%
Population & Housing Associated with Jobs	Not significant (all alternatives) at island and community levels.						
NEAR AIRPORT							
Businesses	Improved traffic; slight chance new retail market could support name-brand stores.						
Residential	Significant impacts due to parallel runway and proposed Alahao Street extension through road; no significant increase in impacts with internationalization.						
INTERISLAND AIR TRAVEL							
Cost for Passengers	0%	N/A	0%	0%	0%	0%	0%
Flights to/from Kahului	16%	N/A	10%	16%	20%	16%	10%
PUBLIC FACILITIES	Potentially significant impact on population (estimated from sensitivity analysis) expected to cause similarly significant impact on demand for public facilities/services.						

8.3 MITIGATIONS

Few of the impacts assessed in this report 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 as either beneficial or as harmful only if they occur extremely rapidly. No rapid changes are anticipated in this report.

The major remaining significant and likely adverse impacts discussed in this report consist of changes proposed for Spreckelsville. Those changes must be considered in tandem with noise impacts and mitigations of those impacts proposed pursuant to FAA policy. With that caveat, it is obvious that a proposed parallel runway will greatly affect Spreckelsville. Should need for construction of such a runway be postponed, delays in acquisition of land for the runway could mitigate some of the impact on residents.

APPENDIX A:

DETAILED EXHIBITS

ON EXISTING CONDITIONS

Appendix A
1. RESIDENT POPULATION ESTIMATES, 1970-1992 (1)

YEAR	State	Maui County	Maui Island (2)
1970	771,600	46,500	39,000
1971	801,600	49,100	41,500
1972	826,300	51,500	44,200
1973	851,600	53,400	45,700
1974	868,000	53,800	46,400
1975	886,200	56,800	49,200
1976	904,200	60,300	52,600
1977	918,300	63,000	55,000
1978	931,600	66,200	58,300
1979	953,300	69,700	61,600
1980	968,500	71,600	63,400
1981	978,200	74,000	65,600
1982	993,800	77,100	68,600
1983	1,012,700	80,100	71,500
1984	1,027,900	83,000	74,500
1985	1,039,700	85,100	76,500
1986	1,051,800	87,400	78,700
1987	1,067,900	90,500	81,700
1988	1,079,800	93,800	85,000
1989	1,094,600	96,800	87,900
1990	1,113,900	101,400	92,000
1991	1,136,600	105,000	N/A
1992	1,159,800	109,000	N/A

NOTES: (1) All estimates are as of July 1 and rounded to nearest hundred.
(2) Maui Island figures are calculated here by subtracting CRI's estimates of Lana'i and Moloka'i populations from published DBED Maui County estimates.

SOURCES: Hawaii State DBED, 1994a, 1993, 1992.

Appendix A
2. DEMOGRAPHIC CHARACTERISTICS, 1980-1990

	State		Maui County		Maui Island	
	1980	1990	1980	1990	1980	1990
POPULATION	964,691	1,108,229	70,991	100,504	62,823	91,361
ETHNICITY						
Caucasian	33%	33%	34%	40%	36%	42%
Japanese	25%	22%	22%	17%	23%	16%
Filipino	14%	15%	19%	20%	17%	19%
Hawaiian	12%	13%	17%	16%	15%	14%
Other	16%	17%	8%	7%	8%	8%
AGE						
Less than 5 years	8%	8%	8%	8%	8%	8%
5 to 17 years	20%	18%	21%	19%	20%	18%
18 to 34 years	33%	29%	30%	26%	31%	27%
35 to 64 years	30%	34%	31%	36%	31%	36%
65 or more years	8%	11%	10%	11%	10%	11%
Median age (years)	28.4	32.8	29.8	33.4	N/A	N/A
EDUCATION OF PERSONS AGED 25 & OVER (1)						
High School Diploma (2)	74%	80%	68%	77%	69%	79%
College Degree (3)	20%	31%	15%	27%	16%	27%
PERSONS AGED 5 & OVER WHO SPEAK A LANGUAGE OTHER THAN ENGLISH AT HOME (1)	26%	25%	25%	22%	24%	21%
PERSONS WITH MOBILITY OR SELF-CARE LIMITATIONS (1)						
% of persons aged 16 to 64	N/A	4%	N/A	4%	N/A	4%
% of persons aged 65 or more	N/A	18%	N/A	18%	N/A	18%

NOTES: N/A Data not available.
(1) Based on 15% sample; hence, figures represent estimates only.
(2) All high school graduates, including those with college education.
(3) Includes Associate, Bachelor's, and graduate degrees.

SOURCES: U.S. Bureau of the Census, 1992, 1991, 1981a, 1981b.

Appendix A
3. GEOGRAPHIC MOBILITY, 1980-1990 (1)

	State		Maui County		Maui Island	
	1980	1990	1980	1990	1980	1990
PERSONS (2)						
PLACE OF BIRTH						
Born in Hawaii	58%	58%	65%	58%	64%	56%
Other U.S.-born (3)	28%	29%	22%	28%	23%	30%
Foreign-born	14%	15%	13%	14%	13%	13%
RESIDENCE 5 YEARS PREVIOUS FOR PERSONS AGED 5 & OVER						
Same house	49%	51%	52%	50%	51%	49%
Same county, different house	25%	26%	23%	27%	23%	27%
Same state, different county	3%	2%	8%	5%	9%	5%
Different state	17%	16%	13%	15%	14%	15%
Lived abroad	6%	5%	4%	3%	4%	3%
HOUSEHOLDERS (2)						
WHEN HOUSEHOLDER MOVED INTO UNIT						
In the last 5 years	57%	53%	53%	54%	54%	55%
6 to 20 years ago	31%	30%	31%	30%	31%	29%
21 to 30 years ago	6%	9%	9%	8%	8%	7%
31 years ago or more	5%	8%	6%	9%	7%	8%

NOTES: (1) Based on 15% sample; hence, figures represent estimates only.
(2) Base figures used in calculating these data may be different than in 100% count.
(3) Includes persons born in U.S. territories, and persons born abroad or at sea to American parents.

SOURCES: U.S. Bureau of the Census, 1992, 1981b.

Appendix A
4. HOUSING CHARACTERISTICS, 1980-1990

	State		Maui County		Maui Island	
	1980	1990	1980	1990	1980	1990
HOUSING UNITS	334,235	388,810	33,154	47,261	29,974	38,422
TOTAL VACANT UNITS	12%	8%	32%	21%	33%	21%
Seasonal/recreational	2%	3%	4%	14%	4%	15%
AGE OF STRUCTURE (1)						
1 year	5%	3%	10%	5%	11%	5%
2 to 10 to years	34%	18%	46%	27%	48%	78%
11 to 20 years	26%	30%	16%	37%	17%	36%
21 years or more	35%	49%	28%	31%	24%	29%
UNITS IN STRUCTURE						
1 unit	52%	61%	52%	67%	50%	66%
2 to 4 units	10%	8%	6%	4%	7%	4%
5 or more units	38%	31%	41%	27%	44%	29%
Trailer, other	0%	2%	0%	2%	0%	2%
NOT COMPLETE PLUMBING (2)	2%	1%	3%	1%	2%	1%
HOUSEHOLDS	294,052	356,267	22,581	33,207	20,162	30,272
HOUSEHOLD TYPE						
1 or more non-relatives	10%	12%	12%	16%	13%	17%
No non-relatives	90%	88%	88%	84%	87%	83%
TENURE						
Owner-occupied	52%	54%	57%	57%	58%	57%
Renter-occupied	48%	46%	43%	43%	42%	43%
PERSONS PER HOUSEHOLD	3.15	3.01	3.10	2.96	3.06	2.97
CROWDED HOUSEHOLDS						
Mildly crowded (3)	8%	8%	9%	9%	9%	8%
Very crowded (4)	7%	8%	7%	8%	7%	8%
MEAN VALUE (5)	$128,100	$272,857	$121,800	$232,430	$127,412	$243,440

NOTES: (1) Based on 15% sample; hence, figures represent estimates only.
(2) Based on 100% sample in 1980, but 15% sample in 1990.
(3) Indicated by households with 1.00 to 1.50 persons per room.
(4) Indicated by households with 1.51 or more persons per room.
(5) For owner-occupied, non-condominium housing units.

SOURCES: U.S. Bureau of the Census, 1992, 1991, 1981a, 1981b.

Appendix A
5. INCOME CHARACTERISTICS, 1980-1990 (1)

	State		Maui County		Maui Island	
	1980	1990	1980	1990	1980	1990
HOUSEHOLDS (2)						
INCOME LEVEL						
Lowest (3)	15%	15%	17%	15%	16%	13%
Highest (4)	18%	18%	15%	14%	18%	15%
Mean Income (5)	$42,471	$47,872	$42,040	$46,979	$43,434	$48,365
Interquartile Range (6)	$37,824	$42,128	$36,450	$39,448	$37,408	$39,832
WITH SELECTED INCOME SOURCES						
Social Security Income	21%	25%	26%	26%	25%	25%
Retirement Income	N/A	20%	N/A	18%	N/A	18%
Public Assistance Income	9%	7%	6%	6%	6%	5%
OWNER HOUSING COSTS (7)						
35% or more of Household Income	11%	14%	10%	15%	10%	16%
Mean Monthly Costs	N/A	$800	N/A	$710	N/A	$749
RENTER HOUSING COSTS (8)						
35% or more of Household Income	32%	34%	34%	33%	36%	34%
Mean Gross Rent (5)	$646	$850	$704	$760	$748	$791
Mean Contract Rent (9)	$497	$635	$514	$580	$559	$711
POPULATION (2)						
PERSONS BELOW POVERTY LEVEL	10%	8%	10%	8%	9%	7%
% of persons aged 18 to 64	N/A	7%	N/A	7%	N/A	6%
% of persons aged 65 or more	10%	8%	12%	8%	11%	6%
% of related children aged less than 18	13%	11%	11%	9%	11%	8%
% of unrelated individuals	23%	20%	24%	18%	22%	17%

NOTES: N/A Data not available.
(1) Based on 15% sample (except "Mean Contract Rent"); hence, figures represent estimates only.
(2) Base figures used in calculating this data may be different than in 100% count.
(3) For 1990, incomes of less than $15,000 (based on lowest 14.6% of incomes statewide); for 1980, incomes of less than $7,500 (based on lowest 14.7% of incomes statewide).
(4) For 1990, incomes of $75,000 or more (based on highest 15.8% of incomes statewide); for 1980 incomes of $40,000 or more (based on highest 13.6% of incomes statewide).
(5) In 1989 dollars. (Based on a CPI-U increase of 73.22% from 1979 to 1989.)
(6) In 1989 dollars. A smaller interquartile range means less difference between rich and poor, while a larger interquartile range means a greater difference between rich and poor.
(7) Owner costs include (but are not limited to) mortgage, real property tax, property insurance, utilities, and fuels.
(8) Renter costs include (but are not limited to) rent, utilities, and fuels.
(9) In 1989 dollars. Monthly cash rent only. Does not include other costs.

SOURCES: U.S. Bureau of the Census, 1992, 1991, 1981a, 1981b; Hawaii State DBED, 1993.

Appendix A
6. AVERAGE MONTHLY FOOD STAMP RECIPIENTS, 1977-1992 (1)

YEAR	State		Maui County		Maui Island (2)	
	Food Stamp Recipients	Per 1,000 Residents	Food Stamp Recipients	Per 1,000 Residents	Food Stamp Recipients	Per 1,000 Residents
1977	104,725	114.0	7,444	118.2	N/A	N/A
1978	91,395	98.1	6,207	93.8	N/A	N/A
1979	94,101	98.7	6,140	88.1	N/A	N/A
1980	99,672	102.9	6,469	90.3	4,979	78.5
1981	103,996	106.3	6,935	93.7	5,293	80.7
1982	99,228	99.8	6,720	87.2	5,142	75.0
1983	101,118	99.8	7,318	91.4	5,595	78.3
1984	99,818	97.1	7,750	93.4	5,753	77.2
1985	99,395	95.6	7,789	91.3	5,604	73.3
1986	93,863	89.2	7,252	83.0	5,032	63.9
1987	87,070	81.5	6,462	71.4	4,317	52.6
1988 (3)	80,823	74.8	5,730	61.1	3,729	43.9
1989	80,264	73.3	5,594	57.8	3,793	43.2
1990	79,496	71.4	5,495	54.2	3,696	40.2
1991	81,345	71.6	5,480	52.2	3,776	N/A
1992	89,465	77.2	6,325	58.0	4,357	N/A

NOTES: (1) Includes individuals receiving financial assistance with food stamps.
(2) Maui and Lana'i Islands were counted together prior to 1980.
(3) From 1978 to 1988, the monetary payment for recipients on financial assistance was constant. In July of 1988, a new policy linking the monetary payment to the poverty level was implemented, making the food stamp program more desirable. The number of recipients did not increase, however, until 1991, when a national economic recession began to affect Hawaii.

SOURCES: Hawaii State Department of Human Services, 1994, 1992a, 1992b.

Appendix A
7. LABOR FORCE CHARACTERISTICS, 1980-1990 (1)

	State		Maui County		Maui Island	
	1980	1990	1980	1990	1980	1990
POPULATION AGED 16 & OVER	723,479	855,518	52,742	78,251	47,189	69,903
In Armed Forces	6%	6%	0%	0%	0%	0%
POTENTIAL CIVILIAN LABOR FORCE	665,038	801,517	52,742	78,184	47,189	69,846
In Civilian Labor Force	66%	68%	66%	72%	69%	73%
CIVILIAN LABOR FORCE	435,780	548,347	36,122	55,153	32,592	51,095
MALE						
Labor force participation (2)	75%	75%	78%	78%	78%	79%
Unemployed	5%	4%	4%	3%	4%	3%
FEMALE						
Labor force participation (2)	57%	63%	60%	66%	61%	67%
Unemployed	5%	3%	4%	2%	4%	2%
EMPLOYED CIVILIAN LABOR FORCE	415,181	529,059	34,695	53,659	31,390	49,780
BY SELECTED INDUSTRY						
Agriculture, forestry, fisheries, mining	4%	3%	8%	6%	7%	5%
Construction	7%	8%	10%	11%	10%	11%
Manufacturing	8%	6%	9%	6%	9%	7%
Transportation	6%	6%	5%	5%	5%	5%
Retail trade	20%	19%	18%	19%	19%	20%
Finance, insurance, real estate	8%	7%	6%	5%	7%	5%
Personal, entertainment, recreation	9%	10%	16%	18%	16%	19%
Health, education, professional	18%	21%	13%	14%	12%	14%
Public administration	10%	8%	6%	5%	5%	4%
BY OCCUPATION						
Managerial, professional	24%	26%	19%	21%	19%	22%
Technical, sales, support	32%	33%	25%	27%	26%	28%
Service	18%	18%	21%	21%	21%	21%
Farming, forestry, fishing	3%	3%	8%	6%	7%	5%
Precision, craft, repair	12%	10%	13%	12%	13%	13%
Operators, cleaners, laborers	12%	10%	14%	12%	14%	12%
COMMUTE TO WORK						
More than 45 minutes	11%	15%	10%	13%	10%	14%
Mean travel time (minutes)	22	24	18	20	N/A	N/A

NOTES: (1) Based on 15% sample; hence, figures represent estimates only.
(2) Calculated by dividing "Civilian Labor Force" by "Potential Civilian Labor Force."

SOURCES: U.S. Bureau of the Census, 1992, 1981b.

Appendix A
8. EMPLOYMENT INDICATORS, 1988 (1)

	MAUI COUNTY	Kahului/ Wailuku	West Maui	Kihei	Up-country	Hana/ Pala
Total Civilian Labor Force Participation Rate	72%	67%	83%	78%	70%	74%
Share of Respondents Working over 48 Hours a Week	25%	26%	35%	33%	14%	18%
Share Working Weekends and/or Evenings						
Usually	40%	37%	63%	52%	53%	45%
Sometimes	18%	20%	14%	27%	14%	19%
Number of Household Workers in Tourism						
All	24%	16%	48%	33%	14%	14%
Some	29%	29%	35%	24%	26%	34%
None	47%	55%	17%	43%	60%	52%
Job Satisfaction						
Very Satisfied	61%	54%	60%	78%	64%	56%
Dissatisfied	8%	7%	5%	5%	8%	12%
BASE	1,057	163	158	148	150	153

NOTE: (1) Adapted from the 1988 Statewide Tourism Impact Core Survey.

SOURCE: Community Resources, Inc., 1989.

Appendix A
9. LABOR FORCE SIZE AND UNEMPLOYMENT ESTIMATES, 1970-1993 (1)

YEAR	State			Maui County			Maui Island		
	Civilian Labor Force	Employed	Unemployment Rate	Civilian Labor Force	Employed	Unemployment Rate	Civilian Labor Force	Employed	Unemployment Rate
1970	321,550	305,850	4.9%	20,700	19,250	7.0%	17,250	16,050	7.0%
1971	336,800	313,450	6.9%	21,500	19,650	8.6%	18,150	16,700	8.0%
1972	351,000	324,050	7.7%	23,850	21,400	10.3%	19,400	17,600	9.3%
1973	364,600	338,350	7.2%	24,850	22,450	9.7%	20,400	18,850	8.6%
1974	375,000	345,350	7.9%	25,800	23,350	9.5%	21,300	19,400	8.8%
1975	382,950	351,100	8.3%	27,800	25,050	9.8%	23,200	21,100	9.0%
1976	410,000	370,000	9.8%	30,400	27,250	10.4%	25,600	23,100	9.8%
1977	418,000	388,000	7.3%	32,100	29,800	7.3%	27,150	25,300	6.9%
1978	420,000	388,000	7.7%	33,300	30,850	7.3%	27,850	26,000	6.6%
1979	422,000	395,000	6.3%	34,150	32,050	6.1%	28,650	27,100	5.5%
1980	440,000	418,000	4.9%	37,550	35,650	5.1%	33,900	32,450	4.4%
1981	451,000	427,000	5.4%	39,800	37,450	5.9%	36,000	34,150	5.2%
1982	461,000	430,000	6.7%	42,850	39,550	7.7%	38,950	36,250	6.9%
1983	472,000	442,000	6.5%	44,850	41,450	7.6%	40,950	38,150	6.8%
1984	472,000	445,000	5.8%	44,950	42,250	6.0%	41,250	39,000	5.4%
1985	479,000	452,000	5.6%	46,950	44,150	5.9%	43,550	41,300	5.2%
1986	492,000	468,000	4.8%	48,800	46,050	5.3%	45,050	42,950	4.7%
1987	514,000	494,000	3.8%	51,800	49,350	4.4%	48,050	46,250	3.7%
1988	518,000	502,000	3.2%	52,750	51,000	3.3%	49,200	47,800	2.9%
1989	525,000	511,000	2.6%	55,000	53,550	2.6%	51,300	50,200	2.2%
1990	539,000	524,000	2.8%	57,550	55,950	2.8%	53,700	52,400	2.4%
1991	561,000	546,000	2.8%	61,400	59,450	3.2%	57,350	55,700	2.9%
1992	568,000	543,900	4.2%	64,050	60,450	5.6%	59,950	56,750	5.3%
1993 (2)	576,670	550,770	4.5%	68,150	64,500	5.4%	63,440	60,200	5.1%

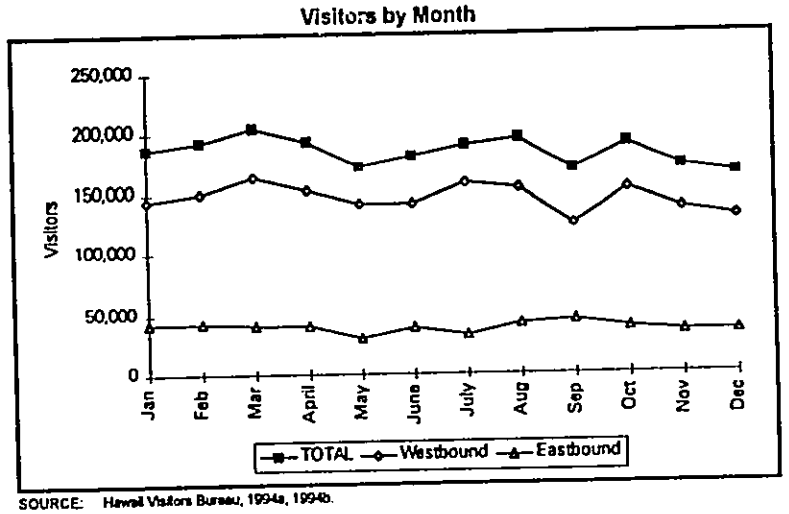
NOTES: (1) In keeping with Department of Labor and Industrial Relations' practice, Civilian Labor Force and employment figures are rounded to the nearest 50, while the unemployment rate is based on raw, unrounded numbers.
(2) Figures for this year are preliminary and are rounded to the nearest ten.

SOURCES: Hawaii State Department of Labor and Industrial Relations, 1994a, 1994b.

Appendix A
10. MAUI ISLAND VISITOR PROFILE, 1993

	TOTAL	Westbound	Eastbound
Visitors	2,209,980	1,746,200	463,780
Percent visiting only Maui Island	42%	46%	26%
Travel Method:			
-Tour group	21%	11%	60%
Package trip	47%	40%	71%
True Independent	51%	58%	26%
Staying in Hotel Only	57%	50%	80%
Average Daily Visitor Census (AVC)	39,900	35,080	4,820
Average Length of Stay (in days)	8.6	7.4	3.6

Visitors by Month



SOURCE: Hawaii Visitors Bureau, 1994a, 1994b.

Appendix A
11. AVERAGE VISITOR CENSUS, 1970-1992

YEAR	State		Maui County		Maui Island (1)	
	AVC	Visitors to Residents	AVC	Visitors to Residents	AVC	Visitors to Residents
1970	36,943	0.05	3,645	0.08	N/A	N/A
1971	40,869	0.05	4,682	0.10	N/A	N/A
1972	50,143	0.06	6,147	0.12	N/A	N/A
1973	59,578	0.07	6,554	0.12	N/A	N/A
1974	63,535	0.07	7,541	0.14	N/A	N/A
1975	66,306	0.07	8,731	0.15	N/A	N/A
1976	75,532	0.08	10,622	0.18	N/A	N/A
1977	83,030	0.09	12,468	0.20	N/A	N/A
1978	92,034	0.10	14,492	0.22	N/A	N/A
1979	98,678	0.10	15,598	0.22	N/A	N/A
1980	96,497	0.10	15,363	0.21	N/A	N/A
1981	95,968	0.10	15,727	0.21	N/A	N/A
1982	105,310	0.11	18,090	0.23	N/A	N/A
1983	108,045	0.11	24,670	0.31	N/A	N/A
1984	118,660	0.12	32,790	0.40	N/A	N/A
1985	116,700	0.11	31,910	0.37	N/A	N/A
1986	132,910	0.13	34,330	0.39	N/A	N/A
1987	134,270	0.13	33,890	0.37	N/A	N/A
1988	141,410	0.13	33,870	0.36	N/A	N/A
1989	169,670	0.16	44,020	0.45	42,690	0.49
1990	162,070	0.15	39,500	0.39	38,150	0.41
1991	157,590	0.14	40,240	0.38	37,870	N/A
1992	153,390	0.13	42,220	0.39	39,700	N/A

NOTE: (1) HVB did not break out the AVC for component Maui County islands prior to 1989.

SOURCES: Hawaii Visitors Bureau, 1994a, 1994b, 1993a, 1993b, 1992a, 1992b, 1991a, 1991b, 1990a, 1990b; Hawaii State DBED, 1994, 1993, 1992.

Appendix A
12. CENSUS AREA EQUIVALENTS FOR MAUI ISLAND REGIONS, 1970-1990

Maui Island Region	1970 Equivalent Census Areas Divisions	1970 Tracts	1980 Equivalent Census Areas Tracts	1990 Equivalent Census Areas Tracts
LAHAINA	Lahaina	314	Lahaina 314	Lahaina 314
		315	315	315
KIHEI-MAKENA	Kihei	307	Kihei 307	Kihei 307
			307.99 *	307.99 *
			Kula (part) 303.02	Kula (part) 303.02
WAILUKU-KAHULUI	Kahului	311	Kahului 311	Kahului 311.01
		312	312	311.02
				311.03
				312
	Puunene	313	Puunene 313	Puunene 313
	Spreckelsville	306	Spreckelsville 306	Spreckelsville 306
	Waihee-Waiakpu	308	Waihee-Waiakpu 308	Waihee-Waiakpu 308
	Wailuku	309	Wailuku 309	Wailuku 309
		310	310	310
MAKAWAO-PUKALANI-KULA	Kula	303	Kula (part) 303.01	Kula (part) 303.01
	Makawao-Pala (part)	304	Makawao-Pala (part) 304.01	Makawao-Pala (part) 304.01
			304.02	304.02
PAIA-HAIKU	Haiku-Paukela	302	Haiku-Paukela 302	Haiku-Paukela 302
	Makawao-Pala (part)	305	Makawao-Pala (part) 305	Makawao-Pala (part) 305
HANA	Hana	301	Hana 301	Hana 301

NOTE: * Census Tract 307.99 is comprised of persons who live aboard vessels moored in Maalaea Bay.

Appendix A
13. SELECTED VIEWS OF COMMUNITY LIFE AND TOURISM, 1988 (1)

	MAUI COUNTY	Kahului/ Wailuku	West Maui	Kihei	Up-country	Hana/ Paia
Quality of Life Compared to 5 Years Ago						
Better	32%	39%	18%	28%	33%	30%
Worse	31%	28%	63%	40%	21%	28%
Reason for Living in Community						
Convenience	33%	49%	44%	26%	13%	15%
Family, roots	23%	27%	23%	10%	15%	32%
Uncrowded, little traffic	20%	13%	1%	22%	36%	28%
Affordability	11%	12%	6%	13%	15%	16%
Community Issues Rated as a Big Problem In the Respondent's Part of the Island						
Housing cost	71%	75%	83%	78%	67%	64%
Cost of food & clothing	52%	46%	66%	58%	44%	58%
Traffic	51%	52%	67%	53%	42%	43%
Population growth	40%	43%	49%	50%	38%	41%
Beauty of area being destroyed by development	30%	22%	44%	49%	27%	34%
Pollution of ocean or natural areas	30%	31%	40%	45%	23%	31%
Lack of nearby jobs	26%	27%	9%	13%	23%	31%
Lack of sports & recreational facilities	25%	15%	28%	29%	31%	35%
Crowded beach parks	24%	31%	19%	25%	22%	38%
Crime	22%	28%	28%	34%	12%	18%
Lack of nearby stores, restaurants, & entertainment	16%	14%	13%	8%	16%	23%
Too many tourists	13%	15%	21%	17%	4%	21%
Problems between people of different backgrounds	7%	7%	9%	12%	4%	11%
Island is being Run for Tourists at Locals' Expense						
Agree	47%	46%	52%	53%	47%	57%
Disagree	47%	46%	42%	42%	49%	39%
Most of the Tax Money from Tourism Should Go for Public Improvements in Visitor Areas						
Agree	65%	67%	71%	65%	54%	61%
Disagree	31%	29%	26%	32%	40%	34%
In Respondent's Part of the Island, More Important to Keep Things as is than Have More Tourism Jobs						
Agree	68%	62%	67%	58%	83%	81%
Disagree	26%	29%	27%	35%	15%	16%
The Island Economy is Too Dependent on Tourism						
Agree	77%	79%	82%	80%	82%	76%
Disagree	20%	17%	16%	18%	16%	18%
BASE	1,057	163	158	148	150	153

NOTE: (1) Adapted from the 1988 Statewide Tourism Impact Core Survey.

SOURCE: Community Resources, Inc., 1989.

Appendix A
14. COMMUNITY VIEWS REGARDING KAHULUI AIRPORT, 1992

View	Response
EXTENDING THE KAHULUI AIRPORT RUNWAY	
Should be extended as soon as possible	29.8%
Should be extended at some time in the future	55.5%
Should never be extended	14.0%
Don't know	0.8%
MAUI'S ROADS, WATER SYSTEMS, AND SEWERS SHOULD BE UPGRADED BEFORE EXTENDING THE RUNWAY	
Strongly agree	66.5%
Somewhat agree	11.5%
Somewhat disagree	10.3%
Strongly disagree	4.8%
Don't know	7.0%
EXTENDING THE RUNWAY WOULD DAMAGE MAUI'S ENVIRONMENT	
Strongly agree	26.0%
Somewhat agree	16.0%
Somewhat disagree	21.3%
Strongly disagree	27.8%
Don't know	7.0%
EXTENDING THE RUNWAY WOULD BENEFIT MAUI BY PROVIDING JOBS	
Strongly agree	43.3%
Somewhat agree	26.3%
Somewhat disagree	10.5%
Strongly disagree	16.3%
Don't know	3.8%
ALLOWING INTERNATIONAL FLIGHTS TO LAND AT KAHULUI AIRPORT	
Strongly favor	27.5%
Somewhat favor	25.0%
Somewhat oppose	15.0%
Strongly oppose	24.8%
Don't know	37.8%
BASE	400

NOTE: Survey of 400 Maui residents conducted by SMS Research between September 28 and October 2, 1992, for The Maui News.

SOURCE: Perry, 1992b.

Appendix A
15. ALL STATE VISITORS, 1980-1993

Year	Total State Visitors				Eastbound State Visitors				Westbound State Visitors			
	Number	% All State Visitors	Length of Stay(1)	Average Visitor Census	Number	% All State Visitors	Length of Stay(1)	Average Visitor Census	% of State AVC	Number	% All State Visitors	Length of Stay(1)	Average Visitor Census	% of State AVC
1980	3,834,304	100%	N/A	98,487	886,372	23%	N/A	8,709	10%	3,048,132	77%	N/A	89,784	90%
1981	3,834,823	100%	N/A	85,868	958,832	24%	N/A	10,519	11%	2,974,791	76%	N/A	85,449	89%
1982	4,242,925	100%	N/A	105,310	964,400	23%	N/A	10,570	10%	3,278,525	77%	N/A	94,740	90%
1983	4,367,880	100%	N/A	108,045	872,000	22%	N/A	10,650	10%	3,395,880	78%	N/A	97,395	90%
1984	4,855,580	100%	N/A	118,980	1,134,200	23%	N/A	12,400	10%	3,721,380	77%	N/A	106,260	90%
1985	4,884,110	100%	N/A	118,700	1,175,500	24%	N/A	12,840	11%	3,708,610	76%	N/A	103,820	89%
1986	5,808,980	100%	N/A	132,810	1,350,580	24%	N/A	14,800	11%	4,258,360	76%	N/A	118,110	89%
1987	5,798,830	100%	N/A	134,270	1,585,820	28%	N/A	17,480	13%	4,204,010	72%	N/A	118,780	87%
1988	6,142,420	100%	N/A	141,410	1,877,880	31%	N/A	25,850	18%	4,264,730	69%	N/A	115,760	82%
1989	6,641,820	100%	8.80	169,670	1,936,500	29%	6.20	34,190	20%	4,705,320	71%	10.51	135,480	80%
1990	6,971,180	100%	8.50	162,070	2,251,450	32%	5.90	36,480	23%	4,719,730	68%	9.71	125,590	77%
1991	6,873,880	100%	8.37	157,580	2,288,430	33%	5.78	36,260	23%	4,584,460	67%	9.66	121,330	77%
1992	6,513,880	100%	8.82	153,360	2,533,760	39%	5.71	36,530	26%	3,980,120	61%	10.44	113,860	74%
1993	6,124,230	100%	8.87	148,750	2,358,710	39%	6.29	40,880	27%	3,764,520	61%	10.48	108,090	73%

NOTE: (1) In this and all subsequent tables, length of stay refers to number of days (in State for this table, on Maui Island for some later tables).

SOURCES: Hawaii Visitors Bureau, 1994a, 1993a, 1992a, 1991a, 1991e, 1990a; Hawaii State DBEDT, 1994a.

Appendix A
16. ALL STATE JAPANESE VISITORS, 1980-1993

Year	Total State Japanese Visitors				
	Number	% State Total	Length of Stay	Average Visitor Census (1)	% of State AVC
1980	658,000	17%	N/A	N/A	N/A
1981	690,400	18%	N/A	N/A	N/A
1982	715,000	17%	N/A	N/A	N/A
1983	729,000	17%	N/A	N/A	N/A
1984	816,000	17%	N/A	N/A	N/A
1985	855,000	18%	N/A	N/A	N/A
1986	944,000	17%	N/A	N/A	N/A
1987	1,161,000	20%	5.8	18,400	14%
1988	1,358,000	22%	6.0	22,300	16%
1989	1,319,340	20%	6.0	21,700	13%
1990	1,439,710	21%	5.9	23,300	14%
1991	1,365,340	20%	5.9	22,400	14%
1992	1,537,030	25%	5.7	25,600	17%
1993	1,591,920	26%	6.1	26,600	18%

Year	Eastbound State Japanese Visitors (2)								
	Number	% State Total	% Eastbound Total	% State Japanese Total	Length of Stay	Average Visitor Census (1)	% of State AVC	% Eastbound AVC	% State Japanese AVC
1989	1,235,830	19%	64%	94%	N/A	N/A	N/A	N/A	N/A
1990	1,343,890	19%	60%	93%	5.9	21,700	13%	59%	93%
1991	1,311,600	19%	57%	95%	5.9	21,200	13%	58%	95%
1992	1,547,870	24%	61%	95%	5.7	24,200	16%	61%	95%
1993	1,510,620	25%	64%	95%	6.0	24,800	17%	61%	93%

NOTES: (1) Average Visitor Census estimated by CRI based on total visitors and length of stay.
(2) Eastbound breakout of Japanese visitors was unavailable prior to 1989.

SOURCES: Hawaii Visitors Bureau, 1993d, 1992d, 1991a, 1991d, 1989, 1988.

Appendix A
17. ALL MAUI ISLAND VISITORS, 1987-1993

Year	Total Maui Island Visitors: Number	% All Maui Visitors	% of State	Length of Stay	Average Visitor Census	% of Maui AVC	% of State AVC	Maui-Only Total Visitors: Number Visiting Maui Only	% All Maui Visitors
1987	[Data not available		N/A	N/A	32,700 (1)	100%	24%	N/A	N/A
1988	prior to 1989]		N/A	N/A	33,000 (1)	100%	23%	N/A	N/A
1989	2,468,870	100%	37%	6.30	42,600 (2)	100%	25%	686,346	28%
1990	2,345,240	100%	34%	5.96	38,300 (1)	100%	24%	719,530	31%
1991	2,272,240	100%	33%	6.16	38,300 (2)	100%	24%	804,530	35%
1992	2,285,410	100%	35%	6.34	39,700 (3)	100%	26%	837,760	37%
1993	2,209,980	100%	36%	6.63	39,900 (3)	100%	27%	920,050	42%

IN RECENT YEARS, THERE'S BEEN A SHARP RISE IN NUMBERS & PCTS. COMING TO VISIT MAUI ONLY.

Year	All Eastbound Maui Visitors: Number	% All Maui Visitors	% State Eastbound	Length of Stay	Average Visitor Census	% of Maui AVC	% State Eastbound AVC	Maui-Only Eastbound Visitors: Number Visiting Maui Only	% All Maui Visitors	% All Maui Eastbound Visitors
1989	393,110	16%	20%	3.20	3,400 (2)	8%	2%	34,987	1%	9%
1990	390,470	17%	17%	N/A	N/A	N/A	N/A	33,950	1%	9%
1991	390,410	17%	17%	3.34	3,600 (2)	9%	2%	61,810	3%	16%
1992	473,210	21%	19%	3.35	4,300 (2)	11%	2%	99,350	4%	21%
1993	463,780	21%	20%	3.64	4,600 (2)	12%	2%	119,780	5%	26%

Year	All Westbound Maui Visitors: Number	% All Maui Visitors	% State Westbound	Length of Stay	Average Visitor Census	% of Maui AVC	% State Westbound AVC	Maui-Only Westbound Visitors: Number Visiting Maui Only	% All Maui Visitors	% All Maui Westbound Visitors
1989	2,075,760	84%	44%	6.89	39,200 (2)	92%	1%	651,359	26%	31%
1990	1,954,770	83%	41%	N/A	N/A	N/A	N/A	685,570	29%	35%
1991	1,881,830	83%	41%	6.73	34,700 (2)	91%	1%	742,720	33%	39%
1992	1,812,200	79%	45%	7.13	35,400 (2)	89%	1%	738,410	32%	41%
1993	1,746,200	79%	46%	7.38	35,300 (2)	88%	1%	800,270	36%	46%

NOTES: (1) Estimated by CRI from Maui County figures.
(2) Calculated from total numbers and length of stay.
(3) From Hawaii Visitors Bureau figures.

SOURCES: Community Resources, Inc., 1993a; Hawaii State DBEDT, 1994a.

Appendix A
18. MAUI ISLAND JAPANESE VISITORS: VISITOR COUNTS, 1989-1993

Year	Total Maui Japanese Visitors: Number	% All Maui Visitors	% All State Japanese Visitors
1989	N/A	N/A	N/A
1990	247,800	11%	21%
1991	237,860	10%	18%
1992	302,190	13%	23%
1993	317,870	14%	22%

IN THE LAST FEW YEARS, JAPANESE HAVE SLIGHTLY RISEN AS A SHARE OF MAUI'S VISITOR COUNT, BUT LARGELY IN PROPORTION TO THEIR RISE IN STATEWIDE VISITOR COUNTS.

Year	Eastbound Maui Japanese Visitors: Number	% All Maui Visitors	% All State Japanese Visitors	% All Maui Japanese Visitors	% State Eastbound Visitors	% Maui Eastbound Visitors
1990	232,490	10%	20%	94%	10%	60%
1991	227,790	10%	17%	96%	10%	58%
1992	285,310	12%	22%	94%	11%	60%
1993	301,940	14%	21%	95%	13%	65%

Year	Total Maui-Only Japanese Visitors: Number	% All Maui Visitors	% All State Japanese Visitors	% All Maui Japanese Visitors	% All Maui-Only Visitors
1990	17,720	1%	2%	7%	2%
1991	14,820	1%	1%	6%	2%
1992	32,070	1%	2%	11%	4%
1993	75,540	3%	5%	24%	8%

IN THE LAST FEW YEARS, THERE'S BEEN A DISPROPORTIONATE INCREASE IN THE NUMBERS & PCTS OF (EASTBOUND) JAPANESE "MAUI-ONLY" VISITORS. HOWEVER, THESE PEOPLE STILL FORM ONLY A VERY SMALL PERCENTAGE OF MAUI'S TOTAL VISITOR COUNT. IF THE TREND CONTINUES, THEY MAY BECOME IMPORTANT IN THE FUTURE.

Year	Eastbound Maui-Only Japanese Visitors: Number	% All Maui Visitors	% All State Japanese Visitors	% All Maui Japanese Visitors	% State Eastbound Visitors	% Maui Eastbound Visitors	% Maui Eastbound Japanese	% All Maui-Only Visitors	% Maui-Only Japanese Visitors	% Maui-Only Eastbound Visitors
1990	13,440	1%	1%	5%	1%	3%	6%	2%	76%	40%
1991	11,970	1%	1%	5%	1%	3%	5%	1%	81%	19%
1992	27,190	1%	2%	9%	1%	6%	10%	3%	85%	27%
1993	69,130	3%	5%	22%	3%	15%	23%	8%	92%	58%

SOURCES: Hawaii Visitors Bureau, 1993d, 1992d, 1991a, 1991d, 1989, 1988

Appendix A
19. MAUI ISLAND JAPANESE VISITORS: AVERAGE VISITOR CENSUS, 1989-1993

Year	Total Maui Japanese Visitors				
	(Visitor Count) Number	Length of Stay	Average Visitor Census (1)	% of Maui AVC	% All State Japanese AVC
1989	N/A	N/A	N/A	N/A	N/A
1990	247,800	2.9	2,000	5%	9%
1991	237,860	2.9	1,900	5%	8%
1992	302,190	3.0	2,500	6%	10%
1993	317,670	3.1	2,700	7%	10%

BECAUSE OF SHORT LENGTHS OF STAY, JAPANESE VISITORS FORM A MUCH SMALLER PERCENTAGE OF AVERAGE VISITOR CENSUS THAN MIGHT BE EXPECTED FROM THEIR VISITOR COUNTS

Year	Eastbound Maui Japanese Visitors							
	(Visitor Count) Number	Length of Stay	Average Visitor Census (1)	% of Maui AVC	% All State Japanese AVC	% All Maui Japanese AVC	% All State Eastbound AVC	% All Maui Eastbound AVC
1989	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1990	232,490	2.8	1,800	5%	8%	90%	5%	n/a
1991	227,790	2.8	1,700	4%	8%	89%	5%	47%
1992	285,310	2.8	2,200	5%	9%	88%	6%	51%
1993	301,940	3.0	2,500	6%	9%	93%	6%	54%

NOTE (1) Average Visitor Census estimated by CRI based on total visitors and length of stay

SOURCES Hawaii Visitors Bureau, 1993d, 1992d, 1991a, 1991d, 1990, 1988

APPENDIX B:
ASSUMPTIONS AND CALCULATIONS USED IN IMPACT ANALYSES

Appendix B
1. ASSUMPTIONS FOR VISITOR INDUSTRY PROJECTIONS, 2010

	1993 Actual	Shaded Figures are CRI Assumptions for the Various Projections in 2010: M-K	Aries 1990 (1)	Aries 1994 (2)
Visitor Arrivals				
(A) Total Statewide	6,124,230	11,494,000	12,100,000	10,855,000
(B) Westbound Share (3)	61.5%	65.0%	65.0%	59.0%
(C) Eastbound Share (3)	38.5%	35.0%	35.0%	41.0%
Passengers In 1000s				
(D) Maui County Total (4)	9,119	N/A	10,807	9,182
Average Visitor Census/Occupied Visitor Units (5)				
(E) Total Statewide	2.9	2.5	2.5	2.5
(F) Maui County	N/A	2.8	2.8	2.8
Occupied Visitor Units				
(G) Maui County Share of State Total	25.5%	25.0%	25.0%	25.0%
2010 Length of Stay				
(H) Statewide Westbound	10.5	10.0	10.0	10.0
(I) Statewide Eastbound	6.3	5.0	6.0	6.0
(J) Maui County Westbound	7.6	7.6	7.6	7.6
(K) Maui County Eastbound	3.8	4.0	4.0	4.0
Share of 2010 Maui County Visitor Arrivals (6)				
(L) Westbound	79.2%	70.0%	70.0%	70.0%
(M) Eastbound	20.8%	30.0%	30.0%	30.0%
Occupancy Rate				
(N) Assumed Maui County Break-Even Rate	N/A	65.0%	65.0%	65.0%

NOTES
(1) The Aries 1990 aviation demand forecast provided only State Total, Westbound, and Eastbound visitor arrivals estimates. In order to estimate implications for other State and Maui County characteristics, CRI applied common assumptions to both the 1990 and 1994 Aries forecasts. (Also see Note 3 below.) the 1990 forecast were more closely linked to the M-K figures than are the 1994 figures.
(2) The Aries 1994 aviation demand forecast provided State Total Visitor projections and Westbound/Eastbound share of overseas passengers in 2010. CRI primarily used assumptions from historical trends (and, if no other source was available, M-K assumptions) to produce additional estimated State and Maui County visitor industry characteristics.
(3) M-K 2010 Westbound/Eastbound estimates calculated by CRI from DBED's Japanese/Non-Japanese estimates. Japanese assumed to be 70% of total Eastbound based on historical patterns. CRI assumed the Aries 1990 to be similar to the M-K.
(4) 1993 passengers (enplaned and deplaned) from Hawaii State Data Book, 1993-94, p. 420. Aries 1990 and Aries 1994 2020 passenger projections from Aries Consultants, Ltd., 1994, pp. 3-5 and 3-6.
(5) This figure is not party size. Rather, it divides estimated total visitor population (including people staying in private homes, unregistered lodgings, and in transit before leaving the island) by total number of occupied hotel and condo units only. Thus, it produces a higher figure than would standard hotel party size estimates. The use of 2.8 for Maui County (vs. 2.5 for Total Statewide) will, later in the calculation process, produce a Maui County employment figure which is less than would be produced by the 2.5 Statewide figure. This is appropriate, because it means that some indirect jobs created by visitor expenditures in Maui are ultimately located elsewhere in the state.
(6) Assumed future increases in eastbound share based on statewide trends and on CRI decision to use a figure which would maximize potential impact of internationalization in later analyses.

SOURCES: Aries Consultants, Ltd., 1994, 1993; Hawaii State DBEDT, 1994a, 1988; Hawaii Visitors Bureau, 1994a, 1994b

Appendix B
2. CALCULATIONS FOR VISITOR INDUSTRY PROJECTIONS, 2010

	1993 Actual	M-K	Aries 1990	Aries 1994
Statewide Visitor Arrivals				
(XA) Total Statewide (from A, Appendix B-*)	6,124,230	11,494,000	12,100,000	10,855,000
(XB) Westbound (=XA*B)	3,764,520	7,471,000	7,865,000	6,404,590
(XC) Eastbound (=XA*C)	2,359,710	4,023,000	4,235,000	4,450,410
Visitor Days				
(XD) Westbound (=XB*H)	39,452,170	74,710,000	78,650,000	64,045,900
(XE) Eastbound (=XC*I)	14,842,580	20,115,000	25,410,000	26,702,460
(XF) Total Statewide (=XD+XE)	54,294,750	94,825,000	104,060,000	90,748,360
State Average Visitor Census				
(XG) Westbound (=XD/365)	108,090	207,760	215,480	175,470
(XH) Eastbound (=XE/365)	40,660	55,940	69,620	73,160
(XI) Total Statewide (XF/365)	148,750	263,700	285,100	248,630
Length of Stay				
(XJ) Total Statewide (=XF/XA)	8.9	8.2	8.6	8.4
Occupied Visitor Units				
(XK) Statewide (=XI/E)	50,783	105,500	114,040	99,450
(XL) Maui County (=XK*G)	12,949	26,400	28,540	24,890
Maui County Average Visitor Census				
(XM) Maui County (=XL*F)	42,260	73,800	79,910	69,690
(XN) Westbound (=(XQ*J)/365)	37,330	60,220	65,200	56,860
(XO) Eastbound (=(XR*K)/365)	4,950	13,580	14,710	12,830
Maui County Visitor Arrivals (1)				
(XP) Maui County (=XQ+XR)	2,260,940	4,131,440	4,473,490	3,901,360
(XQ) Westbound (=(365*XM)/(J+((M/L)*K)))	1,790,480	2,892,010	3,131,440	2,730,950
(XR) Eastbound (=(365*XM)/(K+((L/M)*J)))	470,460	1,239,430	1,342,050	1,170,410
Share of Maui County Average Visitor Census				
(XS) Westbound (=XN/XM)	88.3%	81.6%	81.6%	81.6%
(XT) Eastbound (=XO/XM)	11.7%	18.4%	18.4%	18.4%
Total County	100.0%	100.0%	100.0%	100.0%
Maui Share of State Average Visitor Census				
(XU) Westbound (=XN/XG)	34.5%	29.4%	30.3%	32.4%
(XV) Eastbound (=XO/XH)	12.2%	24.6%	21.1%	17.5%
(XW) Total County (=XM/XI)	28.4%	28.0%	28.0%	28.0%
Visitors As % of Passengers (2)	73.9%	N/A	82.0%	85.0%
(XX) (=(2*XW)/(1000*D))				
Total Visitor Units				
(XY) Maui County (=XL/N)	N/A	40,615	43,908	38,292

NOTES: Alphabetical characters to left of each row are used in algebraic formulas to indicate chain of logic in deriving estimates. The formulae and logic applies to all calculations for the ARIES (State DOT) forecasts. For the 1993 and the M-K columns, some figures are estimated by the same procedures, but some are taken directly from sources as indicated in the footnotes below and in Appendix B-1.
(1) M-K, Aries 1990, and Aries 1994 Visitor Arrivals in 2010 calculated by CRI based on Average Visitor Census estimates (see Note 5 in Appendix B-1) and assumptions regarding length of stay and share of arrivals for Westbound and Eastbound visitors.
(2) (Visitor arrivals * 2) / Total passengers

SOURCES: Aries Consultants, Ltd., 1994, 1990; Hawaii State DBEDT, 1994a, 1988; Hawaii Visitors Bureau, 1994a, 1994b

Appendix B
3. M-K WESTBOUND & EASTBOUND VISITOR SPENDING, 2010

	M-K
ASSUMPTIONS	
ANNUAL VISITOR SPENDING	
(A) Statewide, In Millions of 1982 $s	$10,952
OCCUPIED VISITOR UNITS	
(B) Maui County Share of State Total (1)	25.0%
MAUI COUNTY AVERAGE VISITOR CENSUS	
(C) Westbound (2)	60,220
(D) Eastbound (3)	13,580
STATE AVERAGE DAILY SPENDING PER VISITOR, 1993	
(E) Westbound, In 1993 $s	$129.79
(F) Eastbound, In 1993 $s	$239.66
CALCULATIONS	
MAUI COUNTY ANNUAL VISITOR SPENDING (4)	
(XA) Total Maui County (=A*B*OneMillion)	$2,740,595,261
MAUI COUNTY AVERAGE DAILY VISITOR SPENDING (4)	
(XB) Total Maui County (=XA/DaysInYear)	$7,508,480
STATE EASTBOUND TO WESTBOUND VISITOR SPENDING, 1993	
(XC) 1993 Ratio of Eastbound to Westbound Visitor Spending (=F/E)	1.85
MAUI COUNTY AVERAGE DAILY VISITOR SPENDING, PER VISITOR (4)	
(XD) Westbound (=XB/(C+(D*XC)))	$88.03
(XE) Eastbound (=XC*XD)	$162.55
MAUI COUNTY AVERAGE DAILY VISITOR SPENDING (4)	
(XF) Westbound (=C*XD)	$5,301,092
(XG) Eastbound (=D*XE)	$2,207,388
(XH) Total Maui County (=XF+XG)	$7,508,480

NOTES: (1) From G, Appendix B-1.
(2) From XN, Appendix B-2.
(3) From XO, Appendix B-2.
(4) In 1982 dollars.

SOURCES: Hawaii Visitors Bureau, 1994a, 1994b.

Appendix B
4. DETAILED SOCIO-ECONOMIC PROJECTIONS FOR MAUI COUNTY, 2010

MAUI COUNTY	Assumptions	M-K	Aries 1990	Aries 1994
AVERAGE VISITOR CENSUS (1)				
Westbound		60,220	65,200	56,660
Eastbound		13,580	14,710	12,830
AVERAGE DAILY VISITOR SPENDING, PER VISITOR (2)				
Westbound		$88.03	$88.03	$88.03
Eastbound		$162.55	$162.55	$162.55
AVERAGE DAILY VISITOR SPENDING				
Westbound		$5,301,092	$5,739,475	$5,005,315
Eastbound		$2,207,388	$2,391,066	$2,085,478
TOTAL		$7,508,480	$8,130,541	$7,090,793
ANNUAL VISITOR SPENDING (Millions $s)		$2,741	$2,968	$2,588
VISITOR SPENDING TO CIVILIAN JOBS				
Maui CAC 2010 Visitor Industry Jobs	67,300			
M-K Visitor Spending (Millions $s)	$2,741			
Maui CAC Visitor Industry Jobs to M-K Visitor Spending	24.6			
Change in Visitor Spending (Millions $s)		$0	$227	-$152
Change in Visitor Spending-Supported Jobs		0	5,576	-3,744
M-K Civilian Jobs	77,200			
TOTAL CIVILIAN JOBS (Change plus M-K)		77,200	82,776	73,456
CIVILIAN JOBS TO RESIDENT POPULATION				
M-K Resident Population	145,200			
M-K Resident Population to M-K Civilian Jobs	1.9			
Change in Visitor Spending-Supported Population		0	10,487	-7,041
TOTAL RESIDENT POPULATION (Change plus M-K)		145,200	155,687	138,159
RESIDENT POPULATION TO HOUSING UNITS				
M-K Average Household Size	2.9			
Total Occupied Housing Units		50,069	53,685	47,641
Housing Vacancy Rate	5.0%			
TOTAL HOUSING UNITS		52,572	56,369	50,023

NOTES: (1) From Exhibit 4-U.
(2) From XD and XE in Appendix B-3.

SOURCES: Community Resources, Inc., 1993a; Hawaii State DBEDT, 1988.

Appendix B
5. DETAILED SOCIO-ECONOMIC PROJECTIONS FOR MAUI ISLAND, 2010

MAUI ISLAND	Assumptions (1)	M-K	Aries 1990	Aries 1994
AVERAGE VISITOR CENSUS (2)				
Westbound		58,600	61,290	53,450
Eastbound		12,770	13,820	12,060
AVERAGE DAILY VISITOR SPENDING, PER VISITOR (3)				
Westbound		$88.03	$88.03	$88.03
Eastbound		$162.55	$162.55	$162.55
AVERAGE DAILY VISITOR SPENDING				
Westbound		$4,962,428	$5,395,283	$4,705,137
Eastbound		$2,075,725	$2,246,399	$1,960,317
TOTAL		$7,058,153	$7,641,682	$6,665,454
ANNUAL VISITOR SPENDING (Millions $s)		$2,576	$2,789	$2,433
VISITOR SPENDING TO CIVILIAN JOBS				
Maui CAC 2010 Visitor Industry Jobs	63,300			
M-K Visitor Spending (Millions $s)	$2,576			
Maui CAC Visitor Industry Jobs to M-K Visitor Spending	24.6			
Change in Visitor Spending (Millions $s)		$0	$213	-$143
Change in Visitor Spending-Supported Jobs		0	5,233	-3,522
M-K Civilian Jobs	72,600			
TOTAL CIVILIAN JOBS (Change plus M-K)		72,600	77,833	69,078
CIVILIAN JOBS TO RESIDENT POPULATION				
M-K Resident Population	136,500			
M-K Resident Population to M-K Civilian Jobs	1.9			
Change in Visitor Spending-Supported Population		0	9,839	-6,622
TOTAL RESIDENT POPULATION (Change plus M-K)		136,500	146,339	129,878
RESIDENT POPULATION TO HOUSING UNITS				
M-K Average Household Size	2.9			
Total Occupied Housing Units		47,069	50,462	44,786
Housing Vacancy Rate	5.0%			
TOTAL HOUSING UNITS		49,422	52,985	47,025

NOTES: (1) Maui Island assumptions in this column estimated at 94% of the County level, based on 1990 Maui Island share of Maui County civilian jobs.
(2) From Exhibit 4-U.
(3) From XD and XE in Appendix B-3.

SOURCES: Community Resources, Inc., 1993a; Hawaii State DBEDT, 1988.

Appendix B
6. MAUI COUNTY VISITOR ARRIVALS FROM U.S. MAINLAND, 1993

State	Region (1)	Visitor Arrivals, Maui County	Average Intended Length of Stay, Maui Island (2)
Alabama	4	7,980	5.29
Alaska	1	11,590	11.32
Arizona	1	29,320	7.05
Arkansas	3	4,800	5.91
California	1	562,120	7.54
Colorado	2	35,740	7.67
Connecticut	4	15,740	8.97
Delaware	4	2,320	6.14
Florida	4	37,040	5.84
Georgia	4	24,890	6.04
Idaho	2	9,410	8.48
Illinois	3	71,700	7.01
Indiana	3	19,240	6.36
Iowa	3	10,110	6.52
Kansas	3	9,980	6.61
Kentucky	3	10,011	6.09
Louisiana	3	7,360	5.56
Maine	4	3,420	8.21
Maryland	4	19,470	6.01
Massachusetts	4	25,360	7.06
Michigan	3	39,710	6.75
Minnesota	3	29,480	7.89
Mississippi	3	3,121	5.37
Missouri	3	20,660	6.29
Montana	2	5,350	7.70
Nebraska	2	6,630	6.51
Nevada	1	15,890	7.70
New Hampshire	4	3,900	7.35
New Jersey	4	36,990	6.36
New Mexico	2	8,360	7.67
New York	4	61,900	6.46
North Carolina	4	15,110	5.61
North Dakota	2	2,230	8.10
Ohio	3	39,910	6.04
Oklahoma	3	9,990	6.42
Oregon	1	45,680	9.05
Penn	4	36,110	6.09
Rhode Island	4	3,100	6.31
South Carolina	4	6,290	5.72
South Dakota	2	2,550	7.04
Tennessee	3	15,080	5.75
Texas	3	89,520	5.86
Utah	2	18,180	7.23
Vermont	4	1,810	7.96
Virginia	4	21,420	5.99
Washington	1	111,440	9.49
Washington, DC	4	2,680	6.52
West Virginia	3	2,680	5.72
Wisconsin	3	21,950	6.86
Wyoming	2	2,730	7.18

NOTES: (1) REGIONS:
1. West Coast (HVB Pacific)
2. Rockies
3. Plains/Midwest
4. East and South

(2) In days.

SOURCE: Hawaii Visitors Bureau, 1994a, 1994b.

Appendix B
7. MAUI COUNTY M-K PROJECTIONS, 1990-2010

Forecast Variables	[All figures in thousands]				
	1990	1995	2000	2005	2010
POPULATION					
Resident	96.8	111.2	123.9	133.4	145.2
De Facto	136.7	159.0	179.1	196.0	216.2
CIVILIAN JOBS					
Wage and Salary Jobs:	45.4	53.3	61.2	66.3	71.8
Agriculture	3.1	3.1	3.1	3.2	3.2
Manufacturing	2.0	2.1	2.1	2.1	2.1
Construction	1.6	1.9	2.2	2.4	2.6
Transportation, comm., utilities	2.7	3.2	3.6	3.8	4.1
Trade	12.5	15.1	17.9	19.9	22.0
Banking and finance	3.2	3.9	4.4	4.7	4.9
Hotels	7.9	9.1	10.3	10.9	11.6
Other services	7.0	8.9	10.8	12.2	13.9
State/local government	4.9	5.6	6.3	6.8	7.2
Federal government	0.3	0.3	0.3	0.3	0.3
Self-Employed	4.1	4.5	4.8	5.1	5.4
VISITOR UNITS					
Total	16.7	20.5	24.7	29.2	33.0
Occupied	13.4	16.4	19.8	23.3	26.4
VISITORS					
Average Visitor Census	41.8	50.0	57.7	65.3	73.8
INCOME					
Personal Income (1982 dollars)	$1,195,000	$1,489,000	$1,776,000	$1,989,000	$2,248,000
Per Capita Income (1982 dollars)	$12.4	$13.4	$14.3	$14.9	$15.5

NOTE: All figures in thousands.

SOURCE: Hawaii State DBED, 1988.

Appendix B
8. MAUI COUNTY M-K PROJECTIONS COMPARED TO ACTUAL CONDITIONS, 1990

Forecast Variables	M-K 1990	Actual 1990	Difference
POPULATION			
Resident	96,800	100,504	-3.7%
De Facto	136,700	137,296	-0.4%
CIVILIAN JOBS			
Wage and Salary Jobs:	45,400	50,860	-10.7%
Agriculture	3,100	2,570	20.6%
Manufacturing	2,000	2,000	0.0%
Construction	1,800	3,100	-48.4%
Transportation, comm., utilities	2,700	3,070	-12.1%
Trade	12,500	13,710	-8.8%
Banking and finance	3,200	3,320	-3.6%
Hotels	7,900	9,050	-12.7%
Other services	7,000	8,260	-15.3%
State/local government	4,900	5,360	-8.9%
Federal government	300	400	-25.0%
Self-Employed	4,100	4,130	-0.7%
VISITOR UNITS			
Total	16,700	16,035	7.4%
Occupied	13,400	12,461	7.5%
VISITORS			
Average Visitor Census	41,800	39,500	5.8%

SOURCES: Hawaii State DLIR, 1994a; U.S. Bureau of the Census, 1991; Hawaii Visitors Bureau, 1991a, Hawaii State DBED, 1988.

Appendix B
9. MAUI ISLAND UNCONSTRAINED FORECAST, 1990-2010 (1)

Forecast Variables	1990 (2)	1995	2000	2005	2010
POPULATION					
Resident	91,361	102,314	112,349	121,609	133,459
CIVILIAN JOBS					
Wage and Salary Jobs:	43,001	50,354	56,787	61,877	67,343
Agriculture	2,186	2,909	2,888	2,968	2,987
Manufacturing	2,004	2,020	2,050	2,050	2,050
Construction	2,966	1,834	2,099	2,293	2,460
Transportation, comm., utilities	2,926	3,012	3,333	3,517	3,807
Trade	13,375	14,453	16,810	18,774	20,854
Banking and finance	3,046	3,786	4,220	4,513	4,712
Hotels	8,500	8,450	9,229	9,790	10,466
Other services	7,868	8,412	10,119	11,466	13,122
State/local government	4,764	5,015	5,578	6,023	6,391
Federal government	366	463	463	463	463
Self-Employed	3,755	4,098	4,260	4,550	4,833
VISITOR UNITS					
Total	17,363	22,392	26,614	31,599	35,927
Occupied	12,159	15,614	18,858	22,321	25,399
VISITORS					
Average Visitor Census	38,150	48,539	55,545	63,082	71,520
Arrivals	2,345,060	2,908,186	3,308,718	3,765,436	4,277,122
HOUSEHOLDS					
Total	33,272	34,235	37,947	41,521	46,063
Household Size	3.02	2.99	2.96	2.93	2.90
INCOME (3)					
Households That Earn					
No More Than:					
50% of median	5,641	6,420	7,108	7,804	8,706
80% of median	10,948	12,426	13,722	15,054	16,770
100% of median	14,655	16,615	18,353	20,122	22,392
120% of median	17,943	20,330	22,466	24,621	27,381
140% of median	23,874	239,641	26,136	28,635	31,830
HOUSING DEMAND	31,865	36,037	39,944	43,707	48,487

NOTES: (1) Differs from the "land use constrained" forecast only in 2010 projections.
(2) Figures for 1990 are actual historical numbers rather than projections.
(3) Based on 1989 Maui County median household income of $38,771 (1990 Census).

SOURCE: CRI, 1993a.

Appendix B
10. MAUI ISLAND LAND USE CONSTRAINED FORECAST, 1990-2010

Forecast Variables	1990 (1)	1995	2000	2005	2010
POPULATION					
Resident	91,361	102,314	112,349	121,609	127,670
CIVILIAN JOBS					
Wage and Salary Jobs:	48,001	50,354	56,787	61,877	64,469
Agriculture	2,186	2,909	2,888	2,968	2,987
Manufacturing	2,004	2,020	2,050	2,050	2,050
Construction	2,966	1,834	2,099	2,293	2,386
Transportation, comm., utilities	2,926	3,012	3,333	3,517	3,640
Trade	13,375	14,453	16,810	18,774	19,681
Banking and finance	3,046	3,786	4,220	4,513	4,516
Hotels	8,500	8,450	9,229	9,790	10,077
Other services	7,868	8,412	10,119	11,466	12,567
State/local government	4,764	5,015	5,578	6,023	6,103
Federal government	366	463	463	463	463
Self-Employed	3,755	4,098	4,260	4,550	4,617
VISITOR UNITS					
Total	17,363	22,392	26,298	26,298	26,298
Occupied	12,159	15,614	18,858	22,321	23,668
VISITORS					
Average Visitor Census	38,150	48,539	55,545	63,082	66,682
Arrivals	2,345,060	2,908,186	3,308,718	3,765,436	3,982,878
HOUSEHOLDS					
Total	30,272	34,235	37,947	41,521	44,066
Household Size	3.02	2.99	2.96	2.93	2.90
INCOME (2)					
Households That Earn					
No More Than:					
50% of median	5,641	6,420	7,108	7,804	8,310
80% of median	10,948	12,426	13,722	15,054	16,015
100% of median	14,655	16,615	18,353	20,122	21,393
120% of median	17,943	20,330	22,466	24,621	26,167
140% of median	20,874	239,641	26,136	28,635	30,424
HOUSING DEMAND	31,865	36,037	39,944	43,707	46,385

NOTES: (1) Figures for 1990 are actual historical numbers rather than projections.
(2) Based on 1989 Maui County median household income of $38,771 (1990 Census).

SOURCE: CRI, 1993a.

Appendix B

11. WAILUKU-KAHULUI UNCONSTRAINED FORECAST, 1990-2010 (1)

Forecast Variables	1990 (2)	1995	2000	2005	2010
POPULATION					
Resident	32,816	36,801	40,452	43,821	46,132
CIVILIAN JOBS					
Wage and Salary Jobs:	22,597	24,379	27,627	30,175	33,034
Agriculture	1,405	1,887	1,873	1,938	1,938
Manufacturing	1,628	1,641	1,666	1,666	1,666
Construction	597	467	576	596	710
Transportation, comm., utilities	2,341	2,410	2,666	2,814	3,046
Trade	6,261	6,766	7,669	8,789	9,762
Banking and finance	920	1,144	1,275	1,364	1,423
Hotels	263	277	300	316	340
Other services	5,692	6,066	7,320	8,294	9,493
State/local government	3,377	3,555	3,954	4,270	4,530
Federal government	113	127	127	127	127
Self-Employed	1,768	1,984	2,082	2,219	2,371
VISITOR UNITS					
Total	589	734	866	1,027	1,166
Occupied	412	518	614	725	824
VISITORS					
Average Visitor Census	1,294	1,590	1,808	2,049	2,320
Arrivals	79,551	95,269	107,706	122,326	138,766
HOUSEHOLDS					
Total	10,115	11,557	12,907	14,208	15,660
Household Size	3.24	3.18	3.13	3.08	3.03
INCOME (2)					
Households That Earn					
No More Than:					
50% of median	2,059	2,342	2,592	2,845	3,174
80% of median	3,795	4,333	4,804	5,289	5,914
100% of median	4,971	5,684	6,317	6,960	7,786
120% of median	6,045	6,913	7,690	8,475	9,479
140% of median	7,050	8,057	8,965	9,874	11,036
HOUSING DEMAND	10,647	12,165	13,587	14,956	16,695

NOTES: (1) Figures for 1990 are actual historical numbers rather than projections.
(2) Based on 1989 Maui County median household income of $38,771 (1990 Census).

SOURCE: CRI, 1993a.

Appendix B

12. WAILUKU-KAHULUI LAND USE CONSTRAINED FORECAST, 1990-2010

Forecast Variables	1990 (1)	1995	2000	2005	2010
POPULATION					
Resident	32,816	37,514	40,452	43,821	46,026
CIVILIAN JOBS					
Wage and Salary Jobs:	22,597	24,170	27,403	30,162	31,573
Agriculture	1,405	1,887	1,873	1,938	1,938
Manufacturing	1,628	1,641	1,666	1,666	1,666
Construction	597	467	589	834	868
Transportation, comm., utilities	2,341	2,410	2,666	2,814	2,912
Trade	6,261	6,766	7,669	8,789	9,213
Banking and finance	920	1,144	1,275	1,364	1,364
Hotels	263	68	63	67	69
Other services	5,692	6,066	7,320	8,294	9,091
State/local government	3,377	3,555	3,954	4,270	4,326
Federal government	113	127	127	127	127
Self-Employed	1,768	1,967	2,065	2,218	2,261
VISITOR UNITS					
Total	589	589	589	589	589
Occupied	412	416	422	500	530
VISITORS					
Average Visitor Census	1,294	1,277	1,244	1,413	1,493
Arrivals	79,551	78,499	74,106	84,335	89,205
HOUSEHOLDS					
Total	10,115	11,557	12,907	14,208	15,134
Household Size	3.24	3.25	3.13	3.08	3.04
INCOME (2)					
Households That Earn					
No More Than:					
50% of median	2,059	2,342	2,592	2,845	3,030
80% of median	3,795	4,333	4,804	5,289	5,639
100% of median	4,971	5,684	6,317	6,960	7,423
120% of median	6,045	6,913	7,690	8,475	9,037
140% of median	7,050	8,057	8,965	9,874	10,525
HOUSING DEMAND	10,647	12,165	13,587	14,956	15,930

NOTES: (1) Figures for 1990 are actual historical numbers rather than projections.
(2) Based on 1989 Maui County median household income of $38,771 (1990 Census).

SOURCE: CRI, 1993a.

Appendix B
13. CONSTRUCTION COSTS FOR MASTER PLAN ALTERNATIVES

Preferred Alternative Phases & Components		PREFERRED ALT. Core?	Land? Built?	Total Cost	MASTER PLAN ALTERNATIVES Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
PHASE 1										
26	Land for Airport Access Road & Interchange	Y	Y	10800	10800	10800	10800	10800	10800	10800
30	Easement south of Hana Hwy for Runway 2-20	Y	Y	1440	1440	1440	1440	1440	1440	1440
30	Land south of Hana Hwy for relocated NAVAIDS	Y	Y	850	850	850	850	850	850	850
2	Extend Runway 2-20, build taxiways			37800	0	21865	36442	42228	36442	21865
1	Repave and strengthen Runway 2-20			10000	10000	10000	10000	10000	10000	0
24	Relocate VORTAC	Y	Y	1365	1365	1365	1365	1365	1365	1365
13	Build new west side air cargo facilities			7011	7011	7011	7011	0	7011	7011
26	Build Airport Access Road & Interchange	Y		49830	49830	49830	49830	49830	49830	49830
21	Perimeter service road			1300	1300	1300	1300	1300	1300	1300
17	ARFF Training Facility		Y	2235	0	0	0	0	0	2235
16	ARFF Station		Y	3224	0	3224	3224	3224	3224	3224
19	Post Office Ramp Access Road			200	200	200	200	200	200	200
§	East Ramp sewer system			2817	2817	2817	2817	2817	2817	2817
§	Underground utilities			1400	1400	1400	1400	1400	1400	1400
§	Non-potable water supply system			3400	3400	3400	3400	3400	3400	3400
SUBTOTAL (not including land costs or already built)				113548	78058	97923	112500	111275	112500	87923
PHASE 2										
4	Land for Parallel Runway		Y	7490	0	2149	7490	9639	7490	5882
30	Easement south of Hana Hwy for Parallel Runway		Y	1260	0	1260	1260	1260	1260	1260
13	Land for Cargo Area Expansion		Y	100	100	100	100	0	100	0
10	Develop aviation lease lots at East Ramp			5510	0	0	0	0	5510	5510
13	Cargo facility apron improvements at East Ramp			10085	0	10085	10085	10085	10085	10085
7	Additional T- Hangers			400	0	400	400	400	400	400
9	New scenic air tour facilities			1278	1278	0	1278	1278	1278	1278
11	Relocate airline ground support equipment facility			800	0	0	0	0	0	800
23	Expand ground transport facilities	Y		925	925	925	925	925	925	925
14	Built fuel storage tanks			786	786	786	786	786	786	786
15	Underground fuel pipeline to apron			800	800	800	800	800	800	800
27	Road to connect Alahao Street & Old Stable Road	Y		5111	5111	5111	5111	5111	5111	5111
20	North section of East Ramp Access road			1020	0	0	0	0	1020	1020
21	Extend perimeter road around northwest of airport			570	570	570	570	570	570	570
25	Expand Kanaha Beach Park	Y		3868	3868	3868	3868	3868	3868	3868
SUBTOTAL (not including land costs or already built)				30913	13118	27305	23583	23583	30113	30913
PHASE 3										
4	Build Parallel Runway			107340	0	44199	107340	143940	107340	88398
5	Extend parallel taxiway for 8-23			2400	0	0	0	0	0	0
22	Extend east-side parallel taxiway for Runway 2-20			8000	0	3462	5788	8077	5788	3462
§	Upgrade RSAs for Runways 2-20 and 8-23			1000	1000	1000	1000	1000	1000	500
12	Build transient parking apron			18355	4500	0	18356	18355	18355	18355
13	Expand west-side air cargo facilities			1700	1700	1700	1700	0	1700	1700
23	Build Kaolani Place lease lots			400	400	400	400	400	400	0
23	Expand ground transportation subdivision	Y		640	640	640	640	640	640	640
20	Build East Ramp Access Road from Hana Hwy			4080	0	0	0	0	4080	4080
21	Build perimeter road around Parallel Runway			3200	0	1318	3200	3953	3200	2635
28	Realign Hana Hwy at northeast end of airport	Y		3400	3400	3400	3400	3400	3400	3400
18	Provide lease lot for flight kitchen			853	853	853	853	853	853	853
SUBTOTAL				148188	12293	56771	142457	180418	146537	123822
TOTAL (not including land costs or already built)				294038	101469	178999	278541	315276	289151	242659

NOTES: All costs in thousands of 1993 dollars. Component numbers refer to comparable components in Exhibit 1-B.
Estimated costs for alternatives developed by CRI after review of Tanaka (1991) and Belt Collins Hawaii (1993), and consultation with Edward K. Noda & Associates, Inc. (1994).

Appendix B
14. DIRECT OPERATIONS JOBS, RUNWAY ALTERNATIVES, 2010 (1)

	1993		RUNWAY ALTERNATIVES, 2010															
			Pass./Aircraft Ops (in thousands)								Direct Operations Jobs							
	Ratios	Pass = Ops	No Act.	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	No Act.	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
A: Passenger-Based Jobs																		
PRIVATE FIRMS		5,358	7,968	7,968	7,968	7,968	7,968	7,968	7,968	7,968								
Fixed Base	0.004	100%	7,968	7,968	7,968	7,968	7,968	7,968	7,968	7,968	30	30	30	30	30	30	30	30
Interisland Airlines	0.044	100%	7,968	7,968	7,968	7,968	7,968	7,968	7,968	7,968	350	350	350	350	350	350	350	350
Overseas Airlines	0.011	100%	7,968	7,968	7,968	7,968	7,968	7,968	7,968	7,968	90	90	90	90	90	90	90	90
Rental Cars	0.096	100%	7,968	7,968	7,968	7,968	7,968	7,968	7,968	7,968	770	770	770	770	770	770	770	770
Concessions	0.011	100%	7,968	7,968	7,968	7,968	7,968	7,968	7,968	7,968	90	90	90	90	90	90	90	90
Flight Kitchen (2)	0.003	100%	7,968	7,968	7,968	7,968	7,968	7,968	7,968	7,968	30	30	30	30	30	30	30	30
GOVERNMENT	0.036	100%	7,968	7,968	7,968	7,968	7,968	7,968	7,968	7,968	290	290	290	290	290	290	290	290
B: Operations-Based Jobs																		
FIXED BASE		172	263	183	129	187	258	256	258	262								
	0.093	100%	263	183	129	187	258	256	258	262	20	20	10	20	20	20	20	20
GEN. AVIATION		37	49	44	5	44	49	49	49	49								
Fixed Wing	0.844	90%	44	44	5	44	44	44	44	44	30	30	0	30	30	30	30	30
Helicopter	3.127	10%	5	0	0	0	5	5	5	5	20	0	0	0	20	20	20	20
COMMUTER/A.T.		77	112	23	23	23	112	112	112	112								
Fixed Wing	3.367	10%	11	23	23	23	11	11	11	11	40	80	80	80	40	40	40	40
Helicopter	2.517	90%	101	0	0	0	101	101	101	101	250	0	0	0	250	250	250	250
GOVERNMENT		172	263	183	129	187	258	256	258	262								
	0.157	100%	263	183	129	187	258	256	258	262	40	30	20	30	40	40	40	40
TOTAL (A + B)											2,050	1,810	1,780	1,810	2,050	2,050	2,050	2,050

NOTES: (1) Also see footnotes to Exhibit 5-E for full explanation of categories used in this exhibit.
(2) In the No-Action future, the flight kitchen is located off-airport.

SOURCES: P&D Aviation, 1994; Aries Consultants, Ltd., 1994.

Appendix B
15. SENSITIVITY ANALYSIS: ASSUMPTIONS FOR DIRECT OPERATIONS JOBS, UNCONSTRAINED & CONSTRAINED FUTURES, 2010

	RUNWAY ALTERNATIVES, 2010							
	No Action	Preferred Alternative	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
UNCONSTRAINED								
ON-SITE								
Based on Air Carrier Passengers								
Passengers (1)	100%	103%	100%	101%	103%	104%	103%	101%
Flight Kitchen	0%	103%	100%	101%	103%	104%	103%	101%
Based on Aircraft Operations								
Air Carrier (1)	100%	103%	100%	101%	103%	104%	103%	101%
Military (2)	100%	100%	100%	100%	100%	100%	100%	100%
General Aviation (2)	100%	90%	0%	90%	100%	100%	100%	100%
Commuter/Air Taxi (3)	100%	10%	0%	10%	103%	104%	103%	101%
Total On-Site Operations	100%	59%	36%	59%	102%	103%	102%	101%
OFF-SITE								
Based on Air Carrier Passengers								
Flight Kitchen	100%	0%	0%	0%	0%	0%	0%	0%
Based on Aircraft Operations								
General Aviation	0%	10%	100%	10%	0%	0%	0%	0%
Commuter/Air Taxi	0%	93%	100%	91%	0%	0%	0%	0%
CONSTRAINED								
ON-SITE								
Based on Air Carrier Passengers								
Passengers (1)	90%	95%	90%	94%	95%	101%	95%	94%
Flight Kitchen	0%	95%	90%	94%	95%	101%	95%	94%
Based on Aircraft Operations								
Air Carrier (1)	90%	95%	90%	94%	95%	101%	95%	94%
Military (2)	100%	100%	100%	100%	100%	100%	100%	100%
General Aviation (2)	100%	90%	0%	90%	100%	100%	100%	100%
Commuter/Air Taxi (3)	90%	10%	0%	9%	95%	101%	95%	94%
Total On-Site Operations	92%	56%	33%	56%	96%	101%	96%	95%
OFF-SITE								
Based on Air Carrier Passengers								
Flight Kitchen	90%	0%	0%	0%	0%	0%	0%	0%
Based on Aircraft Operations								
General Aviation	0%	10%	100%	10%	0%	0%	0%	0%
Commuter/Air Taxi	0%	95%	90%	85%	0%	0%	0%	0%

NOTES: (1) To estimate maximal impacts, total passenger and air carrier operations counts are estimated to increase in proportion with visitor arrivals, as shown in Exhibit 4-S.
(2) General and military aviation counts are assumed here to be unaffected by visitor arrivals. Differences among alternatives are due solely to location of facilities for fixed-wing and helicopter operations.
(3) Since commuter/air taxi operations largely consist of tours for visitors, the maximal impact assumption is that the volume of these varies with visitor arrivals. The share at Kahului will further vary as helicopter operations are located on- vs. off-site in different alternatives.

Appendix B
16. SENSITIVITY ANALYSIS: DIRECT OPERATIONS JOBS, UNCONSTRAINED FUTURE, 2010 (1)

	1993 ACTUAL		RUNWAY ALTERNATIVES, 2010 DIRECT OPERATIONS JOBS							
	Jobs Ratio	Passengers/ Aircraft Operations	No Action	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
ON-SITE JOBS										
A: Jobs Based on Air Carrier Passengers		8,358								
PRIVATE FIRMS	0.004	100%	30	30	30	30	30	30	30	30
Fixed Base	0.044	100%	350	350	350	350	350	370	350	350
Interisland Airlines	0.011	100%	80	80	80	80	80	80	80	80
Overseas Airlines	0.098	100%	770	800	770	780	800	800	800	780
Rental Cars	0.011	100%	80	80	80	80	80	80	80	80
Concessions	0.003	100%	3	30	30	30	30	30	30	30
Flight Kitchen										
GOVERNMENT	0.036	100%	280	300	280	280	300	300	300	290
B: Jobs Based on Aircraft Operations										
FIXED BASE	0.093	172 100%	20	10	10	10	20	20	20	20
GENERAL AVIATION		37								
Fixed Wing	0.644	90%	30	30	0	30	30	30	30	30
Helicopter	3.127	10%	20	10	0	10	20	20	20	20
COMMUTER/AIR TAXI		77								
Fixed Wing	3.367	10%	40	0	0	0	40	40	40	40
Helicopter	2.517	90%	250	30	0	30	280	280	280	280
GOVERNMENT	0.157	172 100%	40	20	10	20	40	40	40	40
OFF-SITE JOBS										
C: Jobs Based on Air Carrier Passengers										
Flight Kitchen	0.003	100%	30	0	0	0	0	0	0	0
D: Jobs Based on Aircraft Operations										
General Aviation	0.987	37	0	0	40	0	0	0	0	0
Commuter/Air Taxi	2.802	77	0	270	280	270	0	0	0	0
Government	0.157		0	20	30	20	0	0	0	0
TOTAL JOBS										
On-Site (A + B)			2,020	1,800	1,670	1,780	2,110	2,120	2,110	2,070
Off-Site (C + D)			30	290	360	290	0	0	0	0
TOTAL (A + B + C + D)			2,050	2,090	2,030	2,050	2,110	2,120	2,110	2,070
IMPACT										
Locational (2)			N/A	280	330	280	-30	-30	-30	-30
Absolute (3)			N/A	40	-20	0	60	70	60	20

NOTES: (1) See Appendix B-15 for assumptions used for each alternative. Also see footnotes to Exhibit 5-E.
(2) Each alternative's off-site jobs minus the No Action Forecast's off-site jobs.
(3) Each alternative's total jobs minus the No Action Forecast's total jobs.

Appendix B
17. SENSITIVITY ANALYSIS: DIRECT OPERATIONS JOBS, CONSTRAINED FUTURE, 2010 (1)

	1993 ACTUAL		RUNWAY ALTERNATIVES, 2010 DIRECT OPERATIONS JOBS							
	Jobs Ratio	Passengers/ Aircraft Operations	No Action	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
ON-SITE JOBS										
A: Jobs Based on Air Carrier Passengers										
PRIVATE FIRMS		9,358								
Fixed Base	0.004	100%	30	30	30	30	30	30	30	30
Interisland Airlines	0.044	100%	350	350	350	350	350	370	350	350
Overseas Airlines	0.011	100%	90	90	90	90	90	90	90	90
Rental Cars	0.086	100%	770	800	770	780	800	800	800	770
Concessions	0.011	100%	80	80	80	80	80	90	80	80
Flight Kitchen	0.003	100%	0	30	20	30	30	30	30	30
GOVERNMENT	0.036	100%	290	300	290	290	300	300	300	290
B: Jobs Based on Aircraft Operations										
FIXED BASE	0.093	172 100%	20	10	10	10	20	20	20	20
GENERAL AVIATION		37								
Fixed Wing	0.844	90%	30	30	0	30	30	30	30	30
Helicopter	3.127	10%	20	10	0	10	20	20	20	20
COMMUTER/AIR TAXI		77								
Fixed Wing	3.367	10%	40	0	0	0	40	40	40	40
Helicopter	2.517	90%	250	30	0	30	280	280	280	250
GOVERNMENT	0.157	172 100%	40	20	10	20	40	40	40	40
OFF-SITE JOBS										
C: Jobs Based on Air Carrier Passengers										
Flight Kitchen	0.003	100%	20	0	0	0	0	0	0	0
D: Jobs Based on Aircraft Operations										
General Aviation	0.882	37	0	0	40	0	0	0	0	0
Commuter/Air Taxi	2.602	77	0	280	260	250	0	0	0	0
Government	0.157		0	20	20	20	0	0	0	0
TOTAL JOBS										
On-Site (A + B)			2,020	1,800	1,660	1,760	2,110	2,120	2,110	2,070
Off-Site (C + D)			20	280	320	270	0	0	0	0
TOTAL (A + B + C + D)			2,040	2,080	1,980	2,030	2,110	2,120	2,110	2,070
IMPACT										
Locational (2)			N/A	260	300	250	-20	-20	-20	-20
Absolute (3)			N/A	30	-70	-20	60	70	60	20

NOTES: (1) See Appendix B-15 for assumptions used for each alternative. Also see footnotes to Exhibit 5-E.
(2) Each alternative's off-site jobs minus the No Action Forecast's off-site jobs.
(3) Each alternative's total jobs minus the No Action Forecast's total jobs.

Appendix B
18. DIRECT OPERATIONS JOBS (WITH INTERNATIONALIZATION), RUNWAY ALTERNATIVES, 2010 (1)

	1993		RUNWAY ALTERNATIVES, 2010															
			Pass./Aircraft Ops (in thousands)								Direct Operations Jobs							
	Ratios	Pass. or Ops	No Act.	Pref Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	No Act.	Pref Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
A: Passenger-Based Jobs																		
PRIVATE FIRMS		9,358	7,986	7,986	N/A	7,986	7,986	7,986	7,986	7,986								
Fixed Base	0.004	100%	7,986	7,986	N/A	7,986	7,986	7,986	7,986	7,986	30	30	N/A	30	30	30	30	30
Interisland Airlines	0.044	100%	7,986	7,986	N/A	7,986	7,986	7,986	7,986	7,986	350	350	N/A	350	350	350	350	350
Overseas Airlines	0.011	100%	7,986	7,986	N/A	7,986	7,986	7,986	7,986	7,986	80	80	N/A	80	80	80	80	80
Rental Cars	0.086	100%	7,986	7,986	N/A	7,986	7,986	7,986	7,986	7,986	770	770	N/A	770	770	770	770	770
Concessions	0.011	100%	7,986	7,986	N/A	7,986	7,986	7,986	7,986	7,986	80	80	N/A	90	80	80	80	80
Flight Kitchen (2)	0.003	100%	7,986	7,986	N/A	7,986	7,986	7,986	7,986	7,986	30	30	N/A	30	30	30	30	30
GOVERNMENT	0.036	100%	7,986	7,986	N/A	7,986	7,986	7,986	7,986	7,986	290	290	N/A	290	290	290	290	290
FIS (3)											0	50	N/A	50	50	50	50	50
B: Operations-Based Jobs																		
FIXED BASE	0.093	172 100%	263	158	N/A	167	254	252	254	262	20	10	N/A	20	20	20	20	20
GEN. AVIATION		37	48	44	N/A	44	48	48	48	48								
Fixed Wing	0.844	90%	44	44	N/A	39	44	44	44	44	30	30	N/A	30	30	30	30	30
Helicopter	3.127	10%	5	0	N/A	4	5	5	5	5	20	0	N/A	10	20	20	20	20
COMMUTER/AT		77	112	23	N/A	23	112	112	112	112								
Fixed Wing	3.367	10%	11	23	N/A	2	11	11	11	11	40	80	N/A	10	40	40	40	40
Helicopter	2.517	90%	101	0	N/A	20	101	101	101	101	250	0	N/A	50	250	250	250	250
GOVERNMENT	0.157	172 100%	263	158	N/A	167	254	252	254	262	40	20	N/A	30	40	40	40	40
TOTAL (A + B)											2,050	1,840	N/A	1,850	2,100	2,100	2,100	2,100

NOTES (1) Also see footnotes to Exhibit 5-E for full explanation of category as used in this exhibit.
(2) In the No Action future, the flight kitchen is located off airport.
(3) FIS = Federal Inspection Services. See Section 7 for discussion of estimated direct jobs.

SOURCES P&D Aviation, 1994; Ares Consultants, Ltd., 1994

Appendix B
19. SENSITIVITY ANALYSIS (WITH INTERNATIONALIZATION): DIRECT OPERATIONS JOBS, UNCONSTRAINED FUTURE, 2010 (1)

	1993 ACTUAL		RUNWAY ALTERNATIVES, 2010 DIRECT OPERATIONS JOBS							
	Jobs Ratio	Passengers/ Aircraft Operations	No Action	Pref Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
ON-SITE JOBS										
A: Jobs Based on Air Carrier Passengers										
PRIVATE FIRMS		5,356								
Fixed Base	0.004	100%	30	30	NA	30	30	30	30	30
International Airlines	0.000	100%	0	0	NA	0	0	0	0	0
Overseas Airlines	0.011	100%	60	60	NA	60	60	60	60	60
Rental Cars	0.006	100%	30	30	NA	30	30	30	30	30
Concessions	0.011	100%	60	60	NA	60	60	60	60	60
Flight Kitchen	0.003	100%	15	15	NA	15	15	15	15	15
GOVERNMENT	0.036	100%	200	200	NA	200	200	200	200	200
FIS			0	0	NA	0	0	0	0	0
B: Jobs Based on Aircraft Operations										
FIXED BASE		172								
	0.083	100%	30	30	NA	30	30	30	30	30
GENERAL AVIATION		37								
Fixed Wing	0.044	90%	30	30	NA	30	30	30	30	30
Helicopter	0.127	10%	30	30	NA	30	30	30	30	30
COMMUTER/AIR TAXI		77								
Fixed Wing	0.267	10%	25	0	NA	25	25	25	25	25
Helicopter	2.517	90%	250	30	NA	270	280	280	280	270
GOVERNMENT		172								
	0.157	100%	40	30	NA	40	40	40	40	40
OFF-SITE JOBS										
C: Jobs Based on Air Carrier Passengers Flight Kitchen	0.003	100%	30	0	NA	0	0	0	0	0
D: Jobs Based on Aircraft Operations										
General Aviation	0.082	37	0	0	NA	0	0	0	0	0
Commuter/Air Taxi	2.653	77	0	25	NA	0	0	0	0	0
Government	0.137		0	30	NA	0	0	0	0	0
TOTAL JOBS										
On Site (A + B)			2,020	1,985	NA	2,295	2,335	2,335	2,335	2,295
Off Site (C + D)			30	55	NA	0	0	0	0	0
TOTAL (A + B + C + D)			2,050	2,040	NA	2,295	2,335	2,335	2,335	2,295
IMPACT										
Locational (2)			NA	280	NA	245	285	285	285	245
Absolute (3)			NA	270	NA	245	285	285	285	245

NOTES (1) Also see footnotes to Appendix B-18
(2) Each alternative's off-site jobs minus the No Action Forecast's off-site jobs
(3) Each alternative's total jobs minus the No Action Forecast's total jobs

Appendix B
20. SENSITIVITY ANALYSIS (WITH INTERNATIONALIZATION): DIRECT OPERATIONS JOBS, CONSTRAINED FUTURE, 2010 (1)

	1993 ACTUAL		RUNWAY ALTERNATIVES, 2010 DIRECT OPERATIONS JOBS							
	Jobs Ratio	Passengers/ Aircraft Operations	No Action	Pref Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
ON-SITE JOBS										
A: Jobs Based on Air Carrier Passengers										
PRIVATE FIRMS		5,356								
Fixed Base	0.004	100%	30	30	NA	30	30	30	30	30
International Airlines	0.000	100%	0	0	NA	0	0	0	0	0
Overseas Airlines	0.011	100%	60	60	NA	60	60	60	60	60
Rental Cars	0.006	100%	30	30	NA	30	30	30	30	30
Concessions	0.011	100%	60	60	NA	60	60	60	60	60
Flight Kitchen	0.003	100%	15	15	NA	15	15	15	15	15
GOVERNMENT	0.036	100%	200	200	NA	200	200	200	200	200
FIS			0	0	NA	0	0	0	0	0
B: Jobs Based on Aircraft Operations										
FIXED BASE		172								
	0.083	100%	30	30	NA	30	30	30	30	30
GENERAL AVIATION		37								
Fixed Wing	0.044	90%	30	30	NA	30	30	30	30	30
Helicopter	0.127	10%	30	30	NA	30	30	30	30	30
COMMUTER/AIR TAXI		77								
Fixed Wing	0.267	10%	25	0	NA	25	25	25	25	25
Helicopter	2.517	90%	250	30	NA	270	280	280	280	270
GOVERNMENT		172								
	0.157	100%	40	30	NA	40	40	40	40	40
OFF-SITE JOBS										
C: Jobs Based on Air Carrier Passengers Flight Kitchen	0.003	100%	30	0	NA	0	0	0	0	0
D: Jobs Based on Aircraft Operations										
General Aviation	0.082	37	0	0	NA	0	0	0	0	0
Commuter/Air Taxi	2.653	77	0	25	NA	0	0	0	0	0
Government	0.137		0	30	NA	0	0	0	0	0
TOTAL JOBS										
On Site (A + B)			2,020	1,985	NA	2,295	2,335	2,335	2,335	2,295
Off Site (C + D)			30	55	NA	0	0	0	0	0
TOTAL (A + B + C + D)			2,050	2,040	NA	2,295	2,335	2,335	2,335	2,295
IMPACT										
Locational (2)			NA	280	NA	245	285	285	285	245
Absolute (3)			NA	270	NA	245	285	285	285	245

NOTES (1) Also see footnotes to Appendix B-18
(2) Each alternative's off-site jobs minus the No Action Forecast's off-site jobs
(3) Each alternative's total jobs minus the No Action Forecast's total jobs

APPENDIX C:
PERSONS INTERVIEWED
OR CONTACTED
FOR THIS REPORT

Appendix C
PERSONS INTERVIEWED OR CONTACTED FOR THIS REPORT (1)

Name	Position/Organization
Anita Amal	Personnel, Budget Rent-a-Car
George Applegate	Executive Director, Hawaii Visitors Bureau, Kona
Stephanie Ballard	Hawaii Helicopters
Len Cappe	Owner, Hawaiian Island Windsurfing President, Maui Boardsailing Association
Michael Chambers	American Airlines
Patricia Chevalier	Blue Hawaiian Helicopters
Gaylene Chun	Engineering, Airports Division, Hawaii State DOT
Don Collier	Office Manager, Alexair
Leonard Costa	Projects Manager, Maui County Parks & Recreation
Len Cowper	Owner, American Pacific Air, Inc.
Eugene Dashiell, AICP	Planner
Ronald DeMello	Deputy Chief, Maui County Fire Department
Joanna Eggberg	Administrator, Alamo Rent-a-Car
Steve Egger	Air Kauai Helicopter Tours
Jim Gusukuma	General Manager, Maui, United Airlines
Paul Hallen	Project Director, Triangle Square, A&B Properties, Inc.
Sue Hardesty	Hawaii Flowers Shippers Association Proteas of Hawaii
Mr. Hauptman	Pacific Helicopter Tours, Inc.
Don Hazelton	Cardinal Helicopters
Jim Healy	Pleasant Hawaiian
Carolyn Hebert	Aloha Island Air
Richard Hee	Aloha Island Air
Ted Kagoshima	Facilities Department, Aloha Airlines
Joe Kikiwi	Fresh Fruit Division, Maui Land & Pineapple
Jim King	Marketing Department, Aloha Airlines
Wally Kunisaki	Office Manager, Airports Division, Hawaii State DOT
Donna Lee	Manager, Host International Airport Restaurant
Dr. James Mak	University of Hawaii-Manoa

Name	Position/Organization
Dr. James Mak	University of Hawaii-Manoa
C. Timothy Maloney	CEO, Maui Memorial Hospital
Craig Masumiya	Federal Express, Kahului Airport Station
Don Mitagawa	Captain, ARFF, Kahului Airport
Norman Montas	United Airlines
Pat Moy	United Vacations (Chicago)
Dexter Ohama	Division Manager, Maui Lexus
Barbara Okamoto	Research Director, Hawaii Visitors Bureau
Kent Parsell	Director, Inspection & Control, U.S. Customs Services
Nick Pechin	Century Aviation, Inc.
Donald Reaser	Assistant Manager, Whalers Village, Kapalua
Donald Reeser	Superintendent, Haleakala National Park
Travis Richardson	Officer in Charge, U.S. Department of Agriculture
Stanley Saka	Hawaii State Department of Agriculture
John Sanders	President, Aries Consultants, Ltd.
Art Schneider	Papillon Hawaiian Helicopters
Paul Schwind	Hawaii Agriculture Statistics Service
Anna Scott	Sunshine Helicopters, Inc.
Eloise Shak	Maui Station Manager, Delta Airlines
Don Shearer	Windward Aviation
Kirk Smith	Runaway Hawaii
Bill Stolz+B134	Manager, Princeville Airport
James Tantillo	Store Manager, Maui Kmart
Terryl Vencl	Maui Hotel Association
Mike Vincent	Assistant Manager, Dobb's International Services
Judi Walsh	Acting Manager, Federal Aviation Administration
Noelani Whittington	Executive Director, Kohala Coast Resort Association President, Maui Protea Growers Association
George Willoughby	Former Research Director, Hawaii Visitors Bureau
Kevin Yokoyama	Statistician, Hawaii Agriculture Statistics Service

NOTE (1) Does not include persons interviewed for market growth analysis (see Exhibit 4-D in Section 4).

APPENDIX D:

REFERENCES

Appendix D
REFERENCES

A&B Properties, Inc. Personal communication with Paul Hallen, Project Director, Triangle Square . Honolulu, HI; 1994.

Archer, William. Forecasting: An Appraisal for Policy-Makers and Planners. John Hopkins University Press: 1978.

Aries Consultants, Ltd. Update Hawaii Aviation Demand Forecasts. Prepared for Hawaii State Department of Transportation, Airports Division. California; 1994.

Aries Consultants, Ltd.; and Wilson Okamoto & Associates, Inc. Hawaii Statewide Airport System Plan (SASP). Prepared for Hawaii State Department of Transportation, Airports Division. Hawaii; HI; 1990.

Armstrong, J. Scott. Long-Range Forecasting: From Crystal Ball to Computer. Wiley: 1985.

Bank of Hawaii. Construction in Hawaii 1994. Honolulu, HI; 1994.

Belt Collins & Associates. Hilo International Airport Master Plan Final Report. Prepared for Hawaii State Department of Transportation, Airports Division. Honolulu, HI; 1991.

Belt Collins Hawaii; and Aries Consultants, Ltd. Kahului Airport Master Plan: Kahului Airport, Kahului, Maui, Hawaii. Prepared for Hawaii State Department of Transportation, Airports Division. Honolulu, HI; 1993.

Berry, E.; R. Krannich; and T. Greider. "A Longitudinal Analysis of Neighboring in Rapidly Changing Rural Places," Journal of Rural Studies. 6 (2): 175-86, 1990.

Chesney-Lind, M.; and I. Lind. Visitors as Victims: Crimes against Tourists in Two Hawaii Counties. Report No. 293. Prepared for Youth Development and Research Center, School of Social Work, College of Health Sciences and Social Welfare, University of Hawaii, 1984.

Community Resources, Inc. Social Indicators for the Island of Lana'i. Prepared for Castle & Cooke Properties, Inc. Honolulu, HI; 1994.

Community Resources, Inc. Maui County Community Plan Update Program: Socio-Economic Forecast Report. Prepared for Maui County Planning Department. Honolulu, HI; 1993a.

Community Resources, Inc; and Market Trends Pacific, Inc. A Brief Survey of Hawai'i Resident Attitudes about Tourism and Product Development. Prepared for December 1993 Hawaii Tourism Congress. Honolulu, HI; 1993b.

Community Resources, Inc. 1988 Statewide Tourism Impact Core Survey. Prepared for Hawaii State Department of Business and Economic Development, Tourism Branch. Honolulu, HI; 1989.

Cortese, C.; and B. Jones. "The Sociological Analysis of Boomtowns," Western Sociological Review. 1: 76-90, 1977.

Coveney, Peter; and Roger Highfield. The Arrow of Time. Flamingo: Glasgow, Great Britain; 1991.

Dashiell, Eugene. Appendix. Land Use: Impact Assessment. Kahului Airport Final Environmental Impact Statement. Prepared for Edward K. Noda & Associates. Honolulu, HI; 1994.

Don Fields. The Role of Air Transportation in Maui's Economic Future. Prepared for Maui Economic Development Board, Inc. Kihei, HI; 1992.

Eagar, Harry. "Some in Spreckelsville Profess Identity Crisis to Planning Department," Maui News. A-3, June 30, 1994.

Earthplan. Kahului Airport Master Plan Social and Economic Impact Assessment. Prepared for Pacific Planning and Engineering, Inc. for inclusion in Final Environmental Impact Statement: Kahului Airport Master Plan Update, July 1992. Honolulu, HI; 1991.

Edgell, David; and G. Smith. "Tourism Milestones for the Millenium: Projections and Implications of International Tourism for the United States through the Year 2000," Journal of Travel Research. 22 (Summer): 1, 1993.

Edward K. Noda & Associates, Inc. Environmental Assessment/Determination for Proposed Improvements at Kahului Airport. Prepared for Hawaii State Department of Transportation, Airports Division. Honolulu, HI; 1994.

England, J.; and S. Albrecht. "Boomtowns and Social Disruption," Rural Society. 49: 230-46, 1984.

FIS Facilities Guideline Committee. Guidelines for Federal Inspection Facilities at Airports. Washington D.C.; 1990.

Forsythe, D. "Urban Incomers and Rural Change: The Impact of Migrants from the City on Life in an Orkney Community," Sociologia-Ruralis. 20 (4): 287-307, 1980.

Fujii, Edwin. "Tourism and Crime: Implications for Regional Development Policy," Regional Studies. 14: 27-36, 1980.

Fujii, Edwin; E. Im; and J. Mak. "Airport Expansion, Direct Flights, and Consumer Choice of Travel Destinations: The Case of Hawaii's Neighbor Islands," Journal of Travel Research. 30 (3): 38-43, 1992.

Fujii, Edwin; J. Mak. "The Impact of Alternative Regional Development Strategies on Crime Rates: Tourism versus Agriculture in Hawaii," Annals of Regional Science. 13: 42-56, 1979.

Fujii, Edwin; J. Mak; and E. Nishimura. "Tourism and Crime," Tourism Research Publications Occasional Paper No. 2. Joint project of the School of Travel Industry Management and the Social Science Research Institute, University of Hawaii, 1978.

Gearing, Charles; W. Swart; and T. Var. "Establishing a Measure of Touristic Attractiveness," Journal of Travel Research. 22 (Spring): 1-8, 1974.

Gilmore, J.; and M. Duff. Boom Town Growth Management: A Case of Rock Springs — Green River, Wyoming. Westview: Boulder, CO, 1975.

Glauberman, Stu. "Tourism Posts Dramatic Gains," Honolulu Advertiser. C-1, April 30, 1994a.

Glauberman, Stu. "No. 1 U.S. Air Route Is Honolulu-Kahului," Honolulu Advertiser. C-1, July 16, 1994b.

Glauberman, Stu. "User Fees Support Airports in Hawaii," Honolulu Advertiser. B-1, December 24, 1993.

Gold, R. "Social Impacts of Strip Mining and Other Industrializations of Coal Resources," Social Impact Assessment. C. Wolf (ed.). Environmental Design Research Association: Milwaukee, WI, 1974.

Green, Rodney. Forecasting with Computer Models: Econometric, Population, and Energy Forecasting. Praeger: 1984.

Haiku Design & Analysis. Review and Assessment of Selected Issues Regarding Kahului Airport Master Plan Update. Prepared for Planning & Engineering, Inc. for inclusion in Appendix. Final Environmental Impact Statement, Kahului Airport Master Plan Update: Kahului, Maui, Hawaii. Haiku, HI; 1991.

Hawaii County Police Department. Annual Reports, 1970-1993. Hilo, HI; 1971-1994.

Hawaii State Department of Accounting and General Services. State of Hawaii Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 199. Honolulu, HI; 1993.

Hawaii State Department of Accounting and General Services. State of Hawaii Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 1992. Honolulu, HI; 1992.

Hawaii State Department of Accounting and General Services. State of Hawaii Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 1991. Honolulu, HI; 1991.

Hawaii State Department of Accounting and General Services. State of Hawaii Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 1990. Honolulu, HI; 1990.

Hawaii State Department of Agriculture, Marketing Division. Statistics of Hawaiian Agriculture, 1992. Honolulu, HI; 1993.

Hawaii State Department of Business, Economic Development, and Tourism. State of Hawaii Data Book: 1993-1994. Honolulu, HI; 1994a.

Hawaii State Department of Business, Economic Development, and Tourism. Quarterly Statistical & Economic Report: 3rd Quarter, 1994. Honolulu, HI; 1994b.

Hawaii State Department of Business, Economic Development, and Tourism. Personal communication with Lyn Zane, Research and Statistics. Honolulu, HI; 1994c.

Hawaii State Department of Business, Economic Development, and Tourism. State of Hawaii Data Book: 1992. Honolulu, HI; 1993.

Hawaii State Department of Business, Economic Development, and Tourism. State of Hawaii Data Book: 1991. Honolulu, HI; 1992.

Hawaii State Department of Business and Economic Development. State of Hawaii Data Books; 1970-1991. Honolulu, HI; 1971-91.

Hawaii State Department of Business and Economic Development. The Population of Hawaii, 1990: Statistical Report 219. Honolulu, HI; 1991.

Hawaii State Department of Business and Economic Development. Population and Economic Projections for the State of Hawaii to 2010 (Series M-K). Honolulu, HI, 1988.

Hawaii State Department of Business and Economic Development. Population of Hawaii, 1970-1984: Statistical Report 173. Honolulu, HI; 1985.

Hawaii State Department of Education. Enrollment Projections of the Public Schools in Hawaii, 1994-1999, No. RS 94-5956. Honolulu, HI; 1994.

Hawaii State Department of Health. Personal Communication with Jim Cooper, Acting Coordinator, Health Surveillance Program (based on unpublished records). Honolulu, HI; 1994.

Hawaii State Department of Health. Personal communication with Carol Takamori, Research Statistician, Office of Health Status Monitoring (based on unpublished records). Honolulu, HI; 1993.

Hawaii State Department of Health. Annual Statistical Reports, 1970-90. Honolulu, HI; 1971-92.

Hawaii State Department of Human Services. Personal communication with Keith Nagai, Research Statistician, Planning Office (based on unpublished records). Honolulu, HI; 1994.

Hawaii State Department of Human Services. Statistical Report: 1991. Honolulu, HI; 1992a.

Hawaii State Department of Human Services. Personal communication with Rick Higashide, Planning Office (based on unpublished records). Honolulu, HI; 1992b.

Hawaii State Department of Human Services. A Statistical Report on Child Abuse and Neglect in Hawaii, 1991. Honolulu, HI; 1992c.

Hawaii State Department of Human Services. A Statistical Report on Child Abuse and Neglect in Hawaii, 1990. Honolulu, HI; 1991.

Hawaii State Department of Human Services. A Statistical Report on Child Abuse and Neglect in Hawaii, 1988. Honolulu, HI; 1989.

Hawaii State Department of Human Services. A Statistical Report on Child Abuse and Neglect in Hawaii, 1980-1987. Honolulu, HI; 1988.

Hawaii State Department of Labor and Industrial Relations. 1993 Labor Force Data Book. Honolulu, HI; 1994a.

Hawaii State Department of Labor and Industrial Relations. Personal communication with Manuel Fragante, Research Statistician (based on unpublished records). Honolulu, HI; 1994b.

Hawaii State Department of Labor and Industrial Relations. 1992 Employment and Payrolls in Hawaii. Honolulu, HI; 1993.

Hawaii State Department of Planning and Economic Development. Community Profiles for Hawaii. Honolulu, HI; 1973.

Hawaii State Department of Transportation, Airports Division. Personal communication with Gaylene Chun, based on unpublished records of airport activity statistics. Honolulu, HI; 1994a.

Hawaii State Department of Transportation, Airports Division. Hawaii Administrative Rules. Honolulu, HI; 1994b.

Hawaii State Department of Transportation. 1993 Report to the Governor. Honolulu, HI; 1994c.

Hawaii State Department of Transportation, Airports Division. State of Hawaii Airports System Revenue Bonds, Second Series of 1991. Honolulu, HI; 1991.

Hawaii State Department of Transportation, Airports Division. Keahole Airport: Petition for Land Use Boundary Amendment before Hawaii State Land Use Commission. Docket #A89-641. March 1989.

Hawaii Visitors Bureau. 1993 Visitor Statistics. Honolulu, HI; 1994a.

Hawaii Visitors Bureau. 1993 Annual Research Report. Honolulu, HI; 1994b.

Hawaii Visitors Bureau. 1993 Visitor Expenditures. Honolulu, HI; 1994c.

Hawaii Visitors Bureau. 1992 Island Supplement. Honolulu, HI; 1993a.

Hawaii Visitors Bureau. 1992 Annual Research Report. Honolulu, HI; 1993b.

Hawaii Visitors Bureau. 1992 Visitor Plant Inventory. Honolulu, HI; 1993c.

Hawaii Visitors Bureau. 1992 Domestic and Foreign Market Report. Honolulu, HI; 1993d.

Hawaii Visitors Bureau. 1991 Island Supplement. Honolulu, HI; 1992a.

Hawaii Visitors Bureau. 1991 Annual Research Report. Honolulu, HI; 1992b.

Hawaii Visitors Bureau. 1991 Visitor Plant Inventory. Honolulu, HI; 1992c.

Hawaii Visitors Bureau. 1991 Foreign Market Report. Honolulu, HI; 1992d.

Hawaii Visitors Bureau. 1991 Visitor Satisfaction Report. Honolulu, HI; 1992e.

Hawaii Visitors Bureau. 1990 Island Supplement. Honolulu, HI; 1991a.

Hawaii Visitors Bureau. 1990 Annual Research Report. Honolulu, HI; 1991b.

Hawaii Visitors Bureau. 1990 Visitor Plant Inventory. Honolulu, HI; 1991c.

Hawaii Visitors Bureau. 1990 Foreign Market Visitors to Hawaii. Honolulu, HI; 1991d.

Hawaii Visitors Bureau. Westbound Trends: 1991-1990. Based on unpublished records. Honolulu, HI; 1991e.

Hawaii Visitors Bureau. 1989 Island Supplement. Honolulu, HI; 1990a.

Hawaii Visitors Bureau. 1989 Annual Research Report. Honolulu, HI; 1990b.

Hawaii Visitors Bureau. 1989 Visitor Plant Inventory. Honolulu, HI; 1990c.

Hawaii Visitors Bureau. Westbound Trends: 1975-1989. Based on unpublished records. Honolulu, HI; 1990d.

Hawaii Visitors Bureau. 1988 Study of Japanese Visitors to Hawaii. Honolulu, HI; 1989.

Hawaii Visitors Bureau. 1987 Study of Japanese Visitors to Hawaii. Honolulu, HI; 1988.

Honolulu Advertiser. "Canada Non-Stops to Kona Planned." August 4, 1994.

Honolulu Police Department. Annual Reports, 1970-1993. Honolulu, HI; 1971-1994.

Honolulu Star-Bulletin. "IslandAir Adds Flights to Kapalua, West Maui." March 30, 1994.

Hu, Yangzhou; and J. Ritchie. "Measuring Destination Attractiveness: A Contextual Approach," Journal of Travel Research. 22 (2): 29-34, 1993.

Ishikawa, Lisa. "Green Acres?" Hawaii Business. May 1994.

Israel, G.; and K. Wilkinson. "Persistence and Change in a Growing Community: A Case Study of Seabrook, New Hampshire," Journal of the Community Development Society. 18 (1): 64-77, 1987.

Japan Travel Bureau Foundation. All about Japanese Overseas Travelers. Tokyo, Japan; 1992.

Jud, G. "Tourism and Crime in Mexico," Social Science Quarterly. 56: 324-30, 1975.

Kauai County Police Department. Annual Reports, 1970-1993. Lihue, HI; 1971-1994.

KFC Airports, Inc. Honolulu International Airport Master Plan Update and Noise Compatibility Program. Prepared for Hawaii State Department of Transportation, Airports Division. October 1988, Vol. 1.

Kohrs, E. Social Consequences of Boom Town Growth in Wyoming. Paper presented to regional meeting of the American Association for the Advancement of Science. Laramie, WY, 1974.

Krannich, R.; E. Berry; and T. Greider. "Fear of Crime in Rapidly Changing Rural Communities: A Longitudinal Analysis," Rural Sociology. 54 (2): 195-212, 1989.

Krannich, R.; and T. Greider. "Personal Well-Being in Rapid Growth and Stable Communities: Multiple Indicators and Contrasting Results," Rural Sociology. 49: 541-52, 1984.

Longwoods Travel USA. Maui's Touring Image. Honolulu, HI; 1994.

Lynch, Russ. "Airlines Boost Traffic to Hawaii," Honolulu Star-Bulletin. A-1, May 18, 1994.

Ma, Lybia; and Mike Markrich. "Embattled Sanctuary," Hawaii Business. May 1994.

Mattoch, Malia. "United Adds Seats to Keahole," Pacific Business News. January 3, 1994.

Maui County. The General Plan of the County of Maui 1990 Update (Revised). Wailuku, HI; 1990.

Maui County Planning Department. Community Plan Update. Proposed Kihei-Makena Community Plan. Wailuku, HI; 1993a.

Maui County Planning Department. Community Plan Update. Proposed Makawao-Pukalani-Kula Community Plan. Wailuku, HI; 1993b.

Maui County Planning Department. Community Plan Update. Proposed Pa'ia-Ha'iku Community Plan. Wailuku, HI; 1993c.

Maui County Planning Department. Community Plan Update. Proposed Wailuku-Kahului Community Plan. Wailuku, HI; 1993d.

Maui County Planning Department. Community Plan Update. Proposed West Maui Community Plan. Wailuku, HI; 1993e.

Maui County Police Department. Personal communication with Lynn Peters, Research Statistician, Records Section (based on annual reports and unpublished records). Kahului, HI; 1994.

Maui Economic Development Board, Inc. Maui County Data Book. Prepared for the County of Maui Office of Economic Development. Kihei, HI; 1993f.

McPheters, L.; and W. Stronge. "Crime as an Environmental Externality of Tourism: Miami, Florida," Land Economics. 50: 288-92, 1974.

Montgomery, Douglas. Forecasting and Time Series Analysis. McGraw-Hill: 1990.

Neil, Christopher. "Hawaiian Ending Flights to Kapalua-West Maui," Honolulu Advertiser. March 23, 1994.

Official Airline Guide. OAG Desktop Flight Guide, North American Edition. Vol 21, No. 2. Oakbrook, Ill; October 15, 1994.

Pacific Business News. "A&B Tops First Triangle Square Building on Maui." September 19, 1994.

Pacific Planning & Engineering, Inc. Appendix, Final Environmental Impact Statement, Kahului Airport Master Plan Update: Kahului, Maui, Hawaii. Prepared for Hawaii State Department of Transportation, Airports Division. Honolulu, HI; 1992.

Pannell Kerr Forster. Trends in the Hotel Industry: Hawaii. Honolulu, HI; 1994.

Pannell Kerr Forster. Trends in the Hotel Industry: Hawaii. Honolulu, HI; 1993.

Pannell Kerr Forster. Trends in the Hotel Industry: Hawaii. Honolulu, HI; 1992.

Pannell Kerr Forster. Trends in the Hotel Industry: Hawaii. Honolulu, HI; 1991.

Pannell Kerr Forster. Trends in the Hotel Industry: Hawaii. Honolulu, HI; 1990.

Pannell Kerr Forster. Trends in the Hotel Industry: Hawaii. Honolulu, HI; 1989.

Pannell Kerr Forster. Trends in the Hotel Industry: Hawaii. Honolulu, HI; 1988.

Pannell Kerr Forster. Trends in the Hotel Industry: Hawaii. Honolulu, HI; 1987.

Pannell Kerr Forster. Trends in the Hotel Industry: Hawaii. Honolulu, HI; 1986.

P&D Aviation. Joint EIS for the Development of Kahului Airport. Prepared for Edward K. Noda & Associates. Orange, CA; 1994.

Peat, Marwick, Livingston & Co. General Lyman Field Development Plan — 1985. Prepared for Hawaii State Department of Transportation. San Francisco, CA; 1969.

Perry, Brian. "United Airlines Official Claims Kahului Airport Problems Caused Losses," Maui News. A-4, January 15, 1993.

Perry, Brian. "Adversaries in Airport Debate Muster Troops," Maui News. A-1, August 23, 1992a.

Perry, Brian. "Longer Runway Gets Support of All Community Segments," Maui News. A-1, October 10, 1992b.

Pizam, A. "Tourism and Crime: Is There a Relationship?" Journal of Travel Research. 20 (Winter): 7-10, 1982.

Project Managers Hawaii. Feasibility Study on Providing Facilities to Support International Flight Operations at Kahului Airport. Prepared for Hawaii State Department of Transportation, Airports Division. Honolulu, HI; 1990.

R.M. Towill Corporation. Maui Public Facilities Assessment: Final Report. Prepared for Maui County Department of Planning. Honolulu, HI; 1992.

Rodrigo, Christine. "Keahole Runway Expansion Promises More Direct Flights," Pacific Business News. June 14, 1993.

Rohr, Thos. "New Kona Airport a Boost for Big Island," Honolulu Advertiser. February 28, 1994.

Singapore Economic Research Institute. 1993 Annual Report. Singapore; 1994.

SMS Research; and Locations, Inc. Hawaii Housing Policy Study. Prepared for a consortium of private developers, landowners, & State and County housing officials. Honolulu, HI, 1993.

SMS Research; and Locations, Inc. Market Feasibility Study for State of Hawaii Lahaina Master Planned Project. Honolulu, HI, 1988.

Stephl, Arlene. "First Non-Stop Flights from Vancouver Planned," West Hawaii Today. 4A, August 3, 1994.

Strangeland, P. "Getting Rich Slowly: The Social Impact of Oil Activities," Acta Sociologica. 27: 215-37, 1984.

Tanji, Edwin. "IslandAir to Take Up Slack at Kapalua," Honolulu Advertiser. March 30, 1994a.

Tanji, Edwin. "W. Maui Fears Loss," Honolulu Advertiser. April 7, 1994b.

Thompson, Rod. "Expanded Keahole Airport Runway Ready for Wide-Body Flights," Star-Bulletin. January 27, 1994.

United States Department of Commerce, Bureau of the Census. 1990 Census of Population and Housing, Summary Tape File 3-A: Alaska, Hawaii, Oregon. CD90-3A-02. Washington, D.C.; 1992.

United States Department of Commerce, Bureau of the Census. 1990 Census of Population and Housing, Summary Tape File 1-A: Pacific Division, Vol I. CD90-1A-9-1. Washington, D.C.; 1991.

United States Department of Commerce, Bureau of the Census. 1980 Census of Population and Housing, Census Tracts: Hawaii, Selected Areas. PHC80-2-13. Washington D.C.; 1983a.

United States Department of Commerce, Bureau of the Census. 1980 Census of Population and Housing, Census Tracts: Honolulu, Hawaii SMSA. PHC80-2-183. Washington D.C.; 1983b.

United States Department of Commerce, Bureau of the Census. 1980 Census of Population and Housing, Summary Tape File 1-A: Hawaii. (Available on microfiche, Hawaii State DBED library.) Washington, D.C.; 1981a.

United States Department of Commerce, Bureau of the Census. 1980 Census of Population and Housing, Summary Tape File 3-A: Hawaii. (Available on microfiche, Hawaii State DBED library.) Washington, D.C.; 1981b.

United States Department of Commerce, Bureau of the Census. 1970 Census of Population and Housing, Census Tracts: Honolulu, Hawaii SMSA. PHC(1)-88. Washington D.C.; 1972.

United States Department of Commerce, Bureau of the Census. 1970 Census of Population, General Population Characteristics: Hawaii. PC(1)-B13. Washington D.C.; 1971.

United States Department of Commerce, Bureau of the Census. U.S. Censuses of Population and Housing, 1960, Census Tracts: Honolulu, Hawaii SMSA. PHC(1)-62. Washington D.C.; 1961a.

United States Department of Commerce, Bureau of the Census. U.S. Census of Population, 1960, General Population Characteristics: Hawaii. PC(1)-13B. Washington D.C.; 1961b.

United States Department of Commerce, Bureau of the Census. U.S. Census of Population, 1950, General Characteristics: Hawaii. Vol. II, Part 52, Chapter B. Washington D.C.; 1952a.

United States Department of Commerce, Bureau of the Census. U.S. Census of Population, 1950, Census Tract Statistics: Honolulu, Territory of Hawaii and Adjacent Area. Vol. III, Chapter 62. Washington D.C.; 1952b.

United States Department of Commerce, Bureau of the Census. Sixteenth Census of the U.S., 1940, Population, Second Series: Characteristics of the Population, Hawaii. Washington D.C.; 1943.

United States Department of Commerce, Bureau of the Census. Fifteenth Census of the U.S., 1930, Population, Second Series: Hawaii, Composition & Characteristics of the Population and Unemployment. Washington D.C.; 1931.

U.S. Department of Interior/National Park Service. Draft General Management Plan/Environmental Impact Statement, Haleakala National Park Hawaii. Washington D.C.; 1994.

U.S. Department of the Treasury, Customs Service. Technical Standards for Customs Passenger Processing at Airports. Washington D.C.; 1991.

Weisz, R. "Stress and Mental Health in a Boom Town," Boom Towns and Human Services. J.A. Davenport and J. Davenport III (eds.). Unversity of Wyoming Department of Social Work: Laramie, WY, 1979.

West Hawaii Today. "747 Coming to Keahole." February 23, 1994.

Wilkinson, K; et al. "Local Social Disruption and Westen Energy Devleopment: A Critical Review," Pacific Social Review. 25: 275-96, 1982.

Wilson Okamoto & Associates, Inc. 1992 Maui County Land Use Inventory. Prepared for Maui County Planning Department. Honolulu, HI; 1992.

Witt, Stephen; and C. Witt. Modeling and Forecasting Demand in Tourism. Academic Press Limited: San Diego, CA; 1992.

World Tourism Organization. Tourism to the Year 2000: Qualitative Aspects. Madrid, Spain; 1993.

World Tourism Organization. Yearbook of Tourism Statistics. Madrid, Spain; 1992a.

World Tourism Organization. Compendium of Tourism Statistics, 1988-1992. Madrid, Spain; 1992b.

APPENDIX E:

INTERNATIONAL TOURISM IN THE 1990s:

FORECASTS & PERSPECTIVES

(By Coopers & Lybrand)

International Tourism in the 1990's:
Forecasts and Perspectives

Presented to
Community Resources, Inc.

September 14, 1994

Coopers & Lybrand

Coopers & Lybrand L.L.P.
a professional services firm

Suite 2500 Pacific Tower
1001 Bishop Street
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September 14, 1994

Dr. John Knox
Community Resources, Inc.
130 Merchant Street, Suite 1001
Honolulu, HI 96813

Dear Dr. Knox:

In accordance with our engagement letter dated May 10, 1994, Coopers & Lybrand L.L.P. has prepared this report entitled "International Tourism in the 1990's: Forecasts and Perspectives," related to the Kahului Airport Environmental Impact Statement.

As is customary with consulting reports of this type prepared by public accounting firms, including Coopers & Lybrand, this report is subject to standard limitations regarding the sources, limitations and uses of this information contained in this study.

This report is based on our knowledge of the tourism industry and interviews with representatives of various countries' tourism commissions during which certain information was provided. Where appropriate, the sources of information are stated herein. All information provided to us was not audited or verified and was assumed to be correct.

The report is based on assumptions, estimates, and other information developed from research of the market, knowledge of the industry, and other factors. Some assumptions inevitably will not materialize, and unanticipated events and circumstances will occur; therefore, actual results achieved during the future period discussed in our analysis will vary from estimates presented in this study, and the variations may be material.

Coopers & Lybrand makes no representation or warranty as to the accuracy or completeness of the information contained within our report, including any estimates, and shall have no liability for any representations (expressed or implied) contained in, or for any omissions from, our report.

The information and analyses provided to you are intended solely for use in the Environmental Impact Study for the Proposed Kahului Airport Expansion and should not be relied upon for any other purpose, or by any other entity. Neither our report, nor any reference to our Firm, may be included or quoted in any offering circular or registration statement, prospectus, sales brochure, appraisal, loan or other agreement or document.

Information furnished by others is presumed to be reliable. No responsibility, whether legal or otherwise, is assumed for its accuracy, and is not guaranteed as being certain.

Our analysis assumes market conditions as observed as of September 1, 1994. Coopers & Lybrand assumes no liability should market conditions materially change for any reason. Our report and the comments contained therein, apply only to the proposed Kahului Airport expansion project, and for the purpose so stated and should not be used for any other purpose.

We have no responsibility to update this report for events and circumstances occurring after September 1, 1994. However, we are available to discuss the need for revision should the occasion arise.

We sincerely appreciate this opportunity to provide tourism consulting services to you.

Very truly yours,

Coopers & Lybrand L.L.P.

TABLE OF CONTENTS

I. WORLD TOURISM OVERVIEW

I. WORLD TOURISM OVERVIEW

INTRODUCTION

This section of the report presents a broad overview of the world travel and tourism industry, including historical and projected growth rates, international travel trends, and the impact of increasing international travel on the U.S. and Hawaii markets. Additionally, this section presents a brief analysis of international travel to and from several selected destinations in the Asia/Pacific region.

SUMMARY AND CONCLUSIONS

International tourism continues to grow in robust proportions, with growth in the East Asia and Pacific regions leading the way. This phenomenal growth has benefitted the region as a whole as well as created a source market for the U.S. in general and Hawaii in specific. This growth in international tourism is expected to play an important role in the recovery and expansion of both the U.S. Mainland and Hawaii hotel industry throughout the 1990's and beyond.

WORLD TOURISM OVERVIEW

The growth of international tourism has been spectacular. In 1950, shortly after World War II, there were only 25 million international tourists worldwide. By 1970, with wide-bodied, jet aircraft facilitating long-haul travel, the number of international travelers increased to 160 million. By 1993, the number of international tourists reached 500 million, equal to eight percent of the world's population. These numbers indicate an average annual growth rate of over seven percent per year from 1950 to 1993.

Wide-scale recessions in several of the world's largest economies have had a dampening effect on the world's tourism industry over the past two years. However, as we approach the mid-1990's there are strong indications that tourism has resumed the steady growth that had been enjoyed prior to the worldwide recession, albeit at a more moderate pace. Growth will not be driven by advances in air transportation and international business travel as in the past. Rather, socio-economic and demographic factors will be the chief determinants in the future of international travel growth. Some of these factors include rising income, higher education of the workforce, urbanization of the population, and increasing leisure time and the resultant change in lifestyles as more people can afford to travel. To gain some insights into future tourism growth, we present in the following pages profiles of forecasts for international tourism, and its impact on the U.S. and Hawaii markets.

Growth in International Tourism

International tourism during the initial years of the 1990's has been in a state of turmoil, with war and recession having cast a shadow on the world's largest industry. Despite a leveling off in 1991, however, international tourism has shown remarkable resiliency as worldwide growth in arrivals reported by the World Tourism Organization (WTO) increased by an estimated 6.2 percent to 500 million international visitors in 1993 (Table 1). Excluding transportation costs, international tourism expenditures also increased an astounding 8.8 percent in 1993 to an estimated $324 billion despite the economic woes in Japan, the U.S. and Europe. Table 2 presents international tourism receipts for 1985, 1992, and the first several months of 1993. Full year data for 1993 is not yet available by region.

Table 1
International Tourism Arrivals (in thousands)

Region	1985	Percent	1993	Percent	Compound Annual Growth Rate
Europe	217,957	66.9%	296,535	59.3%	3.9%
Americas	58,659	18.0	106,525	21.3	7.7
East Asia/Pacific	27,447	8.4	68,548	13.7	12.1
Africa	9,818	3.0	17,675	3.6	7.6
Middle East	9,087	2.8	7,200	1.4	(2.9)
South Asia	2,757	0.8	3,459	0.7	2.9
Total	325,725	100.0%	500,142	100.0%	5.5%

Source: World Tourism Organization, Yearbook of Tourism Statistics 1993

Table 2
International Tourism Receipts (in millions, U.S.$)

	1985	Percent	1992	Percent	Compound Annual Growth Rate	1993 (1)	Percent Change from 1992
Europe	$60,783	56.2%	$147,205	52.8%	13.5%	$61,331	-5.9%
Americas	26,656	24.7	76,567	27.5	16.3	63,119	11.7
East Asia/Pacific	11,711	10.8	43,291	15.5	20.5	16,152	4.6
Africa	2,604	2.4	5,167	1.9	10.2	1,092	(6.6)
Middle East	4,703	4.4	4,356	1.6	(1.1)	924	(32.9)
South Asia	1,607	1.5	2,119	0.8	4.0	33	(21.7)
Total	$108,064	100.0%	$278,705	100.0%	10.9%	$142,651	2.1%

Note (1) Partial year data. Percent change over same period in previous year.

Source: World Tourism Organization, Yearbook of Tourism Statistics, 1993.

II. TOURISM IN THE EAST ASIA AND PACIFIC REGION

II. TOURISM IN THE EAST ASIA AND PACIFIC REGION

INTRODUCTION

This section of the report focuses on tourism in the East Asia and Pacific region. Specifically, this section discusses demographic and socio-economic trends in the region that are influencing travel, as well as historic and projected growth rates for inbound and outbound travel to the various countries in the region.

SUMMARY AND CONCLUSIONS

The East Asia and Pacific region, which includes Hawaii, has emerged as the fasting growing tourism destination in the world. Substantial growth in this region is anticipated to continue through the next decade as an increasing portion of the population can afford to travel, international business continues to flourish in the region, leisure travelers are motivated to visit the region, and tourism and air traffic infrastructure is expanded and developed.

TOURISM IN THE EAST ASIA AND PACIFIC REGION

East Asia and the Pacific, which includes Hawaii, continues to out-pace all other world regions in tourism growth with an estimated 9.3 percent growth in arrivals in 1993 over 1992 to 63.7 million, and an impressive growth in tourism receipts of 4.6 percent to $45.3 billion. Table 3 presents the ranking of East Asia and Pacific destinations in 1993 visitor arrivals, and Table 4

ranks these destinations by tourism receipts for 1992, the most recent full year of available data. What is striking is the comparison of relative growth rates when comparing Hawaii to these other destinations. In 1993, visitor arrivals to Hawaii decreased 6.0 percent, while arrivals to other Asia Pacific destinations increased significantly: Hong Kong up 11.6 percent, Singapore up 7.3 percent, Thailand up 12.2 percent, China up 23.5 percent, and Indonesia up 11.1 percent. The only other Asia Pacific destination to report a decline in the number of visitor arrivals during 1993 was Japan, which saw arrivals decrease by 4.8 percent due to the cumulative effects of the strong yen, high costs and competition from less expensive destinations.

Clearly, the difference in growth rates reflect in part the emergence of these new destinations in the regional and world tourism market compared to Hawaii's more established tourism industry. Indeed, Table 5 demonstrates the almost phenomenal growth in hotel rooms that has occurred in the East Asia/Pacific region during the past eleven years. In addition to tourism, the region's strong economic expansion has also led to a substantial business travel market fueling room demand even further. We should note that Hawaii's negative growth from 1989 to 1993 was skewed downward by the impact of the economic recession in Japan and the U.S.. On the other hand, most of the other East Asia and Pacific destinations were bolstered by intra-regional travel, reflecting the increasing wealth and economic growth which has led the world. The East Asia/Pacific region has not been impacted by the economic recession that has plagued the U.S., Japan and Europe.

A recent article in the Asian Wall Street Journal reported that the income level at which demand for overseas travel begins to emerge in the Asia/Pacific region is approximately $35,000. A separately released report by the London-based Economic Intelligence Unit indicated that there are approximately 50 million households with an annual income of $35,000 or more in the Asia Pacific region. A similar study by S.G. Warburg Securities (Far East) Ltd., concluded that the demand for overseas travel rises sharply when per capita gross domestic product hovers between $4,000 and $6,000 a year. Gross domestic product in Japan, Singapore, Hong Kong and the larger cities of Taiwan and South Korea surpassed this level long ago, and they are now big overseas travelers. Those just reaching the takeoff point are rural Taiwanese and Koreans, as well as city dwellers from Malaysia, Thailand and China's coastal provinces.

Table 3
Top Ten Tourism Destinations
East Asia and Pacific Region

1993 Ranking	Destination	Tourist Arrivals in Thousands 1989	1993	Compound Annual Growth Rate
1	Hong Kong	5,995	8,938	10.5%
2	Singapore	4,830	6,426	7.4
3	Hawaii	6,642	6,124	(2.0)
4	Thailand	4,810	5,761	4.6
5	China	1,461	4,950	35.7
6	Indonesia	1,626	3,403	20.3
7	Korea	3,029	3,331	2.4
8	Australia	2,080	2,996	9.6
9	Malaysia	1,638	2,499	11.1
10	Macau	1,011	1,650	13.0

Source: World Tourism Organization, Yearbook of Tourism Statistics, 1993

Table 4
Top Ten Tourism Earners
East Asia and Pacific Region

1992 Ranking	Country	In Millions, U.S.$ 1989	1992	Compound Annual Growth Rate
1	Hawaii	$8,786	$9,559	2.9%
2	Singapore	3,307	5,762	20.5
3	Hong Kong	4,731	5,275	3.7
4	Australia	3,181	4,230	10.0
5	Thailand	3,753	4,057	2.6
6	Japan	3,143	3,509	3.7
7	Korea	3,556	3,259	(2.9)
8	China	1,861	3,150	19.2
9	Indonesia	1,628	2,723	18.7
10	Taiwan	2,698	2,235	(6.1)

Source: World Tourism Organization, Yearbook of Tourism Statistics, 1993

Table 5
Hotel Room Supply Growth (In thousands)

Region	1980	1992	Compound Annual Growth Rate
Europe	4,591	4,906	0.6%
Americas	3,155	4,427	2.9
East Asia/Pacific	376	1,344	11.2
Africa	151	361	7.5
Middle East	65	164	8.0
South Asia	66	120	5.1
Total	8,404	11,322	2.5

Source: World Tourism Organization, Yearbook of Tourism Statistics, 1993

These statistics indicate a significant potential for outbound travel from this region. The following paragraphs briefly highlight the inbound and outbound travel patterns for several select Asia Pacific countries.

* * * * * * * * * *

Growth in Australia

Inbound:

Australia received a record number of foreign arrivals in 1993. Visitors were up 15.1 percent over 1992 to a total of 2,996,300. U.S. arrivals to Australia, however, have declined since they peaked at 322,000 in 1988. In 1993, U.S. visitor arrivals showed an increase of 6.8 percent from 1992 to 280,825 arrivals. In past years, the largest number of arrivals originated in New Zealand. Recently, however, the Japanese have become the predominate source market. In 1993, Japanese visitors grew by 6.5 percent to 671,000 while arrivals from New Zealand continued to show strong growth with a 11.7 percent increase to total almost 500,000.

Visitor arrivals from Asia, not counting Japan, surged 40 percent to nearly 683,000. This increase follows a 30 percent increase in 1992. Arrivals to Australia from Taiwan and South Korea surged 71 and 85 percent, respectively, in 1993. Arrivals from Malaysia were up 33 percent, to about 80,000. Table 6 presents visitors arrivals to Australia from the various Asian countries. The Australian Tourist Commission reports that an increasing portion of visitors are on leisure travel, most prefer three- to four-star hotels, and that while the majority travel on package tours, independent travel is increasing, particularly from Singapore, Hong Kong and Malaysia. A promising note for the future, Sydney Australia won the competition to host the Summer Olympics in the year 2000, beating out other bidding cities of Beijing, Berlin, Istanbul, and Manchester, England. Australian tourism officials have set a target of 1.81 million visitors from Asia by the year 2000.

Table 6
Australia
Visitors from Asia Countries
1993

Origin	1993	Percent Change from 1992
China	22,444	20.2%
Hong Kong	91,651	22.6
India	9,741	1.4
Indonesia	71,871	56.7
Korea	62,188	85.4
Malaysia	80,167	32.8
Philippines	17,909	11.2
Singapore	155,512	33.1
Taiwan	108,198	70.5
Thailand	46,661	38.9
Other	16,466	0.7
Total	682,808	39.6%
Japan	671,000	6.5%

Source: Australian Tourism Commission, Annual Report, 1993

Outbound:

Australia's outbound travel totalled 2.27 million in 1993, a decline of 0.4 percent though a substantial improvement from the 5.5 percent drop in 1992. New Zealand, with 15.5 percent market share, remained the leading destination for Australian residents, followed closely by the U.S. with 13.2 percent share. By region, South East Asia attracted 23.0 percent of Australian travellers with the largest portion, 8.9 percent, going to Indonesia. Europe remained an important destination with a 21.2 percent share, with half of this traffic being to the U.K. The destination with the highest growth in Australian visitors was China which saw visitor arrivals increase nearly 20 percent from 48,747 in 1992 to 99,330 in 1993. Table 7 presents outbound travel trends for Australia from 1989 to 1993.

Growth in Japan

Inbound:

Visitor arrivals to Japan decreased by 4.8 percent in 1993, bringing the total to 3,410,447. Almost all markets registered declines: Korea down 2.2 percent, Taiwan down 6.6 percent, the U.S. down 4.9 percent. As mentioned above, these declines in arrivals were due to the strong yen and increasing popularity of less expensive destinations in the Asia/Pacific region.

Outbound:

Japanese outbound travel increased 1.2 percent in 1993 to 11.9 million visitors. The U.S. received the largest share of Japanese visitors with 30.7 percent, followed by North East Asia with 29.9 percent, South East Asia with 13.8 percent, and Europe with 10.9 percent. The market shares of the various regions remained largely unchanged compared with 1992. Although Japan is still recovering from the economic recession of the early 1990's, with a population of 125 million, the potential for future outbound growth is significant.

Currently, executive travellers account for 20 percent of the Japanese outbound market. Recently, this market has exhibited a trend towards downgrading from first to economy class travel. Japan Airlines reports that traffic in first and executive class decreased by 18 and 16 percent, respectively, in 1992. This trend appears to pervade all types of travel.

Table 7
Australia
Outbound Travel
1989-1993

Destination	1989	1993	Compound Annual Growth Rate
United States	406,392	448,507	2.5%
China	48,747	99,330	19.5
Thailand	218,856	205,187	(1.6)
Hong Kong	259,025	264,722	0.5
Japan	55,586	69,439	5.7
New Zealand	312,217	358,975	3.6
Indonesia	178,456	291,188	13.0
Malaysia	70,513	112,253	12.3
Singapore	450,235	365,128	(5.1)
Korea	15,639	21,371	8.1

Source: PATA Annual Statistical Report, 1993.

Officials at Japan Travel Bureau (JTB), Japan's largest travel agency, estimate that a record number of Japanese will travel overseas in 1994, but will spend less than in previous years. JTB expects 12.4 million Japanese to travel overseas in 1994 compared to an estimated 11.9 million in 1993, but expenditures will average $3,450 per trip in 1994, down 2.8 percent from an estimated $3,555 in 1993. The expected rise in overseas travel and concurrent decline in average expenditures are largely due to increasing availability of cheap tour packages. The net result of these trends for the airlines is that while passenger numbers continue to rise, yields are shrinking because of passengers trading down to lower fares, as well as competitive pressure on fares and the impact of the high yen against the U.S. dollar.

Growth in Thailand

Inbound

Though Thailand faces increasing problems of pollution, prostitution, AIDS, crime, traffic congestion, and corruption, the country continues to see increases in visitor arrivals. In 1993, arrivals totalled 5.76 million, an increase of 12.2 percent over 1992. This growth is attributed primarily to publicity about cheap hotel rooms and Thailand's increasing role as a gateway to Indochina.

Arrivals to Thailand are dominated by Asia Pacific visitors (58 percent) followed by visitors from Europe (28 percent) and North America (13 percent). Of the Asia/Pacific visitors, the biggest group emanated from Malaysia, with 811,272 visitors, a rise of 11.4 percent. Visitors from Japan and Taiwan were the next largest groups. The numbers of Korean and Singaporean visitors, though not yet as sizeable, increased sharply in 1993. Most remarkable, however, was the increase in arrivals from China, up 103 percent to 261,739 in 1993. This growth is due to China's rapidly expanding economy and the "open door" policy by the Chinese government which facilitates increased travel.

Outbound:

Thai outbound travel remains unabated. An estimated 1,690,000 Thai nationals and residents went overseas in 1993, up 25 percent over 1992. Thai visitors to Taiwan reached 90,029 in 1993, up 4.9 percent over 1992. Other popular destinations among Thai travelers were Hong

Kong with 293,495 (up 3.3 percent), China with 152,329 (up 3.1 percent), and the U.S. with 68,779 (up 1.2 percent). Japan saw Thai visitor arrivals decrease for the second consecutive year in 1993 to 71,000, down more than 34 percent from a peak of 108,000 in 1991. Table 8 presents Thai outbound travel to selected countries in 1989 and 1993.

Growth in Indonesia

Inbound:

Indonesia ended 1993 with 11.1 percent growth in visitor arrivals for a total of 3,403,138. South East Asia markets dominated Indonesian arrivals, accounting for 42 percent of the total. The two most important of these markets were Singapore, which generated 27.6 percent of total arrivals, and Malaysia, which had 12.4 percent of total. Other important markets for Indonesia included Japan with an 11.4 percent share, Australia with 8.6 percent and Europe with 18.6 percent.

Indonesian tourism officials have set an aggressive arrivals target for the year 2000 of 9 million visitors. Future growth is likely to emanate largely from Asia/Pacific, although Indonesia is expected to attract inbound visitation from two potential new markets - Middle East and South America. The Directorate General of Tourism (DGT) has a marketing budget of $5.5 million for 1993-4, and has asked for a three-fold increase for 1994-5. Additionally, the private sector Indonesia Tourism Promotion Board (ITPB) is expected to spend $30 million over the next two years for tourism promotion.

Outbound:

Outbound travel from Indonesia has been increasing steadily in recent years due to significant improvements in the country's foreign affairs and economic development. After 23 years of diplomatic estrangement, China and Indonesia have formally restored diplomatic relations. Additionally, strong economic growth, an improved standard of living and significant foreign investment have all contributed to an increased propensity to travel for the fourth most populous nation in the world. Table 9 presents Indonesian outbound travel to selected countries in 1989 and 1993. Indonesian visitors to China increased over 700 percent, from 13,000 in 1992 to 110,000 in 1993. Strong growth was also seen in Indonesian visitors to Malaysia (up 23 percent), Australia (up 26 percent), and Hong Kong (up 22 percent).

Table 8
Thailand
Outbound Travel
1989-1993

Destination	1989	1993	Compound Annual Growth Rate
United States	36,173	68,779	17.4%
China	54,915	152,329	29.1
Taiwan	21,738	90,029	42.7
Hong Kong	175,546	293,495	13.7
Japan	53,288	70,946	7.4
Korea	19,535	75,876	40.4
Indonesia	10,752	28,995	28.1
Malaysia	352,565	467,782	7.3
Australia	17,400	46,678	28.0

Source: PATA Annual Statistical Report, 1993.

Table 9
Indonesia
Outbound Travel
1989-1993

Destination	1989	1993	Compound Annual Growth Rate
United States	36,640	53,245	9.8%
China	16,788	110,482	60.2
Thailand	42,576	63,325	10.4
Hong Kong	79,543	174,346	21.7
Japan	35,707	37,552	1.3
Taiwan	26,395	34,502	6.9
Korea	17,168	28,612	13.6
Malaysia	63,159	146,329	23.4
Australia	28,900	71,977	25.6

Source: PATA Annual Statistical Report, 1993.

Growth in Malaysia

Inbound:

Malaysia finished 1993 with a 6.5 percent increase in visitor arrivals for a total of 2,499,274. The largest source market for Malaysia was Thailand with 468,000 visitor arrivals, followed by Singapore with 352,000 visitors and Japan with 243,000 visitors in 1993. Malaysia receives few Americans when compared to Hong Kong or Singapore. In 1993, only 79,000 visitors from the U.S. found their way to this country, a decline from a peak of 147,000 U.S. visitors in 1990. Probably the largest tourism problem facing Malaysia is the lack of international airlines serving Kuala Lumpur and the country's resort areas. To help increase the country's relatively modest earnings from tourism, Malaysia is encouraging more incoming air charter flights as well as permitting an increased number of scheduled foreign airline arrivals.

Outbound:

Over the past ten years, Malaysia has made a steady and rapid rise from a fairly insignificant tourist origin country to one of the 20 main countries of visitor origin. Much of this travel is not, however, tourism in the traditional sense, but instead represents short trips, especially for shopping purposes, to Singapore and other contiguous countries. Because the majority of Malaysians visiting Singapore, (about four million,) arrive by driving across the causeway from Malaysia, it is difficult to accurately measure total Malaysian travel to Singapore.

The next most popular destination for Malaysians is Thailand which received 811,272 arrivals in 1993, up 2.5 percent from 1992. Indonesia and Hong Kong are also favorite destinations with 421,000 and 234,000 Malaysian visitor arrivals, respectively in 1993. China, however, is the fastest growing destination for outbound travel from Malaysia. In 1989, China received a negligible number of Malaysian visitors, but 1993 saw over 168,000 Malaysian visitors to the country for an average annual growth rate of over 250 percent. Table 10 summarizes Malaysian outbound travel over the last five years.

Table 10
Malaysia
Outbound Travel
1989-1993

Destination	1989	1993	Compound Annual Growth Rate
United States	40,472	49,976	5.4%
China	1,000	168,470	260.3
Thailand	736,021	811,272	2.5
Hong Kong	118,963	234,127	18.4
Japan	54,397	46,165	(4.0)
Macau	31,911	42,537	7.5
Korea	20,604	23,315	3.1
Indonesia	131,146	420,789	33.8
Australia	44,300	80,238	16.0

Source: PATA Annual Statistical Report, 1993.

Growth in Hong Kong

Inbound:

Hong Kong was the top destination in the Pacific Asia region with 8,937,500 visitor arrivals in 1993, up 11.6 percent from 1992. More than half of its arrivals (56.7 percent) originated from North East Asia with Taiwan leading the pack with a 19.9 percent share, closely followed by China with a 19.4 percent share, and Japan with a 14.3 percent share. The strongest growth, however, was from China with an increase of 50.8 percent over 1992. Europe showed an increase of 11.8 percent and the United States an increase of 8.8 percent, while South East Asia was basically flat.

Outbound:

Outbound travel from Hong Kong remains very strong. The most popular Asia/Pacific destination for Hong Kong travelers was Thailand with 265,000 visitors in 1993, though this was a decline from a peak of 383,000 visitors in 1990. Singapore threatens to assume Thailand's number one ranking in the next several years, having seen an increase in Hong Kong visitor arrivals of 14.4 percent in 1993 to 253,000. Other destinations with strong growth rates were Korea (up 40.9 percent), Malaysia (up 31.4 percent), Indonesia (up 22.9 percent) and Australia (up 14.1 percent). The U.S. remained an important destination with 193,000 visitor arrivals in 1993. Table 11 presents Hong Kong outbound travel statistics for 1989 and 1993 for selected countries.

Table 11
Hong Kong
Outbound Travel
1989-1993

Destination	1989	1993	Compound Annual Growth Rate
United States	143,911	192,691	7.6%
Thailand	376,681	265,283	(8.4)
Malaysia	37,538	111,797	31.4
Japan	34,259	34,203	(0.0)
Taiwan	211,804	213,953	0.3
Korea	38,504	151,745	40.9
Indonesia	34,463	78,736	22.9
Singapore	147,480	252,847	14.4
Australia	54,200	91,726	14.1

Source: PATA Annual Statistical Report, 1993.

III. INTERNATIONAL TRAVEL AND THE U.S. MARKET

III. INTERNATIONAL TRAVEL AND THE U.S. MARKET

INTRODUCTION

This section of the report focuses on the U.S.'s role in the international tourism and travel industry. International visitor arrivals to the U.S. as well as the international travel originating from the U.S. are discussed in this section.

SUMMARY AND CONCLUSIONS

The U.S. plays a large and important role in the world's international tourism and travel industry. International visitor arrivals to the U.S. have increased every year for the past ten years, and the U.S. consistently garners more than its fair share of international tourism receipts. While the U.S. may begin to see some erosion in its market share of international visitor arrivals with the increasing popularity of the East Asia Pacific region, both inbound and outbound travel in the U.S. are expected to continue increasing, though at more modest growth rates than in past years.

INTERNATIONAL TRAVEL AND THE U.S. MARKET

The U.S., including Hawaii, has benefitted from the surge in international tourism, with an estimated 8.9 million European travelers and 5.4 million Far Eastern visitors representing 47 percent and 29 percent of the total U.S. international market respectively, travelling to the U.S. in 1993. These results mark ten consecutive years of record growth of inbound travel to the U.S. The U.S. market share of international visitor arrivals peaked in 1991 at 9.4 percent, but is

expected to decline some as the world starts travelling more. Growth in international travel to the U.S. is expected to continue to be robust for the next three years, though at a pace somewhat slower than previous years, with growth in arrivals forecasted to be approximately 10 percent annually. Table 12 presents summary statistics of the U.S. travel market between 1989 and 1994, as reported by the U.S. Travel Data Center.

Inbound:

Total foreign visitors to the U.S. in 1993 reached a new record of 45.6 million. The U.S.'s largest inbound market is Canada. Visitors from Canada peaked in 1991 with 19 million travelers, or 44 percent of all international arrivals. The number of Canadian visitors, however, declined by three percent in 1992 and by another six percent in 1993. Forecasts by the U.S. Travel Data Center estimate 17 million Canadian travelers to the U.S. in 1994. In contrast, Mexico has shown steady growth of seven percent in 1992 and twelve percent in 1993. The number of Mexican visitors to the U.S. is expected to surpass 10 million in 1994.

Overseas visitors to the U.S. increased 6.0 percent in 1993 to 18.8 million. This is a doubling of the number of tourists from overseas countries in the past seven years, from 8.8 million in 1986. Table 13 presents international visitor arrivals to the U.S. for the top overseas markets. Japan remains the top generator of overseas travelers to the U.S., although the number of Japanese visitors experienced a ten percent decline in 1993 due to domestic economic and political uncertainties. A recovery is anticipated for 1994, and visitor arrivals are forecasted to surpass the 3.4 million mark by 1995.

With respect to growth markets, South and Central America are leading the way with growth rates of 18 and 16 percent in 1993, respectively. Favorable growth is also expected to occur from Argentina and Korea, which by 1994 will become the number nine and ten markets, respectively. Both will see growth rates of over 200 percent since 1989.

Significant changes are also occurring in the second-tier markets. In 1994, Brazil will become the number five market for travel to the U.S., surpassing Italy, and Venezuela will move to the number seven spot, replacing Australia.

Table 12
1994 Outlook for Travel and Tourism Market
U.S. Travel Data Center

	1989	1990	1991	1992	Estimated 1993	Projected 1994	Five Year Growth
Arrivals in Millions:							
Canadian travel to the U.S.	15.3	17.3	19.1	18.6	17.5	17.4	13.7%
Mexican travel to the U.S.	7.2	7.2	7.7	8.3	9.2	10.2	41.7%
Overseas visitors to the U.S.	14.0	15.1	16.2	17.8	18.9	20.5	46.4%
Total international travel to U.S.	36.5	39.6	43.0	44.7	45.6	48.1	31.8%
U.S. share of world international tourism arrivals	8.5%	8.7%	9.4%	9.4%	9.1%	9.0%	—
U.S. share of world international tourism receipts	17.2%	16.9%	16.5%	19.3%	16.6%	15.7%	—
Travelers in Millions:							
U.S. travel to Canada	12.2	12.3	12.0	11.6	11.6	11.9	-2.5%
U.S. travel to Mexico	14.2	16.4	15.0	16.1	16.6	17.2	21.1%
U.S. travel to Overseas destinations	14.8	16	14.5	15.3	16.2	17.4	17.6%
Total U.S. outbound travel	41.2	44.7	41.5	43.2	44.8	46.5	12.9%
$Billions:							
Total Receipts from international visitors to U.S.	$46.0	$58.3	$64.2	$71.2	$74.2	$80.9	72.5%
Payments by U.S. Travelers Abroad	$41.7	$47.9	$45.3	$50.8	$49.1	$56.1	34.5%

Source: U.S. Travel Data Center, 1993

Table 13
U.S. Travel Data Center
Estimates and Projections of International Visitor Arrivals
For Top Overseas Markets

Origin	1993 (e) (000's)	Percent Change 1993/1992	1994 (p) (000's)	Percent Change 1994/1993	1995 (p) (000's)	Percent Change 1995/1994
Japan	3,301	-10.0%	3,327	1.0%	3,400	2.0%
U.K.	3,075	9.0	3,357	9.0	3,656	9.0
Germany	1,962	16.0	2,290	17.0	2,674	17.0
France	821	3.0	848	3.0	878	4.0
Italy	590	0.0	610	3.0	635	4.0
Australia	502	3.0	518	3.0	536	3.0
Brazil	576	21.0	640	11.0	697	9.0
Second Tier						
Venezuela	453	22.0	535	18.0	635	19.0
Spain	347	1.0	356	3.0	367	3.0
Argentina	402	17.0	476	19.0	563	18.0
Netherlands	365	7.0	394	8.0	424	8.0
Korea	427	25.0	509	19.0	536	18.0
Switzerland	344	7.0	368	7.0	394	7.0
Taiwan	387	21.0	456	18.0	534	17.0

Source: U.S. Travel Data Center, 1993

Outbound:

Outbound travel for the U.S. is expected to see relatively slow growth of around three to four percent in 1994. 1991 was the first year more foreign travelers visited the U.S. than U.S. travelers going abroad. This travel surplus is expected to remain relatively stable because of slower growth in both inbound and outbound markets. U.S. travel to Canada is forecasted to reach almost 12 million in 1994. Travel to Mexico, which has been the number one foreign destination for U.S. travelers since 1987, is expected to reach 17.2 million in 1994.

Destinations experiencing higher growth in U.S. visitor arrivals include China with a 16.8 percent increase annually from 1989 to 1993 to nearly 400,000 arrivals, and Indonesia with a 13.8 percent annual increase since 1989 to 134,000 arrivals. Table 14 presents U.S. outbound travel to various Asia/Pacific countries between 1989 and 1993.

The U.S. is by far the world's leading beneficiary of international visitor spending, earning more than twice as much as France which ranks second in the world travel market. International tourism receipts in the U.S. were approximately $71 billion in 1992. In 1994, international receipts are forecast to be approximately $81 billion. Over the past several years, the U.S.' share of international receipts has been twice as large as the arrivals share. However, as travel growth into the U.S. slows and visitors start spending more and more abroad, the U.S. will see an actual decline in market share of international travel receipts.

These international tourism receipts are becoming an increasingly larger part of the total U.S. travel industry. In 1989, total travel to the U.S. (domestic plus international) meant about $300 billion for the economy. In 1989, international travel comprised about 12 percent of this total. In 1993, however, international travel to the U.S. generated over 16 percent of the $380 billion spent within the country. According to U.S. Travel Data Center forecasts, by the year 2000, one in four dollars spent in the U.S. will be generated by the international traveler.

Table 14
United States
Outbound OverseasTravel, Including Hawaii
1989-1993

Destination	1989	1993	Compound Annual Growth Rate
Hawaii	3,991,550	3,391,600	-4.0%
Taiwan	220,594	266,678	4.9
China	214,956	399,748	16.8
Thailand	266,735	278,315	1.1
Hong Kong	624,400	755,666	4.9
Japan	531,625	533,401	0.1
Australia	260,700	280,825	1.9
Indonesia	80,196	134,304	13.8
Malaysia	73,266	78,926	1.9
Singapore	247,996	307,392	5.5
Korea	317,133	325,366	0.6

Source: PATA Annual Statistical Report, 1993.

Total spending for tourism services in the U.S. tracks closely with the country's GDP, usually showing a slightly faster rate of growth. With the world's largest economy, the U.S. can expect a long-term growth in GDP, and thus assure the long-term growth of the nation's total tourism industry. There will be continuing changes, however, within the individual sectors of the overall tourism industry.

IV. OVERVIEW OF LEADING TOURISM FORECASTS

IV. OVERVIEW OF LEADING TOURISM FORECASTS

INTRODUCTION

This section of the report presents brief synopses of several leading tourism and travel forecasts. Specifically, forecasts by the World Tourism Organization, International Air Transport Association, Airbus Industrie, and Boeing are discussed as they relate in particular to the East Asia and Pacific region.

SUMMARY AND CONCLUSIONS

Each of the leading tourism forecasts discussed in this section cite the East Asia/Pacific region as the fastest growing region in the world for international travel. As a destination, source market, and overall air traffic region, the forecasts are consistently bullish about the East Asia/Pacific through the next decade.

WORLD TOURISM ORGANIZATION FORECASTS

Continuing demographic and technological changes are expected to further stimulate tourism growth, despite the current economic malaise. Table 15 presents the WTO's forecast of international tourism growth through the year 2010. While worldwide tourism is expected to grow at an annual average of 3.7 percent per year, the East Asia/Pacific region is expected to lead the world at 7.3 percent annual growth rate. While Europe will continue to be the most

visited tourism destination in the world with a projected total of 476 million tourists in the year 2010, the East Asia/Pacific market is expected to gain the most in terms of market share, with one-fifth of total tourist arrivals worldwide by 2010.

Encouraging the upward trend in East Asia/Pacific demographics include an aging and wealthier population, the emergence and acceptance of women in the workplace leading to more affluent two-earner families, later marriages resulting in a significant singles market with higher disposable incomes; the lowering of immigration barriers which impede travel, greater dissemination of travel information through increased use and availability of telecommunications to the general population, and continued exceptional economic expansion throughout the region over the long term.

These factors will all contribute to strong intra-regional flows. As many outbound travel segments in the region are still in their infancy, the potential for rapid growth is much stronger than in the more mature markets of Europe and North America.

Among the different destinations in the region expected to perform the best are Malaysia, Australia and Indonesia. Malaysia is considered to be well positioned to achieve healthy growth and has been investing heavily in tourism infrastructure and aggressive marketing and promotions. Its continuing strong economic growth should stimulate business travel from major industrialized countries. Australia should also see strong arrivals growth through the 1990's, especially out of Japan, and Indonesia's wealth of tourist attractions, combined with a forecasted strong economic development during the next several years, should also stimulate tourism growth.

The region's tourism planners also have their eyes on emerging travel markets in the former Soviet Union (almost one million visitors to China in 1992 were from that region), eastern Europe, South Africa, the Middle East and certain potentially affluent sectors of the population of countries such as Brazil and Mexico.

Table 15
Worldwide and East Asia/Pacific Forecast
Growth in Visitor Arrivals (in millions)

	Worldwide	East Asia Pacific	Market Share of World
1995	520,000	71,000	13.7%
2000	650,000	100,000	15.4%
2010	873,000	188,000	21.5%

Source: World Tourism Organization, Tourism to the Year 2000, 1993

IATA FORECASTS

The growth forecasts by the World Tourism Organization are quite similar to those presented in a recent study conducted by the International Air Transport Association (IATA) which projects that the total number of air visitor arrivals to the Asia Pacific region will increase by an average annual growth rate of 7.1 percent between 1993 and 2001. By the year 2010, the total is forecasted to exceed 148 million, at which time the Asia Pacific region will account for more than 50 percent of all global airline passenger traffic. Table 16 presents the IATA's airline visitor traffic forecasts for the Asia Pacific region between 1992 and 2010. Table 17 presents these forecasts by selected country for the same period.

Similar to the WTO, the IATA expects that Indonesia, Malaysia and Australia will achieve the highest levels of air visitor arrival growth among Asia Pacific countries. Average annual growth is estimated to be 10.6 percent in Indonesia, 9.4 percent in Malaysia and 9.1 percent in Australia. The IATA forecast differs from other forecasts in that it expects Europe to be the world source region with the highest rate of growth in air visitor arrivals to the Asia Pacific region by the end of this century, forecast to achieve 9 percent per year. North East and South East Asia, which generated a far greater number of arrivals in the region in 1992, will average 8.2 and 8.3 percent increases a year respectively, according to IATA forecasts.

AIRBUS INDUSTRIE AND BOEING FORECASTS

The Asia Pacific region also comes out well in the latest air traffic forecasts from Airbus Industrie and Boeing. Like WTO and IATA, Airbus has bullish forecasts for the Asia Pacific region, both in terms of intra-regional and inter-regional flows. Airbus estimates that passenger traffic between 1994 and 2006 will grow 8.0 percent per year in the Asia/Pacific region, as compared to 5.1 percent per year in Europe and 4.4 percent per year in the United States.

Within the Asia/Pacific region, China will out pace all countries in passenger traffic growth with an estimated annual increase of 13.7 percent. Hong Kong, Indonesia, the Philippines, South Korea, Taiwan and Thailand will also experience strong growth with increases ranging between 8.5 and 9.5 percent per year. Singapore and Malaysia are expected to achieve slightly lower growth rates of approximately 8.0 percent.

Table 16
Airline Visitor Traffic Forecasts for Asia Pacific Region (1), 1992-2010
International Air Transport Association

Market	1991 (000)	Average Annual Growth (%) 1992-1996	1997-2000	2001-2005	2006-2010
North East Asia	12,075	7.7%	8.8%	8.1%	7.7%
South East Asia	6,165	8.5	7.6	6.8	6.5
South West Pacific	2,117	4.9	4.4	4.1	4.0
Europe	4,952	8.9	9.2	7.7	7.1
North America	3,052	6.7	5.3	4.9	4.5
Rest of World	2,874	7.1	7.9	7.7	7.2
Total World	**31,236**	**7.7%**	**8.0%**	**7.3%**	**7.0%**

Note: (1) Asia Pacific region includes ten selected countries: Japan, Hong Kong, Singapore, Thailand, Malaysia, Taiwan, Australia, Indonesia, South Korea and India.

Source: International Air Transport Association (IATA), Asia Pacific Air Traveller Forecast January 1993.

Table 17
Airline Visitor Traffic Forecasts for Selected Countries, 1992-2010
International Air Transport Association

Destination	1991 (000)	Average Annual Growth (%) 1992-1996	1997-2000	2001-2005	2006-2010
Japan	3,448	7.1%	7.1%	6.9%	6.9%
Hong Kong	4,779	8.1	7.7	6.7	6.2
Singapore	4,256	7.9	6.5	5.8	5.3
Thailand (1)	5,013	7.7	9.6	8.2	7.5
Malaysia	2,615	9.4	9.1	8.5	8.2
Taiwan	1,837	3.6	4.9	5.5	5.5
Australia	2,370	9.1	9.1	8.5	7.9
Indonesia	2,570	10.6	10.6	8.8	8.5
Korea	3,105	5.3	6.4	6.2	5.9
India	1,243	6.2	6.1	5.8	5.4
Total Selected Countries	**31,236**	**7.7%**	**8.0%**	**7.3%**	**7.0%**
Rest of Asia Pacific	12,323	5.4%	4.2%	3.4%	3.0%
Total Asia/Pacific (2)	**43,559**	**7.1%**	**7.1%**	**6.4%**	**6.2%**

Note: (1) Thailand figure includes visitors by all modes of transport, and thus would tend to distort the picture.
Note: (2) Total Asia Pacific figure does not include air arrivals to China.

Source: International Air Transport Association (IATA), Asia-Pacific Air Traveller Forecast, January 1993.

As shown in Table 18, the Japanese domestic market is the only one expected to register below-average growth as excess production capacity, low consumer confidence, a very strong yen, and financial problems in the private sector impede economic recovery.

According to its 1994 Market Outlook, Boeing projects world travel will grow nearly 6 percent in 1994 as the global economy recovers. Travel growth is expected to average 5.9 percent per year through the year 2000 as the economy further improves and airline yields continue to decline. Boeing joins other forecasters in anticipating the largest addition to increased air travel coming from travel within the Asia/Pacific region. Between 1994 and 2013, travel within China is expected to grow at 10.2 percent per year, on average. Regional traffic within Asia/Pacific is projected to increase by 6.8 percent per year during the same time period. Boeing estimates that almost 2,000 new aircraft will be needed by the regional airlines through 2005 to meet this demand. In addition, Asia/Pacific travel to/from Europe and to/from the United States is projected to increase at a healthy seven percent per year. Table 19 presents Boeing's profile of traffic growth in major air travel markets from 1994 to 2013.

As the forecasters cited in the preceding paragraphs agree on strong growth for the Asia Pacific region, so do they agree that the region will not be without many challenges. Transportation infrastructure, availability of skilled labor, protection of natural resources and political stability will be key issues facing the region into the next century. Asia Pacific destinations will also have to deal with the paradox of tourists wanting unique experiences, and the pressure placed on providers of such product and services by the rising tide of international travel.

Table 18
Regional Passenger Traffic Growth Forecasts
Airbus Industrie
1992 - 2011

Routes:	Average Annual Growth (%) 1992-1996	1997-2001	2002-2011
Intra-Regional Flows within:			
Europe (incl. charters)	5.6%	4.7%	4.4%
North America	5.0	4.1	3.8
Asia Pacific	8.4	8.3	7.2
Australia	9.8	5.8	5.0
Africa	4.7	4.8	4.9
Latin America	6.4	5.2	5.0
India	6.3	6.3	6.3
Japan	4.5	4.9	4.7
Inter-Regional Flows			
Europe-North America	6.1%	4.0%	3.8%
Europe-Far East	8.8	7.5	6.4
Europe-Middle East	7.9	4.1	3.9
Europe-Africa	4.3	4.1	4.4
Europe-Latin America	6.7	5.9	5.1
North America-Asia Pacific	9.1	7.5	6.2
North America-Latin America	8.2	7.7	5.6
Middle East-Asia Pacific	6.4	5.5	4.8
Rest of world regions	5.9	5.5	4.8
Total World	6.3%	5.4%	5.1%

Source: Airbus Industrie, 1993 Forecast Report

Table 19
Traffic Growth in Major Air Travel Markets, 1994-2013
Boeing Commercial Airplane Group

Market	Average Annual Percent Increase
Asia - Europe	7.2%
Intra Asia Pacific	6.8
Trans Pacific	6.8
Intra Latin America	5.6
No. Amer.- Latin Amer.	5.5
Europe - Latin Amer.	4.8
North Atlantic	4.4
Intra Europe	4.4
Europe - Africa	4.3
North America	4.0

Source: Boeing Commercial Airplane Group, Current Market Outlook, 1994.

V. IMPLICATIONS FOR HAWAII

V. IMPLICATIONS FOR HAWAII

INTRODUCTION

As was noted in the previous section, tourism forecasts for the Asia Pacific region includes the Hawaiian Islands as these forecasts were prepared based on geographic boundaries rather than national affiliations. This section assesses the potential impact of the strong tourism growth expected for the region on Hawaii's tourism industry.

ASSESSMENT OF GROWTH POTENTIAL FOR HAWAII AND MAUI

Historical Tourism Growth

In assessing potential growth scenarios for Hawaii and Maui, it is useful to first analyze historical growth in Hawaii as it relates to growth in the East Asia and Pacific Region. Table 20 presents visitor arrival growth for the pre-world recession period 1985 to 1990, and growth for the period 1985 to 1993 inclusive of this most recent recessionary period.

Table 20
Comparison of Visitor Arrival Growth
For East Asia/Pacific and State of Hawaii (in 000s)

	East Asia/Pacific			State of Hawaii		
	1985	1990	CAGR	1985	1990	CAGR
Pre-Recession:	27,447	46,500	11.1%	4,884	6,971	7.4%
	1985	1993	CAGR	1985	1993	CAGR
Including Recession:	27,447	68,548	20.1%	4,884	6,124	4.6%

Source: Travel Industry World Yearbook 1991; Travel Industry World Yearbook 1993; 1993 Hawaii Visitor Industry Annual Report

CAGR: Compounded Annual Growth Rate

As Table 20 suggests, the Asia Pacific region enjoyed double digit tourism growth during both the pre- and post recession period. During the pre-recession period, Hawaii compared somewhat lower than the Asia Pacific region as a whole, due in part to Hawaii being a more mature destination. However, Hawaii compared favorably to other regions of the world. and exceeded the average world growth rate of 5.6 percent during the 1985 to 1990 pre-recession period.

When the 1990 to 1993 recession years are added to the data set, Hawaii falls below the world average of 5.5 percent, and well below the average of 12.1 percent for the Asia Pacific region. This reflects primarily the strong intra-regional travel within the Asia Pacific region when compared to the drop in travel from Japan and the western U.S. due to the severe recession. This suggests that, while Hawaii is classified as an Asia Pacific region, there are significant differences in "push and pull" factors that drive tourism in Hawaii versus the rest of the Asia Pacific region.

Market Profile of Hawaii's International Visitor Market

While Hawaii appears to be on the lower growth scale within the Asia Pacific region, Hawaii is still able to benefit from the region's dynamic tourism growth. For example, Hawaii has consistently been among the top three destinations of the Japanese travelers worldwide, and is becoming a major destination for visitors from Korea and Taiwan. During the 1994 Pacific Asia Travel Association conference held in Seoul, Korea in February, Taiwan and Korea were highlighted as the two most promising outbound source markets after Japan.

Research presented at the conference suggested that outbound travel from these two countries would average between five to seven percent per year through the rest of the decade. Economic Research Associates of San Francisco, which authored the 1993 research study point to a fast rising per capita income; longer vacation periods; two-earner families; and easing of outbound travel restrictions in both countries. As Table 21 demonstrates, these two countries far exceeded their projected growth rates during the last four years to Hawaii. This could indicate that Hawaii is achieving greater penetration into these two markets than its competitors along similar lines as the Japanese market. In addition to international visitors from the Asia Pacific region, Hawaii also benefits from growing arrivals from Europe, and in particular Germany.

Table 21
International Visitor Arrivals to Hawaii
1989 to 1993

Origin	1989	1993	Compound Annual Growth Rate
Japan	1,319,340	1,591,920	4.8%
Taiwan	43,870	75,780	14.6%
Korea	38,330	92,990	24.8%
Australia	186,540	156,560	-4.3%
New Zealand	91,280	47,350	-15.1%
United Kingdom	94,860	87,200	-2.1%
Germany	41,900	91,120	21.4%
Canada	352,860	311,900	-3.0%
Other Foreign	178,590	277,810	11.7%
Total Foreign	2,347,570	2,732,630	3.9%

Source: Hawaii Visitors Bureau, Annual Statistical Reports, 1989 and 1993

Table 22 presents a comparison of international visitor arrival trends to Hawaii and the United States as a whole for the recession period 1990 to 1993. While Hawaii appears to have performed better than the U.S. overall in travel from many of the top international markets in 1992, the State did experience some significant downturns among the Eastern markets in 1993. Growth in travel from two big European markets, the U.K. and Germany, was also greater in Hawaii than in the U.S. overall in 1992, though some ground was lost in 1993 from the U.K. Growth in travel from Australia and New Zealand has been slow for both Hawaii and the U.S. overall.

Hawaii has seen a dramatic fall-off of international flights as international carriers such as Singapore Air, Malaysian Air and Cathy Pacific all over-fly Hawaii from Asia to the U.S. mainland. Airlines such as these have international bilateral agreements and landing rights to Honolulu in place, but due to economic and strategic considerations, these national air carriers chose to end air service to Hawaii. It is therefore not possible to fly direct into Hawaii from long-haul gateway cities in Southeast Asia due to perceived lack of demand from these air carriers, let alone justifying flying direct to Maui. As Table 22 suggests, with the exception of Korea, Japan and Australia, and Taiwan, there currently appears to be minimal demand for regular direct service from Hawaii to longer-haul destinations in Asia.

Table 22
Hawaii and U.S. International Visitor Arrival Trends
1991 to 1993

	Percent Change To Hawaii			Percent Change To United States		
Origin	91/90	92/91	93/92	91/90	92/91	93/92
Japan	(3.8)	18.2	(2.8)	2.7	10.0	(9.6)
Taiwan	(1.1)	21.9	(2.7)	12.0	19.8	20.6
Korea	8.7	34.7	9.5	31.7	22.7	25.1
Australia	(8.7)	4.5	(25.4)	1.1	3.5	3.1
New Zealand	(32.2)	0.3	(25.4)	(16.4)	(4.0)	(0.2)
United Kingdom	0.2	17.2	(12.1)	11.2	13.2	8.9
Germany	(12.7)	74.4	10.3	18.9	18.3	16.0
Canada	(12.3)	5.2	(0.8)	10.7	(2.7)	(5.8)
Mexico	n/a	n/a	n/a	5.9	7.0	12.0
Total	(1.4)	(5.2)	(6.0)	8.5	3.9	2.2

Source: Hawaii Visitors Bureau and U.S. Travel and Tourism Association
Annual Statistical Reports, 1990 to 1993

Future International Tourism Potential for Hawaii

Demographic changes occurring within the Asia Pacific region point to a robust outbound travel market for the medium and long term. While tourism forecasts appear strong for the Asia Pacific region, Hawaii will likely not achieve the high growth rates forecasted despite being located in the region. Time cost of travel for much of the market, substantial regional competition and limited direct flights to points beyond Japan will likely prevent Hawaii from sharing fully in the explosive growth projected for the region. Furthermore, the majority of Hawaii's market is from the U.S. mainland with different market dynamics and not the Asia Pacific region. The U.S. mainland market itself has strong competition from the Caribbean, Mexico, Florida, Nevada and California.

Following the historical and current comparative international patterns, growth, the Asia Pacific region and Hawaii will likely continue to out-perform other regions, including the Americas and Europe in visitor arrival growth. Hawaii will certainly benefit to some extent from this extraordinary growth with certain Asia Pacific markets, such as Korea, Taiwan and Japan. However, most of the forecasts for the Asia Pacific region are primarily driven by travel within East and South Asia, and increasing direct flights from the U.S. mainland to and from Asia itself.

Based on past analysis of historical arrivals to Hawaii and demographic changes occurring in Hawaii's in-bound markets, we believe the visitor industry will likely see moderate growth rate in arrivals of three to four percent a year. This analysis is based in part on the remarkable and consistent growth in visitor arrivals that occurred from 1960 through 1985. During this period, each five year interval yielded 1 million new visitors, or 200,000 new visitors a year for a compounded annual growth rate of four percent. This growth rate is also consistent with Coopers & Lybrand's Tour Wholesaler and Hotel Reservation survey through 1997, which indicates growth of almost four percent annually. While this is a medium term survey, we also do not foresee any milestone events, such as the 1986 80 percent appreciation of the yen in combination with Japan's 10 million visitor program that drove much of the tourism increases of the late 1980's.

COMMENTS REGARDING THE STATE OF HAWAII SERIES M-K VISITOR PROJECTIONS AND THE ARIES 1994 VISITOR PROJECTION

After having discussed the potential for future visitor arrival growth for Hawaii, presented below is a brief analysis of the State of Hawaii Series M-K Visitor Industry Projections and the Aries 1994 Visitor Projections.

- **State of Hawaii Series M-K Visitor Industry Projections**

The State of Hawaii Series M-K Visitor Industry Projections were prepared by the Department of Business, Economic Development and Tourism in November 1988. The projections estimated that there would be approximately 11.5 million visitors to Hawaii by 2010. Since the release of the projections, Hawaii suffered its severest decline in its tourism history, falling from almost 7 million visitors in 1990 to just over 6.1 million visitors in 1993.

The Hawaii Visitors Bureau has estimated that visitor arrivals to Hawaii in 1994 could rebound to as high as 6.4 million visitors. However, the Series M-K projections also project that 1995 arrivals will reach over 7.7 million by the end of 1995. This would require a growth of over 21 percent for next year to keep the Series M-K projections on track. Such a growth rate would appear to be highly unlikely, particularly given the increasing international tourism competition, declining seat capacity to Hawaii, and a more experienced and value conscious traveler.

Assuming the 6.4 million visitor arrival estimate is relatively accurate, the Series M-K growth needed to reach the projected 11.5 million visitors by 2010 would require a growth rate of almost 4 percent. While the period 1970 to 1985 averaged approximately 5 percent compounded annually and the 1985-1990 hyper growth period averaged 8 percent, we should note that it was easier to generate larger growth rates in earlier years due to a smaller tourism base. It is therefore more meaningful to analyze absolute numbers of visitor arrivals.

Since 1965 to 1985, visitor arrivals increased at a very consistent 1 million new visitors every five years, or 200,000 new visitor each year on average. During the hyper growth period, of 1985-1990, the incremental new visitors increased by over 2 million, or 400,000 new visitors each

year for the period. This growth was fueled in part by the Japanese visitors, which doubled from over 700,000 in 1985 to over 1.4 million in 1990.

To reach the Series M-K level of visitors for 2010, there would need to be an annual increase in visitor arrivals of 340,000 per year, assuming 1994 visitor arrivals reach 6.4 million. This would compare with the approximately 200,000 new visitor arrivals on average since 1965 and the 400,000 new visitor arrivals for the period 1985 to 1990. In comparing five year incremental growth for 1995 to 2010, new visitor arrivals would have to achieve approximately 1.7 million new visitors for each five year period. Again, this compares to the very consistent 1 million new visitors for every five year interval since 1965 through 1985, and over 2 million for the period 1985 to 2000. In essence, for the Series M-K projections to be achieved, it would be expected that much of the forces that drove demand during the hyper growth period would need to be present in the marketplace between 1995 and 2010.

We note that the growth needed to reach the projected Series M-K levels is somewhat below the 1985-1990 hyper-growth period. However, given the current changes in the tourism industry previously discussed, the Series M-K levels appear to be highly aggressive and unlikely given the need for the market to approximate the unprecedented demand levels experienced between 1995 and 1990.

- **1994 Aries Visitor Projections**

We conducted a similar analysis of the 1994 "Low" Aries Visitor Projections as presented in the CRI report. We found that, while the Aries forecast is also somewhat aggressive, the projected levels of visitor arrivals were more reasonable when compared to the Series M-K projections.

The Aries forecast was lower than the Series M-K forecast by almost 6 percent of total visitor arrivals in 2010. More importantly, the Aries projection averaged 297,000 annual new visitors when compared with 340,000 new visitors as indicated by the Series M-K projections. This represents almost a 16 percent decrease of new visitors projected per year annually from 1995 to

2010, and is closer to the historical incremental arrivals of over 200,000 between 1965 to 1985. On a five year incremental basis, the Aries projection anticipates 1,485,000 visitors for every five year incremental period. Again, this compares to the approximately 1 million annual new visitors to Hawaii for each five year period from 1965 to 1985, and over 2,000,000 new visitors for 1985 to 1990. This demonstrates that while the Aries projections are somewhat aggressive, they are not out of the realm of possibility when compared to historical performance, and appear to be more realistic than the series M-K projections.

- **Projections in Relation to WTO Projections for the East Asia and Pacific Region**

Although we emphasize that it is more important to analyze the trends in absolute numbers of visitor arrivals, it is interesting to compare the projected growth rates under both the Series M-K and Aries projections with the WTO projections for the East Asia and Pacific Region. As Table 20 demonstrates, Hawaii performed on the lower end of the growth for the region. During the 1985 to 1990 period, the region grew by 11.1 percent compared to 7.4 percent for Hawaii, or about two-thirds of the region's growth. If we include the recessionary period through 1993, the region grew by 12.1 percent compared to 4.6 percent for Hawaii, or about 38 percent of the region's growth.

Comparison of these growth rates indicates that Hawaii shares only peripherally in the region, reflecting Hawaii's stronger Westbound market in its market mix. As indicated earlier, North America's growth rate is expected to be about 3 percent or less through 2010. According to the WTO, approximately two-thirds of the growth is expected to be generated within the region, with most of the growth occurring within the East Asia sector as opposed to the Pacific sector.

This is due not only to the new resorts and business centers being developed throughout the East Pacific region, but also because of the extensive air links currently and expected to be place in the future. Hawaii has not shared in this air route expansion, and in fact has found itself being overflown between vital city pairs. For example, there is no existing direct service between vital markets such as Singapore, Hong Kong, Bangkok and Kuala Lumpur. Due in part to these

factors, it is highly likely that the trends of Hawaii lagging in growth within the region will continue for the forecasted period.

When comparing the growth rates under the Series M-K and Aries projections to that of the region, the Aries growth rates again appear more reasonable. The WTO forecasts a compounded 7.3 percent annual growth rate in visitor arrivals for the region. Under the Series M-K growth rates, to reach 11.5 million by 2010 Hawaii would require a compounded annual growth rate of 4.0 percent, or 55 percent of the region's growth assuming 6.4 million visitors for 1994. The Aries forecast assumes a 3.6 percent growth rate, or 49 percent of the region's growth.

- **Other Factors Impacting Hawaii Tourism Growth**

The factors that impact visitor arrival growth are highly complex and dynamic. In general, the smaller and more concentrated the market being projected, the greater the potential variability in the projection as smaller markets tend to have higher reaction or "swings" from these factors. For Hawaii, factors that can potentially have significant impact on visitor growth include:

- competing resort destinations in the East Asia and Pacific Region, as well as competition from Mexico and the Caribbean;
- competing tourism products, such as expansion of cruise markets both in Asia and elsewhere;
- continued overflights of Hawaii between the U.S. mainland and destinations in the East Asia and Pacific region;
- continued lack of direct service with principal cities in the East Asia region, including Singapore; Bangkok; Hong Kong and Kuala Lumpur.

APPENDIX A

Role of Airports and Nonstop Flights in Determining Visitor Arrivals

4. ROLE OF AIRPORTS AND NONSTOP FLIGHTS IN DETERMINING VISITOR ARRIVALS

The purpose of this section is to assess the role airports and nonstop flights have on visitor arrivals. In discussing the role of airports and nonstop flights on visitor arrivals, a framework first needs to be developed to gain an understanding of visitor travel motivations and the travel distribution system. Comparative analyses will also be presented to highlight and reinforce the concepts presented. This Section will be comprised of five main sub-sections as follows:

- "Push/Pull" Factors of Travel
- Visitor Motivations to Travel
- Role of the Air Travel Distribution System
- Analysis of Comparable Airports
- Conclusions Regarding Roles of Airports and nonstop Flights

4.1 "PUSH/PULL" FACTORS OF TRAVEL

To facilitate discussion of potential impacts and roles of airports and nonstop flights, it is essential to gain a fundamental understanding of the primary factors that impact demand for travel. In assessing travel demand, there are a number of key factors that impact demand (Edgell and Smith 1993). These factors can be described as "push" factors which drives demand from source markets, and "pull" factors in which demand is created from the destination itself. This demand "push/pull" model is graphically presented below as follows:

Exhibit 4-A
BASIC CONCEPTUAL TRAVEL DEMAND PUSH/PULL MODEL

PUSH FACTORS ---------> DEMAND FOR TRAVEL BY POTENTIAL VISITOR <-------> PULL FACTORS -----> DEMAND FOR DESTINATION

Source: Edgell & Smith; Coopers & Lybrand

4.1.1 PUSH FACTORS OF DEMAND

Push factors are movements within source markets that can influence the demand for overseas travel. The extent of strength of push factors for each source country generally is dependent on how far and fast the source country has evolved economically and socially to world class standards.

- **Per Capita Gross Domestic Product (GDP)**

  Per capita gross domestic product, which measures average wealth per individual for a given geographical region, is an obvious major factor in creating demand for overseas travel. A 1993 study by S.G. Warburg Securities (Far East) Ltd. determined that the take-off point for Asian markets for sustained overseas travel occurred when per capita GDP reached $4,000 to $6,000 per year. Countries such as Japan, Hong Kong, Singapore and certain cities within Taiwan and Korea have long ago reached that level and have become major source inter-regional markets within the East Asia and Pacific Region.

  Certain southern coastal cities in China such as Guangzhou are also approaching this per capita GDP level and are now becoming major source markets for Hong Kong and Singapore. While short haul travel will most likely occur for younger economies such as China, long haul travel, including to Hawaii, is already occurring for the more mature and affluent Asian countries.

- Household Income

  Another 1993 study by the Economics Intelligence Unit (EIU) concluded that sustainable long haul travel occurs when household income reaches $35,000 or more. The EIU estimated that the Asia Pacific region had over 50 million households at this income level, and that such income will rise in tandem with GDP growth of many of these "Newly Industrialized Countries." The EIU concluded that this group will increase in tandem with the rise in GDP ranging from five to nine percent throughout the rest of the decade. This estimate is further corroborated by the Asian Development Bank, which expects the overall region to grow in GDP by over seven percent through the year 2000.

- **Savings Rate**

  In addition to rising wealth, the extremely high individual savings rate of many of these countries creates substantial disposable income for discretionary purchases, including travel. Savings rates range from 17 percent per Japanese households (JTB Report "All About Japanese Travelers" 1992) to 47 percent for Singapore (Singapore Economic Research Institute 1993 Annual Report). These savings rates compare with the U.S., in which the savings rate has been fluctuating between 4.5 percent and 5.5

percent over the past several years. Thus, the affluence of these travelers will certainly benefit Hawaii with respect to potentially higher visitor expenditures from these markets, as we have already seen from the Japanese market.

- **Increase in Leisure Time**

  Along with rising wealth has been the increase in leisure time as vacation days allotted to workers have been steadily increasing. This increase in leisure time along with increasing wealth has helped create a growing overseas travel market. Increasing the length of vacation time also promotes longer-haul travel as the individual is able to afford longer travel times to reach his or her destination, as well as spending more time at that destination.

- **Maturity of Outbound Travel Market**

  Under this context, maturity refers to the experience the source outbound market has with travel. The outbound markets in the Asia Pacific markets are relatively new, with rising per capita GDP reaching levels of travel only for the past ten to fifteen years. At the beginning, most overseas travel is primarily short haul travel such as Hong Kong to Taiwan or Singapore. Often, the purpose of travel is for business, religious pilgrimage or visiting friends and relatives.

  As the market matures, becomes more affluent and experienced, longer-haul travel becomes more prevalent. Such is the case of the Japanese travel market, which initially opted for short haul travel to Thailand, Guam and Hong Kong; then matured to medium haul travel to Hawaii; and are now traveling in record numbers to Europe and the east coast of the U.S.. Currently, evolving new markets for Hawaii are primarily the Taiwanese and Koreans.

- **Lifting of Outbound Travel Restrictions**

  Another push factor for travel has been the lifting of restrictions for outbound travel for many of these countries. These restrictions included lifting of exit visas for residents traveling abroad and the easing of currency restrictions that residents may carry to destinations.

- **Evolution of National Air Carriers**

  The evolution of national air carriers for these Asia countries has also helped spur outbound travel to overseas destinations. With national air carriers, these countries are no longer dependent upon foreign carriers for medium and long haul travel, and now have the freedom as a nation to negotiate landing rights with any destination it desires.

4.1.2 PULL FACTORS OF DEMAND

An analysis of demand "pull" factors also need to be considered. These pull factors needs to be analyzed not only for the destination under consideration, but also within the context of competing destinations. The strength of each competitive attribute and "pull" factor are major determinants of how much market share each destination will receive within the tourism market place. The following represents an overview of the pull factors that need to be considered in assessing potential tourism markets, and its implications for Hawaii and Maui:

- **New Destination**

  New destinations clearly can spark interest in travel markets, particularly if they are portrayed as exotic, unspoiled or culturally rich. While the presence of tourism infrastructure is a necessity for successful large scale demand generation, new destinations by their nature infer that the destination has yet to be over-taken by mass tourism. From this perspective, Hawaii and Maui may be at a disadvantage given the multitude of "new" destinations that have and are being developed throughout the Asia Pacific region. This may be particularly true given the relative time savings that many of the Asia Pacific destinations will have with other Asia source markets. On the other hand, Hawaii and Maui continues to have a strong positive image with outstanding tourism infrastructure and a proven track record as a successful visitor destination.

- **New Resorts/Attractions**

  New resorts and attractions can act as catalysts for tourism demand for both new destinations and mature destinations such as Hawaii. As a significant number of resorts in Hawaii and Maui consistently rank among the top resorts in the world by Conde Nast Traveler Magazine in its annual readership poll, new resorts, attractions and activities would generally receive worldwide attention. This would particularly peak the interest of repeat visitors to Hawaii that wish to try the new resort or golf course. Such demand is known as "induced" demand, whereby a new product, coupled with an effective marketing campaign, will be able to induce new demand above and beyond normal demonstrated demand. We should note, however, that other "maturing" destinations are also adding new visitor products, including golf resorts, theme parks, gaming. This competition also occurs within Hawaii. Exhibit 4-B presents visitor arrivals by island for the period 1985 to 1993. As the analysis indicates, Maui arrivals tapered somewhat during the latter half of the 1980's and into the 1990's due in part to the numerous new resorts on the island of Hawaii.

- **Quality of Experience of Destination**

  Quality of experience is extremely important as it dictates whether the experience is of world class standard, and whether the destination will be able to continue to grow its market base. Through 1992, the Hawaii Visitors Bureau published a Visitor Satisfaction Report which surveyed consumer satisfaction with Hawaii and Maui. The

Exhibit 4-B
Visitor Distribution By Island - Overnight and Longer
Percent Changes

Year	Oahu Total	Percent Change	Maui Total	Percent Change	Kauai Total	Percent Change	Hawaii Total	Percent Change
1985	3,999,640	---	1,999,110	---	981,580	---	760,360	---
1986	4,491,030	12.3%	2,205,870	10.3%	1,196,650	21.9%	865,930	13.9%
1987	4,583,500	2.1	2,134,780	(3.2)	1,133,840	(5.2)	872,550	0.8
1988	4,844,660	5.7	2,204,050	3.2	1,181,710	4.2	885,360	1.5
1989	5,049,800	4.2	2,514,100	14.1	1,291,230	9.3	1,120,540	26.6
1990	5,350,630	6.0	2,390,160	(4.9)	1,285,930	(0.4)	1,170,900	4.5
1991	5,048,550	(5.6)	2,272,240	(4.9)	1,267,620	(1.4)	1,188,630	1.5
1992	4,884,270	(3.3)	2,285,410	0.6	877,060	(30.8)	1,142,340	(3.9)
1993	4,504,900	(7.8)	2,209,980	(3.3)	571,760	(34.8)	1,120,040	(2.0)
Compound Annual Growth Rate								
1985 - 1990	6.0%		3.6%		5.6%		9.0%	
1985 - 1993	1.5%		1.3%		-6.5% *		5.0%	

Notes: * Hurricane Iniki struck Kauai in September 1992, and its aftermath is still impacting visitor arrivals to the island.
Visitor totals to all islands do not equal total visitors to the State due to multiple stays.

Source: Hawaii Visitors Bureau

last satisfaction report indicated that both U.S. and Japanese visitors rated their Hawaii vacation as either above average or excellent, with a 92 percent and 84 percent rating, respectively. For the Island of Maui, the approval rating of above average or excellent was 93 percent and 85 percent, respectively, for the U.S. and Japanese market. When polled as to whether they would recommend Hawaii as a destination to a friend or relative, 98 percent of those polled that they would likely do so. These extremely high satisfaction ratings demonstrate the superior quality of experience for the Hawaii and Maui visitor product, and represents a high demand pull factor.

Attractiveness Relative to Other Destinations

As new destinations reach world class standards, international competition begins to rise. A 1991 study conducted by the HVB indicate that Hawaii fares very well against competitive destinations. However, concerns are now being raised regarding the rapidly rising quality of experience for Asia destinations, which were not part of the 1991 study. In particular, service and quality levels of many Asian hotels are considered to be on par or superior to U.S. hotels, including Hawaii. Still, other experiential concerns remain with these other destinations, including safety, sanitation, infrastructure, and consistency in experience.

Culture Orientation

The culture of the destination also plays an important pull factor for demand. Part of the desired experience of traveling is to experience new customs, food and heritage that is quite different that the visitor's home. Hawaii is able to blend a unique mix of culture both exotically foreign to the visitor, as well as having cultural elements that are also familiar. This is particularly true for the Asian visitor, from which much of Hawaii's people and culture are drawn from, in addition to the native Hawaiian culture. Another advantage that helps demand is that Hawaii offers a tropical exotic location with all the conveniences of a U.S. state. This is an attractive feature for both U.S. and international visitors alike.

World Class Destination

While there are new destinations being developed in Asia and other parts of the world, a distinction should be made between world class destinations and regional destinations. Hawaii is a world class destinations in that there are features, terrain and culture that are wholly unique and cannot be duplicated. Many of the destinations that are being developed elsewhere offer little else than sun and sand. This is not to downplay other formidable competitive regions in the Asia Pacific region, such as Phuket, Thailand and Bali, Indonesia. However, when regional destinations are eliminated from the competitive set, Hawaii still fares well among the competition as a truly international and world class resort.

- **Life Cycle of the Destination**

Perhaps the greatest issue for Hawaii is that as a resort destination, we are on the downward verge of the resort life cycle. In its simplistic form, the resort life cycle moves from Discovery=>Growth=>Investment=>Mass Tourism=>Decline. After several decades as a mass tourism destination, we are beginning to witness the toll of tourism on our infrastructure, including concerns over water availability, traffic congestion, resident/visitor competition for land use, and other social and environmental issues. Some new destinations such as Phuket are being master-planned with the intention of avoiding mass tourism and opting for "sustainable" tourism instead. Maui is currently nearing its mature stage, although new resort development along the Wailea resort district and upgrading of several major properties and businesses in Lahaina have helped rejuvenate Maui's product offering.

Hawaii's greatest challenge now is for thoughtful reinvestment and long-term planning to preserve and enhance our visitor product. These issues are now becoming apparent and are moving to the forefront with planning efforts such as the Tourism Congress. None-the-less, as the new resort destinations develop, they will inherently draw demand as the international tourism industry "discovers" new experiences and travel destinations.

- **Infrastructure**

Tourism and overall infrastructure plays an important role in creating demand. Without infrastructure such as hotels, activities and attractions, transportation systems, and a trained work force, destinations would not be able to compete on an international level. While Hawaii's infrastructure was beginning to strain during the height of our tourism boom, it is still considered to have one of the best tourism infrastructure systems in the world. Although reinvestment into our tourism infrastructure is a key to maintaining our future competitive edge, we still enjoy a competitive advantage over much of our competition.

- **Safety**

Of the numerous and frequent travel surveys given, safety has always come out as one of the primary factors in choosing a destination. In fact, a 1994 survey by Travel Weekly identified the number one concern in choosing a destination was personal safety. The second choice, not surprisingly was the safety of the destination itself. One of Hawaii's major advantages is that it is considered by many travelers and travel professionals as one of the most safest destinations worldwide. It is interesting to note that, particularly for repeat Japanese visitors, safety was one of the most common positive attributes given by the visitor. This is clearly a major advantages over many newer destinations, where travel alerts are routinely posted for more untraveled areas of that particular country.

- **Cost of Travel, Accommodations and Subsistence**

An obvious determinate of demand is the cost of travel to the destination. With air travel and creative tour packaging , travel products have become extremely competitive in the world travel markets. While Hawaii has developed a reputation as an expensive destination, in actuality hotel rooms in many Asia destinations such as Hong Kong and certain areas of Thailand are actually higher than Hawaii. With Hawaii's hotel rooms selling on average at about $105 per night per Coopers & Lybrand's most recent hotel survey, Hawaii is actually vary comparable with many of its competitive destinations both nationally and internationally. Currency exchange movements have also made Hawaii more affordable for many markets, particularly the Japanese and Taiwanese markets where the dollar has been trading at much lower levels than in previous years.

- **Time Cost of Travel and Air Access**

In addition to monetary considerations, time cost of travel is also a factor impacting demand. Time cost between Japan, our closest major Asia destination, and Hawaii approximates eight hours on point-to-point travel. Points beyond Japan such as Bangkok, Singapore and Hong Kong require an additional four to six hour of flight time. Similarly, Chicago, a major U.S. hub and feeder city for travel to Hawaii, is also approximately eight hours away from Hawaii, with additional flight times to points beyond Chicago.

Incumbent on travel duration is the availability of nonstop air routes between city pairs of travel. As aircraft technology advances and bilateral air service agreements are extended, the ability to fly direct from major city pairs can substantially reduce time travel. This is particularly true for long haul travel where stop-overs for refueling can be avoided. In this respect, Hawaii is at a major disadvantage as air technology and new bilateral agreements have led to substantial declines in air service to Hawaii.

During the last five to seven years, international service to Hawaii has been reduced drastically due to over-flights between the U.S. and major Asia destinations. Most flights into East Asia now are required to connect through Japan, although we are now beginning to see the return of direct flights from certain growing Hawaii markets such as Korea. As discussed previously, however, most outbound markets from farther destinations in East and South Asia continue to be relatively marginal to warrant regular service between Hawaii and destinations such as Singapore and Bangkok.

4.2 VISITOR MOTIVATIONS TO TRAVEL

Once the ability and desire for travel has been established by the traveler, the traveler's motivation needs to be understood as it determines how the travel decision is made. These motivations can generally be segmented into the two broad market groups of business and leisure travelers (Smith 1989). As Hawaii is primarily a leisure destination, we will concentrate our discussion on the leisure segment.

Leisure travel decisions are made based on five major categories (Gearing, Swart, and Var 1974). These categories are:

1. natural factors
2. social factors
3. historical factors
4. recreational and shopping facilities
5. tourism infrastructure (including access and transportation), food and shelter

More recent surveys of leisure travelers have supported this travel decision making theory. In fact, a distinct hierarchy of travel decision making variables have begun to emerge in both academic research (Hu and Ritchie 1993) as well as consumer research, as discussed below.

4.2.1 HIERARCHY OF LEISURE TRAVEL DECISION MAKING

A hierarchy of decision criteria has emerged for leisure travel. This hierarchy appears to cross cultural and geographical boundaries as most travelers, regardless of origin, seek the same end result; namely leisure recreation or educational travel. Furthermore, the lead times for leisure travel are typically much longer than business travel, and therefore the motivations and planning for leisure travel are generally well thought out. The following are the results of recent consumer research that profiles the decision hierarchy for leisure travelers. These surveys will be presented first for the general U.S. and Japanese travelers. We will then discuss actual westbound and Japanese experiences for the island of Maui and their implications for defining the role of airports and nonstop flights for Maui.

U.S. Travel Decision Hierarchy

The survey below is based on consumer research prepared by Longwoods International in 1994 for consumers expressing interest in beach resort destinations. Percentage responses are approximations due to the presentation format of the Longwood's survey:

Exhibit 4-C
U.S. TRAVEL DECISION HIERARCHY

Category/ Criteria	Percent Response
Travel Cost	35%
Safety	32
Popularity of Destination	25
Excitement	23
Entertainment	20
Food and Accommodations	20
Sports and Recreation	18
Sun and Sand	14
Sightseeing	14
Outdoor Activities	10
Culture	10

Source: 1994 Longwoods Travel USA Survey

Japanese Travel Decision Hierarchy

The travel decision hierarchy for the Japanese market displays similar attributes to its U.S. counterpart, although we should note that the survey was based on travel for all destination types. As Exhibit 4-D demonstrates, natural and social factors dominate the top ten criteria for travel by the Japanese market.

Exhibit 4-D
JAPANESE TRAVEL DECISION HIERARCHY

Category/ Criteria	Percent Response
Nature/Scenery	71.5%
Historical Sites	55.6
Local Cuisine/Foods	46.4
Shopping	42.7
Relaxation	35.6
Experience Cultures	34.2
Art Galleries/Museums	33.6
Stay at Famous Hotels	20.0
Meet Local People	15.9
Water Sports	11.5

Source: 1993 Japan Travel Bureau Foundation

These criteria are even more interesting when compared to perceived barriers to travel by the Japanese as presented on Exhibit 4-E:

Exhibit 4-E
JAPANESE HIERARCHY OF BARRIERS TO TRAVEL

Category/ Criteria	Percent Response
Too Expensive	52.6%
No Vacation Time	27.2
Language Barrier	26.2
Safety	23.4
Care for Dependents	15.2
Fear of Flying	14.2
Dislike of Foreign Food	13.7
Overseas Travel Too Extravagant	13.1
Health Concerns	12.3
Cumbersome Travel Applications	12.2
Dislike Foreign Travel	8.9
Travel Only if Someone Else Pays	8.4
Dislikes Group Tours	5.4
No Travel Companion	5.0
Lack of Initiative	3.9
Dislike Foreign Customs	3.8
Transiting Through Airports	3.6

Source: 1992 Japan Travel Bureau Foundation
(Note: Question was not included in the 1993 survey.)

) interesting that, when comparing barriers to travel and criteria for traveling, the subject of airports surfaces only as a minimal barrier to travel. Therefore, for the Japanese market at least, it appears clear that tourism infrastructure concerns, and more specifically airport inconvenience, are of minimal impact to the travel decision making process.

Exhibit 4-F
MAUI TRAVEL EXPERIENCE

The following survey results are based on the 1991 HVB Visitor Satisfaction Survey. We believe the analysis is useful as it highlights what visitors found the most and least attractive of Maui. Although 1991 was the last time this survey was completed for Maui, past surveys have found little variation from responses given.

Westbound Maui Travel Positive Experience

Category/ Criteria	Percent Response
Scenery/Beauty	31%
Relaxing/Peaceful	23
Beaches/Ocean	21
Attractions	16
Weather/Climate	15
Water Sports/Activities	12
Accommodations	10
Friendly People	8
Variety of Activities	7
Sightseeing Tours	5
Hawaiian Spirit	2

Westbound Maui Travel Negative Experience

Category/ Criteria	Percent Response
Overall Expensive	19%
Food/Restaurant Expensive	13
Weather/Climate	12
Too Congested/Traffic	8
Too Crowded/Tourists	8
Flight/Airport Related	5

Japanese Maui Travel Positive Experience

Category/ Criteria	Percent Response
Beaches/Oceans	16.5%
Scenery/Beauty	16.2
Relaxful/Peaceful	15.8
Friendly People	12.1
Weather/Climate	7.0

Japanese Maui Travel Negative Experience

Category/ Criteria	Percent Response
Expensive Food	7.0%
Weather/Climate	4.8
Overall Expensive	3.3
Over-crowded	2.8
Airport congestion/Related	1.1

Source: 1991 Hawaii Visitor Bureau Visitor Satisfaction Report
(Note: 1991 was last time survey completed for the Island of Maui)

It is interesting that the criteria desired by the visitor match fairly well with the favorable results exhibited in the Maui visitor satisfaction survey. It is also interesting that negative comments regarding airport-related issues were received by only 1.1 percent of the Japanese surveyed, especially in view of the fact that they would have had to use interisland air service to arrive in Maui. Westbound visitors, which enjoy limited nonstop service, actually had a slightly higher response rate. We further note that the 1991 survey revealed that Japanese ranked Maui either first or second in preferred island destination despite having to transit through Oahu. When asked if their Maui experience was better or worse than expected, only 4 percent of Japanese responded negatively, again after having to transit through to Oahu. Lastly, 85 percent of those Japanese that visited Maui would choose Maui again for their next Hawaii destination, while others would opt for other neighbor islands.

Ranking of Air Transportation/Travel Factors in Decision Hierarchy

As had been demonstrated throughout the travel criteria hierarchy analyses above, airport and air transportation were non-existent factors in formulating travel decisions, and were very minor detractors in barriers to travel. Travel cost, however, was a concern in making travel plans. These findings are highly consistent with academic studies (Edgell and Smith 1993) that found leisure travelers to be more concerned with dollar cost of travel, but less concerned with actual travel time costs. The more important the leisure aspects of the visitor's motivations, the less importance were time costs of travel. Conversely, business travelers were more time-cost conscious and less concerned regarding actual dollar travel costs.

An interesting note is the time cost of immigration and how it impacts the decision to return to Hawaii. Hawaii has had a growing reputation for extremely lengthy immigration lines, with some reports of waits of up to one hour to clear customs. Indeed, the 1991 HVB Visitor Industry Satisfaction Report (the last survey which researched immigration) revealed that almost 30 percent expressed negatively to Hawaii's immigration procedures and timeliness. However, that same survey also asked whether the immigration procedures would deter them

from returning to Hawaii. Only 2 percent of the respondents replied negatively. This again supports both the consumer and academic research that travel time costs, airports and air transportation were minimal issues in making the travel decision for leisure travel.

4.3 ROLE OF AIR TRAVEL DISTRIBUTIONS SYSTEMS

This sub-section discusses the role of the air travel distribution system and impact of nonstop flights.

Role of Airports

Based on the above research, it appears that airports serve as accommodators of air travel demand. The decision to travel appears to be made outside the context of the airport facility itself. Indeed, research indicates that those on leisure educational travel (e.g. to learn new cultures or experience new surroundings and activities) will actually travel to that destination despite poor or difficult accessibility including air infrastructure and inadequate tourism facilities (Hu and Ritchie 1993). In other words, research indicates that criteria for leisure travel decisions far out-weigh consideration for travel time costs, method of travel and travel distribution infrastructure, except perhaps in extreme cases where air service or other transportation is completely lacking.

Role of Nonstop Flights

Air access is an important link in the travel distribution system. This is particularly true for long haul destinations such as Hawaii. Nonstop flights are essential for gateway cities into countries (Inskeep1991). For larger countries, there may be a need to have several gateway cities for international nonstop flights due to geographical spread. The need for additional gateway cities for nonstop flights diminishes as the geographical area shrinks and there is an extensive domestic or commuter air transportation system.

Based on academic research and interviews with air transportation specialists, there appears to be an inverse need or impact for direct flights to secondary locations from distant points of origins. In other words, the longer the flight from the point of origin to the gateway city, and the shorter the distance from the gateway city to the secondary city, the less need or impact there would be from nonstop flights from the point of origin to the secondary city. This of course also assumes that the secondary city is small relative to the gateway city and there is existing and frequent air transport between the gateway and secondary cities.

The primary logic is that the incremental time cost of transiting through from the gateway city to a nearby secondary city is minimal and not perceived as an impediment to travel by the traveler. Establishing nonstop service from the distant point of origin to the secondary city would primarily make the distribution system more efficient for those passengers whose destination point is the secondary city. However, the farther the secondary city is from the

gateway, the more the incremental time cost becomes a factor. Exhibit 4-G (1) through (3) illustrates the needs hierarchy for nonstop flights.

IMPACT HIERARCHY OF NONSTOP FLIGHTS

Under Scenario A, long haul travel to the gateway city is characterized by frequent service to secondary cities in close proximity that can be serviced by frequent short haul air service. Examples of city pairings would be Tokyo-Honolulu-Kahului, Hong Kong-San Francisco-San Jose, or Tokyo-Chicago-Milwaukee. Establishing direct service to a small regional center such as Kahului, San Jose or Milwaukee from the point of origin would likely cause a shift of passengers already traveling in the distribution channel as the distribution channel has become more efficient for these passengers.

However, because of the frequent commuter service from these gateways to the end destinations and the minimal incremental time cost, the current transit through the gateway to the secondary city is not considered a barrier to travel. Therefore, establishing direct flights from the point of origin to secondary destinations, in close proximity and with frequent service would not necessarily mean more new inflows of visitors to the end destinations.

We should note, however, that there may be other compelling reasons to have nonstop flights, such as establishing regional airports to relieve congestion at the primary gateway airport, or for marketing considerations for direct flights to the secondary destination. For example, regional airport such as Oakland and San Jose to provide relief for the San Francisco airport, and has created better access to markets for their respective business communities.

Scenarios B and C would potentially create greater impacts from nonstop service to secondary cities as the nonstop flights would be reaching into farther geographical regions. As such, there could potentially be more marketing opportunities for passengers desiring more direct access to the new region rather than having to first transit through the primary gateway city. Given the higher time costs involved, and therefore the potentially higher time cost savings, visitor arrival impacts could be greater under scenarios A and B.

Applicability to Hawaii

Because Hawaii is considered to be an extremely geographically small area, travel markets outside of Hawaii continue to view Honolulu as its primary gateway city despite the availability of limited nonstop service from the U.S. mainland to other Hawaiian islands. In fact, an international comparative study of five leisure destinations consisting of Hawaii, A tralia, Greece, France and China found that Hawaii consistently ranked the highest in t: of perceived accessibility and local transportation, including frequent regional air transportation (Hu and Ritchie, 1993). Accessibility concerns for the other countries appear to be related to the greater geographical distances for secondary destinations from the gateway cities, and also due to perceived less developed travel infrastructure. As discussed previously, the incremental travel time costs to other island destinations within Hawaii compared to other

EXHIBIT 4-G (1)

IMPACT HIERARCHY FOR NON-STOP FLIGHTS

A. LOW IMPACT OF NON-STOP FLIGHTS TO SECONDARY CITY

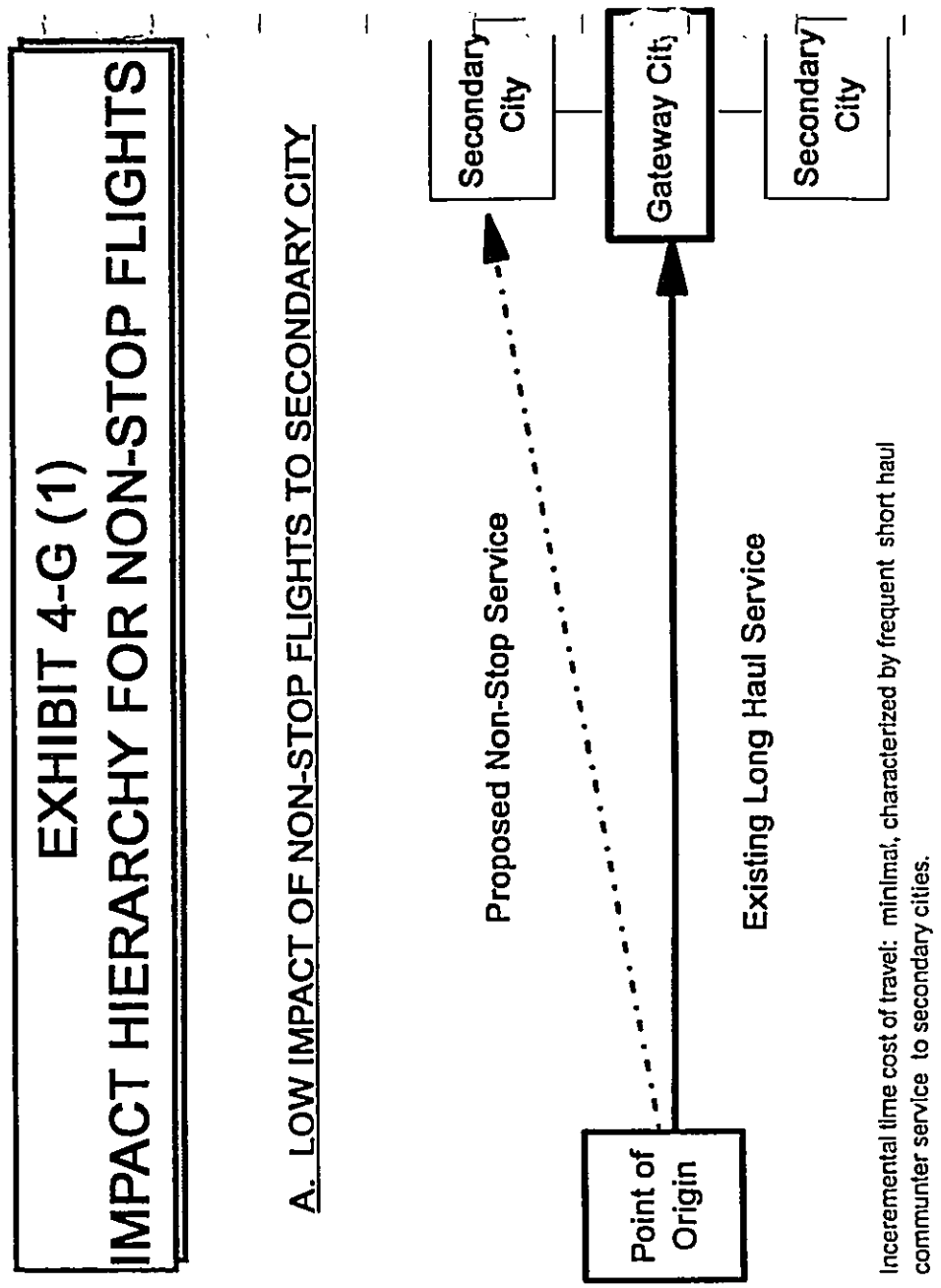
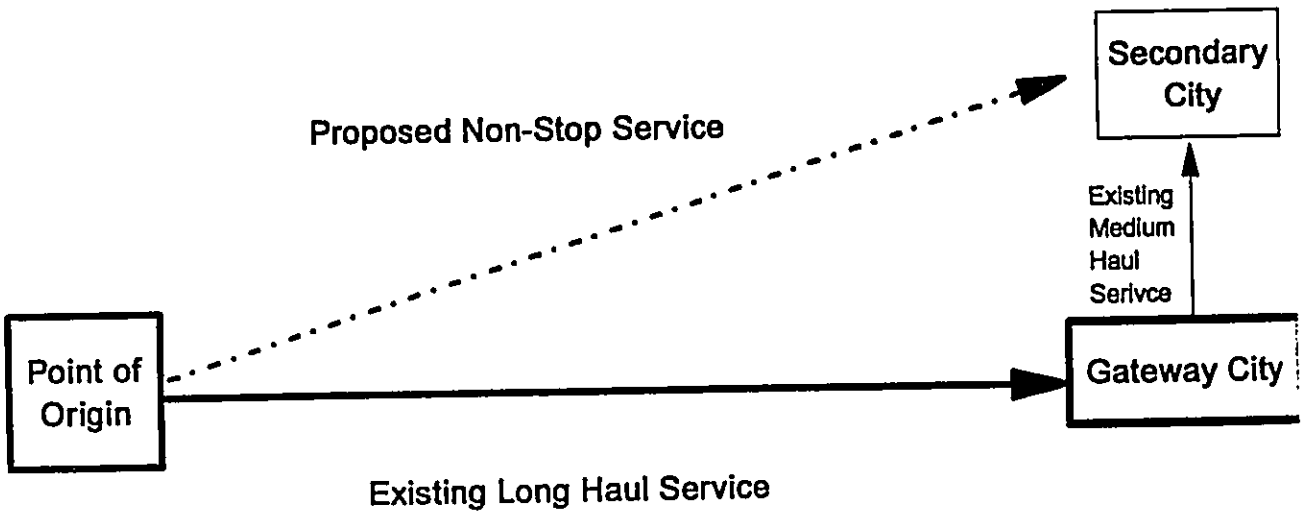


EXHIBIT 4-G (2)
IMPACT HIERARCHY FOR NON-STOP FLIGHTS

17

B. MEDIUM IMPACT OF NON-STOP FLIGHTS

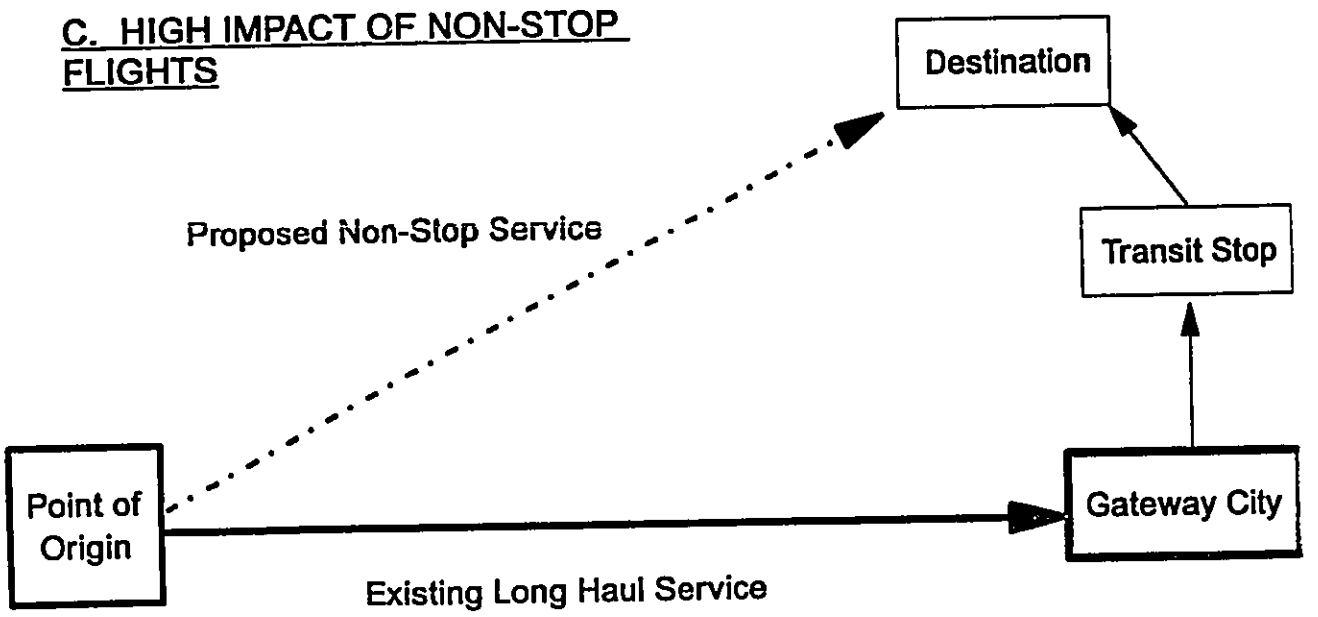


Inceremental time cost of travel: medium

EXHIBIT 4-G (3)
IMPACT HIERARCHY FOR NON-STOP FLIGHTS

18

C. HIGH IMPACT OF NON-STOP FLIGHTS



Inceremental time cost of travel: high

long haul destinations appears to be minimal. Given the availability of frequent interisland air service, this does not appear to be of major concern to the traveler.

Impact of Bilateral Agreements

In discussing the role of nonstop flights, it is also useful to gain a brief understanding of bilateral air agreements, which govern city pair air rights between nations. Nonstop international air routes such as those envisioned for Maui cannot occur without a bilateral air agreement in place.

Although lengthening of the runway would permit long haul direct flights from Asia Pacific destinations to Maui, only Japan Airlines has a bilateral treaty for Maui at this time. These Maui landing rights, however, also requires a stop-over in Honolulu. Therefore, any Maui direct flights from Asia would have to apply for bilateral air agreements to permit direct flights from foreign destinations into Maui.

This process is extremely complicated and costly given the extremely high potential of such direct routes. As an overview, governments negotiate bilateral agreements to determine city pairs between countries for direct flights, as well as the frequency of flights between the negotiating countries. For the U.S., the Federal Department of Transportation negotiates with other countries, but States such as Hawaii can lobby for the air routes. Currently, there is a perception other U.S. cities vying for these coveted routes that Hawaii already has a disproportionate number of Japanese air routes.

Should Maui seek direct routes, it would be competing with other cities such as Dallas, Seattle and Chicago, which may be perceived as more economically viable both by Japan and the U.S. given that these cities are airport hubs that can service a greater geographical area. Other foreign carriers not servicing Hawaii might also likely seek to establish direct air routes with Honolulu first as its primary Hawaii city, rather than opting for a regional market first. Airlines such as Singapore, Cathay Pacific and Malaysian Air all have established air agreements with Honolulu, but have not obtained routes into Maui or any other neighbor island.

Therefore, while the lengthening of the runway may permit direct long haul flights, the process in establishing them on a large scale international level would be difficult.

4.4 ANALYSIS OF COMPARABLE AIRPORTS

As part of this study, we analyzed several airports with different development issues to assess the applicability of their respective impacts to the proposed Kahului Airport runway expansion. The issues we analyzed were:

1. Impact of airport runway expansions on visitor arrivals. The impacts for the airports Bangkok, St. Thomas and Puerto Rico were analyzed for this purpose.

2. Impact of development of new regional airports on visitor arrivals. The gateway and regional airports used for this analysis were Bangkok and Phuket in Thailand, and Kahului and Kapalua on Maui.

3. Impact of development of a state of the art airport with accommodation for all types of aircraft. The Singapore Airport was analyzed for this scenario.

4. Impact from no change of the airport. The airport in Hong Kong was used for this example. While the Hong Kong airport can accommodate all types of aircraft, we wanted to analyze a situation where an airport had over capacity to determine if there were any inferences that could be made to the Kahului Airport.

The analyses and our conclusions were as follows:

Bangkok/Phuket - The new Bangkok Airport opened in 1988 with expanded runway and terminal facilities. Analysis of Exhibit 4-H shows relatively marginal increases in arrivals after the opening of the airport. Much of the growth was reflective of the overall growth for the region rather than specifically only to Bangkok. We should note that 1991 through 1992 showed flat growth due to civil unrest due to a military coup.

As an interesting note, Japanese tourists traveling to the beach resorts of Phuket previously had to travel to Bangkok from Japan, and then fly to Phuket on domestic airlines or travel by train or bus. Beginning in 1992, Thai Airways began to fly directly from Tokyo to Phuket. According to the Tourism Authority of Thailand, for 1993 Japanese visitors to Thailand only showed a modest 1.3 percent increase, but a 14.2 percent decrease in Japanese arrivals into Bangkok. The majority of the decrease in Japanese Bangkok arrivals flew directly to Phuket on these new direct routes. This shift had the modest benefit of increasing the length of stay of Japanese in Phuket and increasing visitor expenditures, but overall Japanese visitors to Thailand and to Phuket itself had only a slight increase.

In St. Thomas, the airport expansion program involved a new terminal completed in 1990 and a new 7,000 foot runway completed in December 1992. In existence prior to the expansion was a 5,300 foot runway which has been converted to a taxi runway. Prior to the runway completion, the airport was able to accommodate 727, 747 and Airbus aircraft. The new runway was designed to accommodate DC-10's which could not land on the island previously. However, since the completion of the runway, none of the carriers (American, Delta, Continental, and USAir) have started DC-10 service to the island. In addition, according to the U.S. Virgin Islands Port Authority, there have been no unusual increases in air traffic volume that could be attributed to the new runway. In the opinion of the Authority, private airlines decide whether to increase aircraft volume and size to the airports based on the availability of demand generators, primarily hotel rooms. Additionally, the previous runway was sufficient to service the existing demand. Had there been some unaccommodated demand present prior to the increased runway size, there would have been an immediate impact.

Exhibit 4-H
Visitor Arrival Trends (In thousands)
Among Selected Countries with
Recent Airport Expansion Projects
1983 - 1993

Year	Thailand	Percent Change	Singapore	Percent Change	Hong Kong	Percent Change	St. Thomas Note (1)	Percent Change	Puerto Rico	Percent Change	Maui	Percent Change
1993	5,761	12.2%	6,426	7.3%	8,938	11.6%	570	17.0%	n/a	n/a	2,210	-3.3%
1992	5,136	0.3	5,990	10.6	8,011	17.8 (3)	487	3.6	3,703	5.7	2,285	0.6
1991	5,122	(3.3)	5,415	1.7	6,800	3.2	470	1.5 (3)	3,504	2.3	2,272	(4.9)
1990	5,299	10.2	5,323	10.2	6,590	9.9 (3)	463	2.9	3,428	6.4	2,390	(4.9)
1989	4,810	13.7	4,830	15.0	5,994	7.2	450	(19.1)	3,221	7.2	2,514	14.1
1988	4,231	11.8	4,201	13.7	5,589	24.1	556	(4.1)	3,004	14.7	2,204	3.2
1987	3,783	34.2	3,695	15.4	4,502	20.6	580	23.4	2,619	22.1 (4)	2,135	(3.2)
1986	2,818	15.6	3,201	5.2	3,733	10.8	470	14.1	2,145	4.0	2,206	10.4
1985	2,438	3.9	3,043	1.4	3,370	8.4	412	11.4	2,062	37.8	1,999	(0.4)
1984	2,347	7.1	3,001	4.7	3,108	12.9	370	4.5	1,496	(2.2)	2,008	13.4
1983	2,191	---	2,867	---	2,754	---	354	---	1,530	---	1,770	---

Notes: (1) Includes arrivals to St. Thomas and St. Croix.
(2) U.S. Virgin Islands affected by Hurricane Hugo in 1989.
(3) Expansion completed of airport.
(4) Opening of Kapalua Airport.

Source: World Tourism Organization, Pacific Asia Travel Association, and Hawaii Visitors Bureau

In Puerto Rico, the airport expansion program involved the construction of a new international ramp. Phase I was begun in January 1990 and finished in May 1991. At this point, not fully operational, the ramp was utilized for national flights and military planes. Phase II, completed in early 1993, will finish the 600,000 square foot expansion of the terminal and enable the airport to accommodate six to seven additional international gates. Other recent improvements include repaving of the taxiways and various support areas. According to the Puerto Rico Port Authority, there has not been an expansion that has allowed the airport to accommodate larger aircraft, however, the ongoing upgrade programs have had only a slight impact on volume. While the expansion did not involve expansion of the runway, never-the-less, expansion of the passenger capacity did not lead to corresponding increases in visitor arrivals. This example demonstrates that despite capacity and ability to facilitate long haul aircraft, the anticipated surge in traffic did not materialize.

Kapalua Airport - The Kapalua Airport was opened in 1988, bringing air service direct to the Kaanapali and Kapalua resort districts of Maui. Exhibit 4-I shows the occupancy rates for the period 1985 to 1993, as well as total visitor arrivals to the island. The data indicates that occupancy actually decreased during the years subsequent to the opening of the new airport, which suggests that the direct flights had a marginal, if any, impact on occupancy and rates at the Kaanapali resorts in which the direct flights were intended to benefit. Furthermore, visitor arrivals to Maui only rose marginally during the period, indicating that no new substantial demand was generated. Although new resorts were built on Maui, most of the new room inventory was developed in the Wailea Resort development. We should also note that much of the traffic in 1992 and 1993 was traffic redirected from Kauai due to the closure of Kauai from the impact of Hurricane Iniki.

Singapore - Singapore boasts one of the most modern airports in Asia and had expanded its runways to accommodate long haul aircraft in the mid-1980's. Despite the state-of-the-art facilities, capacities and aircraft accommodation, visitor arrival growth for most of the 1990's has been modest compared to other airports such as Bangkok and Hong Kong during the same period. Because of the lackluster visitor arrivals, Singapore has embarked on a five year $5 billion restoration project which will create new tourism infrastructure to develop a more stable tourism base.

Hong Kong - The existing Kai Tak Airport in Hong Kong is second only to London's Heathrow in the number of international passengers handled each year. Major expansion to the airport has not occurred during our analysis period. Existing passenger terminal capacity is strained, with aircraft having to park on the over-crowded tarmac. Runway capacity is therefore already constrained for a long number of hours during the day. Despite the constrained capacity, Kai Tak is faced with a situation of growing demand and is expected to accommodate 31 million passengers by 1997. This will further exacerbate the already constrained and arguably unsafe conditions.

This situation illustrates how the demand in the market as represented by passenger flow is independent of the type and size of airport facilities available. The visitor arrivals are reflective of the dynamic growth in the region for both business and tourism-related travel.

Exhibit 4-I
Maui Visitor Arrivals and Kaanapali Hotel Occupancies
1985 to 1993

Year	Visitor Arrivals to Maui	Kaanapali Hotel Occupancy
1985	1,999,110	82.5%
1986	2,205,870	85.8
1987	2,134,780 *	79.8
1988	2,204,050	76.2
1989	2,514,100	75.1
1990	2,390,160	76.3
1991	2,272,240	71.5
1992	2,285,410	68.9
1993	2,209,980	72.7

Notes: *Kapalua Airport opened in 1987.
Hotel occupancy statistics prior to 1989 include West Maui hotels (Kihei, Wailea) as well as those in Kaanapa

Source: Hawaii Visitors Bureau

Our analysis above suggests that causal relationships between airport expansions, including runway extensions, and tourism growth may only by marginal. Tourism markets are dynamic, and the factors determining travel are complex. While airport improvements and improvement in tourism distribution efficiencies, such as the proposed Kahului Airport runway expansion may create new markets through creative marketing and product packaging, it will more likely be servicing an already existing market. While there will probably be some benefits realized, such as longer lengths of stay for some market segments, the overall impact will likely be marginal.

4.5 CONCLUSIONS REGARDING ROLES OF AIRPORTS AND NONSTOP FLIGHTS

Based on the foregoing discussion, airports serve as accommodators of travel only. The decision to travel for leisure purposes has been demonstrated by both academic and consumer research to be well outside the concerns of the airport environment. Time costs to leisure travelers have been found to be of less importance to the travel decision making process. Primary travel decision factors relate to experiential criteria sought by the traveler once the traveler has reached his or her destination. Nonstop long haul flights would appear to gain importance only when time costs are reduced substantially.

However, as time costs to leisure travelers are much less important, nonstop long haul flights to secondary destinations within a small geographical area (including Hawaii) may have minimal impact over the long term. While such nonstops may have the impact of making the travel distribution more efficient for the traveler seeking the secondary destination rather than transiting through the gateway city, under Scenario A of Exhibit 4-G there would most likely be a shifting of an already existing market to the new nonstop flight. While strong marketing initiatives may induce travelers to travel to the secondary location, the long term would most likely see natural market growth as opposed to hyper visitor growth due to the new nonstop flight. More dramatic visitor arrivals could be possible under Scenarios B and C as both scenarios would be more geographical depth beyond the gateway city.

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APPENDIX F

AIR QUALITY STUDY

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AIR QUALITY STUDY
FOR THE PROPOSED
KAHULUI AIRPORT IMPROVEMENTS

KAHULUI, MAUI

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December 1995

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1.0 SUMMARY

The State of Hawaii (State) Department of Transportation is proposing to provide improvements at Kahului Airport to accommodate forecast aviation demand and to optimize airport operations. Major elements of the improvement plan include extension of Runway 2-20, the construction of a new airport access road and the possible addition of a parallel runway. The project is intended to provide needed facilities through the year 2010. This study examines the potential short- and long-term air quality impacts that could occur as a result of construction and use of the proposed facilities. Mitigative measures to lessen project impacts are suggested where possible and appropriate.

The proposed airport improvements involve 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 parameters are regulated including: particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. Hawaii's air

quality standards are more stringent than the comparable national limits except for the standards for sulfur dioxide, particulate matter and lead, which are set at the same levels.

In areas that do not meet national ambient air quality standards, Conformity Rules apply. Conformity Rules were issued by the federal 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 nonattainment situations. The entire State of Hawaii is considered to be an attainment area for all air quality standards. Thus, Conformity Rules are currently not applicable.

Before assessing potential impacts from the proposed project, the existing environment was characterized. Kahului Airport is located along the north shore of the island of Maui in the valley between the two large mountain masses that form the island. The predominant land uses around the airport are industrial or agricultural with some small residential and preservation areas. The climate is very equitable year-round with little variation in temperature range. Winds from the northeast have a high frequency of occurrence, and mean wind speeds are relatively high providing good ventilation much of the time. Rainfall is relatively low and occurs mostly during the winter months.

The major sources of manmade air pollution on the island are power plants, motor vehicles and agricultural activities. Aircraft emissions represent a relatively small percentage of total emissions. Natural sources of air pollution that may affect the air quality of the island include the ocean, plants, wind-blown dust and distant volcanoes. Air quality monitoring data for Maui suggest that background ambient air pollution is very low except

possibly for concentrations of ozone and particulate matter. All data collected indicate that both State and national ambient air quality standards are currently being achieved.

If the proposed project is given the necessary approvals to proceed, it is probably inevitable that short-term impacts from fugitive dust will occur during the project construction phase. To a lesser extent, exhaust emissions from stationary and mobile construction equipment, from the disruption of traffic, and from workers' vehicles may also affect air quality during the period of construction. State air pollution control regulations require that there be no visible fugitive dust emissions at the property line. Hence, an effective dust control plan must be implemented to ensure compliance with State regulations. Fugitive dust emissions can be controlled to a large extent by watering of active work areas, using wind screens, keeping adjacent paved roads clean, and by covering of open-bodied haul trucks. Other dust control measures could include limiting the area that can be disturbed at any given time and/or mulching or chemically stabilizing inactive areas that have been worked. Paving and landscaping of project areas early in the construction schedule will also reduce dust emissions. Exhaust emissions can be mitigated by moving construction equipment and workers to and from the project site during off-peak traffic hours.

After construction, potential long-term impacts on air quality due to airport operations were investigated. This investigation began by preparing detailed emission estimates for existing and future airport operations. The existing case was based on 1994 airport operations while future scenarios were based on forecast operations for 2010. Three future scenarios were considered: 2010 without the project, 2010 with the preferred project alternative, and 2010 with the preferred project alternative less the parallel runway and the relocation of helicopter operations. These emission estimates

basically show that current airport emissions are significant with respect to the State-defined significant emission rates for carbon monoxide, nitrogen oxides and hydrocarbons. Existing emissions of sulfur oxides and particulate matter are insignificant. Without the proposed improvements, emissions of the significant air pollutants were estimated to increase by about 70 to 80 percent by the year 2010. With the preferred project plan, the increase in carbon monoxide emissions by 2010 was estimated to be reduced significantly while emissions of nitrogen oxides and hydrocarbons would be reduced by insignificant amounts. This would be true also in the 2010 alternative without the parallel runway and the relocation of helicopter operations except that nitrogen oxides emissions were estimated to increase by an insignificant amount. Compared to the without project scenario, the with project cases studied for 2010 would not cause a significant increase in the emission of any air pollutant.

In addition to preparing and comparing detailed emission estimates for the various project alternatives, potential impacts on ambient air quality were assessed both at the airport boundary and at offsite roadway intersections. These assessments indicated that both State and national air quality standards were currently being met at the airport boundary. Without the project in 2010, all national standards would continue to be met, but the more stringent State standards for carbon monoxide could be exceeded at the airport boundary during worst-case conditions. If the preferred project plan is implemented, it appears that the 2010 level of airport operations would meet State carbon monoxide standards. If the added capacity of the proposed parallel runway is omitted from the development plan, the State 1-hour carbon monoxide standard could be exceeded by 2010 due to longer queue delay times. With or without the project, it appears likely that State and national ambient air quality standards pertaining to nitrogen dioxide concentrations would be maintained at the airport boundary.

Based on air quality modeling of offsite roadway intersections, it appears that the highest concentrations of air pollution in the vicinity of Kahului Airport are not due to aircraft emissions but are caused by emissions from motor vehicle traffic on nearby roadways. Although there are no monitoring data that show this actually occurs, air quality modeling results indicate that both State and national standards for carbon monoxide could currently be exceeded during worst-case conditions in the vicinity of high-volume, congested intersections such as Hana Highway at Haleakala Highway, Hana Highway at Dairy Road and Puunene Avenue at Kuihelani Highway. This would likely remain so in the year 2010 with or without the project. Worst-case concentrations with the project will generally remain unchanged or decrease somewhat, i.e., project-related traffic would not be a factor if the traffic mitigation measures proposed in the project traffic study are implemented.

Some degree of control of carbon monoxide and hydrocarbon emissions from air carrier turbine-aircraft could potentially be achieved by modification of ground-operation procedures. Control measures could include: (1) requiring pilots to increase engine speed and reduce number of engines operating during idle and taxi; (2) reducing idle operating times by controlling departure times from gates; (3) reducing taxi operating time by towing aircraft between runway and gate; and (4) reducing operating time of aircraft auxiliary power supply by providing ground-based power supply. Another measure that could serve to reduce all aircraft emissions would be to maximize the operational airport capacity so as to minimize aircraft queuing.

Although the proposed project would not reduce air quality at offsite roadway intersections where potential problems may occur

and the proposed development may not have any control over these locations, some mitigation measures can be suggested: (1) roadway capacity could be added at those locations where the traffic level of service is poor; (2) roadway speed limits could be reduced at those locations where the high speed limits (above 35 mph) cause excessive acceleration emissions; (3) traffic signals could be optimized and/or coordinated to reduce traffic queuing; (4) buffer zones could be provided between sidewalks and roadways; and (5) bus service could be promoted for arriving and departing airport passengers.

2.0 INTRODUCTION AND PROJECT DESCRIPTION

The Airports Division of the State of Hawaii Department of Transportation (HDOT-A) has prepared a Master Plan Update for Kahului Airport [Ref. 1]. The purpose of the Master Plan Update was to provide for the improvements necessary to ensure safe, efficient, economical and convenient air transportation facilities for residents of and visitors to the State and the island of Maui through the year 2010. As indicated in Figure 1, Kahului Airport is situated along the north central coast of Maui Island near the urban areas of Kahului and Wailuku. Presently, the airport is comprised of two runways and associated taxiways and aircraft parking aprons. Runway 2-20 is 7000 feet long, 150 feet wide and has 35-foot shoulders. Runway 5-23 is 4990 feet long and 150 feet wide and has shoulders that are at least 35 feet wide. The main passenger terminal, commuter airline terminal, airline offices, air cargo facilities, airline maintenance baseyard, ground transportation subdivision, and airport industrial area are located on the west side of Runway 2-20. Facilities for general aviation (e.g., aircraft maintenance facilities, hangars, based and itinerant aircraft parking apron, fixed base operator), facilities for helicopter and air taxis (including scenic air tour operations),

and the Air Traffic Control Tower are located on the eastern side of Runway 2-20.

Kahului Airport is the principal airport serving the island of Maui. In 1990, total aircraft operations were reported to number about 183,000. Commuter/air taxi operations accounted for approximately 40 percent of the total operations, while air carrier operations amounted to about 30 percent and general aviation activities about 25 percent. Military operations accounted for less than 5 percent of the total.

Aviation demand forecasts indicate that by the year 2010 aircraft operations at Kahului Airport will exceed airport capacity. The preferred plan for airport improvements as detailed in the Master Plan Update calls for the extension of Runway 2-20 to 9600 feet, the relocation of helicopter operations to another offsite location, the eventual construction of a new parallel runway, the construction of a new airport access road, and other airport improvements.

The purpose of this study was to evaluate the potential air quality impacts of the proposed project and recommend mitigative measures, if possible and appropriate, to reduce or eliminate any degradation of air quality in the area. Before examining the potential impacts of the proposed project, a discussion of regulatory requirements and ambient air quality standards is presented and background information is provided concerning the existing physical environment of the project.

3.0 REGULATORY REQUIREMENTS

The proposed improvements to Kahului Airport will involve the use of State land and State funds. Further, the proposed improvements must be approved by the Federal Aviation Administration (FAA) and may utilize federal funds. Because State land and State funds are involved, the proposed project is subject to Chapter 343, Hawaii Revised Statutes (HRS 343). The involvement of federal funds requires the project to comply with the National Environmental Policy Act (NEPA) of 1969, as amended, and FAA Orders 5050.4A and 1050.1D, as well as the Stipulated Court Order that was entered into on March 12, 1991, and the Court Order that was entered on June 2, 1993. These State and federal laws require that the potential environmental impacts of the proposed project be identified, evaluated and mitigated to the extent possible. Alternatives to the proposed project must also be considered. With respect to air quality, impacts are usually measured in terms of the magnitude of project-related air pollution emissions and by a project's conformance with State and federal emission standards. Impacts are also ascertained by assessing project compliance with State and federal ambient air quality standards, or in the absence thereof, comparing project air pollution levels with air quality concentrations that are known to be harmful to man or the environment. In addition to complying with all State and federal emission and ambient air quality standards, federal actions in any given state must conform to the federally mandated State Implementation Plan in areas that do not currently meet national ambient air quality standards.

3.1 Emission Standards

Emission standards pertaining to the proposed project will primarily be those which limit emissions from aircraft, motor vehicles and petroleum storage facilities. State and federal

emission standards pertaining to these sources are summarized below.

3.1.1 State of Hawaii

State of Hawaii rules governing air pollution control are found in Chapter 60 of the Department of Health's Administrative Rules, Title 11. The State Department of Health (DOH) does not regulate aircraft emissions. It regulates motor vehicle emissions only to the extent of prohibiting visible emissions from gasoline-powered vehicles and limiting visible smoke from diesel-powered vehicles to 5 consecutive seconds. Of relevance to airports, the rules also place restrictions on engine idling while parked, limiting idle times to three minutes during the loading or unloading of passengers. Another emission control provision applicable to airport operations pertains to fuel storage. Any new storage vessel of more than 250-gallon capacity containing any volatile organic compound must be designed to control vapor emissions. All storage tanks with a capacity in excess of 40,000 gallons containing volatile organic compounds with a true vapor pressure equal to or greater than 1.5 pounds per square inch are required to have vapor control systems.

3.1.2 Federal Government

3.1.2.1 Aircraft and Aircraft Engines. Emission standards for aircraft were first promulgated in 1973 by the U.S. Environmental Protection Agency (EPA) after it was determined that these engines were significant sources of air pollution around airports. Engine emission standards were initially established for carbon monoxide, nitrogen oxides, hydrocarbons and smoke. In December 1980, the EPA delayed compliance with all gaseous standards until January 1, 1983. In December 1982, the EPA extensively amended the 1973

standards by creating new aircraft classes, withdrawing all carbon monoxide and nitrogen oxides emission standards, and delaying compliance with hydrocarbon standards until January 1984. The newly defined classes of aircraft engines included:

Class	Description
TP	All aircraft turboprop engines
TF	All turbofan or turbojet engines except engines of Class T3, T8 and TSS
T3	All aircraft gas turbine engines of the JT3D model family
T8	All aircraft gas turbine engines of the JT8D model family
TSS	All aircraft gas turbine engines employed for propulsion of aircraft designed to operate at supersonic flight speeds.

In August 1984, the EPA rejected an appeal by an aircraft engine manufacturer and removed a stay on the smoke emission standard for small engines. In October 1984, the EPA amended the exemption for low production engines and provided clarification of the prohibition of fuel venting. Since this time there have been no further changes to the federal aircraft emission standards.

The federal rules pertaining to aircraft emissions, as specified in the Code of Federal Regulations at Title 40, Chapter 87, are presently composed of the following parts:

Subpart A	Provides general provisions including exemptions
Subpart B	Prohibits intentional discharge to the atmosphere of fuel from any new or in-use aircraft gas turbine engines

Subpart C	Establishes smoke and hydrocarbon emission standards for all classes of new gas turbine aircraft engines
Subpart D	Sets smoke standards for in-use gas turbine engines included in Classes T8 and TF
Subparts G & H	Define test procedures to ascertain compliance with emission standards.

Compliance dates for these standards have all passed some time ago. Thus, all new and in-use aircraft subject to these standards should be in compliance.

3.1.2.2 Motor Vehicles. The EPA has also promulgated federal emission standards for newly manufactured motor vehicles as specified in the Code of Federal Regulations at Title 40, Part 85. These have been amended numerous times in the past several years, too many to enumerate in this report. Suffice it to say that the EPA regulates emissions of carbon monoxide, hydrocarbons and nitrogen oxides from motor vehicles and that emission standards have become increasingly stringent in the last 20 years.

EPA's emission standards for motor vehicles are specified by vehicle category, e.g., light-duty gasoline-powered vehicles, light-duty diesel-powered vehicles, heavy-duty diesel-powered vehicles, etc. Emission standards for gasoline-powered motor vehicles are generally expressed on a gram-per-vehicle-mile basis, while standards for diesel-powered motor vehicles are given in terms of grams per brake-horsepower hour or percent opacity.

Fuel and fuel additives used in motor vehicles are also regulated by EPA as specified in the Code of Federal Regulations at Title 40, Part 80. Perhaps the most notable aspect of these regulations with

respect to Hawaii has been the near elimination of lead additives in gasoline. Since the mid-1970's, all newly manufactured gasoline-powered vehicles have been designed and required to burn only unleaded gasoline, i.e., gasoline with a lead content less than 0.05 gram per gallon. Since January 1986, refiners cannot produce any leaded gasoline with a lead content of more than 0.10 gram per gallon. Prior to the enactment of these regulations, lead additives in gasoline averaged more than 1 gram per gallon.

3.1.2.3 Petroleum Storage. The EPA has also promulgated emission regulations pertaining to fuel storage tanks. These are specified in Title 40 of the Code of Federal Regulations at Part 60, Subparts K, Ka and Kb. Any new fuel tanks with a capacity of more than 40,000 gallons must be equipped with emission control equipment if the true vapor pressure is equal to or greater than 5.2 kPa. Any new storage tanks of 20,000 gallons or more containing highly volatile liquids (true vapor pressure equal to or greater than 27.6 kPa) are also subject to regulation.

3.2 Ambient Air Quality Standards

Ambient concentrations of air pollution are regulated by both national and State ambient air quality standards (AAQS). National AAQS are specified in Title 40, Part 50 of the Code of Federal Regulations, while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 1 summarizes both the national and the State AAQS that are specified in the cited documents. As indicated in the table, AAQS have been established for six criteria air pollutants. These regulated air pollutants include: particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. National AAQS are stated in terms of primary and secondary standards. National primary standards are designed to protect the public health with an "adequate margin of

safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both national and State standards allow one exceedance per year.

State of Hawaii AAQS are in some cases considerably more stringent than comparable national AAQS. In particular, the State of Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit, and the State 1-hour limit for ozone is less than one-half of the federal standard.

Hawaii AAQS for sulfur dioxide were relaxed in 1986 to make the State standards essentially the same as the national limits. In 1993, the State also revised its particulate standards to follow those set by the federal government. It has been proposed in various forums that the State also relax its carbon monoxide standards to the national levels, but at present there are no indications that such a change is being considered.

3.3 Air Quality Conformity

Section 176 of the Clean Air Act and subsequent rules issued by EPA require that federal agencies must demonstrate projects which they fund, approve, permit or authorize do not cause new violations of federal air quality standards, aggravate existing violations of air quality standards or delay timely attainment. More specifically, federal agencies are prohibited from engaging in or supporting in any way actions or activities that do not conform to an applicable State Implementation Plan (SIP). Each state's SIP is meant to ensure that national ambient air quality standards will be achieved and maintained.

Currently, conformity rules as issued by EPA only pertain to areas that are considered nonattainment, i.e., those areas that do not meet federal air quality standards. The entire State of Hawaii is considered to be an attainment area for all federal air quality standards. Thus, the conformity rules pertaining to federal actions are not currently applicable.

4.0 EXISTING ENVIRONMENT

4.1 Location and Topography

Kahului Airport is located on the north central coast of the island of Maui near Kahului Bay. The Pacific Ocean lies within 1000 feet of the airport's northern perimeter. The topography of this general area of Maui is probably best characterized as a broad valley which connects East and West Maui. East Maui is essentially comprised of the huge volcanic mountain, Haleakala. Haleakala rises gradually to the southeast of the airport to an elevation of approximately 10,000 feet within about 17 miles. The West Haui Mountains, about 5 miles directly to the west, rise abruptly to an elevation of about 5800 feet. The valley formed between the two mountain ranges has a relatively flat floor and is about 10 miles wide between the mountains and about 7 miles across at the narrowest point between the north and south shores. Elevation at the airport is about 53 feet above mean sea level.

4.2 Land Use

Land uses surrounding the airport include a mixture of developed and undeveloped areas. The immediate areas to the west within the airport boundaries include mostly industrial and light-industrial/commercial developments. Beyond this, about 1 mile from the main terminal, is the Kanaha Pond and Wildlife Sanctuary. The urban center of Kahului town is located adjacent to Kanaha Pond less than 2 miles west of the terminal. The coastline and Kanaha Beach Park lie immediately to the north, while the small residential community of Spreckelsville is situated about 1 mile to the northeast. The immediate areas to the east and south of the airport are predominantly in agricultural use and planted in sugar cane. Puunene, a small residential/industrial area, is located about 2 miles to the southwest.

4.3 Climatology and Meteorology

Regional and local climatology significantly affect the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Although the climate of Hawaii is relatively moderate throughout most of the State, significant differences in these parameters may occur from one location to another. Most differences in regional and local climates within the State are caused by the mountainous topography.

Climatic normals, means and extremes for the Kahului Airport based on long-term data collected by the National Weather Service are summarized in Table 2. The outstanding features of the climate of the Kahului area are the equable temperature regime, the marked seasonal variation in rainfall, the persistent surface winds from the northeast quadrant, and the rarity of severe storms. The extremely equable temperatures at Kahului are illustrated by the relatively small range in normal temperature between the warmest month, August, at 79.2 degrees F and the coldest month, January, at 71.5 degrees F. Annual average temperature is 75.5 degrees F. Rainfall is normally relatively light and occurs mostly during the wet season which extends from November through April. Annual rainfall normally amounts to about 20 inches. Humidity at Kahului is usually moderate to high throughout the year.

The large Pacific semipermanent high pressure cell, which is usually centered north of the Hawaiian Islands, is responsible for the persistent northeasterly trade winds which dominant the wind pattern at Kahului and give the area a well-ventilated characteristic. The tradewind flow is most prevalent during the dry season. Winds are more variable during the wet season although, on the average, the trades still blow more than 50 percent of the time

during this period. The normal trade winds, accentuated by the funneling effect between Haleakala and the West Maui Mountains, as well as by the daytime thermally induced low pressure in the valley, often attain speeds of 40 to 45 mph at the airport. Occasional strong winds from the south (Kona winds) occur with the passage of storms during the winter months. Figure 2 is a wind rose for Kahului Airport which graphically depicts the annual frequency of wind speeds and directions based on hourly weather data collected during 1983. These data are also shown in tabular format in Table 3.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is oftentimes measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In the Kahului area, stability class 5 or 6 is generally the highest stability class that occurs, developing during clear, calm nighttime or early morning hours when temperature inversions form due to radiational cooling or when downslope winds from the mountains force warmer air aloft. Stability classes 1 through 4 occur during the daytime, depending mainly on the amount of cloud cover and incoming solar radiation and the onset and extent of sea breeze conditions.

Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations because contaminants emitted from or near the surface can become trapped within the mixing layer. In Hawaii, minimum mixing

heights tend to be high because of mechanical mixing caused by the trade winds and because of the temperature moderating effect of the surrounding ocean. Low mixing heights may sometimes occur, however, at inland locations and even at times along coastal areas early in the morning following a clear, cool, windless night. Coastal areas also may experience low mixing levels during sea breeze conditions when cooler ocean air rushes in over warmer land. Mixing heights in Hawaii typically are above 3000 feet (1000 meters).

4.4 Air Quality

The air quality of a given location is a function of both the local meteorology and the types and amounts of air pollutants emitted from sources in the area. Present air quality in the project area is mostly affected by air pollution emissions from vehicular, industrial, natural and/or agricultural sources. Table 4 presents an air pollutant emission inventory by source category for Maui County that was compiled for 1980 by the State Department of Health. This is the latest emission inventory available from the Department of Health for Maui County. In 1980, as suggested in the table, agriculture was the most significant source category for emissions of particulate matter. Sulfur dioxide emissions originated mainly from electric power plants, while motor vehicles accounted for much of the emissions of nitrogen oxides, carbon monoxide and hydrocarbons. Agricultural field burning also contributed relatively large amounts of carbon monoxide and hydrocarbons. Emissions from aircraft were relatively small compared to emissions attributable to other source categories on the island.

Due to the long period of time that has elapsed since the Department of Health emission inventory was prepared, an attempt has been

made specifically for this study to prepare a more current Maui emission inventory. Table 5 is an estimated emission inventory for Maui Island for 1992. This was compiled based on source information on file at the Department of Health, U.S. Environmental Protection Agency emission factors, and statistics given in the State of Hawaii Data Book 1992. As indicated in the table, agriculture continues to be the major source of particulate emissions on the island, and the level of emissions has increased by about 25 percent since 1980. Similar to 1980, electric power plants accounted for most of the sulfur oxides emissions, showing an increase of more than 50 percent compared to 1980. Note, however, that the 1980 source category is indicated as "steam" electric power plants while the 1992 estimate includes all electric power plant emissions.

Emission estimates for 1992 indicate that electric power plants (all types) is the most significant nitrogen oxides source category on Maui and that emissions are about four times higher compared to the 1980 steam electric estimates. This is because most of the new generation units added since 1980 are non-steam units (i.e., diesel or combustion turbine units) which mainly emit nitrogen oxides. As in 1980, motor vehicles and the agriculture industry account for most of the carbon monoxide emissions on the island. This is despite the fact that compared to 1980 motor vehicle emissions of carbon monoxide are estimated to have decreased by about 15 percent even though traffic volumes have increased substantially since that time. This is due to the improved emission control devices that are present on late-model vehicles. Carbon monoxide emissions from agricultural field burning have increased by about 25 percent. Hydrocarbon emissions in 1992 were estimated to originate primarily from motor vehicles and from agricultural field burning. Aircraft emissions of nitrogen oxides and hyrdocarbons during 1992 increased by about a factor of about two to three compared to 1980 while carbon monoxide emissions may have decreased slightly. The

decrease in carbon monoxide emissions is probably due to the increased usage of jet turbine aircraft which emit relatively low amounts of this pollutant. Aircraft emissions during 1992 continued to represent a relatively small percentage of total emissions for Maui Island.

The emission estimates given in Tables 4 and 5 include only manmade sources of air pollution. Natural sources of air pollution emissions that also could affect the project area but cannot be quantified very accurately include the ocean (sea spray), plants (aero-allergens), wind-blown dust, and distant volcanoes on the island of Hawaii.

The Hawaii State Department of Health operates a network of air quality stations at various locations around the State to monitor ambient concentrations of air pollution. Each station, however, typically does not monitor the full complement of air quality parameters. Table 6 shows annual summaries of air quality measurements that were made on Maui by the Department of Health for the period 1985 through 1990. These are the most recent data available.

Sulfur dioxide was monitored by the State Department of Health at an air quality station located at the county sewage treatment plant in Kihei, approximately 8 miles south of Kahului on the leeward side of Maui. Monitoring consisted of measurements of 24-hour average sulfur dioxide concentration every six to 12 days between 1987 and 1990. There were no exceedances of the State/national 24-hour AAQS for sulfur dioxide during the 4-year period. Concentrations monitored were consistently low with daily mean values at or below 5 $\mu g/m^3$.

The Department of Health also operated a PM-10 monitor at the Kihei site between 1987 and 1990. Twenty-four hour average PM-10 concentrations monitored at this location ranged from 6 to 107 $\mu g/m^3$. Average daily concentrations were approximately 26 $\mu g/m^3$. All values reported were within the State/national AAQS.

PM-10 concentrations were also monitored by the Department of Health at the Lahaina Intermediate School, approximately 23 miles southeast of Kahului on the leeward coast of Maui. Twenty-four hour average PM-10 concentrations monitored at this location ranged from 5 to 34 $\mu g/m^3$ between 1987 and 1990. Average daily concentrations were approximately 16 $\mu g/m^3$. All values reported were within the State/national AAQS.

Until October 1985, the Department of Health operated an air quality monitoring station at the Kahului Shopping Center, about one-half mile from the Kahului Harbor and the Kahului Power Plant. This station measured total suspended particulate (TSP) and sulfur dioxide concentrations. During 1985, twenty-four hour average sulfur dioxide concentrations ranged between about 5 and 31 $\mu g/m^3$, while 24-hour average TSP concentrations ranged from 26 to 105 $\mu g/m^3$. At the time, one exceedance of the State TSP air quality standard was logged, but the State TSP standard has since been relaxed and then subsequently eliminated in favor of the federal PM-10 standard.

The Department of Health has not monitored carbon monoxide, ozone or lead concentrations anywhere on Maui. Nitrogen dioxide measurements have not been made since the mid-1970's when monitoring was discontinued at Kahului. Nitrogen dioxide concentrations at that time averaged about 18 $\mu g/m^3$, well within the State and national AAQS.

Table 6a summarizes air quality data available for Maui for the years 1992 through 1994 as reported by the U.S. EPA's Aerometric Information Retrieval System (AIRS). As indicated in the table, sulfur dioxide measurements were made at Kihei during 1993 and 1994. The highest 24-hour average that was reported was 9 $\mu g/m^3$. PM-10 measurements were reported both at Kihei and at Lahaina for 1992 and 1993. The highest 24-hour PM-10 concentrations reported at these two locations were in the 20 to 25 $\mu g/m^3$. Ozone measurements were reported for Makawao (about 7 miles southeast of Kahului Airport) for 1992 and 1993. The highest 1-hour value reported was 0.052 ppm.

Other air quality data for Maui have been collected by Maui Electric Company (MECO) during recent years to support expansion projects. Table 7 is a summary of air quality data collected by MECO at Maalaea (about 7 miles south of Kahului Airport) between June and December 1989. As noted in the table, these data are considered representative of background concentrations, i.e., uninfluenced by local sources. The monitoring station was located approximately 1 mile north of Maalaea Generating Station, and as such, was upwind of the power plant most of the time due to the prevailing northerly wind pattern. Periods of power plant impacts on the monitoring station occurring with south winds (which occur relatively infrequently) have been eliminated from the data. The sulfur dioxide and particulate matter data collected by MECO are comparable to that reported by the Department of Health. The MECO data indicate that maximum background concentrations are relatively low for all parameters except possibly for particulate matter and for ozone. As indicated in the table, background particulate concentrations were 37 percent of the State/national 24-hour standard and 28 percent of the annual State/national limit. One-hour ozone levels were 86 percent of the State standard and 37 percent of the national standard.

Based on the data and discussion presented above, it appears likely that the State of Hawaii and the national AAQS for sulfur dioxide and for nitrogen dioxide are currently being met in the project area. Based on the data reported by MECO, it appears that while the national standard for ozone is probably being achieved, the more stringent State ozone standard may be exceeded on occasion due to the high background values. Background carbon monoxide concentrations appear to be almost nil, although concentrations near traffic-congested locations or close to agricultural field burning operations could be higher. Background particulate concentrations are currently at moderate levels. Sugar cane operations in the project vicinity likely cause occasional elevated levels of both carbon monoxide and particulate. No data are available to ascertain the present levels of ambient lead concentrations, but this pollutant is not considered to be a problem anywhere in the State.

5.0 SHORT-TERM IMPACTS OF PROJECT

Short-term direct and indirect impacts on air quality could potentially occur due to project construction. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project construction: (1) fugitive dust from vehicle movement and soil excavation; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term impacts related to slow-moving construction equipment traveling to and from the project site and from a temporary increase in local traffic caused by commuting construction workers.

Fugitive dust emissions may arise from the grading and dirt-moving activities associated with site clearing and preparation work. The

emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately because of its elusive nature of emission and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA [Ref. 2] has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions in the project area would likely be higher because the PE index for the Kahului area is less than 50 due to the relatively dry climate and because the soil silt content in the area is probably greater than 30 percent. Also, as discussed previously, the project site is a relatively windy location, and this may exacerbate uncontrolled dust emissions.

State of Hawaii Air Pollution Control Regulations [Ref. 3] prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for the project construction phase will be essential. Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust. In dust-prone or dust-sensitive areas, other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials that could be blown away. Haul trucks tracking dirt onto paved streets from unpaved areas is oftentimes a significant source of dust in construction areas. Some means to alleviate this problem, such as road cleaning or tire washing, may

be appropriate. Paving of parking areas and/or establishment of landscaping as early in the construction schedule as possible can also lower the potential for fugitive dust emissions.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides 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 engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

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, most potential short-term air quality impacts from project construction can be mitigated.

6.0 LONG-TERM IMPACTS OF PROJECT

6.1 Air Pollution Emissions

To ascertain the potential significance of air pollution emissions associated with the Kahului Airport Master Plan, annual emission estimates were prepared for comparison with the "significant" emission rates as defined by the State Department of Health

[Ref. 3] and the U.S. EPA [Ref. 4]. It should be noted, however, that the significant emission rates as defined by the Department of Health and the EPA are generally used to assess the significance of emissions from stationary point sources and not those from an airport, which is in effect a collection of mobile sources that constitutes an area or a volume source. Emissions from area and/or volume sources, while occurring at or near ground level, are much more diluted than point source emissions, and hence ambient concentrations and impacts on air quality are typically less significant for a given emission rate. Nevertheless, the significant emission rates as defined by DOH/EPA provide a useful measure of the potential significance of airport emissions.

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 minimal activities, although it is expected that more refueling and maintenance operations may occur in the future.

Emissions at or near Kahului Airport from aircraft operations, motor vehicles and aircraft refueling were estimated for the years 1994 and 2010. Estimates for 2010 were made for the following three basic alternatives:

Alternative 1	No action
Alternative 2	The preferred plan which includes extending Runway 2-20 to 9600 feet, adding a parallel runway and relocating helicopter traffic to another location.
Alternative 3	Extending Runway 2-20 to 9600 feet.

Although other variations of the above alternatives are being considered, it is unlikely that any of these other variations would differ substantially from one of the above three basic alternatives insofar as air quality is concerned.

Development of airport annual emission estimates commenced by first obtaining aircraft operations data for 1994 and aviation demand forecasts for each of the 2010 alternatives to be studied. These data were then input to the Emissions and Dispersion Modeling System (EDMS) [Ref. 5]. EDMS was developed jointly by the Federal Aviation Administration (FAA) and the United States Air Force (USAF), and its use is currently recommended by the U.S. EPA for assessing air quality impacts from airport emissions [Ref. 6].

EDMS is a computerized model that estimates both emissions and dispersion at civilian airports and military air bases. Emission estimates are based on U.S. EPA emission factors and the FAA Federal Aircraft Engine Emissions Database (FAEED). The required inputs to the model for estimating annual aircraft emissions include: peak-hour aircraft takeoff volume by aircraft type, queue delay time and temporal activity factors. The emission source characteristics for other sources present at the airport, such as automobile traffic, power plants, fuel storage facilities, etc., must also be supplied to the model.

Tables 8 through 11 show the actual and forecast annual aircraft operations for the four classes of aircraft that operate at Kahului Airport: air carrier, commuter/air taxi, general aviation and military. Operations are shown in the tables by aircraft type for 1994 and for 2010 both with and without the project. An aircraft operation is defined as either a takeoff or a landing. Estimated peak-hour takeoffs for 1994 and for 2010 with and without the

project are also given in the tables. Except for helicopter operations, the 2010 with project forecasts were assumed to pertain to both Alternatives 2 and 3 (Alternative 2 assumes that helicopter operations are relocated off site). As indicated in the tables, peak-hour takeoffs for each aircraft type were estimated as 0.0177 percent of annual operations. This factor was derived based on the project Master Plan which indicates that the peak month accounts for 10 percent of annual aircraft operations and that the peak hour accounts for approximately 11 percent of daily operations. One-half of annual operations were assumed to be takeoffs.

Most of the fixed-wing aircraft that operate at Kahului Airport are represented in the EDMS data base. However, it should be noted that EDMS does not have a specific capability to represent helicopter operations. Helicopter traffic represents a substantial portion of the aircraft operations at Kahului Airport. Thus, it is important to accurately account for this.

Table 12 shows the correlation between fixed-wing aircraft at Kahului Airport and the EDMS database. Note that ATR42 and P-3 emissions data are not included in the EDMS 7-93 database. These data were added as shown in Tables 13 and 14. ATR42 emissions were assumed to be twice those of the DHC-6 emissions given in the EDMS database based on the relative size and capacity of these two aircraft. P-3 emissions data were obtained from EPA emissions data [Ref. 7].

Helicopter traffic predominantly consists of tour helicopters, which are primarily represented by AS350B, Hughes 500 or Bell 206B models. Emission data for a Model AS350B helicopter were obtained from the engine manufacturer [Ref. 8] and were added to the EDMS aircraft data base as indicated in Table 15. Note that similar to

many aircraft sources in the EDMS data base, accurate estimates of particulate emissions were not available; particulate emissions were assumed to be nil. Note also that all runway takeoff emissions were assumed to be nil since helicopters do not operate in a runway takeoff mode. Due to the lack of emission data available for other civilian helicopter models, Model AS350B emissions were assumed to be representative of all civilian helicopter operations.

As indicated in Table 11, a relatively small number and variety of military helicopters operate at Kahului Airport. Military helicopter operations include: HH-65, SH-60, UH-1V, CH-53, AH-1, UH-1, UH-60, OH-58 and CH-47D. Military helicopter emission data for UH-1H and CH-47 models were obtained from EPA emission data [Ref. 7] and were added to the EDMS database as shown in Tables 16 and 17. Note again that runway takeoff emissions were assumed to be nil since helicopters do not operate in a runway takeoff mode. All military helicopter operations were represented by either UH-1H or CH-47 aircraft.

For purposes of estimating annual emissions, average queue delay times were used. The average queue delay time assumed for fixed-wing aircraft for each scenario was as follows:

Scenario	Delay (min)
1994	0.9
2010/Alt. 1	7.0
2010/Alt. 2	1.4
2010/Alt. 3	3.1

These data were provided by Edward K. Noda and Associates, Inc. [Ref. 9] and are based on standard FAA procedures for estimating

aircraft delay. Average queue delay time for all helicopter operations was assumed to be 10 minutes. This is the estimated time that is typically required for a tour helicopter to unload, service and reload.

Temporal activity factors were estimated for hourly, weekly and monthly levels of operation. Hourly activity factors were estimated based on tower traffic count data collected between May 1 and May 19, 1994. These data were assumed to be reasonably representative of year-around operations. As indicated in Table 18 which summarizes the daily operations counts for this period, the peak hour occurred between 10 and 11 am with an average of 50.6 operations. Thus, an activity factor of 1.00 was input to EDMS for this period. Activity factors for the other hours of the day were calculated as fractions of the peak hour based on the average number of operations for each period. Activity factors of 0.00 were assumed for the period between 10 pm and 6 am when the tower is closed.

Weekly activity factors were also estimated based on the tower traffic counts taken between May 1 and May 19, 1994. This yielded the following activity factors:

Day	Factor
Sunday	0.74
Monday	0.83
Tuesday	0.94
Wednesday	1.00
Thursday	0.94
Friday	0.84
Saturday	0.84

As indicated above, Wednesday was assumed to have the highest activity level and Sunday the lowest.

Monthly activity factors were estimated based on airport traffic records for 1992. This provided the following monthly activity factors:

Month	Factor
January	0.93
February	0.88
March	0.98
April	0.96
May	0.91
June	0.90
July	0.98
August	1.00
September	0.94
October	0.96
November	0.85
December	0.86

As suggested above, August was assumed to be the peak month for the year with November being the slowest.

The activity factors discussed above were assumed to be applicable to all scenarios studied. Thus, it was assumed that neither the passage of time nor the proposed airport improvements would alter the airport activity factors.

In addition to aircraft, airport-related motor vehicle traffic was included in the airport emission inventory as developed from EDMS.

To calculate emissions from roadway traffic, EDMS requires the user to provide roadway coordinates (i.e., roadway length), peak-hour two-way traffic volume, vehicle speed, cold-start fraction and temporal activity factors.

Emissions from roadway traffic were counted only from motor vehicles using the airport access road between the airport boundary and the terminal area. Two-way peak-hour traffic volumes used to estimate emissions were as follows:

Scenario	Peak-Hour Traffic Volume (vehicles/hr)
1994	1500
2010/Alt. 1	2393
2010/Alt. 2	2474
2010/Alt. 3	2474

These data were obtained from the project traffic study [Ref. 10]. As indicated above, it was assumed that there would be no difference in peak-hour traffic volumes between Alternatives 2 and 3 for 2010.

Vehicle speed for all scenarios was assumed to be 30 mph. This is the current posted speed limit on Keolani Place. The cold-start fraction for all scenarios was assumed to be 50 percent. This is a conservative assumption since the cold-start fraction likely currently is and will be lower and emissions are proportional to the cold-start fraction. Activity factors for roadway traffic were assumed to follow a pattern similar to that for aircraft operations.

Emissions from motor vehicles using the airport parking facilities were also included in the emission inventory. To enable EDMS to estimate parking lot emissions, the average gate-to-stall travel distance, travel speed, cold-start fraction and peak-hour ingress/egress traffic volumes are required. For all scenarios, the following assumptions were made:

Average gate-to-stall travel distance:	330 ft
Average travel speed:	5 mph
Cold-start fraction:	50 %

These are typical values for these parameters.

No specific information is available concerning the existing or future parking lot ingress/egress volumes during the peak hour. These were estimated as one-half of the traffic entering/exiting the airport terminal area as reported in the project traffic study.

As described in the Master Plan, jet fuel is currently stored on the east side of the airport in two large tanks with capacities of 23,000 gallons and 28,000 gallons each. A third tank, also located on the east side of the airport and with a 10,000-gallon capacity, is used for aviation gasoline. Tanker trucks are used both for resupplying the storage tanks and for refueling aircraft. The Kahului Airport Master Plan calls for relocating fuel storage facilities to the west side of the airport to a site opposite the existing ground transportation subdivision and potentially constructing a pipeline between the fuel storage area and the passenger terminal apron.

Inputs required by EDMS to calculate emissions from fuel storage include: fuel type, annual fuel throughput, type of fuel storage

facilities and vapor recovery efficiency. Based on information received from local fuel suppliers [Ref. 11], fuel throughputs for 1994 were estimated to amount to 200,000 gallons of aviation gasoline and 13 million gallons of Jet-A fuel. Fuel throughputs for the 2010 alternatives studied were scaled up from the 1994 levels based on the projected increases in aircraft operations for each alternative. All fuel tanks were assumed to be fixed-roof type, and it was assumed that no vapor recovery systems were used.

The results of the emission estimates for Kahului Airport for 1994 and for each of the three 2010 alternatives studied are summarized in Table 19. Emission estimates are given for each of the major (regulated) air pollutants including: carbon monoxide, nitrogen oxides, hydrocarbons, sulfur oxides and particulate. As indicated in the table, estimates are given in terms of tons per year of air pollution emitted.

Carbon monoxide emissions were estimated to amount to about 1132 tons during 1994 and were projected to increase to about 1912 tons in 2010 with Alternative 1. With Alternative 2, carbon monoxide emissions in 2010 would amount to about 1690 tons and with Alternative 3 about 1802 tons. Approximately 90 percent of carbon monoxide emissions was estimated to originate from aircraft operations with the remainder coming from motor vehicles.

Emissions of nitrogen oxides were calculated to amount to about 368 tons during 1994 and were projected to increase to about 652 tons during 2010/Alternative 1. Emissions in 2010/Alternative 2 would amount to about 626 tons, and 2010/Alternative 3 would result in about 667 tons of nitrogen oxides emitted. More than 95 percent of nitrogen oxides emissions was estimated to come from aircraft operations and the small remainder from motor vehicles.

Hydrocarbon emissions were estimated to amount to about 183 tons during 1994. This would increase to about 310 tons during 2010/ Alternative 1, 286 tons during 2010/Alternative 2 and 308 tons during 2010/Alternative 3. Approximately 90 to 95 percent of hydrocarbon emissions were estimated to originate from aircraft operations.

Emissions of sulfur oxides were estimated to amount to about 18 tons in 1994 and were projected to increase to about 30 tons in 2010/Alternative 1. Emissions in 2010/Alternative 2 were projected to total approximately 25 tons, while 2010/Alternative 3 would generate 28 tons. Nearly all of the relatively small amounts of sulfur oxides was estimated to originate from aircraft operations.

TSP/PM-10 emissions were estimated to amount to about 3 tons during 1994. These emissions were projected to increase to about 6 tons during 2010 with any of the three alternatives studied. Note that these emission estimates pertain to combustion emissions only, i.e., fugitive dust is not included. It should also be noted that combustion TSP/PM-10 emissions are probably underestimated due to the lack of TSP/PM-10 emission data included in the EDMS data base for several of the aircraft which use the Kahului Airport.

As with all sources involving combustion engines, trace quantities of other air pollutants will also occur. These typically include benzene, toluene, phenol, formaldehyde, xylene, ethylene, styrene, napthalene and other contaminants. Currently, methodologies are not available to accurately quantify the emissions of these pollutants.

Table 20 shows the defined significant emission rates (in tons per year) for carbon monoxide, nitrogen oxides, volatile organic compounds (hydrocarbons), sulfur dioxide and particulate matter. These values can be used to assess the significance of the estimated emission rates for the project. Emissions (or changes in emissions) below the significant emission rates are considered minor enough that any air quality impacts will likely be small. Emissions above the significant levels generally indicate that an air quality analysis or a more detailed examination of those emissions may be warranted to determine what impact significance the project might have.

Comparing the significant emission rates to the estimated emissions given in Table 19, it can be seen that 1994 emission levels of carbon monoxide, nitrogen oxides and hydrocarbons were above the significant emission rates while emissions of sulfur oxides and particulate matter were below. This would continue to remain so in the year 2010 with any of the three alternatives studied.

Between 1994 and 2010 in the no-action case (Alternative 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 significant emission rates for this alternative. In the 2010 with project alternatives (Alternatives 2 and 3), while the emission increases are generally projected to be smaller, the increases in emissions with respect to 1994 emissions would continue to exceed the significant emission rates for carbon monoxide, nitrogen oxides and hydrocarbons.

The primary purpose of this evaluation was to determine if the proposed project alternatives, i.e., Alternatives 2 or 3 for 2010, could have a significant impact on air quality. The most appropriate way to address this question insofar as emissions are concerned is to compare the estimated differences in emissions between 2010/Alternative 1 (no action) and 2010/Alternatives 2 and 3. The estimated net changes in emissions are indicated in Table 21. As shown in the table, 2010/Alternative 2 emissions of carbon monoxide, nitrogen oxides and hydrocarbons were estimated to be less than 2010/Alternative 1 emissions. Carbon monoxide emissions for 2010/Alternative 2 were estimated to be significantly less than those that would be emitted for 2010/Alternative 1. Thus, compared to the no-action alternative (2010/Alternative 1), 2010/Alternative 2 would likely not have a significant adverse impact on air quality but could instead potentially provide a significant positive impact on air quality.

Emissions of carbon monoxide for 2010/Alternative 3 would be significantly less than those for 2010/Alternative 1, while nitrogen oxides emissions would be slightly higher and hydrocarbon emissions would be nearly the same. Again, 2010/Alternative 3 would likely not have a significant adverse impact on air quality and could potentially provide a significant positive effect.

Table 22 is a truth table which summarizes the results of the emissions analyses by indicating which pollutants were projected to significantly increase for each alternative. Compared to 1994 emissions, any of the three 2010 alternatives would result in significant increases in carbon monoxide, nitrogen oxides and hydrocarbons and insignificant increases in sulfur dioxide and particulate matter. Compared to 2010/Alternative 1, 2010/Alternatives 2 and 3 would result either in insignificant increases or in decreases in emission rates for all pollutants.

6.2 Air Quality Impact Assessment

The emission estimates and discussion presented above indicate that if the proposed project is measured in terms of the no-project alternative it would likely not have a significant impact on air quality except for a positive effect with respect to carbon monoxide emissions. If the project is instead measured in terms of 1994 emission levels, then a potential impact from the increase in carbon monoxide, nitrogen oxides and hydrocarbons emissions exists. A detailed air quality impact assessment was prepared to quantify the potential impact. Impacts both along the airport boundary and at offsite roadway intersections were assessed.

6.2.1 Airport Boundary

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 its use is recommended by the U.S. EPA for assessing air quality impacts from airport emissions (Ref. 6). 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.

The emission estimating components of EDMS were discussed above in Section 6.1. In addition to providing a tool to estimate airport emissions, EDMS provides an atmospheric dispersion capability

specifically designed to simulate some of the unique aspects of airport emission sources. Standard Gaussian dispersion techniques are used to calculate ambient concentrations at user specified locations. The required inputs to the EDMS dispersion model include: airport geometry, peak-hour aircraft takeoff volume by aircraft type, peak-hour aircraft queue length and queue delay time, and hourly meteorology. The emission source characteristics for other sources present in the vicinity of the airport, such as automobile traffic, power plants, fuel storage facilities, etc., must also be supplied to the model. In the screening mode, EDMS assumes that the maximum level of activity for each source is applicable.

6.2.1.1 Carbon Monoxide. The detailed analysis of carbon monoxide air pollution focused on worst-case estimates of 1-hour and 8-hour concentrations. These are the averaging times that are comparable to the State and national AAQS. To begin the carbon monoxide air quality modeling study, four scenarios were selected for analysis and comparison. The four scenarios selected are similar to the emissions scenarios discussed in the previous section. These included one scenario for year 1994 based on actual aircraft operations and three alternatives for the year 2010 based on forecast aircraft operations. The year 2010 alternatives included: no action (2010/Alternative 1), the preferred plan (2010/Alternative 2), and the preferred plan but without the parallel runway and without the relocation of helicopter operations to another airfield (2010/Alternative 3).

The basic airport geometry for 1994 and for 2010/Alternative 1 was assumed to remain unchanged, i.e., the existing airport boundary and airport runways were assumed. Alternatives 2 and 3 assumed the proposed enlarged airport boundary as defined in the Master Plan and the extension of Runway 2-20 to 9600 feet would exist.

Alternative 2 further assumed the addition of a second runway parallel to Runway 2-20.

Defining the airport geometry for an EDMS application involves using a consistent coordinate system to identify runway and aircraft queue locations and orientations and the locations of model receptor sites. Receptor sites are the locations where the model will estimate ambient air pollution concentrations. Receptors are typically located either at locations where maximum concentrations could be expected to occur or at locations that are considered to be sensitive to air pollution. Most of the emissions from airport activities occur at or near groundlevel. Thus, maximum offsite groundlevel concentrations are typically assumed to occur at the airport boundary and to decrease with distance thereafter. Model receptors were placed along the entire boundary of Kahului Airport at intervals of approximately 100 m. A total of 149 receptors were used in the modeling study for the cases involving the existing airport boundaries, while a total of 164 receptors were established for the enlarged boundary scenarios (i.e., for 2010/Alternatives 2 and 3). Model receptor sites that were used for the 1994 and the 2010/Alternative 1 scenarios are depicted in Figure 3. Model receptor sites that were used for the scenarios involving the enlarged airport boundary, i.e., 2010/ Alternatives 2 and 3, are shown in Figure 4.

Peak-hour aircraft takeoff operations input to EDMS for each of the four scenarios studied were the same as those used to estimate annual emissions. This is discussed in detail in Section 6.1, and the relevant values used for dispersion modeling are given in Tables 8 through 11. Note that the takeoff values given in these tables for the 2010 without project scenario pertain to 2010/Alternative 1 and that the values given for the 2010 with project case pertain to 2010/Alternatives 2 and 3. Aircraft types were

either correlated with or added to the EDMS data base as described in Section 6.1.

The peak-hour queue length, as required by EDMS, was calculated based on the average number of aircraft queued and the average length of each aircraft in the queue (including spacing between aircraft). The average number of aircraft queued was estimated based on single-channel queuing theory as follows:

$$N = \frac{V^2}{C(C-V)}$$

where,

N = number of aircraft queued
V = aircraft takeoffs during peak hour (aircraft/hour)
C = runway takeoff capacity (aircraft/hour)

The above relationship indicates that a calculated estimate of the number of aircraft queued can be obtained given the total hourly demand volume of aircraft takeoff operations and the hourly airport takeoff capacity. Note that this relationship pertains to single-channel queuing operations. Although the existing airport has dual runways, the runways do not operate simultaneously, and this is, in effect, a single channel operation with respect to aircraft takeoffs. In the 2010 scenario that involves a parallel runway alternative (2010/Alternative 2), it was assumed that one of the parallel runways would be used for takeoffs and the other would be used for landings. Hence, an effective single-channel queuing operation would continue to be applicable.

The estimated total demand volume of aircraft takeoffs during the peak hour for each of the scenarios studied is indicated in

Table 23. The values given in this table are the total values indicated for each aircraft class as obtained from Tables 8 through 11, excluding helicopter operations. As discussed in the Master Plan, most helicopter operations at Kahului Airport operate independently from fixed-wing runway operations. Thus, helicopter operations were assumed to have no effect on the queuing of fixed-wing aircraft.

The estimated hourly airport takeoff capacities for 1994 and for each of the three 2010 alternatives studied is given in Table 24. This was obtained from the indicated source. Capacities during both Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) conditions are given in the table. Capacity during IFR conditions, when visibility is less than 3 miles and ceiling height is below 1000 feet, is less than that available during VFR situations. Aircraft queue lengths and queue times are obviously longer during IFR conditions.

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 am, although other hours between 8 am and 4 pm may approach the peak-hour level (see Table 18).

For purposes of making queuing estimates for screening analyses, it must be determined whether IFR or VFR capacity should be used. To make this determination, it must be resolved:

1) whether IFR conditions occur during worst-case dispersion conditions, and
2) whether IFR conditions occur during the peak hour of airport operations.

To answer these questions, weather observations as reported by the National Weather Service at Kahului Airport for 1993 and 1994 were reviewed and periods of IFR conditions were identified.

The National Weather Service Office at Kahului Airport reports observations every three hours during the period of tower operations. Table 25 summarizes the incidents of IFR conditions that were identified based on the reported weather observations during 1993 and 1994. As indicated in the table, IFR conditions at Kahului Airport occur very infrequently. Only nine occurrences were identified during 1993 and only five incidents were identified during 1994. Most of the IFR periods occurred either at or before 8 am or during the late afternoon or early evening hours. All but one of the IFR periods occurred during rain showers, and most of the periods occurred during periods of at least moderate wind speeds.

As will be discussed in more detail later, poor dispersion conditions during the daytime typically occur with low wind speeds and heavy cloud cover. Thus, while it is theoretically possible for such conditions to coincide with IFR conditions, data for Kahului Airport indicate that more moderate wind speeds generally prevail during IFR situations. Further, IFR conditions at Kahului Airport generally do not occur during periods of peak aircraft activity. Thus, VFR takeoff capacities were used to estimate peak-hour queue lengths. For those alternatives shown in Table 24 where a range of VFR takeoff capacities is applicable (depending on how

the airport runways are operated), the lowest end of the range was assumed.

Comparing the VFR takeoff capacities given in Table 24 to the total takeoff demand volumes given in Table 23, it can be seen that the takeoff demand volume is forecast to equal or slightly exceed the takeoff capacity in the 2010/Alternative 1 scenario. The formulation given above is only valid when the takeoff demand volume is less than the takeoff capacity. In calculating the queue lengths for the 2010/Alternative 1 scenario, it was assumed that air traffic control would limit the peak-hour demand volume to approximately 95 percent of takeoff capacity by holding aircraft in the apron area.

After determining the number of aircraft queued for each scenario, in an analysis that involves an airport with multiple runways, it is then necessary to specify runway usage. For the 1994 scenario and for the 2010 alternatives without the proposed parallel runway (i.e., 2010/Alternatives 1 and 3), it was assumed that all air carrier and military operations used Runway 2-20 and that all commuter/air taxi and general aviation operations used Runway 5-23. The estimated total number of aircraft queued during the peak hour was apportioned to each of the two runways on a pro rata basis. In the case of the parallel runway alternative (2010/Alternative 2), it was assumed that all commuter/air taxi and general aviation operations continued to use Runway 5-23 and that all air carrier and military takeoffs occurred on Runway 2L-20R while all air carrier/military landings occurred on Runway 2R-20L. Table 26 shows the resulting estimated number of aircraft queued at each runway for each of the four scenarios studied.

After estimating the number of aircraft queued at each runway during the peak hour, the peak-hour runway queue lengths were calculated by multiplying the estimated number of aircraft queued by the estimated average aircraft length including spacing between aircraft. For air carrier and military operations, it was estimated that the average aircraft length including aircraft spacing was 150 feet. For commuter/air taxi and general aviation operations, it was estimated that the average aircraft length including aircraft spacing was 50 feet.

The next task in developing the inputs to EDMS is to estimate queue delay time during the peak hour. This was estimated from the following formulation:

$$D = 60\frac{V}{C(C-V)}$$

where,

D = queue delay time (minutes)
C = runway takeoff capacity (aircraft/hour)
V = aircraft takeoffs during peak hour (aircraft/hour)

Table 27 shows the resulting estimated queue delay time for each scenario studied. Note again that the takeoff demand volume is forecast to equal or slightly exceed the takeoff capacity in the 2010/Alternative 1 scenario and that the formulation given above is only valid when the takeoff demand volume is less than the takeoff capacity. Similar to the queue length calculation, in calculating the queue delay time for the 2010/Alternative 1 scenario, it was assumed that air traffic control would limit the peak-hour demand volume to approximately 95 percent of takeoff capacity by holding aircraft in the apron area.

To fully evaluate air quality conditions in the vicinity of an airport, emissions from both aircraft and any other nearby sources of air pollution must be considered. As indicated in the airport emission estimates given in Table 19, 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 6.1.

Industrial sources located within a few miles of Kahului Airport include: Puunene Sugar Mill, located about 2 miles to the southwest, Paia Sugar Mill, located about 4 miles to the east, and Kahului Power Plant, located about 2 miles to the west. Annual emission estimates for these three sources are given in Table 28. 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 Mill, 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. Carbon monoxide emissions are below the defined significant emission rate.

EDMS calculates emissions from industrial sources based on fuel type and usage. Both Puunene Mill and Paia Mill burn a mixture of fuels that include fuel oil, diesel oil, coal and bagasse. Since the current version of EDMS does not have a capability to estimate emissions from bagasse-burning sources, these sources could not be

included in the air quality impact analysis. However, due to the relative size of the sources and the distances from the airport, it is unlikely that carbon monoxide emissions from the two mills would significantly interact with airport emissions at the airport boundary. Due to the relatively small emission rate, carbon monoxide emissions from Kahului Power Plant were assumed to have a negligible effect at the airport boundary. It might also be noted that EDMS does not account for limited mixing, and thus the concentration contribution from distant sources may not be accurately represented in the model.

As discussed previously in Section 4, agricultural burning is a relatively large source of carbon monoxide and particulate emissions on Maui. While EDMS does not have a capability to represent these emissions, field-burning near the airport occurs only infrequently and for short periods of time.

After completing the source input data for EDMS, it is then necessary to prepare the meteorological inputs. Meteorological inputs to an EDMS screening analysis include wind speed, wind direction, temperature and atmospheric stability class. As discussed in Section 4, atmospheric stability class is a measure of the small scale, random motions in the atmosphere (turbulence) that cause air pollutants to be dispersed as a function of distance or time from the point of emission. Stability class 1 is the most turbulent and class 6 the least. Thus, air pollution dissipates the most during stability class 1 conditions and the least when stability class 6 prevails.

As discussed previously, a screening-level analysis is performed by assuming worst-case meteorological dispersion conditions for a given hour occur coincidently with the period of maximum emissions,

i.e., during the peak hour of aircraft traffic. In most cases, this results in conservatively high estimates of worst-case air pollution concentrations for a 1-hour period.

Worst-case wind speeds for a source such as an airport that emits air pollution at or near groundlevel are light wind speeds which result in minimal dilution. In air quality modeling, the lowest wind speed that is typically considered is 1 meter per second (m/s). Thus, for the Kahului Airport screening analysis, a wind speed of 1 m/s was assumed.

The worst-case wind direction generally depends on the geometry of the airport and its relationship to any nearby sources. To determine the worst-case wind direction, a screening analysis generally assumes that the wind could come from any direction. For the Kahului Airport screening analysis, the worst-case wind direction was determined by examining 36 wind directions at 10-degree intervals around the compass, e.g., 10 degrees, 20 degrees, 30 degrees, etc.

Worst-case stability is primarily a function of time-of-day. Flight operations at Kahului Airport occur mostly during the daylight hours. The peak hour for aircraft operations currently occurs between mid-morning and mid-afternoon. Stability class 4 is the worst stability condition that occurs during this timeframe. This stability condition occurs during the daytime when the sky is mostly overcast.

Although EDMS requires the input of temperature, predicted concentrations from aircraft sources are relatively insensitive to this meteorological variable. For the Kahului Airport screening

analysis, a temperature of 75°F was assumed. As discussed previously in Section 4, this is the average annual temperature reported for Kahului Airport.

Predicted Worst-Case 1-Hour Concentrations

Table 29 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. Note that the concentrations given in the table include background contributions of carbon monoxide from sources not directly considered in the analysis. Background was accounted for by adding a concentration of 1 mg/m³ to all concentrations predicted by EDMS. Based on the information given in Section 4, this is a conservatively high estimate of background contribution. The relative significance of the estimated worst-case concentrations indicated in the table can be evaluated by comparing the values to the State and the national AAQS.

The predicted highest worst-case 1-hour carbon monoxide concentration for 1994 was 5.8 mg/m³ and occurred at receptor no. 126. As indicated in Figure 3, receptor no. 126 is located along the south boundary of the airport near the queuing area for Runway 2. Worst-case concentrations for all receptors along the airport boundary are displayed graphically in Figure 5. This shows that secondary maxima occur 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/Alternative 1 scenario, the predicted highest worst-case 1-hour concentration was 25.4 mg/m³; 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. Worst-case concentrations at other locations along the airport boundary for this scenario are shown in Figure 6. 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 allowable levels defined by the national AAQS, but several locations exceeded the more stringent State standard.

In the 2010/Alternative 2 scenario, the maximum predicted worst-case 1-hour concentration was 6.5 mg/m³ 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 alternative would provide for only a slight increase in the worst-case concentration compared to 1994 and a substantial improvement compared to 2010/Alternative 1. The substantial reduction in the maximum worst-case concentration compared to the 2010/Alternative 1 case reflects both the added capacity and the change in aircraft mix that 2010/Alternative 2 would provide. Figure 7 shows the worst-case concentrations at other receptor sites around the airport boundary. Areas of secondary maximum concentrations were predicted to occur near receptor nos. 95 through 100 and 122 through 125. These are 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.

In 2010/Alternative 3, the maximum predicted worst-case 1-hour concentration was 12.9 mg/m³ and occurred along the south boundary at receptor no. 24. This alternative was predicted to result in a maximum worst-case concentration approximately double that of 1994 and about half that of 2010/Alternative 1. The reduction in the maximum worst-case concentration compared to the 2010/Alternative 1 case reflects the change in aircraft mix and the enlarged airport boundary that 2010/Alternative 3 would provide. As indicated in Figure 8, elevated concentrations were 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 several locations equaled or slightly exceeded the more stringent State standard.

Predicted Worst-Case 8-Hour Concentrations

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. The locally derived 1-hour to 8-hour conversion factor was derived as follows:

$$C_8 = R_1 * R_2$$

where,

C_8 = 1-hour to 8-hour conversion factor

R_1 = ratio of 8-hour to 1-hour airport activity
R_2 = ratio of 1-hour to 8-hour wind speed

The above conversion factor accounts for two factors: (1) aircraft operations averaged over eight hours are generally lower than peak 1-hour values, and (2) meteorological dispersion conditions are typically more variable (and hence more favorable) over an 8-hour period than they are for a single hour.

As discussed previously in Section 6.1, hourly aircraft operations at Kahului Airport typically peak between 10 and 11 am, while activity levels for other hours range from 11 percent to 98 percent of peak-hour operations. The highest 8-hour activity level is about 86 percent of peak-hour operations. Thus, R_1 was calculated as 86/100 or 0.86.

Concentrations predicted by EDMS are inversely proportional to wind speed. As discussed previously, in estimating the worst-case 1-hour concentration, a wind speed of 1 m/s was assumed. To evaluate whether it was reasonable to assume that this would persist for an 8-hour period, one year of hourly meteorological data collected at Kahului Airport for 1983 was examined, and 8-hour average wind speeds were calculated for the hours of airport operations. Data for 1983 were used because this is the most recent year for which hourly data are available. In conducting this analysis, it was found that the minimum 8-hour wind speed during the period of airport operations was 2.6 m/s. Thus, R_2 was calculated as 1/2.6 or 0.38.

Given the above information, a locally derived 1-hour to 8-hour conversion factor was thus calculated as:

$$C_8 = 0.86 \cdot 0.38 = 0.33$$

It should be noted that low wind speeds at Kahului Airport are generally accompanied by highly variable wind directions which will tend to further reduce 8-hour concentrations. It should also be noted that aircraft queuing is a nonlinear function of aircraft volume and that reductions in peak-hour aircraft traffic will result in proportionally larger reductions in aircraft emissions. Thus, it is likely that the derived 1-hour to 8-hour conversion factor will yield conservatively high estimates of worst-case 8-hour concentrations.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 30. For the 1994 scenario, the estimated worst-case 8-hour carbon monoxide concentration at the airport boundary was 1.9 mg/m³. The maximum value for 2010/Alternative 1 was predicted to increase to 8.4 mg/m³. In the 2010/Alternative 2 scenario, a worst-case 8-hour concentration of 2.2 mg/m³ was predicted, only slightly above the 1994 level. In the 2010/Alternative 3 case, the worst-case 8-hour value was 4.3 mg/m³, more than double the 1994 case but only about one-half of the 2010/Alternative 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/Alternative 1 case. In this case, the more stringent State standard of 5 mg/m³ is predicted to be exceeded.

6.2.1.2 Nitrogen Oxides. The impact analysis of nitrogen oxides emissions focused on identifying the location and value of the maximum annual average concentration of nitrogen dioxide. This is the averaging time that is comparable to the State and national

AAQS. In preparing this assessment, all nitrogen oxides emissions were assumed to convert to nitrogen dioxide.

Similar to the impact assessment for carbon monoxide, a 1994 scenario and three 2010 alternatives were examined. The 2010 alternatives studied were the same as those described elsewhere in this report. The basic airport source and receptor geometry assumed for each scenario was the same as that discussed in the previous section, i.e., 1994 and 2010/Alternative 1 assumed that the existing airport boundary and airport runways were present while Alternatives 2 and 3 assumed the proposed enlarged airport boundary and the extension of Runway 2-20 to 9600 feet would exist. Alternative 2 further assumed the addition of a second runway parallel to Runway 2-20. In all cases, receptor sites were located at approximately 100-m intervals along the airport boundary.

The approach used in estimating the maximum annual nitrogen dioxide concentration involved using EDMS to calculate a 1-hour average concentration based on average annual meteorological conditions and peak-hour aircraft operations and then converting the resulting value to an annual average. The conversion to annual average concentration was accomplished based on annual average aircraft activity and annual wind direction frequency data.

Peak-hour aircraft takeoff operations, queue length and queue delay times input to EDMS for each of the four scenarios studied were the same as those used to estimate worst-case 1-hour carbon monoxide concentrations. Other airport sources of nitrogen oxides emissions, i.e., motor vehicles using the airport access road and airport parking lot, were also included in each of the scenarios examined as described in the previous section.

Other sources of nitrogen oxides in the vicinity of Kahului Airport include Puunene Sugar Mill, Kahului Power Plant and Paia Sugar Mill. These sources were not specifically included in the analysis of annual average nitrogen oxides impacts for the reasons given in Section 6.2.1.1. However, given their source strengths and locations relative to the airport, it is likely that they would not be involved in defining the location of maximum annual concentration, i.e., maximum annual average nitrogen dioxide concentration in the vicinity of the airport is probably largely defined by airport emissions.

Meteorological inputs to the EDMS screening analysis for nitrogen oxides included annual averages of wind speed, wind direction, temperature and atmospheric stability class. As indicated elsewhere in this report, annual average wind speed for Kahului Airport is 12.8 mph (6 m/s). The direction of the annual prevailing wind (as reported previously in Tables 2 and 3) is from the northeast. Hence, the input wind direction used to calculate annual average nitrogen dioxide concentration was 45 degrees. Annual average temperature (as indicated previously in Table x) is 75 degrees F. Table 31 shows the annual stability class frequency based on 1983 hourly weather observations for Kahului Airport for all hours and for the period of airport tower operations (6 am to 10 pm). Stability class 4 is the dominant class occurring 64 percent of the time during the 6 am to 10 pm time period. Thus, stability class 4 was used to derive an estimate of annual average nitrogen dioxide concentration.

After obtaining the maximum 1-hour concentration pertaining to annual average meteorological conditions, an estimate of maximum annual concentration was obtained by applying an annual activity factor and then by multiplying the result by the wind direction with the highest frequency of occurrence. The annual activity

factor was taken to be the average of the hourly activity factors given in Table 18 and assuming no activity for the 8 hours from 10 pm to 6 am when the tower is closed. This results in an annual activity factor of 0.39. As reported previously in Table 3, the northeast wind direction sector has the highest annual frequency of occurrence with a value of 0.38. The combination of these two factors results in a 1-hour to annual conversion factor of 0.15. Note that this is applied to the 1-hour average that is representative of maximum aircraft activity and average wind speed and stability conditions.

Background was accounted for by adding a concentration of 10 $\mu g/m^3$ to the resulting estimates of annual nitrogen dioxide concentrations. Based on the information given in Section 4, this is a conservatively high estimate of background contribution.

The resulting estimated maximum annual nitrogen dioxide concentrations are indicated in Table 32. The relative significance of the estimated worst-case concentrations indicated in the table can be evaluated by comparing the values to the State and the national AAQS. For the 1994 scenario, the estimated maximum annual nitrogen dioxide concentration at the airport boundary was 29.5 $\mu g/m^3$ and occurred at receptor no. 107. The maximum value for 2010/Alternative 1 was predicted to increase to 54.9 $\mu g/m^3$ and occur at receptor no. 106. In the 2010/Alternative 2 scenario, a maximum annual nitrogen dioxide concentration of 47.4 $\mu g/m^3$ was predicted to occur at receptor no. 117. This value is slightly below the 2010/Alternative 1 scenario and approximately 60 percent above the 1994 level. In the 2010/Alternative 3 case, the maximum annual value was 59.9 $\mu g/m^3$ and occurred at receptor no. 116. This value is approximately double the 1994 case and about 10 percent above the 2010/Alternative 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.

6.2.1.3 Hydrocarbons. Although there are no State or national ambient air quality standards pertaining to hydrocarbons, hydrocarbons 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.

EDMS is not a photochemical model and cannot predict groundlevel ozone concentrations. Typically, when photochemical modeling is performed, it is done on an areawide basis using models specifically designed for photochemical analyses. This would probably be the only meaningful approach to assessing the potential impact of hydrocarbon emissions from Kahului Airport, but such an assessment is generally beyond the scope of any single development in a given area and may only be warranted when ozone standards are known to be exceeded.

Based on the information given in Section 4, 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.

Given the relatively small number of air pollution sources on Maui, current ozone levels are higher than one might expect. This is

probably true at many locations in Hawaii due to the abundance of sunlight and the fact that the islands are surrounded by water which is devoid of ozone sinks. As indicated in Section 4, motor vehicles and agricultural burning are the largest sources of hydrocarbons on Maui. Each emits about 4000 tons per year of hydrocarbons. As shown in Table 19, 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/Alternative 1, 286 tons in 2010/Alternative 2 and 308 tons in 2010/Alternative 3. These emission rates represent only about 3 to 4 percent of that currently emitted from motor vehicles and agricultural burning. Thus, it is unlikely that either existing or future emissions of hydrocarbons from Kahului Airport will affect groundlevel ozone concentrations.

6.2.2 Roadway Intersections

Motor vehicles coming to and from the airport may potentially impact air quality at offsite locations. Generally speaking, roadway intersections are the primary concern because of traffic congestion and because of the increase in vehicular emissions associated with traffic queuing. Motor vehicles with gasoline-powered engines primarily emit carbon monoxide and nitrogen oxides. As a relative measure compared to airport emissions, approximately 25 motor vehicles at idle emit carbon monoxide at about the same rate as one Boeing 737 jet aircraft queued for takeoff.

To evaluate the potential long-term indirect ambient air quality impact of increased roadway traffic associated with a project such as this, computerized emission and atmospheric dispersion models can be used to estimate ambient carbon monoxide concentrations along roadways leading to and from the project. Carbon monoxide is selected for modeling because it is both the most stable and the

most abundant of the pollutants generated by motor vehicles. Furthermore, carbon monoxide air pollution is generally considered to be a microscale problem that can be addressed locally to some extent, whereas nitrogen oxides air pollution most often is a regional issue that cannot be addressed by a single new development.

Similar to the airport boundary assessments, four scenarios were selected for the assessment of carbon monoxide concentrations at roadway intersections: (1) year 1994 with present conditions, (2) year 2010 without the project, and (3) year 2010 with the project. The 2010 with project alternative pertains to the preferred project alternative which includes extending the existing main runway to 9600 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 taken to include high-volume, signalized intersections located in the vicinity of the airport and identified in the traffic study as being potentially affected 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 report for the project describes the present and future traffic conditions and laneage configurations of these intersections in detail. Note that per the traffic study it was assumed that the new airport access road would form a grade-separated and partial cloverleaf interchange at Hana Highway, thereby avoiding the need for an at-grade intersection at this location.

The main objective of the roadway intersection modeling study was to estimate maximum 1-hour average carbon monoxide concentrations for each of the three scenarios studied. To evaluate the significance of the estimated concentrations, a comparison of the predicted values for each scenario can then be made. Comparison of the estimated values to the national and State AAQS will provide another measure of significance.

It was assumed that maximum 1-hour carbon monoxide concentrations near the roadway intersections studied would coincide with peak hour traffic. The traffic impact assessment report indicates that traffic volumes peak in the morning between 7:30 and 8:30 am and again in the afternoon between 4:30 and 5:30 pm. Afternoon peak-hour traffic volumes generally are or will be higher than during the morning peak period. However, worst-case emission and worst-case meteorological dispersion conditions typically occur during the morning hours at most locations. Thus, both morning and afternoon peak-traffic hours were examined to ensure that worst-case concentrations were identified.

EPA air quality modeling guidelines [Ref. 6] currently recommend that CAL3QHC [Ref. 12] be used to assess carbon monoxide concentrations at roadway intersections, or in areas where its use has previously been established, CALINE4 [Ref. 13]. CALINE4 has been used extensively in Hawaii to assess air quality impacts at roadway intersections. Each of these two computer models offers advantages and disadvantages. CAL3QHC has the capability to make vehicle queuing estimates, but it does not simulate modal emissions. CALINE4 has the capability to simulate modal emissions, but it does not have the capacity to make queuing estimates.

Since the use of CALINE4 has previously been established in Hawaii, CALINE4 was used to perform the analyses for the Kahului Airport project. However, all vehicle queuing estimates were made based on the queuing algorithms included in the CAL3QHC model. This approach takes advantage of the best features of both models.

CALINE4 was developed by the California Transportation Department to simulate vehicular movement and atmospheric dispersion of vehicular emissions. The model is designed to predict 1-hour average pollutant concentrations along roadways based on input traffic and emission data, roadway/receptor geometry and meteorological conditions.

Input peak-hour traffic data were obtained from the traffic study cited previously. As discussed above, traffic queuing estimates were made based on the methodology used by CAL3QHC. Vehicle speeds were input as the posted speed limits reported in the project traffic study. Average deceleration and acceleration times were assumed to be equivalent and were calculated as recommended by the California Department of Transportation by assuming an acceleration rate of 2.0 mph per second.

Model roadways were set up to reflect roadway geometry, physical dimensions and operating characteristics. Presently, there are no pedestrian walkways along several of the roadways within the project area. In the 2010 with and without project cases, sidewalks may or may not exist. Concentrations predicted by air quality models generally are not considered valid within the roadway mixing zone. The roadway mixing zone is taken to include 3 meters on either side of the traveled portion of the roadway and the turbulent area within 10 meters of a cross street. For this study, model receptor sites were located at the edges of the mixing

zones where the maximum concentrations would likely occur, whether or not sidewalks currently exist. All receptor heights were placed at 1.8 meters above ground to simulate levels within the normal human breathing zone.

Input meteorological conditions for this study were defined to provide "worst-case" results. Worst-case wind conditions were defined as a wind speed of 1 meter per second with a wind direction resulting in the highest predicted concentration. For groundlevel sources, worst-case dispersion typically occurs during the highest possible stability class and the lowest possible wind speed. Table 33 shows the stability class frequency for the Kahului Airport area for the morning and afternoon peak-traffic periods. During the morning commute hour, stability class 6 occurs approximately 1.9 percent of the time while stability class 5 occurs about 10.7 percent of the time. Stability class 6 and wind speeds of 1 meter per second occur even less frequently. It is further unlikely that stability class 6 and a wind speed of 1 meter per second will coincide with the worst wind direction. Thus, stability class 5 was assumed for the morning scenarios. As shown in Table 33, stability class 4 has a very high frequency of occurrence during the afternoon commute hour and is the highest stability class that occurs. Hence, stability category 4 was assumed for afternoon cases.

Other meteorological inputs include surface roughness length and mixing height. A surface roughness length of 100 cm was assumed both for the present scenario and for the future cases. This is characteristic of either residential or agricultural areas. A worst-case mixing height of 300 meters was used in all cases. Average mixing heights in Hawaii are generally above 1000 meters.

Background contributions of carbon monoxide from sources or distant roadways not directly considered in the analysis were accounted for by adding a background concentration of 1 mg/m³ to all predicted concentrations for both the 1994 and the 2010 scenarios. This is a conservatively high estimate of background concentration based on the data reported in Section 4.

In addition to providing inputs for vehicle volume and queuing, CALINE4 requires the user to input vehicle carbon monoxide emission rates at idle and at a cruise speed of 16 mph. Vehicle carbon monoxide emission rates were calculated for each year studied using EPA's MOBILE5A computer model [Ref. 14]. Key inputs to MOBILE5A include: emission year, vehicle mix, cold/hot-start fractions, ambient temperature, vehicle speed and type of vehicle inspection and maintenance program.

Federal air pollution control regulations require that new motor vehicles be equipped with emission control devices that reduce emissions significantly compared to a few years ago. In 1990, the President signed into law the Clean Air Act Amendments. This new legislation requires further emission reductions be phased in beginning in 1994. The combination of current and new restrictions on emissions from new motor vehicles will lower average emissions each year as more and more older vehicles leave the State's roadways. Carbon monoxide emissions, for example, will go down by about 15 percent on the average during the next 10 years due to the replacement of older vehicles with newer models. Thus, MOBILE5A predicts lower emissions for future years than for the current year. The Kahului Airport analysis was based on MOBILE5A emission estimates for 1994 and for 2010.

Based on recent vehicle registration figures, the present and projected vehicle mix in the project area is estimated to be 91.9% light-duty gasoline-powered vehicles, 5% light-duty gasoline-powered trucks and vans, 0.5% heavy-duty gasoline-powered vehicles, 0.6% light-duty diesel-powered vehicles, 1% heavy-duty diesel-powered trucks and buses, and 1% motorcycles.

Motor vehicles operating in a cold- or hot-start mode emit excess air pollution. Typically, motor vehicles reach stabilized operating temperatures after about 4 miles of driving. For traffic operating within the project area, it was assumed that during both the morning and the afternoon peak-traffic hours about 25 percent of all vehicles would be operating in the cold-start mode and that about 5 percent would be operating in the hot-start mode. These operational mode values were estimated based on a report from the California Department of Transportation [Ref. 15] and taking into consideration the likely origin of traffic in the project area.

Ambient temperatures of 59 and 68 degrees F were used for morning and afternoon peak-hour emission computations, respectively. These are conservative assumptions since morning/afternoon ambient temperatures will generally be warmer than this, and emission estimates given by MOBILE5A are inversely proportional to the ambient temperature.

Emission estimates provided by MOBILE5A are inversely proportional to vehicle speed. As required by CALINE4, all vehicle cruise emission estimates were based on a vehicle speed of 16 mph. Vehicle idle emissions were derived from the emission estimates pertaining to 2.5 mph as recommended by EPA.

Hawaii has no vehicle inspection and maintenance program. Thus, both existing and future emission estimates were made assuming no inspection and maintenance program.

Predicted Worst-Case 1-Hour Concentrations

Table 34 summarizes the final results of the roadway intersection study in the form of the 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.

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/m³, respectively. With or without the project, roadway improvements are planned for this intersection by 2010, and the analyses for 2010 assumed that the improvements would be implemented. Without the project in 2010, the morning worst-case concentration was estimated to remain nearly unchanged at 42.7 mg/m³, while the afternoon value increased to 56.1 mg/m³. With the project in 2010, worst-case concentrations were forecast to decrease compared to both the without project case and the existing case to 31.5 mg/m³ during the morning and 48.1 mg/m³ 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 this location were predicted to potentially exceed both State and national standards in all three scenarios.

Existing worst-case concentrations at the intersection of Hana Highway and Haleakala Highway were predicted to reach 51.6 mg/m³ during the morning and 32.5 mg/m³ during the afternoon. Without the project in 2010, worst-case concentrations were estimated to decrease to 42.4 mg/m³ during the morning and increase slightly to 34.6 mg/m³ during the afternoon. The decrease in the morning concentration is related to the assumed new highway between Pukalani and Kihei. With the 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 project scenario was predicted to remain nearly unchanged at 42.0 mg/m³, while the afternoon value was estimated to decrease to 27.9 mg/m³. Worst-case concentrations at this location were predicted to potentially exceed both State and national standards in all three scenarios.

Worst-case concentrations at the Puunene Avenue/Kuihelani Highway intersection for the existing case were predicted to reach 28.6 mg/m³ during the morning and 23.2 mg/m³ during the afternoon. Without the project in 2010, worst-case concentrations were forecast to increase substantially to 67.9 mg/m³ during the morning and 44.3 mg/m³ during the afternoon. Worst-case concentrations in 2010 with the project compared to without it were estimated to remain unchanged during the morning and to decrease somewhat to 39.4 mg/m³ 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.

The new airport access road intersection with Dairy Road would only exist in the with project scenario. Worst-case concentrations at this intersection were predicted to be 14.7 mg/m³ 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 at Hansen-Spine Road would only become a signalized intersection in the with project case. Hence, only the 2010 with project scenario was examined at this location. During the morning, a worst-case concentration of 30.6 mg/m³ was forecast. During the afternoon, a worst-case value of 24.4 mg/m³ was predicted. These concentrations are within the national standard but exceed the more stringent State standard.

Predicted Worst-Case 8-Hour Concentrations

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: (1) traffic volumes averaged over eight hours are lower than peak 1-hour values, and (2) 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.

Specific 8-hour averages of traffic volumes were not available, but it was assumed that hourly traffic volumes during the highest 8-hour period would average no higher than 0.9 of the peak-hour value. Concentrations predicted by CALINE4 are proportional to input traffic volumes.

It was further assumed that the highest 8-hour concentrations would occur during the daytime when 8-hour average traffic volumes are

highest. As discussed in the previous section, the lowest 8-hour wind speed at Kahului Airport between 6 am and 10 pm based on hourly weather observations for 1983 was 2.6 m/s. It was assumed that this was representative of daytime periods at intersection locations near the airport. Given that concentrations predicted by CALINE4 are inversely proportional to wind speed and that worst-case 1-hour estimates are based on a wind speed of 1 m/s, this yields a 1-hour to 8-hour wind speed correction factor of 1/2.6 or 0.38.

The combined effect of a 1-hour to 8-hour traffic correction factor of 0.9 and a 1-hour to 8-hour wind speed correction factor of 0.38 produces a 1-hour to 8-hour conversion factor of 0.35. Note that traffic queuing is a nonlinear function of traffic volume and that the variability of wind direction and other meteorological variables over an 8-hour period will further reduce the maximum 8-hour concentration. Thus, the locally-derived 1-hour to 8-hour conversion factor can be expected to result in conservatively high estimates of worst-case 8-hour concentrations.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 35. For the 1994 scenario, the highest estimated worst-case 8-hour carbon monoxide concentration within the project area was 18.1 mg/m³. 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/m³ at Hana Highway and Dairy Road and 10.0 mg/m³ at Puunene Avenue and Kuihelani Highway. Worst-case concentrations at all locations studied were forecast to equal or exceed both State and national standards.

Without the project in 2010, the predicted maximum values near the intersections studied were 23.8 mg/m³ at Puunene Avenue and Kuihelani Highway, 19.6 mg/m³ at Hana Highway and Dairy Road, and 14.8 mg/m³ 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 without project case. At the five intersections studied for this scenario, concentrations were predicted to range from 5.2 mg/m³ near the airport access road at Dairy Road to 23.8 mg/m³ near Puunene Avenue and Kuihelani Highway. Worst-case concentrations at all locations studied were forecast to equal or exceed both State and national standards.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on air quality monitoring data, it appears likely that State and national ambient air quality standards are currently being met at most locations on Maui. Background concentrations of ozone and of particulate matter are at moderate to high levels, while concentrations of other pollutants are nil except possibly in areas close to air pollution sources.

The major potential short-term air quality impact of the project will occur from the emission of fugitive dust during construction. Kahului is a particularly dust-prone location due to the dry

climate, the fine nature of the soil in the area, and the windy conditions. Uncontrolled fugitive dust emissions from construction activities are estimated to amount to at least 1.2 tons per acre per month. To control dust, active work areas and any temporary unpaved work roads should be watered at least twice daily on days without rainfall. Use of wind screens and/or limiting the area that is disturbed at any given time will also help to contain fugitive dust emissions. Wind erosion of inactive areas of the site that have been disturbed could be controlled by mulching or by the use of chemical soil stabilizers. Dirt-hauling trucks should be covered when traveling on roadways to prevent windage. A routine road cleaning and/or tire washing program will also help to reduce fugitive dust emissions that may occur as a result of trucks tracking dirt onto paved roadways in the project area. Paving of parking areas and establishment of landscaping early in the construction schedule will also help to control dust.

During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from vehicles used by construction workers and from trucks traveling to and from the project. Increased vehicular emissions due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours.

After construction is completed and the new facilities are in use, emissions from aircraft operations and from onsite motor vehicle traffic would result in long-term improvements in air quality compared to the without project alternative. This conclusion was reached after comparing emissions for the with and without project cases and after performing air quality impact analyses for the project alternatives. The change in aircraft mix and the added

capacity of the project alternative which includes the extension of Runway 2-20 to 9600 feet and the construction of a parallel runway will result in substantially lower emissions of carbon monoxide and minor reductions in nitrogen oxides and hydrocarbons emissions compared to the without project case. This would also be true in the project alternative that includes the proposed runway extension but does not include a parallel runway, although nitrogen oxides emissions would increase slightly instead of decreasing.

Based on air quality modeling of airport emissions, it appears that all State and national ambient air quality standards are currently being met at the airport boundary. Without the project in 2010, all national standards would continue to be met, but the more stringent State standards for carbon monoxide could be exceeded at the airport boundary during worst-case conditions. If the preferred project plan is implemented, it appears that the 2010 level of airport operations would meet State carbon monoxide standards. If the added capacity of the proposed parallel runway is omitted from the development plan, the State 1-hour carbon monoxide standard could be exceeded by 2010 due to longer queue delay times. With or without the project, it appears likely that State and national ambient air quality standards pertaining to nitrogen dioxide concentrations would be maintained at the airport boundary.

Based on air quality modeling of offsite roadway intersections, it appears that the highest concentrations of air pollution in the vicinity of Kahului Airport are not due to aircraft emissions but due to emissions from motor vehicle traffic on nearby roadways. Although there are no monitoring data that show this actually occurs, air quality modeling results indicate that both State and national standards for carbon monoxide could currently be exceeded during worst-case conditions in the vicinity of high-volume,

congested intersections such as Hana Highway at Haleakala Highway, Hana Highway at Dairy Road and Puunene Avenue at Kuihelani Highway. This would likely remain so in the year 2010 with or without the project. Worst-case concentrations with the project will generally remain unchanged or decrease somewhat, i.e., project-related traffic would not be a factor if the traffic mitigation measures proposed in the project traffic study are implemented.

A substantial portion of the emissions at Kahului Airport are emitted by air carrier aircraft. Some degree of control of carbon monoxide and hydrocarbon emissions from air carrier turbine-aircraft could potentially be achieved by modification of ground-operation procedures. Control measures could include:

1) Requiring pilots to increase engine speed and reduce number of engines operating during idle and taxi;
2) Reducing idle operating times by controlling departure times from gates;
3) Reducing taxi operating time by towing aircraft between runway and gate;
4) Reducing operating time of aircraft auxiliary power supply by providing ground-based power supply.

Another measure that could serve to reduce all aircraft emissions would be to maximize the operational airport capacity so as to minimize aircraft queuing.

Although the proposed project would not have a measurable affect on air quality at offsite roadway intersections where potential problems may occur and the proposed development may not have any control over these locations, some mitigation measures can be suggested:

1) Roadway capacity could be added at those locations where the traffic level of service is poor;
2) Roadway speed limits could be reduced at those locations where the high speed limits (above 35 mph) cause excessive acceleration emissions;
3) Traffic signals could be optimized and/or coordinated to reduce traffic queuing;
4) Buffer zones could be provided between sidewalks and roadways;
5) Bus service could be promoted for arriving and departing airport passengers.

REFERENCES

1. "Kahului Airport Master Plan", State of Hawaii Department of Transportation, Airports Division, prepared by Belt Collins & Associates, June 1993.

2. Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Fourth Edition Including Supplements A-F, AP-42, U.S. Environmental Protection Agency, Research Triangle Park, NC, July 1993.

3. State of Hawaii. Hawaii Administrative Rules, Chapter 11-60, Air Pollution Control.

4. Code of Federal Regulations, Title 40, Part 51.166, "Prevention of Significant Deterioration of Air Quality".

5. EDMS - Microcomputer Pollution Model for Civilian Airports and Air Force Bases: User's Guide, Including Supplement A, Federal Aviation Administration, Office of Environment and Energy, FAA-EE-91-3, June 1991.

6. Guideline on Air Quality Models (Revised), Including Supplements A and B, EPA-450/2-78-027R, U.S. Environmental Protection Agency, Research Triangle Park, NC, July 1986.

7. Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, Fourth Edition Including Supplement A, AP-42, U.S. Environmental Protection Agency, Research Triangle Park, NC, January 1991.

8. Personal communication, from John McGraw, Turbomeca Engine Corporation, to Ken Cordes, P&D Aviation, November 8, 1994.

9. Personal communication, from Brian Ishii, Edward K. Noda and Associates, Inc., to Barry D. Neal, B.D. Neal & Associates, May 12, 1995.

10. Wilbur Smith Associates, Traffic Impact Study for Kahului Airport Improvements, Draft, April 7, 1995.

11. Personal communication, from Nick Pechin, Century Aviation, to Barry D. Neal, B.D. Neal & Associates, April 17, 1995.

12. User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections, U.S. Environmental Protection Agency, November 1992.

13. CALINE4 - A Dispersion Model for Predicting Air Pollutant Concentrations Near Roadways, FHWA/CA/TL-84/15, California State Department of Transportation, November 1984 with June 1989 Revisions.

14. User's Guide to MOBILE5A (Mobile Source Emission Factor Model), U.S. Environmental Protection Agency, Office of Air and Radiation, Office of Mobile Sources, Emission Control Technology Division, Test and Evaluation Branch, Ann Arbor, Michigan, May 1994.

15. Benson, Paul E., "Corrections to Hot and Cold-Start Vehicle Fractions for Microscale Air Quality Modeling", California Department of Transportation, Transportation Laboratory, Sacramento, California.

Appendix A

AIR POLLUTION CONVERSION FACTORS

Parameter	Units Given	Conversion Units	Conversion Factor
Sulfur Dioxide	$\mu g/m^3$	ppb	0.38
Carbon Monoxide	mg/m^3	ppm	0.87
Nitrogen Dioxide	$\mu g/m^3$	ppb	0.53
Ozone	$\mu g/m^3$	ppb	0.51

Note: All conversions assume 25 degrees C and 760 mm Hg.

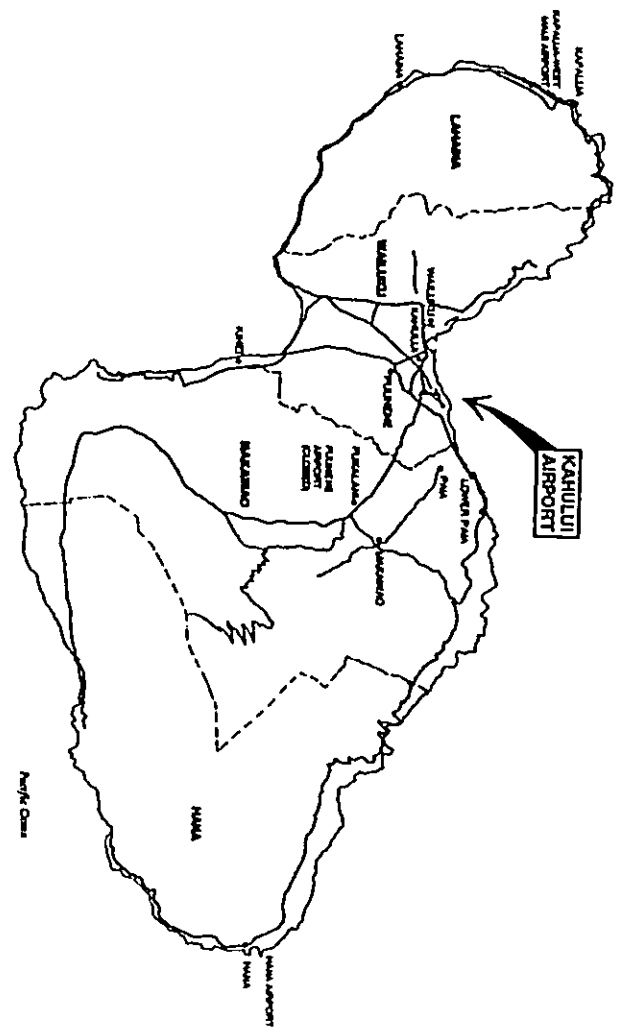


Figure 1
LOCATION MAP

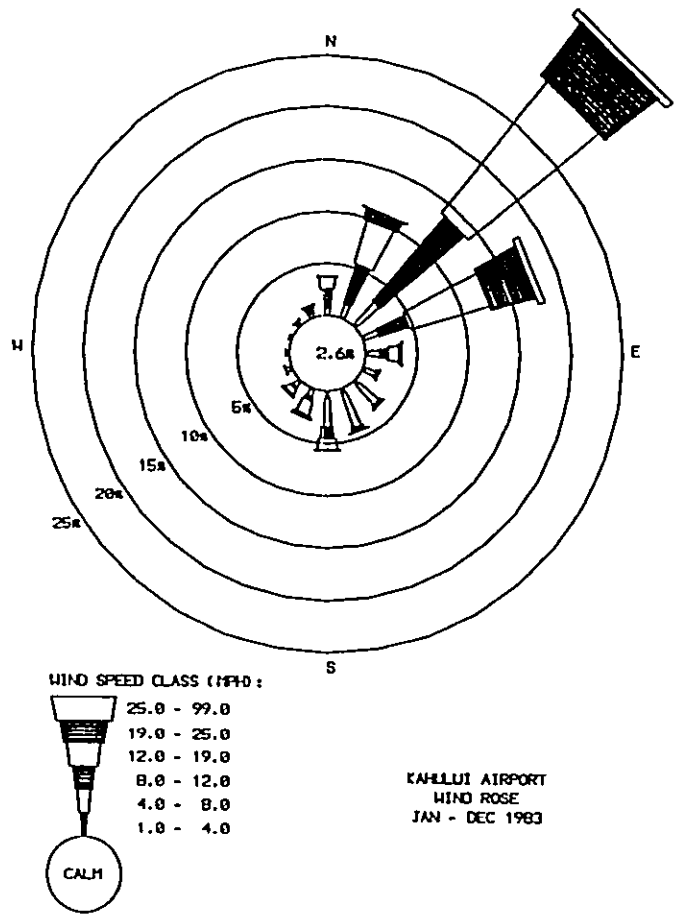


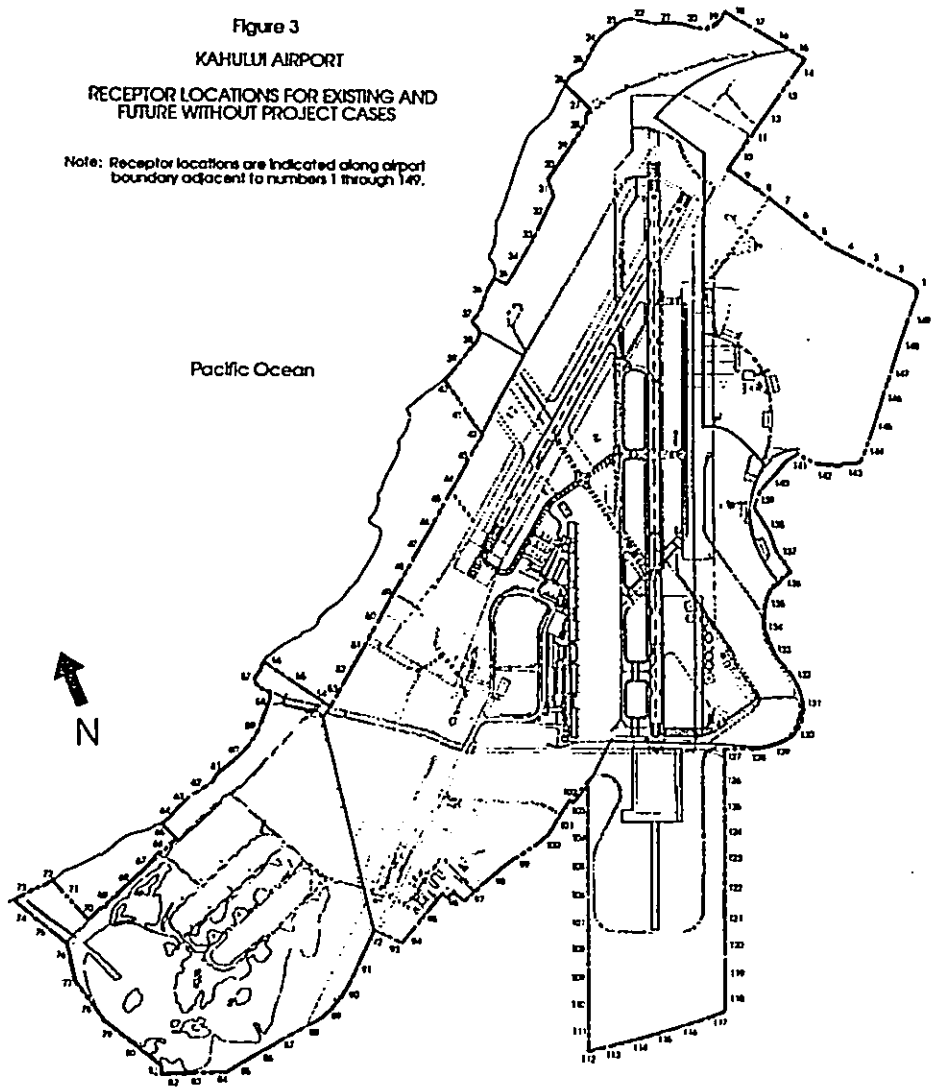
Figure 2

Figure 3

KAHULUI AIRPORT

RECEPTOR LOCATIONS FOR EXISTING AND FUTURE WITHOUT PROJECT CASES

Note: Receptor locations are indicated along airport boundary adjacent to numbers 1 through 149.



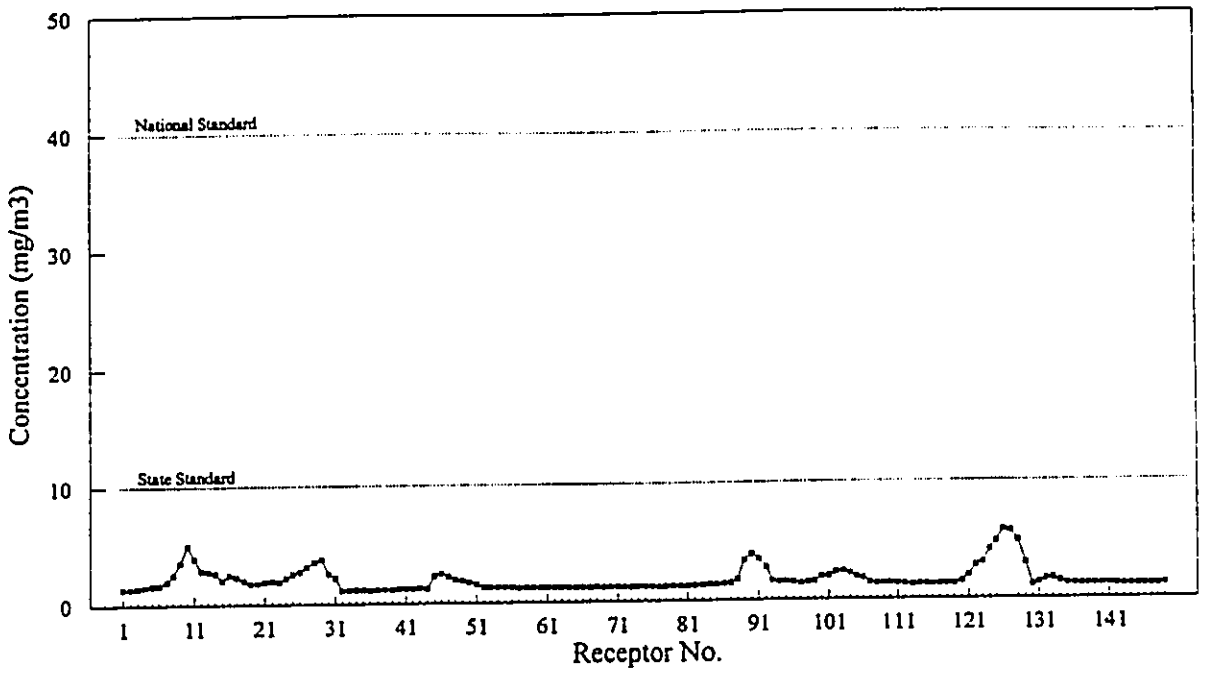


Figure 5

PREDICTED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS
ALONG KAHULUI AIRPORT BOUNDARY FOR 1994

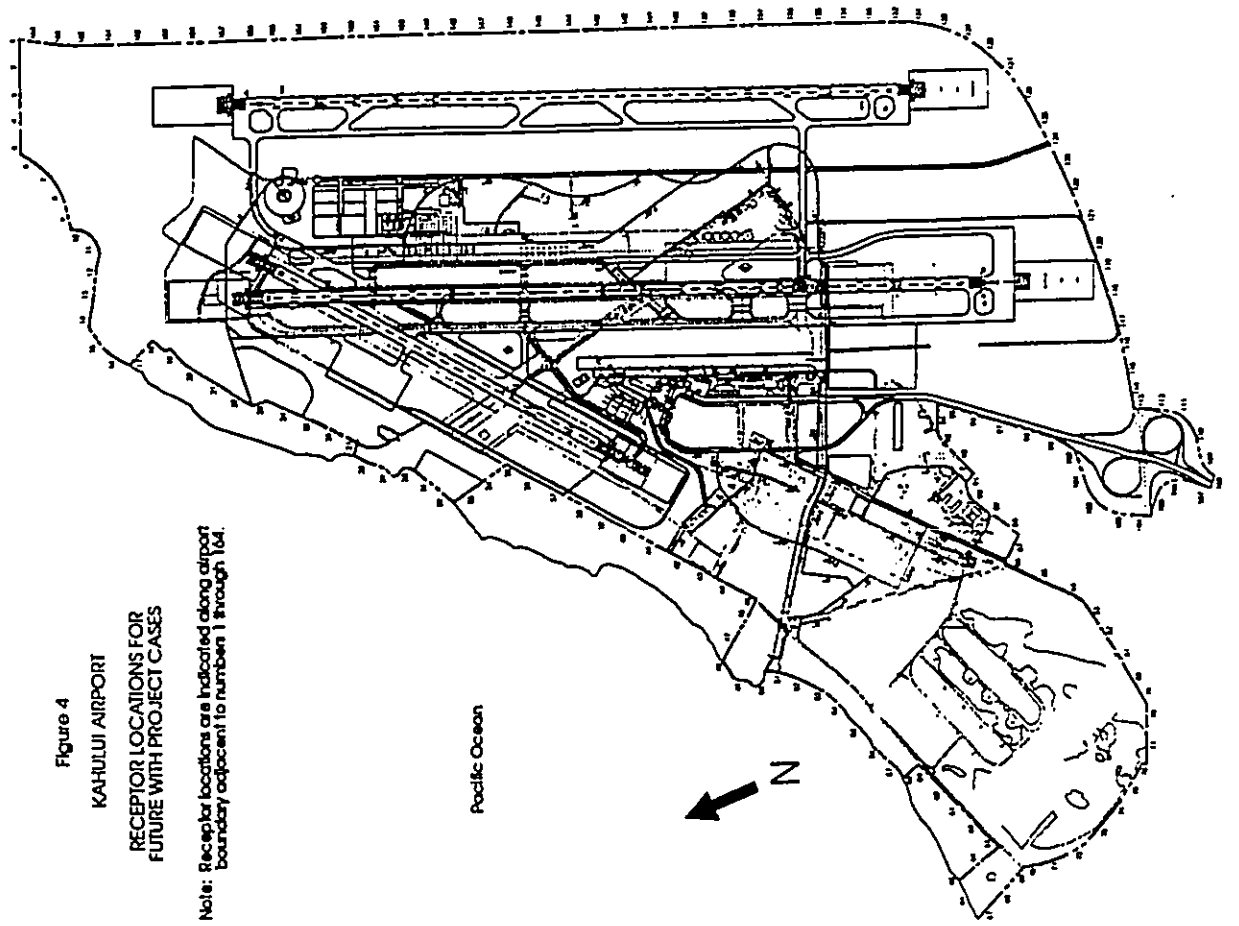


Figure 4

KAHULUI AIRPORT

RECEPTOR LOCATIONS FOR
FUTURE WITH PROJECT CASES

Note: Receptor locations are indicated along airport boundary adjacent to numbers 1 through 164.

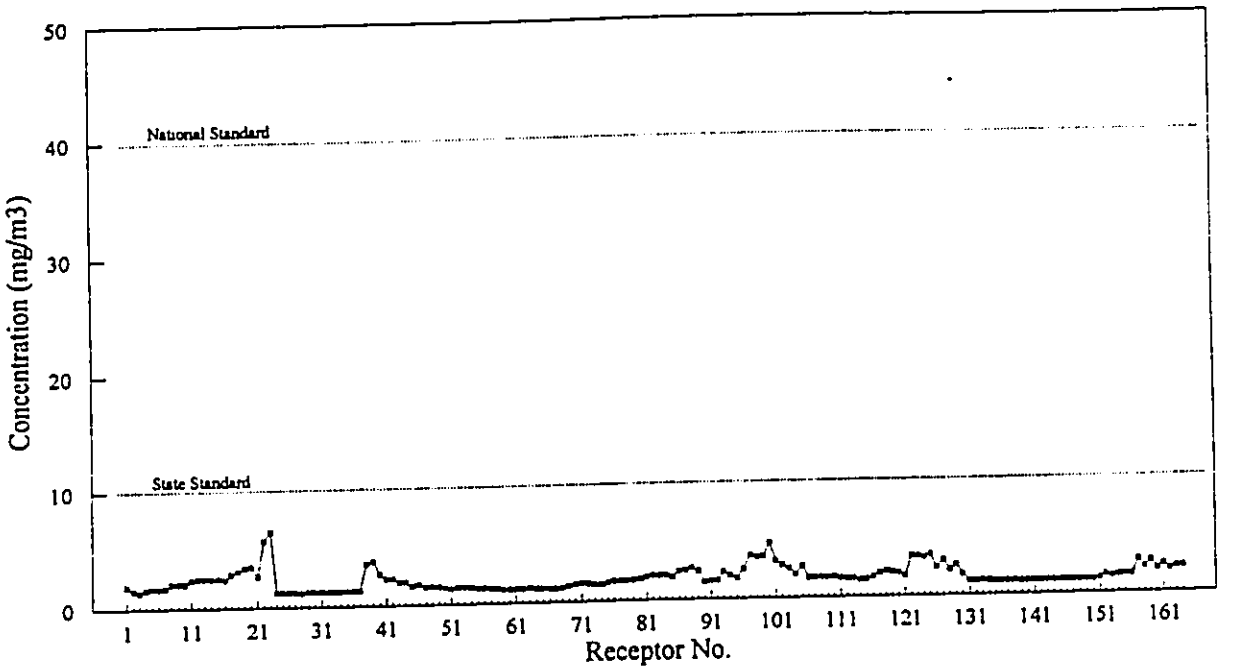


Figure 7

PREDICTED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS
ALONG KAHULUI AIRPORT BOUNDARY FOR 2010/ALTERNATIVE 2

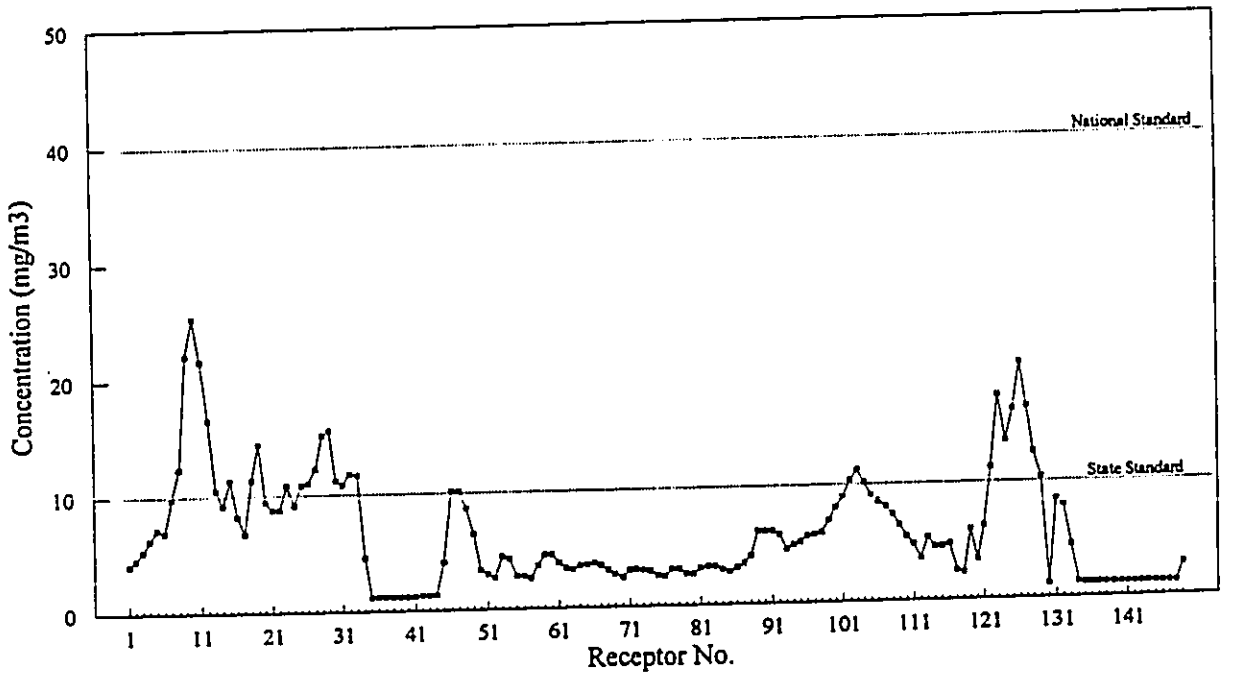


Figure 6

PREDICTED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS
ALONG KAHULUI AIRPORT BOUNDARY FOR 2010/ALTERNATIVE 1

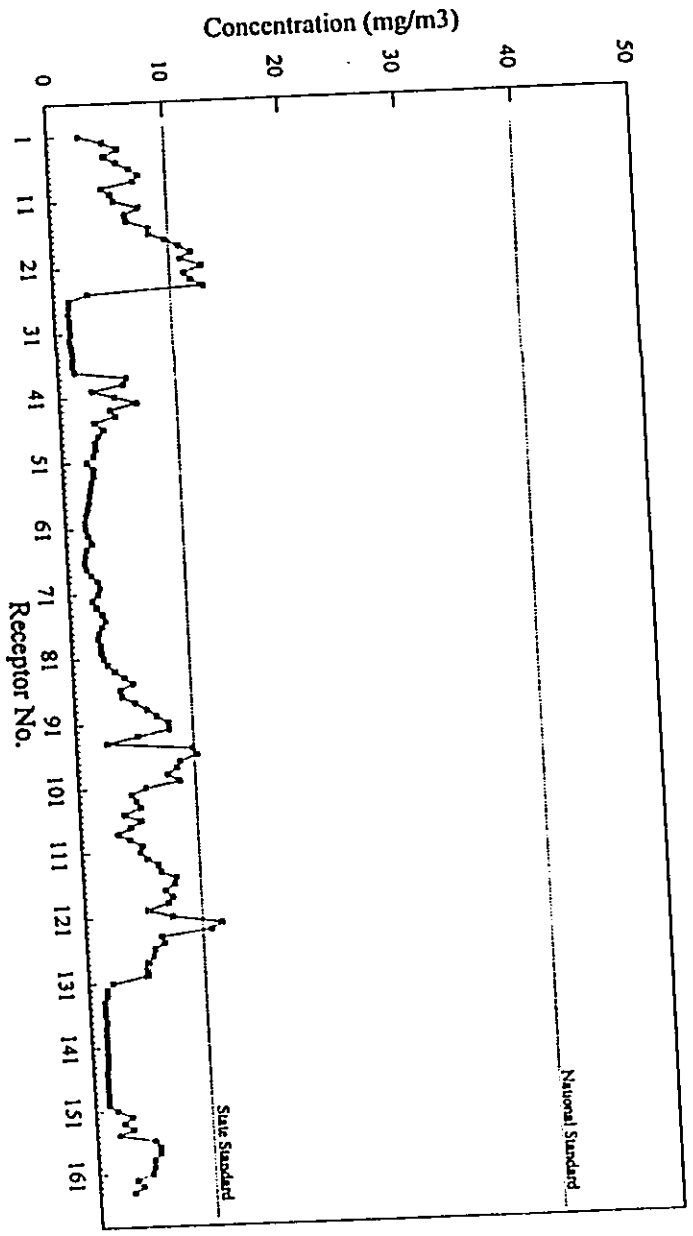


Figure 8

PREDICTED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS ALONG KAHULUI AIRPORT BOUNDARY FOR 2010/ALTERNATIVE 3

Table 1

SUMMARY OF STATE OF HAWAII AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Units	Averaging Time	Maximum Allowable Concentration: National Primary	National Secondary	State of Hawaii
Particulate Matter[a]	$\mu g/m^3$	Annual	50	50	50
		24 Hours	150[b]	150[b]	150[b]
Sulfur Dioxide	$\mu g/m^3$	Annual	80	-	80
		24 Hours	365[b]	-	365[b]
		3 Hours	-	1300[b]	1300[b]
Nitrogen Dioxide	$\mu g/m^3$	Annual	100	100	70
Carbon Monoxide	mg/m^3	8 Hours	10[b]	-	5[b]
		1 Hour	40[b]	-	10[b]
Ozone	$\mu g/m^3$	1 Hour	235[b]	235[b]	100[b]
Lead	$\mu g/m^3$	Calendar Quarter	1.5	1.5	1.5

[a]Particles less than or equal to 10 microns aerodynamic diameter

[b]Not to be exceeded more than once per year

Table 2

CLIMATOLOGICAL SUMMARY FOR KAHULUI AIRPORT

	Record (years)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Temperature (Deg F)														
Normals														
-Daily Max		79.5	79.7	81.1	82.2	84.5	85.9	86.5	87.4	87.6	86.4	83.5	81.0	83.8
-Daily Min		63.4	63.6	64.8	66.2	67.0	68.7	70.4	70.9	69.8	69.1	67.5	65.3	67.2
-Monthly		71.5	71.6	73.0	74.2	75.8	77.3	78.5	79.2	78.7	77.8	75.5	73.2	75.5
Extremes														
-Record Highest	28	89	88	90	91	92	93	94	96	95	96	93	90	96
-Year		1981	1981	1984	1981	1982	1981	1984	1983	1982	1973	1980	1982	Aug 83
-Record Lowest	28	49	50	55	54	57	58	58	61	60	58	55	52	49
-Year		1969	1987	1980	1985	1985	1985	1985	1978	1979	1964	1985	1983	Jan 69
% of Possible Sunshine	30	64	65	64	62	68	72	71	71	72	67	63	63	67
Mean Sky Cover (tenths) Sunrise - Sunset	34	4.8	4.9	5.4	6.0	5.4	4.9	4.7	4.7	4.7	5.2	5.2	5.0	5.1
Mean Number of Days:														
Sunrise - Sunset														
-Clear	34	12.9	11.5	10.7	7.6	9.3	10.6	11.1	13.3	11.7	10.7	10.9	11.9	131.3
-Partly Cloudy	34	9.9	8.5	11.2	11.6	13.6	13.2	14.7	13.2	12.6	12.4	10.5	11.0	143.5
-Cloudy	34	8.2	7.9	9.1	10.8	8.1	6.1	5.1	3.5	5.7	7.9	8.6	8.1	90.5
Precipitation 0.01 inch or more	34	10.6	9.9	10.8	10.3	6.2	5.1	6.4	6.0	5.6	7.3	10.2	11.1	99.6
Thunderstorms	34	0.9	0.6	0.5	0.5	0.2	0.0	0.1	0.1	0.1	0.4	0.4	0.5	4.3
Temperature														
-Maximum > 90 F	28	0.0	0.0	0.1	0.1	1.2	3.0	3.4	5.8	7.1	4.4	1.2	0.1	25.3
-Minimum < 32 F	28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Avg. Station Pressure (mb)	11	1013.4	1013.6	1014.9	1014.9	1014.7	1014.3	1013.6	1013.2	1013.4	1013.8	1013.9	1013.3	1013.6
Relative Humidity (%)														
Hour 02 (Local Time)	10	85	83	81	81	82	80	80	79	80	80	81	82	81
Hour 08	28	82	81	77	75	71	70	71	71	71	73	76	80	75
Hour 14	28	62	61	59	58	56	55	55	56	55	57	60	61	58
Hour 20	28	77	75	74	73	72	71	71	72	71	73	75	74	73
Precipitation (inches):														
Normal		4.21	3.27	3.00	1.18	0.66	0.28	0.41	0.50	0.36	0.87	2.26	2.85	19.85
Maximum Monthly	38	14.66	8.31	10.90	14.29	4.36	2.50	1.65	1.54	1.43	5.68	9.27	10.19	14.66
Year		1980	1972	1967	1969	1987	1967	1989	1982	1987	1985	1965	1988	Jan 80
Minimum Monthly	38	0.12	0.07	0.09	0.06	T	0.00	0.02	0.02	0.02	T	0.16	0.01	0.00
Year		1977	1983	1957	1990	1972	1957	1973	1973	1972	1984	1980	1975	Jun 57
Wind:														
Mean Speed (mph)	23	10.8	11.1	12.3	13.3	13.2	14.7	15.6	14.8	12.9	12.0	11.8	11.3	12.8
Prevailing Direction	23	SSW	S	NE	NE	NE	ENE	NE	NE	NE	NE	NE	NE	NE
Peak Gust														
-Direction	9	S	NE	E	NE	NE	NE	E	NE	SW	NE	S	E	S
-Speed (mph)	9	54	46	49	45	43	44	46	45	44	46	51	54	54
-Date		1991	1990	1985	1987	1991	1990	1989	1991	1992	1985	1988	1988	Jan 91

Source: Local Climatological Data, 1987 Annual Summary with Comparative Data, Kahului, Hawaii, National Oceanic and Atmospheric Administration

Table 3

WIND FREQUENCY TABLE FOR KAHULUI AIRPORT, JAN-DEC 1983

FREQUENCY OF OCCURRENCE (HOURS)

WIND DIRECTION FROM

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	329
1.0 - 4.0	5	7	19	10	20	20	33	36	63	16	22	17	6	2	7	4	285
4.0 - 8.0	93	111	244	128	99	91	333	300	230	57	42	37	24	20	24	30	1727
8.0 - 12.0	164	358	950	374	75	30	28	39	106	37	26	9	4	4	19	48	2147
12.0 - 19.0	104	378	1437	704	88	4	1	9	93	118	44	3	0	0	3	18	3004
19.0 - 25.0	11	103	576	407	30	0	0	2	16	31	20	0	0	0	0	10	1196
25.0 - 99.0	0	9	71	54	6	0	0	0	0	10	2	0	0	0	0	0	152
TOTALS	339	966	3297	1577	318	145	395	386	508	257	158	61	34	26	54	110	8760

RELATIVE FREQUENCY (%)

WIND DIRECTION FROM

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	3.41
1.0 - 4.0	.06	.08	.22	.11	.23	.23	.38	.41	.72	.16	.25	.19	.07	.02	.08	.05	3.25
4.0 - 8.0	.83	1.27	2.79	1.46	1.13	1.04	3.66	3.42	3.63	.65	.48	.42	.27	.23	.30	.34	19.71
8.0 - 12.0	1.87	4.09	10.84	3.13	.86	.34	.32	.45	1.21	.42	.30	.06	.05	.05	.22	.55	24.74
12.0 - 19.0	1.19	4.32	16.40	8.04	1.00	.05	.01	.10	1.06	1.35	.53	.02	.00	.00	.02	.21	34.29
19.0 - 25.0	.13	1.18	6.58	4.65	.34	.00	.00	.02	.18	.24	.23	.00	.00	.00	.00	.11	13.65
25.0 - 99.0	.00	.10	.81	.62	.07	.00	.00	.00	.00	.11	.02	.00	.00	.00	.00	.00	1.74
TOTALS	3.87	11.03	37.64	18.00	3.63	1.66	3.37	4.41	5.80	2.93	1.80	.70	.39	.30	.62	1.26	100.00

Table 4

AIR POLLUTION EMISSIONS INVENTORY FOR
COUNTY OF MAUI, 1980

Source Category	Emissions (tons/year)				
	Particulate	Sulfur Oxides	Nitrogen Oxides	Carbon Monoxide	Hydrocarbons
Steam Electric Power Plants	131	2,892	1,353	367	73
Gas Utilities	0	0	5	0	0
Fuel Combustion in Agricultural Industry	1,866	354	677	0	7
Mineral Products Industry	158	36	61	0	0
Municipal Incineration	0	0	0	0	0
Motor Vehicles	212	143	2,483	34,422	3,676
Construction, Farm and Industrial Vehicles	23	21	300	796	139
Aircraft	5	14	137	1,286	159
Vessels	14	114	71	61	26
Agricultural Field Burning	2,110	0	0	24,316	2,228
Total:	4,519	3,575	5,088	61,250	6,307

Source: State of Hawaii, Department of Health

Table 5

AIR POLLUTION EMISSIONS INVENTORY FOR
ISLAND OF MAUI, 1992

Source Category	Emissions (tons/year)				
	Particulate	Sulfur Oxides	Nitrogen Oxides	Carbon Monoxide	Hydrocarbons
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/Refueling	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		2	18	835	213
Agricultural Field Burning	2,628	0	0	30,570	3,886
Total:	6,636	6,382	9,264	64,057	8,619

Table 6

ANNUAL SUMMARIES OF AIR QUALITY MEASUREMENTS FOR
DEPARTMENT OF HEALTH MONITORING STATIONS LOCATED ON MAUI ISLAND, 1985-1990

Parameter / Location	1985	1986	1987	1988	1989	1990
Sulfur Dioxide / Kahului						
No. of 24-Hr Samples	32	-	-	-	-	
Range of 24-Hr Values (µg/m3)	<5-31	-	-	-	-	
Average Daily Value (µg/m3)	7	-	-	-	-	
No. of State AAQS Exceedances	0	-	-	-	-	
Sulfur Dioxide / Kihei						
No. of 24-Hr Samples	-	-	36	30	39	8
Range of 24-Hr Values (µg/m3)	-	-	<5-13	<5-5	<5-5	<5-5
Average Daily Value (µg/m3)	-	-	<5	<5	<5	<5
No. of State AAQS Exceedances	-	-	0	0	0	0
PM-10 / Kihei						
No. of 24-Hr Samples	-	-	38	33	37	9
Range of 24-Hr Values (µg/m3)	-	-	11-107	17-46	9-51	6-42
Average Daily Value (µg/m3)	-	-	28	28	24	22
No. of State AAQS Exceedances	-	-	NA	NA	NA	NA
PM-10 / Lahaina						
No. of 24-Hr Samples	-	-	8	22	39	42
Range of 24-Hr Values (µg/m3)	-	-	8-19	9-34	6-25	5-31
Average Daily Value (µg/m3)	-	-	14	19	15	17
No. of State AAQS Exceedances	-	-	NA	NA	NA	NA
TSP / Kahului						
No. of 24-Hr Samples	36	-	-	-	-	-
Range of 24-Hr Values (µg/m3)	26-105	-	-	-	-	-
Average Daily Value (µg/m3)	57	-	-	-	-	-
No. of State AAQS Exceedances	1	-	-	-	-	-

Source: State of Hawaii Department of Health

Table 6a

ANNUAL SUMMARIES OF AIR QUALITY MEASUREMENTS REPORTED BY
U.S. ENVIRONMENTAL PROTECTION AGENCY'S AEROMETRIC INFORMATION
RETRIEVAL SYSTEM (AIRS), 1992-1994

Parameter / Location	1992	1993	1994
Sulfur Dioxide / Kihei			
No. of 24-Hr Samples	-	47	11
Highest 24-Hr Value (µg/m3)	-	9	3
Second-Highest 24-Hr Value (µg/m3)	-	5	3
Average Daily Value (µg/m3)	-	3	3
PM-10 / Kihei			
No. of 24-Hr Samples	2	42	-
Highest 24-Hr Value (µg/m3)	19	25	-
Second-Highest 24-Hr Value (µg/m3)	18	24	-
Average Daily Value (µg/m3)	19	15	-
PM-10 / Lahaina			
No. of 24-Hr Samples	36	55	-
Highest 24-Hr Value (µg/m3)	22	23	-
Second-Highest 24-Hr Value (µg/m3)	20	22	-
Average Daily Value (µg/m3)	13	14	-
Ozone / Makawao			
No. of 24-Hr Samples	358	353	-
Highest 1-Hr Value (ppm)	0.050	0.052	-
Second-Highest 1-Hr Value (ppm)	0.050	0.050	-

Source: U.S. Environmental Protection Agency

Table 8

ACTUAL AND FORECAST AIR CARRIER OPERATIONS FOR
KAHULUI AIRPORT, 1994 and 2010

Aircraft Type	1994		2010 Without Project		2010 With Project	
	Annual Operations	Peak-Hour Takeoffs	Annual Operations	Peak-Hour Takeoffs	Annual Operations	Peak-Hour Takeoffs
Large 2-Engine						
B777	0	0.0	1,200	0.2	500	0.1
Large 3-Engine						
DC10-10	3,539	0.6	2,330	0.4	3,050	0.5
DC10-30	1,283	0.2	840	0.2	1,110	0.2
L1011-100	1,476	0.2	1,280	0.2	1,680	0.3
L1011-250	490	0.1	420	0.1	560	0.1
MD11	0	0.0	530	0.1	700	0.1
Large 4-Engine						
B747	0	0.0	0	0.0	2,200	0.4
Medium 2-Engine						
B757-200	412	0.1	830	0.2	830	0.2
B767	78	0.0	1,970	0.4	1,970	0.4
Small 2-Engine						
B737-200	22,535	4.0	0	0.0	0	0.0
B737-300	3,756	0.7	49,670	8.8	42,170	7.5
B737-400	3,756	0.7	0	0.0	0	0.0
DC9-50	19,514	3.5	0	0.0	0	0.0
MD82	0	0.0	30,530	5.4	25,930	4.6
Total	56,839	10.1	89,600	16.0	80,700	14.4

Note: Annual operations obtained from personal communication, Brian T. Ishii of Edward K. Noda and Associates, Inc., dated March 30, 1995 to Barry D. Neal of B.D. Neal & Associates; peak-hour takeoffs estimated as 0.0177 percent of annual operations.

Table 7

AMBIENT BACKGROUND AIR QUALITY DATA FOR
MAALAEA, MAUI - JUNE 1989 THROUGH DECEMBER 1989

Pollutant	Averaging Period	Concentration (ppb)	Concentration ($\mu g/m^3$)	Percentage of Standard	
				State	National
Sulfur Dioxide	3-hour	13	34	3	3
	24-hour	5	13	4	4
	Annual	1	3	4	4
Nitrogen Dioxide	Annual	3	6	9	6
Ozone	1-hour	44	86	86	37
	Annual	16	31	-	-
Carbon Monoxide	1-hour	12	14	<1	<1
	8-hour	5	6	<1	<1
Particulate Matter	24-hour	-	56	37	37
	Annual	-	14	28	28

Notes:

1. 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.

2. 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.

Table 9

ACTUAL AND FORECAST COMMUTER/AIR TAXI OPERATIONS FOR
KAHULUI AIRPORT, 1994 and 2010

Aircraft Type	1994		2010 Without Project		2010 With Project	
	Annual Operations	Peak-Hour Takeoffs	Annual Operations	Peak-Hour Takeoffs	Annual Operations	Peak-Hour Takeoffs
Single-Engine Propeller						
Cessna 152	0	0.0	80	0.0	80	0.0
Cessna 208	912	0.2	530	0.1	530	0.1
Waco YMF	974	0.2	1,190	0.2	1,190	0.2
Twin-Engine Propeller						
Brittan-Norman	2,286	0.4	3,710	0.7	3,710	0.7
Beech E&H-18	730	0.2	1,180	0.2	1,180	0.2
Cessna 402	3,430	0.6	5,560	1.0	5,560	1.0
Cessna 414A	1,002	0.2	1,620	0.3	1,620	0.3
Fokker F27	1,538	0.3	2,500	0.4	2,500	0.4
Shorts 330	510	0.1	830	0.2	830	0.2
PA-31-350	1,194	0.2	1,930	0.3	1,930	0.3
P68C Partenavia	654	0.1	1,070	0.2	1,070	0.2
Turboprop						
ATR42	672	0.1	8,000	1.4	8,000	1.4
DHC-7	192	0.0	0	0.0	0	0.0
DC-3	538	0.1	0	0.0	0	0.0
DHC-6	8,032	1.4	2,300	0.4	2,300	0.4

(continued)

Table 9 (cont.)

ACTUAL AND FORECAST COMMUTER/AIR TAXI OPERATIONS FOR
KAHULUI AIRPORT, 1994 and 2010

Aircraft Type	1994		2010 Without Project		2010 With Project	
	Annual Operations	Peak-Hour Takeoffs	Annual Operations	Peak-Hour Takeoffs	Annual Operations	Peak-Hour Takeoffs
Six-Passenger Helicopter						
AS350 ASTAR	40,190	7.1	52,280	9.2	52,280	9.2
Bell 206B	14,480	2.6	18,840	3.3	18,840	3.3
Hughes 500	9,286	1.6	12,080	2.1	12,080	2.1
R22 Beta	4	0.0	0	0.0	0	0.0
Four-Passenger Helicopter	0	0.0	6,600	1.2	6,600	1.2
Total	86,624	15.3	120,300	21.2	120,300	21.2

Note: Annual operations obtained from personal communication, Brian T. Ishii of Edward K. Noda and Associates, Inc., dated March 30, 1995 to Barry D. Neal of B.D. Neal & Associates; peak-hour takeoffs estimated as 0.0177 percent of annual operations.

Table 10

ACTUAL AND FORECAST GENERAL AVIATION OPERATIONS FOR
KAHULUI AIRPORT, 1994 and 2010

Aircraft Type	1994		2010 Without Project		2010 With Project	
	Annual Operations	Peak-Hour Takeoffs	Annual Operations	Peak-Hour Takeoffs	Annual Operations	Peak-Hour Takeoffs
Single-Engine Propeller	24,510	4.3	33,300	5.9	33,300	5.9
Twin-Engine Propeller	3,122	0.6	5,600	1.0	5,600	1.0
Turboprop						
Cessna 441	1,496	0.3	1,000	0.2	1,000	0.2
Turbojet						
Challenger 600/60	44	0.0	290	0.0	290	0.0
Falcon 50	56	0.0	370	0.1	370	0.1
JetStar	6	0.0	40	0.0	40	0.0
Lear 35 & 36	4	0.0	30	0.0	30	0.0
Westwind Astra	10	0.0	70	0.0	70	0.0
Westwind II	4	0.0	30	0.0	30	0.0
Hawker Sidley	4	0.0	30	0.0	30	0.0
Citation	44	0.0	290	0.0	290	0.0
Gulfstream	294	0.0	1,970	0.4	1,970	0.4
Falcon 90D	102	0.0	680	0.1	680	0.1
Helicopters	3,596	0.6	5,300	0.9	5,300	0.9
Total	33,292	5.8	49,000	8.6	49,000	8.6

Note: Annual operations obtained from personal communication, Brian T. Ishii of Edward K. Noda and Associates, Inc., dated March 30, 1995 to Barry D. Neal of B.D. Neal & Associates; peak-hour takeoffs estimated as 0.0177 percent of annual operations.

Table 11

ACTUAL AND FORECAST MILITARY OPERATIONS FOR
KAHULUI AIRPORT, 1994 and 2010

Aircraft Type	1994		2010 Without Project		2010 With Project	
	Annual Operations	Peak-Hour Takeoffs	Annual Operations	Peak-Hour Takeoffs	Annual Operations	Peak-Hour Takeoffs
Turboprop						
C-130	700	0.1	2,300	0.4	2,300	0.4
P-3	992	0.2	2,880	0.5	2,880	0.5
C-135	346	0.1	990	0.2	990	0.2
C-12	17	0.0	50	0.0	50	0.0
C-20	17	0.0	60	0.0	60	0.0
C-26	138	0.0	400	0.1	400	0.1
Helicopter						
HH-65	371	0.1	1,440	0.2	1,440	0.2
SH-60	138	0.0	400	0.1	400	0.1
UH-1V	204	0.0	600	0.1	600	0.1
CH-53	8	0.0	30	0.0	30	0.0
AH-1	171	0.0	0	0.0	0	0.0
UH-1	138	0.0	0	0.0	0	0.0
UH-60	334	0.1	960	0.2	960	0.2
OH-58	446	0.1	1,150	0.2	1,150	0.2
CH-47D	150	0.0	440	0.1	440	0.1
Total	4,169	0.7	11,700	2.1	11,700	2.1

Note: Annual operations obtained from personal communication, Brian T. Ishii of Edward K. Noda and Associates, Inc., dated March 30, 1995 to Barry D. Neal of B.D. Neal & Associates; peak-hour takeoffs estimated as 0.0177 percent of annual operations.

Table 12

CORRELATION OF FIXED-WING AIRCRAFT AT KAHULUI AIRPORT TO EDMS DATABASE

Kahului Airport	EDMS Database
DC-10	DC-10
L-1011	L-1011
MD-11	DC-10
MD-82	MD-80
DC-9	DC-9
B737	B737
B747	B747
B757	B757
B767	B767
B777	B767
Cessna 152, Cessna 208, Waco YMF	Single engine piston
Brittan-Norman, Beech E&H-18, Cessna 402, Cessna 414A, Fokker F27, Shorts 330, PA-31-350, P68C	Twin engine piston
ATR42	ATR42*
DHC-7, DC-3, DHC-6	DHC-6
Cessna 441	Cessna 441
General aviation turbojets	GIIB
C-130	C-130H
P-3	P-3*
C-135	C-135/A-Q
C-12	Cessna 441
C-20	GIIB
C-26	DHC-6

*Added to EDMS 7-93 database.

Table 13

ATR42 EMISSION DATA ADDED TO EDMS DATABASE

Mode	Emission Rate (kg/hr/engine)					Time in Mode (mins)
	Carbon Monoxide	Hyrdo-carbons	Nitrogen Oxides	Sulfur Oxides	Particu-late	
Takeoff	0.39	0.00	3.00	0.20	0.00	0.50
Queue	6.68	5.20	0.25	0.06	0.00	10.00
Touch & Go	0.00	0.00	0.00	0.00	0.00	0.00
Taxi In/Out	6.68	5.20	0.25	0.06	0.00	14.00
Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Test	6.68	5.20	0.25	0.06	0.00	4.00
Climbout	0.44	0.00	2.54	0.20	0.00	2.50
Approach	4.48	0.42	1.63	0.11	0.00	4.50

Number of engines: 2

Table 14

P-3 EMISSION DATA ADDED TO EDMS DATABASE

Mode	Emission Rate (kg/hr/engine)					Time in Mode (mins)
	Carbon Monoxide	Hyrdo-carbons	Nitrogen Oxides	Sulfur Oxides	Particu-late	
Takeoff	2.00	0.40	8.80	1.00	1.70	0.60
Queue	7.90	5.20	1.00	0.20	0.70	9.60
Touch & Go	0.00	0.00	0.00	0.00	0.00	0.00
Taxi In/Out	7.90	5.20	1.00	0.20	0.70	6.50
Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Test	0.00	0.00	0.00	0.00	0.00	0.00
Climbout	2.10	0.40	8.00	0.40	1.40	5.00
Approach	1.70	0.20	3.50	0.50	1.40	4.60

Number of engines: 4

Source: Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, Fourth Edition Including Supplements A, AP-42, U.S. Environmental Protection Agency, Research Triangle Park, NC, January 1991.

Table 15

AS350B HELICOPTER EMISSION DATA ADDED TO EDMS DATABASE

Mode	Emission Rate (kg/hr/engine)					Time in Mode (mins)
	Carbon Monoxide	Hyrdo-carbons	Nitrogen Oxides	Sulfur Oxides	Particu-late	
Takeoff	0.00	0.00	0.00	0.00	0.00	0.00
Queue	0.74	0.01	0.33	0.10	0.00	5.00
Touch & Go	0.00	0.00	0.00	0.00	0.00	0.00
Taxi In/Out	0.74	0.01	0.33	0.10	0.00	7.00
Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Test	0.00	0.00	0.00	0.00	0.00	0.00
Climbout	0.92	0.01	1.66	0.10	0.00	6.50
Approach	0.92	0.01	1.66	0.10	0.00	6.50

Number of engines: 1

Source: Personal communication dated November 8, 1994 from John McGraw of Turbomeca Engine Corporation to Ken Cordes of P&D Aviation.

Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, Fourth Edition Including Supplements A, AP-42, U.S. Environmental Protection Agency, Research Triangle Park, NC, January 1991.

Table 16

UH-1H HELICOPTER EMISSION DATA ADDED TO EDMS DATABASE

Mode	Emission Rate (kg/hr/engine)					Time in Mode (mins)
	Carbon Monoxide	Hyrdo-carbons	Nitrogen Oxides	Sulfur Oxides	Particu-late	
Takeoff	0.00	0.00	0.00	0.00	0.00	0.00
Queue	1.90	4.10	0.10	0.06	0.00	10.00
Touch & Go	0.00	0.00	0.00	0.00	0.00	0.00
Taxi In/Out	1.90	4.10	0.10	0.06	0.00	15.00
Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Test	0.00	0.00	0.00	0.00	0.00	0.00
Climbout	0.90	0.10	2.30	0.31	0.00	6.80
Approach	0.90	0.10	2.30	0.31	0.00	6.80

Number of engines: 1

Source: Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, Fourth Edition Including Supplements A, AP-42, U.S. Environmental Protection Agency, Research Triangle Park, NC, January 1991.

Table 17

CH-47 HELICOPTER EMISSION DATA ADDED TO EDMS DATABASE

Mode	Emission Rate (kg/hr/engine)					Time in Mode (mins)
	Carbon Monoxide	Hyrdo-carbons	Nitrogen Oxides	Sulfur Oxides	Particu-late	
Takeoff	0.00	0.00	0.00	0.00	0.00	0.00
Queue	13.40	1.80	4.00	0.00	0.00	10.00
Touch & Go	0.00	0.00	0.00	0.00	0.00	0.00
Taxi In/Out	13.40	1.80	4.00	0.00	0.00	15.00
Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Test	0.00	0.00	0.00	0.00	0.00	0.00
Climbout	6.60	0.10	8.40	0.00	0.00	6.80
Approach	6.60	0.10	8.40	0.00	0.00	6.80

Number of engines: 2

Source: Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, Fourth Edition Including Supplements A, AP-42, U.S. Environmental Protection Agency, Research Triangle Park, NC, January 1991.

Table 19

AIR POLLUTION EMISSION ESTIMATES FOR
KAHULUI AIRPORT, 1994 AND 2010 (TONS/YR)

Pollutant / Source	Year / Scenario			
	1994	2010/ Alt. 1	2010/ Alt. 2	2010/ Alt. 3
Carbon Monoxide/				
Aircraft	1013.4	1773.8	1547.1	1658.4
Motor Vehicles	118.7	138.0	143.2	143.2
Total	1132.1	1911.8	1690.3	1801.6
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

Note: Total suspended particulate and particulate matter (<10 um) include combustion emissions only, i.e., fugitive dust not included.

Table 18

HOURLY AIRCRAFT OPERATIONS FOR KAHULUI AIRPORT, MAY 1-19, 1994

Hour	Date																			Ave	Activity Factor
	5-1	5-2	5-3	5-4	5-5	5-6	5-7	5-8	5-9	5-10	5-11	5-12	5-13	5-14	5-15	5-16	5-17	5-18	5-19		
6-7	8	16	12	9	12	11	7	6	10	13	12	7	14	10	10	11	10	15	14	10.9	0.22
7-8	12	20	17	24	17	25	19	10	21	27	23	25	12	21	5	17	15	25	22	18.3	0.36
8-9	19	31	35	30	37	31	44	27	26	45	32	64	25	40	24	39	32	46	44	41.5	0.82
9-10	43	55	60	45	54	58	44	28	67	44	43	51	34	30	36	30	74	66	62	49.7	0.98
10-11	58	57	50	44	39	60	57	41	45	68	45	42	56	39	34	36	58	61	51	50.6	1.00
11-12	33	53	58	59	71	32	38	43	44	43	52	56	44	44	40	26	62	63	32	48.0	0.95
12-13	31	26	23	40	32	54	23	36	24	25	45	39	39	35	23	28	31	35	34	32.2	0.64
13-14	41	36	44	34	43	56	36	25	40	36	47	42	34	45	31	30	36	39	34	43.4	0.86
14-15	37	31	49	65	26	24	43	32	47	39	41	37	45	41	43	39	41	32	32	41.2	0.81
15-16	39	39	48	44	46	30	47	38	44	41	50	33	40	42	35	42	36	53	52	42.2	0.83
16-17	37	29	40	22	37	23	29	43	26	31	38	20	34	28	31	26	37	35	36	33.7	0.67
17-18	29	25	18	19	22	28	30	19	24	25	24	25	27	31	19	22	23	39	37	25.6	0.51
18-19	10	12	11	23	14	9	8	15	11	4	16	10	7	9	10	13	24	23	12	12.8	0.25
19-20	11	11	6	13	7	12	10	11	15	13	9	11	13	13	11	10	12	11	8	10.9	0.22
20-21	11	14	10	9	8	10	10	10	13	10	10	6	6	8	9	14	4	10	8	9.6	0.19
21-22	4	5	5	8	8	4	3	6	7	6	4	6	7	6	8	6	6	4	4	5.6	0.11
Total	422	480	488	530	493	467	448	378	462	510	506	494	437	460	409	411	521	566	541	475.8	

Source: Maui Tower Traffic Count Worksheets

Table 20

SIGNIFICANT AIR POLLUTION EMISSION RATES

Air Pollutant	Significant Emission Rate (tons/year)
Carbon Monoxide	100
Nitrogen Oxides	40
Volatile Organic Compounds	40
Sulfur Dioxide	40
Particulate Matter (total)	25
Particulate Matter (<10 microns)	15

Source: Hawaii Administrative Rules, Title 11, Department of Health, Chapter 60, Air Pollution Control

Table 21

ESTIMATED NET DIFFERENCE IN EMISSIONS BETWEEN 2010 ALTERNATIVE 1 AND 2010 ALTERNATIVES 2 AND 3

Pollutant	Net Difference (t/yr)	
	Alternative 2 vs. Alternative 1	Alternative 3 vs. Alternative 1
Carbon monoxide	-222	-110
Nitrogen oxides	-25	+15
Hydrocarbons	-24	-1

Table 23

NUMBER OF PEAK-HOUR AIRCRAFT TAKEOFFS AT KAHULUI AIRPORT

Aircraft Class	Year / Scenario			
	1994	2010/ Alt. 1	2010/ Alt. 2	2010/ Alt. 3
Air Carrier	10.1	16.0	14.4	14.4
Commuter/Air Taxi*	4.0	5.3	5.3	5.3
General Aviation*	5.2	7.7	7.7	7.7
Military*	0.4	1.2	1.2	1.2
Total	19.7	30.2	28.6	28.6

*Helicopter operations excluded.

Table 22

TRUTH TABLE INDICATING SIGNIFICANT EMISSION INCREASES FOR PROJECT ALTERNATIVES

Pollutant	Significant Emissions Increase					
	1994 versus:			2010/Alt. 1 versus:		
	2010/Alt. 1	2010/Alt. 2	2010/Alt. 3	2010/Alt. 2	2010/Alt. 3	
Carbon Monoxide	Yes	Yes	Yes	No	No	No
Nitrogen Oxides	Yes	Yes	Yes	No	No	No
Hydrocarbons	Yes	Yes	Yes	No	No	No
Sulfur Dioxide	No	No	No	No	No	No
Particulate Matter*	No	No	No	No	No	No

*Less than 10 microns diameter

Note: Significant emission increases are defined by the Hawaii Department of Health (Ref. 3) and the U.S. EPA (Ref. 4).

Table 24

HOURLY TAKEOFF CAPACITY AT KAHULUI AIRPORT

Year / Scenario	Takeoff Capacity (No. of Operations)	
	IFR	VFR
1994	25	30
2010 / Alternative 1	25	30
2010 / Alternative 2	28	40 - 84
2010 / Alternative 3	27	32 - 47

Note: Takeoff capacity assumed to be one-half of total airport capacity.

Source: Personal communications dated April 11, 1995 and May 12, 1995 from Brian T. Ishii of Edward K. Noda and Associates to Barry D. Neal of B.D. Neal & Associates.

Table 25

PERIODS IDENTIFIED AS IFR CONDITIONS
AT KAHULUI AIRPORT, 1993-94

Date	Time	Ceiling (feet)	Visibility (miles)	Wind Direction (deg)	Wind Speed (knots)	Weather
01/01/93	0500	1500	3	220	8	Rain
01/28/93	2000	1000	4	190	15	Rain
02/13/93	0800	2000	2	340	15	Rain
03/08/93	1700	1500	1	020	19	Rain
04/19/93	1700	1500	2	050	16	Rain
04/19/93	2000	1700	3	060	8	Rain
05/21/93	0800	800	15	050	6	-
10/25/93	1700	800	6	200	13	Rain
11/02/93	1700	800	2	360	11	Rain
01/20/94	0600	3500	3	050	11	Rain
02/14/94	0800	700	7	110	5	Rain
03/24/94	1400	1000	1	060	13	Rain
03/11/94	1400	1200	2	360	15	Rain
06/25/94	0800	2000	3	040	10	Rain

Source: Local Climatological Data, Monthly Summaries for Kahului Airport, January 1993-December 1994, National Climatic Data Center, Asheville, NC.

Table 26

ESTIMATED NUMBER OF AIRCRAFT QUEUED
AT KAHULUI AIRPORT DURING PEAK HOUR

Year / Scenario	Number of Aircraft Queued		
	Total	Runway 2-20	Runway 5-23
1994	1.3	1	1
2010 / Alternative 1	13.1*	7*	6*
2010 / Alternative 2	1.9	1*	1
2010 / Alternative 3	8.8	5	4

*Assumes air traffic control would limit the peak-hour demand volume to approximately 95 percent of takeoff capacity by holding aircraft in the apron area.

*Pertains to Runway 2L-20R.

Table 27

ESTIMATED QUEUE DELAY TIME AT KAHULUI AIRPORT
DURING PEAK HOUR

Year / Scenario	Queue Delay Time (minutes)
1994	4
2010 / Alternative 1	28*
2010 / Alternative 2	4
2010 / Alternative 3	18

*Assumes air traffic control would limit the peak-hour demand volume to approximately 95 percent of takeoff capacity by holding aircraft in the apron area.

Table 28

AIR POLLUTION EMISSIONS FROM INDUSTRIAL SOURCES
LOCATED NEAR KAHULUI AIRPORT

Pollutant	Emissions (tons/year)		
	Puunene Mill	Paia Mill	Kahului Power Plant
Sulfur Oxides	2164	192	3872
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

Table 29

ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATION
ALONG KAHULUI AIRPORT BOUNDARY

Year / Scenario	Concentration (mg/m^3)	Receptor Number
1994	5.8	126
2010 / Alternative 1	25.4	10
2010 / Alternative 2	6.5	23
2010 / Alternative 3	12.9	24
Ambient Air Quality Standard		
State	10	
National	40	

Note: To convert table values to parts per million, multiply by 0.87.

Table 30

ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATION ALONG KAHULUI AIRPORT BOUNDARY

Year / Scenario	Concentration (mg/m^3)
1994	1.9
2010 / Alternative 1	8.4
2010 / Alternative 2	2.2
2010 / Alternative 3	4.3
Ambient Air Quality Standard	
State	5
National	10

Note: To convert table values to parts per million, multiply by 0.87.

Table 31

STABILITY CLASS FREQUENCY DURING ALL HOURS AND DURING 6 AM TO 10 PM PERIOD AT KAHULUI AIRPORT FOR 1983

Stability Class	Frequency of Occurrence (%)	
	All Hours	6 am to 10 pm
1	0.1	0.1
2	1.3	1.8
3	11.4	16.2
4	56.2	64.4
5	16.0	11.2
6	15.0	6.3

Table 32

ESTIMATED MAXIMUM ANNUAL NITROGEN DIOXIDE CONCENTRATION ALONG KAHULUI AIRPORT BOUNDARY

Year / Scenario	Concentration ($\mu g/m^3$)	Receptor Number
1994	29.3	107
2010 / Alternative 1	54.9	106
2010 / Alternative 2	47.4	117
2010 / Alternative 3	59.9	116
Ambient Air Quality Standard		
State	70	
National	100	

Note: To convert table values to parts per billion, multiply by 0.53.

Table 33

STABILITY CLASS FREQUENCY DURING MORNING AND AFTERNOON PEAK COMMUTE HOURS

Stability Class	Frequency of Occurrence (%)	
	Morning	Afternoon
1	0.0	0.0
2	0.0	0.0
3	11.5	2.7
4	75.9	97.3
5	10.7	0.0
6	1.9	0.0

Note: Based on weather observations at Kahului Airport for 1983. Morning frequency based on 8 am observations. Afternoon frequency based on 5 pm observations.

Table 34

ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS
ALONG ROADWAYS NEAR KAHULUI AIRPORT IMPROVEMENT PROJECT
(milligrams per cubic meter)

Roadway Intersection	Year/Scenario					
	1994/ Existing Case		2010/ Without Project		2010/ With Project	
	AM	PM	AM	PM	AM	PM
Hana Highway at Dairy Road	42.8	48.8	42.7	56.1	31.5	48.1
Hana Highway at Haleakala Highway	51.6	32.5	42.2	34.6	42.0	27.9
Puunene Avenue at Kuihelani Highway	28.6	23.2	67.9	44.3	67.9	39.4
Airport Access Road at Dairy Road	-	-	-	-	14.7	14.7
Hana Highway at Hansen-Spine Road	-	-	-	-	30.6	24.4

Hawaii State AAQS: 10
National AAQS: 40

Note: To convert table values to parts per million, multiply by 0.87.

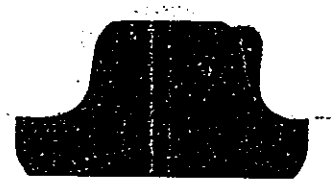
Table 35

ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATIONS
ALONG ROADWAYS NEAR KAHULUI AIRPORT IMPROVEMENT PROJECT
(milligrams per cubic meter)

Roadway Intersection	Year/Scenario		
	1994/ Existing Case	2010/ Without Project	2010/ With Project
Hana Highway at Dairy Road	17.1	19.6	16.8
Hana Highway at Haleakala Highway	18.1	14.8	14.7
Puunene Avenue at Kuihelani Highway	10.0	23.8	23.8
Airport Access Road at Dairy Road	-	-	5.2
Hana Highway at Hansen-Spine Road	-	-	10.7

Hawaii State AAQS: 5
National AAQS: 10

Note: To convert table values to parts per million, multiply by 0.87.



APPENDIX G

WATER QUALITY ANALYSIS

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Water Quality Analysis
Kahului Airport Environmental Impact Statement
December 1995

Methods

Water quality samples were collected at seven stations (Figure 1) in the Kahului Airport area: four nearshore marine stations (KA2, KA3, KA6, and KA7), two drainage canal stations (KA4 and KA5), and one station in Kanaha Pond near Haleakala Highway (KA1). Samples were collected on July 15, 1994, between 6:30 a.m. and 8:00 a.m., and November 21, 1994.

Weather during the July sampling was light rain. Nearshore waters were nearly clam, with little surf or current. Both the A&B and the Kalialinui drainage culverts contained flowing water. Observations (J. Dittmar, personal communication) of the culvert bottoms revealed inflowing water along the culvert seams, indicating a significant source of ground water flow.

Weather during the November sampling was light tradewinds with little surf and no current. A light mist was falling. Three sea turtles were observed offshore between stations KA3 and KA7. Minimum flow was observed in the A&B and Kalialinui drainage culverts, apparently from ground water.

Surface water samples were collected at stations KA1, KA4, and KA5. In July, samples were collected at depths of approximately 1, 5, and 9 feet at the nearshore stations. In November, samples were collected at depth of approximately 1 and 9 feet at the nearshore stations. Water samples were chilled and transported to The Oceanic Institute (OI) Water Quality Laboratory on Oahu for analysis. Samples were analyzed within 24 hours of collection. Samples were analyzed for salinity, pH, turbidity, total suspended solids, nitrate + nitrite, ammonium, total nitrogen, phosphate, total phosphorus, silicate and chlorophyll. Methodologies used in laboratory analyses are summarized in Table 1.

Results

The results of the water quality analyses on samples collected from the Kahului Airport area are presented in Table 2, 3 and 4. In general, the data for the nearshore samples are typical of nearshore marine environments impacted by surface runoff and/or ground water inflow. The surface samples from the nearshore stations all show decreased salinity and elevated nutrient levels, with their greatest impact seen at station KA3, located immediately off the Kalialinui drainage culvert. The effects of surface runoff were less pronounced at station KA6, and least pronounced at stations KA2 and KA7. All stations, however,

showed depressed salinity and increased nutrient levels when compared to stations taken under dry conditions further to the east (OIC, 1993). Chlorophyll levels were typical of nearshore waters with surface or ground water nutrient input and low energy (weak currents and wave energy).

The geometric mean values for the nearshore stations are compared to corresponding State of Hawaii water quality numerical criteria for dry open coastal waters ("WQS Open Coastal), with water samples taken along the same reach of coastline in 1981 and 1990 (AECOS, 1981 and 1990), and along a reach of coastline from Baldwin Beach to Ho'okipa Beach (OIC, 1993). The geometric means for the nearshore samples collected in this study exceeded the respective water quality criteria for turbidity, nitrate + nitrite, ammonium and total nitrogen and the mean levels of total phosphorus were below the water quality criterion.

This situation is similar to that observed in surface samples collected in the same area over thirteen years earlier (AECOS, 1981). In that study, mean salinity levels were slightly higher, as were levels of turbidity, total nitrogen and total phosphorus; nitrate + nitrite and ammonium levels were lower than observed in the present study. The water quality conditions observed along the reach of coastline further to the east (OIC,1993) were also similar to those observed in this study. Salinity, turbidity and total suspended solids levels were higher in the OCI study, while the other parameters were lower. However, the ranges of values observed generally overlapped, indicating little significant difference in overall water quality.

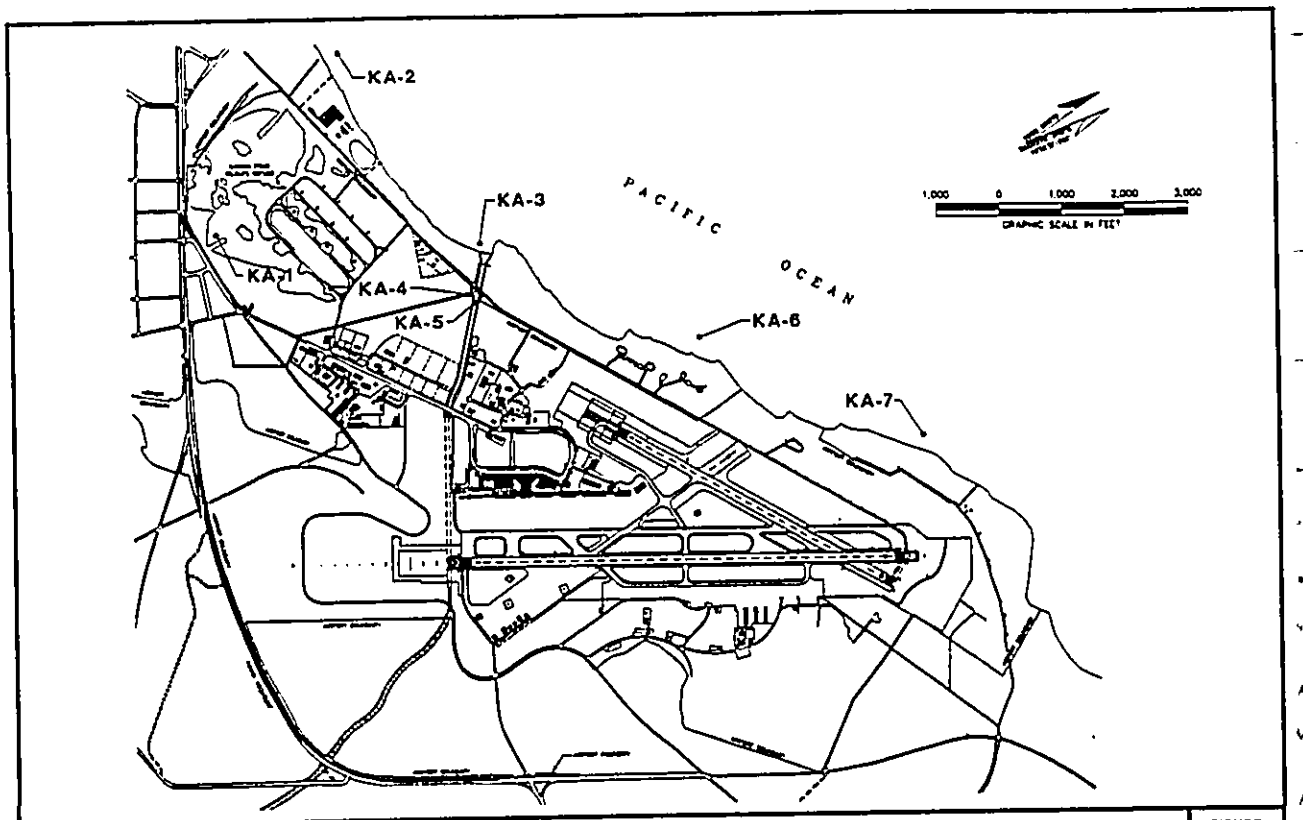
Summary

Water quality conditions in the nearshore marine environment offshore of the proposed expansion of Kahului Airport were similar to conditions observed thirteen years earlier at the same location, and at locations further to the east. The geometric means of some parameters exceeded the respective state water quality numerical criteria. This situation, however, is common for nearshore areas around the Hawaiian Islands, and reflects the strong influence of natural ground water influx on water quality.

References

AECOS, 1981. Environmental field surveys at Kahului Airport and vicinity, Kahului, Maui. Prepared for Austin, Tsutsumi & Associates, Honolulu. 76 pp. + Appendix A - C.

AECOS, 1992. An Assessment of Impacts on the Marine Environment of Proposed Expansion Plans for the Kahului Airport, Maui. 29 pp.



OI Consultants, Inc. Makapuu Point Waimanalo, Hawaii 96795	KAHULUI AIRPORT EXPANSION WATER QUALITY STUDY **SURVEY STATION LOCATIONS**	FIGURE 1

American Public Health Association. 1992. Standard Methods for the Examination of Water and Wastewater. Washington D. C. 1193 pp.

D'Elia, C.F., P. A. Steidler and N. Corwin. 1977 Determination of total nitrogen in aqueous samples using persulfate digestion. Limnol. Oceanogr. 22: 760-764.

Grasshoff, K., M. Ehrhardt and K. Kremling, eds. 1983. Methods of Seawater Analysis. Verlag Chemie, Weinheim. 419 pp.

Murphy, J. and J. P. Riley. 1962 A modified simple solution method for the determination of phosphate in natural waters. Anal. chim. Acta 27:31-36.

OI Consultants, Inc. 1993. Pa'ia/Mekana subdivision drainage impact study. Prepared for Gentry Hawaii, Honolulu. 34 pp.

Solorzano, L., 1969. Determination of ammonia in natural waters by the phenolhypochlorite method. Limnol. Oceanogr. 14: 799-801.

Strickland, J.D.F. and T.R. Parsons. 1972. A Practical Handbook of Seawater Analysis. Bull. Fish. Res. Bd. Canada 167. 311 pp.

Technicon Inc. 1977. Nitrate and nitrite in water and seawater. Technicon Inc. Industrial Method No. 158, f/w/a.

U.S.E.P.A. 1976. Areawide Assessment Procedure Manual, Volume I.

Table 1. Water quality analytical methods

Parameter	Collection and Analyses Method
Water Samples:	2 liter Niskin bottle
Nutrients	Technicon AutoAnalyzer II;
NH4	Solorzano, 1969
NO3/NO2	Technicon Inc., 1977
PO4	Murphy and Riley, 1962
Si(OH)4	Strickland and Parsons, 1972
Total Nitrogen	D'Elia et al., 1977
Total Phosphorus	Grasshoff et al., 1983
Salinity	AGE Instruments Model 2100 salinometer
Turbidity	Turner Designs nephelometer;
Suspended Solids	Filtration, Cahn electrobalance; APHA, 1992
Chlorophyll a	Turner Designs flurometer; Strickland and Parsons, 1972 APHA, 1992

Table 2
RESULTS OF WATER QUALITY ANALYSES
IN THE VICINITY OF KAHULUI AIRPORT FROM JULY 15, 1994

SAMPLE	SALINITY (o/oo)	pH	TURBIDITY (NTU)	TSS (mg/l)	NO_3+NO_2 (µM)	NH_4 (µM)	TN (µM)	PO_4 (µM)	SI (µM)	SI (µM)	CHL (µg/l)
KA1	10.282	9.41	10.1	NS	0.58	1.39	157.37	0.46	5.03	167.27	NS
KA4	0.078	8.10	9.6	NS	6.08	1.94	28.61	3.76	7.47	37.85	0.23
KA5	1.166	7.89	1.2	9.55	3.58	1.39	16.56	2.32	4.04	776.16	1.00
KA2-1'	31.871	8.08	0.7	4.46	3.25	3.33	13.82	0.10	0.30	70.20	0.58
KA2-5'	32.542	8.10	0.7	2.78	2.42	2.22	11.89	0.05	0.23	55.50	0.44
KA2-9'	32.527	8.09	0.5	4.34	2.25	2.50	12.54	0.08	0.23	56.48	0.48
KA3-1'	27.916	8.02	2.3	7.88	5.08	6.39	26.36	0.41	1.60	90.79	1.41
KA3-5'	33.599	8.07	1.1	6.47	1.42	2.50	12.22	0.08	0.30	28.04	0.82
KA3-9'	35.365	8.06	1.3	5.82	4.41	4.17	21.54	0.08	0.69	49.81	0.78
KA6-1'	30.536	7.84	1.4	6.21	13.08	1.94	24.75	0.05	0.53	122.17	1.54
KA6-5'	32.739	7.97	1.4	5.26	5.25	2.50	19.13	0.05	0.46	47.46	4.19
KA6-9'	32.729	7.97	1.2	5.54	4.75	2.50	20.25	0.05	0.34	53.34	1.63
KA7-1'	31.225	8.00	0.8	4.37	16.91	2.22	25.72	0.15	0.38	70.20	0.34
KA7-5'	33.628	8.00	0.7	4.97	3.33	1.39	10.93	0.08	0.27	25.49	0.58
KA7-9'	33.665	8.00	0.5	4.26	3.17	1.81	11.09	0.08	0.23	20.59	0.55
OIC 1994 Geo Mean (KA2, KA3, KA6, KA7)	32.31	8.02	0.95	5.04	4.23	2.57	16.57	0.08	0.38	51.10	0.84

Table 3
RESULTS OF WATER QUALITY ANALYSES
IN THE VICINITY OF KAHULUI AIRPORT FROM NOVEMBER 21, 1994

SAMPLE	SALINITY (o/oo)	pH	TURBIDITY (NTU)	TSS (mg/l)	NO_3+NO_2 (µM)	NH_4 (µM)	TN (µM)	PO_4 (µM)	SI (µM)	SI (µM)	CHL (µg/l)
KA1	16.75	9.33	15.30	73.28	0.31	1.71	95.33	1.14	8.41	103.10	30.08
KA4	1.29	7.89	3.37	39.66	17.86	7.43	38.86	2.33	4.68	632.87	4.45
KA5	1.30	7.89	3.43	39.18	18.49	3.43	34.56	2.28	6.29	675.73	2.35
KA2-1'	33.38	8.03	0.93	5.95	7.71	1.00	14.98	0.13	0.47	30.48	0.38
KA2-9'	33.48	8.04	0.77	4.89	7.71	1.71	14.40	0.16	0.43	29.52	0.38
KA3-1'	33.54	8.05	0.88	9.65	8.36	1.14	16.13	0.16	0.47	26.19	0.65
KA3-9'	33.50	8.04	0.83	5.34	8.97	1.00	15.84	0.13	0.43	27.62	0.41
KA6-1'	33.69	8.13	1.2	9.82	9.60	0.86	17.71	0.20	0.51	29.52	0.75
KA6-9'	33.50	8.11	1.32	9.13	11.96	1.00	19.01	0.21	0.55	35.72	0.51
KA7-1'	34.28	8.12	0.86	8.14	4.64	1.57	12.38	0.21	0.55	15.24	0.48
KA7-9'	33.90	8.14	1.28	6.99	8.58	1.57	15.70	0.22	0.47	24.76	0.31
OIC 1994 Geo Mean (KA2,KA3, KA6,KA7)	33.66	8.08	0.99	7.25	8.19	1.19	15.65	0.17	0.48	26.71	0.46

Table 4
RESULTS OF WATER QUALITY ANALYSES
IN THE VICINITY OF KAHULUI AIRPORT - SUMMARY OF GEOMETRIC MEAN
(WQS OPEN/COASTAL)

	SALINITY (o/oo)	pH	TURBIDITY (NTU)	TSS (mg/l)	NO_3+NO^2 (µM)	NH_4 (µM)	TN (µM)	PO_4 (µM)	TP (µM)	SI (µM)	CHL (µg/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
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
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
AECOS 1981	33.75	7.72	2.78	NA	2.98	0.89	24.35	0.49	0.94	NA	NA
AECOS 1990	NA	8.2	1.6	NA	7.21	0.79	24.29	0.32	NA	NA	1.10
WQS	Not Applicable	Not Applicable	0.50	Not Applicable	0.36	0.25	10.71	Not Applicable	0.65	Not Applicable	0.30

TOTAL PETROLEUM HYDROCARBON ANALYSIS

The Total Petroleum Hydrocarbon (TPH) and Benzene, Toluene, Ethylbenzene and Xylene (BTEX) Analysis of the Nearshore Stations was performed by Ana-Lab, Inc. for both water sampling periods. The results of the analysis are included in the following pages.

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HONOLULU, HAWAII 96814
ATTN: JIM DITTMAR

ANACON NO.	11046
DATE RECEIVED	7/19/94
DATE OF REPORT	7/28/94
DO NUMBER	#95
Project Number	1449

Sample ID KA-2

Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL mg/l	Results mg/l	Date Analyzed	Analyst
BENZENE	5030/8020	0.005	<0.005	7/21/94	LG
TOLUENE	5030/8020	0.01	<0.01	7/21/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	7/21/94	LG
XYLENE	5030/8020	0.01	<0.01	7/21/94	LG
TPH, Jet Fuel A	5030/8015	5.00	<1.00	7/21/94	LG

Lab Director
Ted Yen

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EDWARD K. NODA AND ASSOCIATES, INC.
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ATTN: JIM DITTMAR

ANACON NO.	11046
DATE RECEIVED	7/19/94
DATE OF REPORT	7/28/94
DO NUMBER	#95
Project Number	1449

Sample ID KA-3

Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL mg/l	Results mg/l	Date Analyzed	Analyst
BENZENE	5030/8020	0.005	<0.005	7/21/94	LG
TOLUENE	5030/8020	0.01	<0.01	7/21/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	7/21/94	LG
XYLENE	5030/8020	0.01	<0.01	7/21/94	LG
TPH, Jet Fuel A	5030/8015	5.00	<1.00	7/21/94	LG

Lab Director
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ATTN: JIM DITTMAR

ANACON NO.	11046
DATE RECEIVED	7/19/94
DATE OF REPORT	7/28/94
DO NUMBER	#95
Project Number	1449

Sample ID KA-4 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL	Results	Date Analyzed	Analyst
		mg/l	mg/l		
BENZENE	5030/8020	0.005	<0.005	7/21/94	LG
TOLUENE	5030/8020	0.01	<0.01	7/21/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	7/21/94	LG
XYLENE	5030/8020	0.01	<0.01	7/21/94	LG
TPH, Jet Fuel A	5030/8015	5.00	<1.00	7/21/94	LG

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ATTN: JIM DITTMAR

ANACON NO.	11046
DATE RECEIVED	7/19/94
DATE OF REPORT	7/28/94
DO NUMBER	#95
Project Number	1449

Sample ID KA-5 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL	Results	Date Analyzed	Analyst
		mg/l	mg/l		
BENZENE	5030/8020	0.005	<0.005	7/21/94	LG
TOLUENE	5030/8020	0.01	<0.01	7/21/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	7/21/94	LG
XYLENE	5030/8020	0.01	<0.01	7/21/94	LG
TPH, Jet Fuel A	5030/8015	5.00	<1.00	7/21/94	LG

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ATTN: JIM DITTMAR

ANACON NO.	11046
DATE RECEIVED	7/19/94
DATE OF REPORT	7/28/94
DO NUMBER	#95
Project Number	1449

Sample ID KA-6 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL	Results	Date Analyzed	Analyst
		mg/l	mg/l		
BENZENE	5030/8020	0.005	<0.005	7/21/94	LG
TOLUENE	5030/8020	0.01	<0.01	7/21/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	7/21/94	LG
XYLENE	5030/8020	0.01	<0.01	7/21/94	LG
TPH, Jet Fuel A	5030/8015	5.00	<1.00	7/21/94	LG

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ATTN: JIM DITTMAR

ANACON NO.	11046
DATE RECEIVED	7/19/94
DATE OF REPORT	7/28/94
DO NUMBER	#95
Project Number	1449

Sample ID KA-7 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL	Results	Date Analyzed	Analyst
		mg/l	mg/l		
BENZENE	5030/8020	0.005	<0.005	7/21/94	LG
TOLUENE	5030/8020	0.01	<0.01	7/21/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	7/21/94	LG
XYLENE	5030/8020	0.01	<0.01	7/21/94	LG
TPH, Jet Fuel A	5030/8015	5.00	<1.00	7/21/94	LG

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DATE RECEIVED	7/19/94
DATE OF REPORT	7/28/94
DO NUMBER	#95
Project Number	1449

Sample ID KA-1 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL	Results	Date Analyzed	Analyst
		mg/l	mg/l		
BENZENE	5030/8020	0.005	<0.005	7/21/94	LG
TOLUENE	5030/8020	0.01	<0.01	7/21/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	7/21/94	LG
XYLENE	5030/8020	0.01	<0.01	7/21/94	LG

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QA/QC REPORT

TPH (Jet A)				QA/QC Officer :			
Sample ID		11046 KA-4		Date of Report :			7/22/94
D.O. Number		#95		Sample Matrix :			aq. liquid
				Unit :			mg/l

analyte	blank	sample	duplicate	rpd	spike	spike level	% rec
TPH (Jet A)	<1.00	<1.00	<1.00	0.0%	4.88	5.00	97.6

Page 1

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QA/QC REPORT

BTEX				QA/QC Officer :			
Sample ID		11046 KA-4		Date of Report :			7/22/94
D.O. Number		#95		Sample Matrix :			aq. liquid
				Unit :			mg/l

analyte	blank	sample	duplicate	rpd	spike	spike level	% rec
Benzene	<0.010	<0.010	<0.010	0.0%	0.020	0.020	100.
Toluene	<0.010	<0.010	<0.010	0.0%	0.021	0.020	105.
Ethylbenzene	<0.010	<0.010	<0.010	0.0%	0.020	0.020	100.
Xylene	<0.010	<0.010	<0.010	0.0%	0.020	0.020	100.

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ATTN: JIM DITTMAR

ANACON NO. 11466
DATE RECEIVED 11/23/94
DATE OF REPORT 12/2/94
DO NUMBER 100
Project Number 1449 Kahului Airport

Sample ID 00 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL mg/l	Results mg/l	Date Analyzed	Analyst
BENZENE	5030/8020	0.005	<0.005	12/2/94	LG
TOLUENE	5030/8020	0.01	<0.01	12/2/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	12/2/94	LG
XYLENE	5030/8020	0.01	<0.01	12/2/94	LG
TPH, Jet Fuel	5030/8015	5.00	<5.00	12/2/94	LG

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ANACON NO. 11466
DATE RECEIVED 11/23/94
DATE OF REPORT 12/2/94
DO NUMBER 100
Project Number 1449 Kahului Airport

Sample ID 1 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL mg/l	Results mg/l	Date Analyzed	Analyst
BENZENE	5030/8020	0.005	<0.005	12/2/94	LG
TOLUENE	5030/8020	0.01	<0.01	12/2/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	12/2/94	LG
XYLENE	5030/8020	0.01	<0.01	12/2/94	LG
TPH, Jet Fuel	5030/8015	5.00	<5.00	12/2/94	LG

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ANACON NO. 11466
DATE RECEIVED 11/23/94
DATE OF REPORT 12/2/94
DO NUMBER 100
Project Number 1449 Kahului Airport

Sample ID 2 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL mg/l	Results mg/l	Date Analyzed	Analyst
BENZENE	5030/8020	0.005	<0.005	12/2/94	LG
TOLUENE	5030/8020	0.01	<0.01	12/2/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	12/2/94	LG
XYLENE	5030/8020	0.01	<0.01	12/2/94	LG
TPH, Jet Fuel	5030/8015	5.00	<5.00	12/2/94	LG

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DATE RECEIVED 11/23/94
DATE OF REPORT 12/2/94
DO NUMBER 100
Project Number 1449 Kahului Airport

Sample ID 3 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL mg/l	Results mg/l	Date Analyzed	Analyst
BENZENE	5030/8020	0.005	<0.005	12/2/94	LG
TOLUENE	5030/8020	0.01	<0.01	12/2/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	12/2/94	LG
XYLENE	5030/8020	0.01	<0.01	12/2/94	LG
TPH, Jet Fuel	5030/8015	5.00	<5.00	12/2/94	LG

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ANACON NO. 11466
DATE RECEIVED 11/23/94
DATE OF REPORT 12/2/94
DO NUMBER 100
Project Number 1449 Kahului Airport

Sample ID 4 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL mg/l	Results mg/l	Date Analyzed	Analyst
BENZENE	5030/8020	0.005	<0.005	12/2/94	LG
TOLUENE	5030/8020	0.01	<0.01	12/2/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	12/2/94	LG
XYLENE	5030/8020	0.01	<0.01	12/2/94	LG
TPH, Jet Fuel	5030/8015	5.00	<5.00	12/2/94	LG

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ANACON NO. 11466
DATE RECEIVED 11/23/94
DATE OF REPORT 12/2/94
DO NUMBER 100
Project Number 1449 Kahului Airport

Sample ID 5 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL mg/l	Results mg/l	Date Analyzed	Analyst
BENZENE	5030/8020	0.005	<0.005	12/2/94	LG
TOLUENE	5030/8020	0.01	<0.01	12/2/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	12/2/94	LG
XYLENE	5030/8020	0.01	<0.01	12/2/94	LG
TPH, Jet Fuel	5030/8015	5.00	<5.00	12/2/94	LG

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ANACON NO. 11466
DATE RECEIVED 11/23/94
DATE OF REPORT 12/2/94
DO NUMBER 100
Project Number 1449 Kahului Airport

Sample ID 6 Sample Matrix Aqueous liquid

Parameter	EPA Method	MDL mg/l	Results mg/l	Date Analyzed	Analyst
BENZENE	5030/8020	0.005	<0.005	12/2/94	LG
TOLUENE	5030/8020	0.01	<0.01	12/2/94	LG
ETHYLBENZENE	5030/8020	0.01	<0.01	12/2/94	LG
XYLENE	5030/8020	0.01	<0.01	12/2/94	LG
TPH, Jet Fuel	5030/8015	5.00	<5.00	12/2/94	LG

Lab Manager
Ted Yen

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APPENDIX H

ARCHAEOLOGICAL STUDY

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THE ARCHAEOLOGY OF KAHULUI AIRPORT

by

M.J. Tomonari-Tuggle, M.A.
David J. Welch, Ph.D.

Prepared for

Edward K. Noda and Associates
615 Piikoi Street, Suite 1000
Honolulu, Hawai'i 96814

Cover Photo: Spreckelsville, Maui and sugar mill 1890. Cane car construction in progress (middle left) and loading of processed sugar (middle right). *Archives of Hawai'i.*

INTERNATIONAL ARCHAEOLOGICAL RESEARCH INSTITUTE, INC.
949 McCully Street, Suite 5
Honolulu, Hawai'i 96826

May 1995

EXECUTIVE SUMMARY

At the request of Edward K. Noda and Associates, Inc., International Archaeological Research Institute, Inc. has conducted an assessment of cultural resources at Kahului Airport, Kahului, Maui County. This assessment is part of the overall preparation of an environmental impact statement for the airport, based on an Airport Master Plan developed in 1993. The primary tasks of this project are to [1] review and summarize all previous archaeological reports of work carried out at or in the vicinity of Kahului Airport, [2] carry out additional historical research and field survey if deemed necessary from the literature review, [3] evaluate sites/structures for eligibility to the National Register of Historic Places, [4] evaluate the potential adverse effects of airport construction on cultural properties, and [5] make recommendations for avoidance or mitigation of adverse effects.

Based on the documentary review, there are five known archaeological sites within the airport study area: two buried cultural deposits; a burial/reburial area; a possible surface habitation site; and a fishpond with traditional origins. All of these are evaluated to be significant for their information content; the burial site and the fishpond are also significant for their cultural value.

Based on a limited field survey, the remains of World War II military activity related to Naval Air Station, Kahului were identified. Most of these are concrete foundations, although several buildings remain in intact. Buildings 101 (warehouse), 244 (beach club), and 411 (Officers' Club) should be considered for preservation. Recreational features such as the swimming pool and handball court are also extant.

Other possible historical sites identified through cartographic and literature sources are related to plantation activities. These include at least four plantation villages (inland of the east end of the runways) and the railroad remains.

Appendix A summarizes survey and site information, potential impacts, and recommended mitigation actions, organized by proposed airport projects.

ACKNOWLEDGMENTS

The authors wish to acknowledge several individuals who assisted in the successful completion of this project. At IARII, Audré Harlow conducted historical research and field survey and Roger Blankfein produced the AutoCAD illustrations. Gaylord Kubota of the A&B Sugar Museum and Randall Moore and Carolyn Pimentel of Hawaiian Commercial & Sugar Co. (HC&S) were exceptionally helpful in providing archival information about the development of sugar in Spreckelsville and the surrounding area. Jason Koga of the Department of Transportation, Airports Division, very efficiently researched information on Naval Air Station, Kahului.

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I. INTRODUCTION

At the request of Edward K. Noda and Associates, Inc. (EKNA), International Archaeological Research Institute, Inc. (IARII) has conducted an assessment of cultural resources at Kahului Airport, Kahului, Maui County, Hawai'i (TMK 3-8-01-various). This assessment is part of the overall preparation of an environmental impact statement (EIS) for the airport, based on an Airport Master Plan developed by Belt Collins and Associates in 1993 (BCA 1993). The EIS is being jointly prepared by the Federal Aviation Administration (FAA) and the State of Hawaii, Department of Transportation, Airports Division, in accordance with the requirements of the National Environmental Policy Act of 1969, as amended, and Chapter 343, HRS, as revised.

The project area is defined by the proposed developments under the Airport Master Plan (BCA 1993). For the purposes of this study, however, it roughly covers an area bounded by Hana Highway on the west and south and the Pacific Ocean on the north and east (Fig. 1). It does not include those areas which will not be physically impacted by airport construction, such as the protection zones for the new parallel runway (to the southwest of Hana Highway and to the northeast of Old Stable Road) and the extended Runway 2/20.

Project Scope-of-Work

The tasks undertaken for this project are outlined in a proposed scope-of-work (letter to Brian Ishii, EKNA, from David Welch, IARII, dated November 9, 1993). These tasks include:

[1] Review of all previous archaeological reports of investigations at Kahului Airport. Based on this review, a list of sites and site types, site evaluations, recommendations for treatment, and maps showing surveyed areas and locations of identified sites will be prepared.

[2] If the review of previous reports suggests it is necessary, conduct a review of additional historic documents related to the airport area for evidence concerning potential historic sites not yet identified.

[3] Confirm, through fieldwork if necessary, the location of known historic sites at Kahului Airport and especially the location of the Site 1798 burial area.

[4] If the review of previous reports suggests that any areas have been inadequately surveyed, conduct a field survey of these areas.

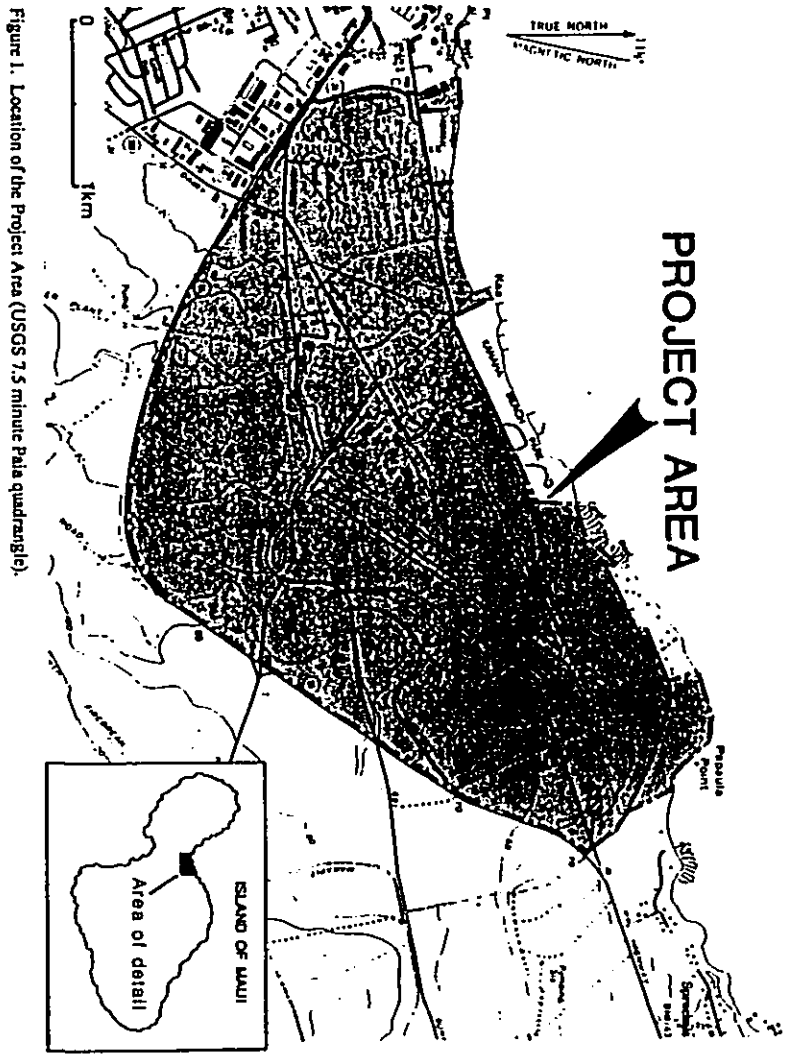

Figure 1. Location of the Project Area (USGS 7.5 minute Paia quadrangle).

[5] Determine if any structures eligible for the National Register exist in the vicinity of the airport and what effect construction may have on them.

[6] Evaluate the potential adverse effects of airport construction on any cultural properties within the airport boundaries or in the near vicinity of the airport.

[7] Prepare recommendations for avoidance or mitigation of adverse impacts to burials and other cultural resources located in the vicinity of Kahului Airport.

Project Methods

The project focused on a review of existing reports detailing archaeological work that has been carried out in the Kahului airport area. The project area was divided into subareas, based on environmental and development conditions. The history of land use and landform modification within each subarea was summarized and the extent of archaeological coverage and the location of cultural sites within each subarea were determined. Based on this analysis, a summary of site distribution in the project area was developed. An evaluation of site significance and potential impacts, and recommendations for necessary mitigation of adverse impacts from airport development were outlined.

This work included 16 person-hours of reconnaissance survey to familiarize the principal investigator and the project director with the airport area, particularly the coastal section where the majority of field work has been carried out. Based on the literature review, it was determined that all airport subareas had been sampled and that only limited additional field survey was necessary to complete this cultural assessment. A total of 30 person-hours was expended on a low to medium intensity survey of areas that had not previously been surveyed and of an area that had been surveyed (by Connolly in 1981) but for which inadequate information was recorded. Historical work at the A&B Sugar Museum and the Hawaiian Commercial & Sugar Company (HC&S) was also carried out.

Organization of the Report

This report presents an assessment of cultural resources in the Kahului Airport project area. It is organized in the following sections: Section II presents environmental background information and organizes the project area into subareas, based on environmental and development conditions. Section III discusses the history of land use and landform modification in the project area. Section IV summarizes previous archaeological studies and describes and evaluates the known sites in the airport area. It presents the results of the present survey and concludes with a summary of site distribution by subarea; possible historical sites are also discussed. Section V makes recommendations for future archaeological work and for the management of cultural resources in the airport area.

II. PROJECT AREA BACKGROUND

The project area is a roughly triangular-shaped parcel encompassing Kahului Airport and its immediately surrounding environs of commercial, agricultural, residential, and open areas (Fig. 2). Kahului Airport, covering about 1,446 acres, lies at the eastern edge of Kahului town, the largest community on the island of Maui. As the principal airport on the island, it provides facilities for commercial and private aircraft, cargo and interisland air mail transport, helicopter operations, and military flights. About 230 acres within the airport area is designated as the Kanahā Pond Wildlife Sanctuary. Non-airport properties include agricultural lands along Hana Highway, residential properties in Spreckelsville at the northeast end of Runway 2/20 and along a portion of the coastline, Maui County's Kanahā Beach Park, wastewater reclamation facilities and industrial uses seaward and west of Kanahā Pond, and numerous commercial activities west of the airport terminal.

The two primary landowners within the project area are the State of Hawaii and Alexander and Baldwin, Inc. (A&B). The State owns the airport, which is administered by the Department of Transportation. The Department of Land and Natural Resources manages the Kanahā Pond Wildlife Sanctuary. A&B owns the surrounding agricultural lands and operates a 36,000 acre sugar plantation through its subsidiary, Hawaiian Commercial & Sugar Company (HC&S).

The main access to the airport is along Keolani Place, which connects the airport terminal with the town of Kahului. Alahao Street and the Old Stable Road alignment mark the seaward perimeter of the airport and connect Kahului with Spreckelsville. This alignment, which is unpaved in sections, follows the old Kahului Railroad line built in the 1800s. Old Stable Road is sometimes referred to as Spreckelsville Beach Road. Ka'a Street (also called Kocheka Street) connects the passenger terminal with Alahao Street. Haleakala Highway loops around the southwest edge of the main runway.

Environment

The project area lies along the southeast side of Kahului Bay (now developed as Kahului Harbor). Although Hobron Point now marks the east edge of the built harbor, Papa'ula Point at the east end of the project area is the eastern edge of the natural bay.

The project area rises from sea level along the coast to about 100 feet above sea level (asl) at Hana Highway. Mean annual rainfall is about 19 inches, most of which falls from November to April; January and February are the wettest months of the year and June is the driest month. The winds are predominantly northeast trades. The underlying geologic

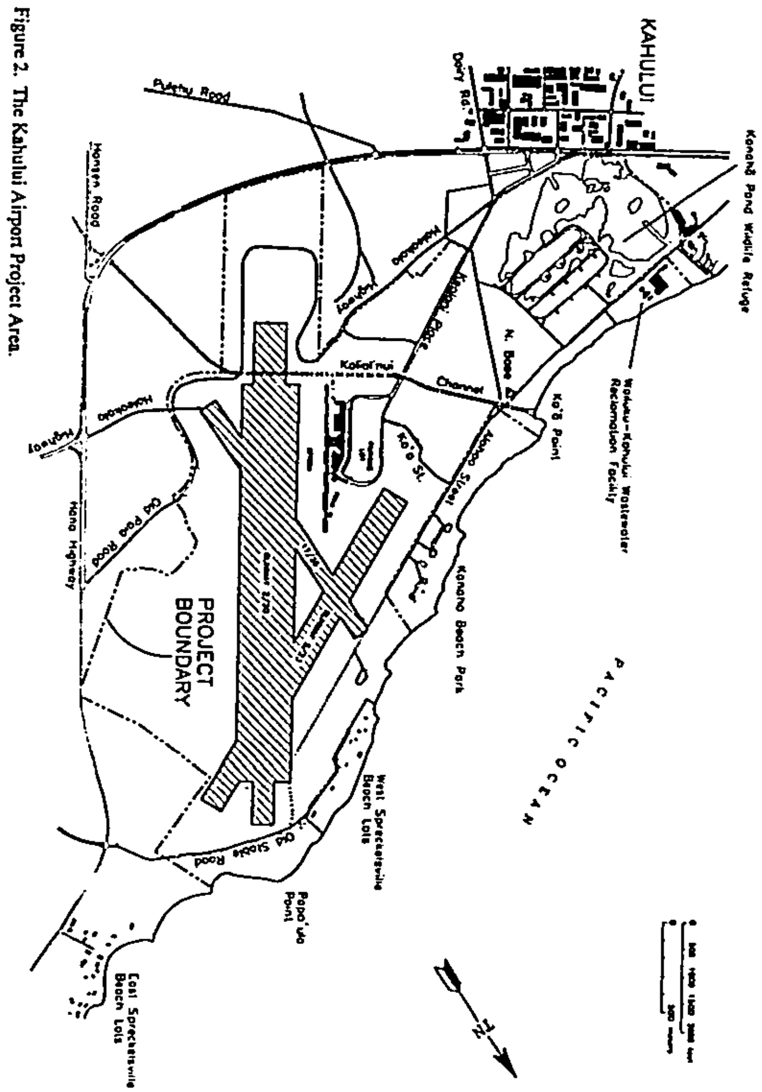

Figure 2. The Kahului Airport Project Area.

formation of the project area is lithified sand (cf. Macdonald and Abbott 1970:Figure 203; 326) overlain by still active calcareous sand dunes. Because of the extensive construction related to military development during World War II and subsequent expansion of the airport, little of the project area remains in a natural condition.

The only identified drainage through the project area is Kalialinui Stream which runs along the southwest side of the airport. It drains from the northwest slopes of Haleakalā, beginning close to the crater summit and is the longest watercourse on Maui (Welch 1988a). The stream is intermittent, with very little water flowing during the dry summer months. It historically drained into a coastal marsh with no exit into the ocean; it has been channelized in recent years and now exits into the ocean just west of Ka'ā Point.

The coastline is oriented along a slight northeast to southwest axis. For descriptive purposes in this report, the ordinal directions are the ocean to the north, Pu'unēnē to the south, Kahului to the west, and Pā'ia to the east. Runway 5/23 runs along an east-west orientation; Runway 2/20 is aligned along a northeast-southwest orientation.

Survey Subareas

The project area is divided into five subareas to facilitate descriptions and analysis: the airport proper; the coastal strip; the sugar fields inland and south of the airport; the developed area west of the Kalialinui drainage, excluding the Kanahā Pond Wildlife Refuge; and Kanahā Pond (Fig. 3).

The Airport Proper

This subarea consists of the main facilities and runways of Kahului Airport. It is bounded on the west by Kalialinui Channel and the southwest end of Runway 2/20, on the north by Alahao Street, on the east by the east and northeast ends of the runways, and on the south by HC&S sugar cane fields.

Kahului Airport is the dominant feature of the built environment in the project area. It has two active runways and a third closed one. Runway 2/20 is the main runway, measuring 7,000 feet long and 150 feet wide; it parallels Hana Highway. Runway 5/23 is 4,990 feet long and 150 feet wide and is parallel to the coast. Runway 17/35, which was built during World War II, is no longer in use, although portions are still used as a taxiway and for helicopter parking. This runway is oriented roughly north-south, with its north end cut by the Alahao Street/Old Stable Road alignment. The airport passenger terminal is located between Runway 2/20 and the west end of Runway 5/23. Other support facilities and the FAA air traffic control tower are located along the south side of Runway 2/20.

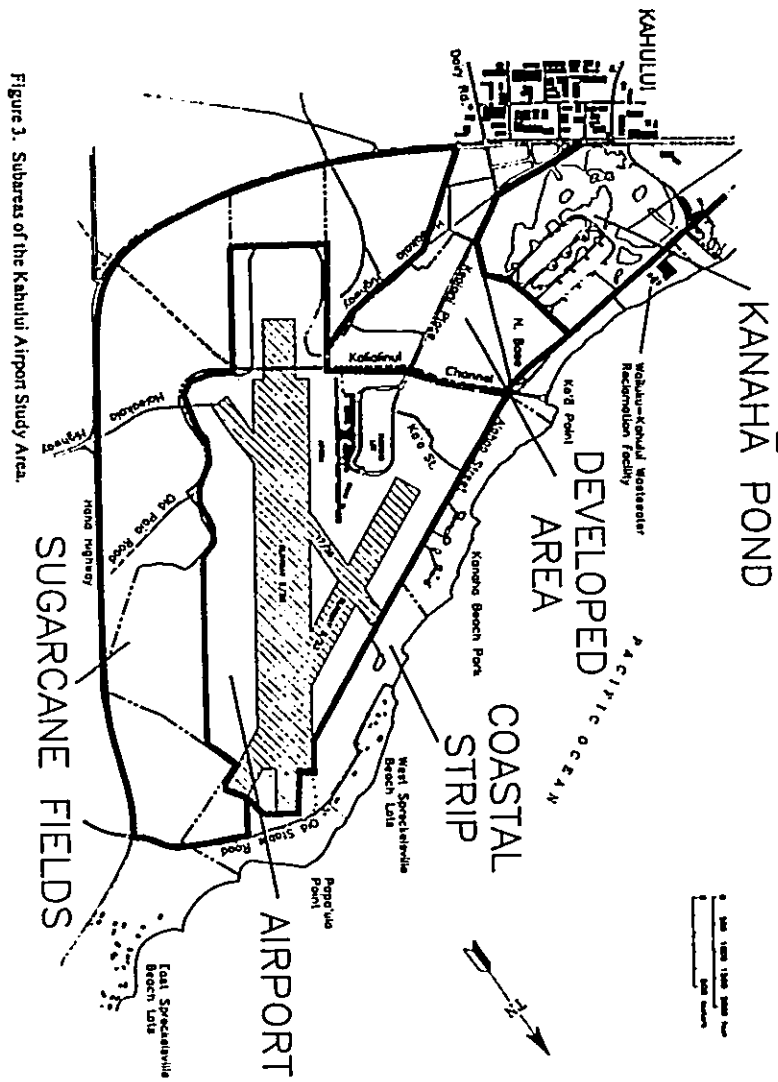

Figure 3. Subareas of the Kahului Airport Study Area.

Vegetation within the airport proper is primarily introduced landscaping. Along Alahao Street and the seaward perimeter fence, *koa haole* (*Leucaena glauca*) and grass are the main vegetation, with Indian pluchea (*Pluchea indica*) along the roadsides.

Historical maps indicate that the airport parking lot and passenger terminal are sited on what was once a broad, low ridge that marked the east side of Kalialinui Gulch. This ridge was significantly cut during World War II construction of Naval Air Station, Kahului. Backhoe excavations just inland of Kanahā Park indicate a basalt bedrock base beneath the ridge, occurring from 90 to 160 cm below surface. Folk and Hammatt (1991:17) posit that the basalt bedrock originates from:

> ...probably lavas of the Kula Volcanic Series of Haleakala volcano, thus of Pleistocene age. In two instances the bedrock is overlain by a basal soil of dark reddish brown, very compact, fine silt with abundant angular pebbles and cobbles of the decomposing bedrock. This appears to be an *in situ* development of soil. In the other three trenches here, the bedrock is overlain by a fine silt loam with a few rounded pebbles, cobbles and boulders. These sediments are interpreted as alluvial and colluvial deposits derived from the late Pleistocene and recent epochs of pronounced erosion of the western flank of Haleakala and the northeastern flank of West Maui Mountain.

The Coastline

The coastline seaward of Alahao Street and Old Stable Road is the most undeveloped of any of the airport subareas, although it has certainly been impacted by historical and modern activities. East of Kalialinui Channel, the coastline consists of a series of shallow embayments marked by small rocky points or promontories, the most distinct of which are Ka'ā Point at the outlet of Kalialinui Channel and Papa'ula Point at the northeast end of the main runway. Behind the sand beach (and seaward of the airport perimeter fence) are rolling coralline sand dunes oriented roughly parallel to the coast. The dunes rise as high as 15 feet asl and are separated by low areas only about 3 feet asl.

Kanahā Beach Park, operated by Maui County, occupies about 1,100 m along the beachfront east of Kalialinui Channel. It is a popular destination for fishermen, picnickers, windsurfers, tourists, and *limu* pickers. Spreckelsville Beach, which is also popular with windsurfers, extends to the east for over 3 km from Papa'ula Point to Maui Country Club (outside of the project area). Offshore of the project area and extending from near Kahului Harbor east to lower Pā'ia is the extensive Spartan Reef, the outer edge of which is over one-half mile from shore. The submerged reef platform is only 30 feet (about 9 m) below surface.

Private residences in the East and West Spreckelsville Beach Lots are scattered along the east end of the coastline. Access to these residences is by the unpaved Old Stable Road.

West of the Kalialinui drainage, the coast has been altered by beach erosion and construction. The Kahului-Wailuku Wastewater Treatment Plant, constructed in 1979, is just seaward of Kanahā Pond and serves as the county's primary treatment facility for central Maui. West of the sewage facility is Kahului Harbor; Hobron Point, anchor to the east breakwater of the harbor, is just outside of the airport study area.

Primary vegetation along the coast includes *koa haole*, *kiawe* (*Prosopis pallida*), ironwood trees (*Casuarina equisetifolia*), and various grasses, with densities of stands and heights of trees varying by location. Other vegetation includes Indian pluchea, sisal (*Agave sisalana*), castor bean (*Ricinus communis*), beach naupaka (*Scaevola sericea*), and beach morning glory (*Ipomoea pes-caprae*). Along the Alahao Street/Old Stable Road alignment, vegetation is typical of disturbed conditions: *koa haole* and grass are the major plants, with Indian pluchea and Christmas berry (*Schinus terebinthifolius*) common along the roadway edge.

During archaeological testing at the east end of the coastal strip, Toenjes et al. (1991:6) noted the presence of ground water in some localities to within 30 cm of the surface. They describe the ground water as "sweet to mildly brackish." Former residents of the area state that there were several brackish water springs along this coastline (Stearns and Macdonald 1942:56).

Erosion has been a problem along this shore since at least the turn-of-the-century. In 1942, Stearns and Macdonald (1942:56) wrote that the coastline:

> has been rapidly washing away during the last 40 years...Calcareous beach sand or sandstone, as it is known locally, lithified by ground water carrying organic acids, is exposed as arcuate rocky ledges at low tide near Spreckelsville. Old residents state that these ledges were under beaches of 25 years ago where numerous slightly brackish springs issued at low tide.

These authors discount the conventional wisdom of the time that the Kahului Harbor breakwaters (built in the early years of the century) caused the erosion problems. They note that "it does not seem likely from its location [the harbor breakwaters] to have upset the regimen of ocean currents as far away as Spreckelsville" (Stearns and Macdonald 1942:56).

There has been significant reduction in beach sand volume and width since the 1960s (Campbell 1972). Numerous groins of piled basalt boulders have been constructed, particularly fronting Kanahā Beach Park; sand tends to accumulate on the east sides of the groins and promote erosion of the west sides.

Kahului has been subjected to a number of tsunami throughout the historic period, with considerable effect on the coastline of the project area. Kennedy et al. (1993) wrote that:

> A 1923 tsunami destroyed the wharf at Kahului Harbor and inflicted $1.5 million damage. An even worse tsunami was experienced in 1946. Other less serious tsunami hit in 1952 and 1957. It would be safe to assume that the area [around the airport] was affected by tsunami in pre-contact times, even though no references to these could be found in the oral history.

During the 1946 tsunami, wave heights of 22 feet at Kahului Harbor and 28 feet along the shoreline at the east end of Runway 2/20 were recorded. Recorded wave heights during other major tsunami range from 8 to 17 feet along this shoreline. During the course of an archaeological survey, Keau (1981) noted that sand from a major 1980 storm had covered the surface of the wastewater treatment plant at the west end of the project area.

The Sugar Cane Fields

The area inland of Runway 2/20 has been under sugar cane cultivation since the late 1800s; much of it is still actively cultivated. Plantation camps occupied the area inland of the east end of Runway 2/20 until the late 1950s; after demolition of the camps, these areas were used for support facilities or warehouses and are now under sugar cane cultivation.

Most of the subarea has a soil base of Molokai silty clay loam, with a small area of Pulehu silt loam at the south end of Runway 17/35 along the Kalialinui drainage. Molokai silty clay loam consists of well-drained soils, usually a dark reddish-brown silty clay loam (Foote et al. 1972). Pulehu silt loam consists of well-drained soil on alluvial fans and stream terraces and in basins; this soil type follows the channel of Kalialinui Stream.

The Developed Area West of the Airport

This subarea is the developed area west of the airport, situated along the Keolani Place corridor and extending seaward between the Kalialinui Channel and Kanahā Pond. It is characterized by a mix of reused WWII period buildings, structures for HC&S operations, and new construction, as well as open lots where only the concrete foundations remain of military structures. Airport support facilities and commercial activities occupy this area, primarily along Keolani Place. New major construction in the area, including two large-scale warehouse department stores, has focused along Hana Highway.

Kanahā Pond

Kanahā Pond presently covers approximately 85 acres and is managed as a wildlife preserve by the Department of Land and Natural Resources. The preserve as a whole includes 230 acres of airport property. The major historical impact to the pond was construction of ammunition magazines and access roads during WWII development. These magazines, although no longer serving their original function, remain intact and in relatively good condition.

III. A HISTORY OF LAND USE AND LANDFORM CHANGE

The project area encompasses the Kahului Airport and surrounding commercial, agricultural, residential, and open areas. Until about 50 years ago, it was a peripheral area to the town of Kahului, used mostly for cattle grazing and sugar cane cultivation. During World War II, the area was leased by the U.S. military and developed as Naval Air Station, Kahului (NASKA). After the war, the air facilities were acquired by the Territorial government for use as a commercial and general aviation airport and has since evolved into the principal airport on the island of Maui.

Pre-Contact and the Early Contact Period

The project area falls within the traditional *ahupua'a* of Wailuku in the district of Wailuku (Fig. 4). The district encompasses the eastern flank of the West Maui mountains and all of the isthmus between east and west Maui. It includes the coastal stretches of both Kahului Bay on the north and Mā'alaea Bay on the south. The western half of Wailuku district is characterized by the permanent streams emanating out of the West Maui mountains and the eastern half is typified by sand hills with intermittent streams.

Handy and Handy (1972:272) call the district *Na Wai 'Eha*, "The Four Waters," after the four major streams and taro-growing areas of windward West Maui: Waikapū, Wailuku, Waiehu, and Waihe'e. Based on the account of a native Hawaiian of "considerable age," a writer at the turn-of-the-century described Wailuku:

> The district was called Nawaieha (the four streams) and was famous throughout the group, not only for the magnificence of Kahekili's court but for the vastness of its products. The shores of Kahului harbor, from Waihee Point to Haiku, were surrounded with the grass huts of the fishermen and of those connected with the innumerable war canoes of the king. Myriads of cocoanut trees lined the beach from Kahakuloa to Wailuku, the trunks of many of which are found in the marshes at Wailuku at this day, the trees having been destroyed by a conquering army from Hawaii (Paradise of the Pacific, September 1900, in Silva n.d.:10).

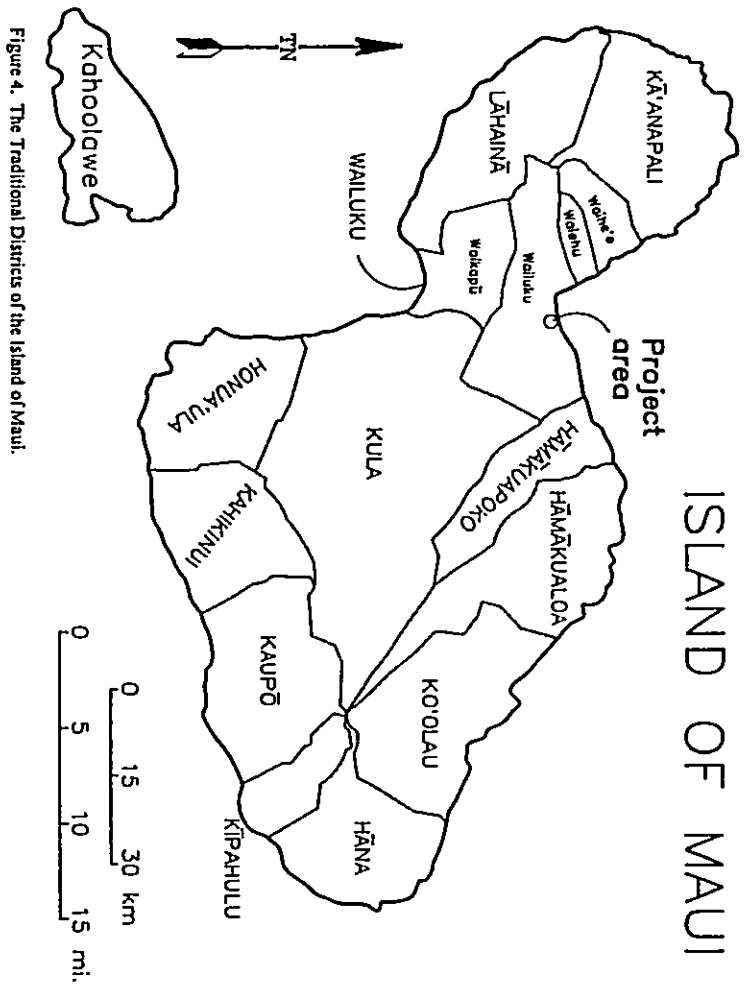

Figure 4. The Traditional Districts of the Island of Maui.

The *ahupua'a* of Wailuku covers almost half of the district, including the coastal area of Kahului Bay, all of 'Īao Valley, and the north half of the isthmus (see Fig. 4). It includes two of the four fishponds that are known for the district, Kanahā and Mau'oni (the other two are Keāli'a at Kihei on the south coast of the isthmus in Waikapū *ahupua'a* and Paukūkalo in Waihe'e *ahupua'a*).

In the late prehistoric period, a time of frequent warfare among the chiefs of Maui, O'ahu, and Hawai'i, Wailuku was a chiefly center and a site of decisive battles. In 1736, the fatally ill Maui chief Kekaulike heard that the Hawai'i chief Alapa'i was planning to invade his island. He and his retinue retreated from Kaupo to Kula and then to Wailuku where the Maui chief died at Haleki'i Heiau. There, his body was burned and his ashes thrown into 'Īao Stream (Speakman 1978:13, in Kennedy et al. 1993). Pu'unēnē in Wailuku was later the site of the final battle between the sons of Kekaulike for control of the island (Kamakau 1961:74).

Between 1765 and 1793, Kahekili was chief of the island (as well as O'ahu, Moloka'i, and Lāna'i) and Wailuku was the site of his residence, Kalanihale (Kennedy et al. 1993:8). Late in his rule, war broke out between Kahekili and the chief of Hawai'i, who led a force of special warriors in an invasion of Maui. Kahekili awaited the outcome of the battle at his house in Wailuku. When his forces eventually defeated the invading army and the Hawai'i chief came to him and sued for peace, Kahekili said, "Take the fish of Kanaha and Mau'oni and the vegetable food of Nawaiehā..." (Kamakau 1961:88-89).

Kamehameha fought one of his first battles with European weapons on the plains of Wailuku. Kamakau (1961:148) writes:

> The bay from Kahului to Hopukoa was filled with war canoes. For two days there was constant fighting in which many of the most skillful warriors of Maui took part, but Kamehameha brought up the cannon, Lopaka, with men to haul it and the white men, John Young and Isaac Davis, to handle it; and there was great slaughter.

But Wailuku was also a place where chiefs passed their quiet times. Kamakau (1961:83) writes that, in the 1760s, "the chiefs of Wailuku passed their time in the surf of Kehu and Ka'akau." 'Ī'ī (1959:135) identifies "the surfs of Kaleholeho, Kaakau-pohaku, and Paukukalo" in Wailuku as some of the attractive locations for this sport.

For the project area specifically, little is known aside from references to Kanahā and Mau'oni fishponds. These are said to have been built by Maui chiefs, possibly as early as the A.D. 1500s. Kamakau (1961:42) writes of a meeting between the chiefs of Maui and Hawai'i:

> Keawe-nui-a-'Umi sailed from Hilo to Kapu'ekahi in Hana and from Hana to Kahului of Wailuku. There the chief of Hawaii met Kiha-a-Pi'i-lani, ruler of Maui. Kiha-a-Pi'i-lani was building the walls of the pond of Mau'oni. A wide expanse of water lay between Kaipu'ula and Kanaha, and the sea swept into Mau'oni. The two ruling chiefs met and greeted each other with affection.

Based on other stories, the ponds were expanded or modified in the early 18th century by an O'ahu chief (Summers, in Kikuchi 1973).

In 1778, Captain James Cook made landfall in the Hawaiians Islands and his two ships, the Resolution and the Discovery, passed along the north shore of Maui in November of that year. Over several days, trade was made between Cook's ships and Maui islanders. Kahekili visited the Discovery and presented its captain with a red feather cloak (Kuykendall 1968:15).

The 19th Century

It is not until the mid-1800s that the project area is documented in any historical records. This area falls within what was once called Ka'a Lands, or Wailuku Commons, which covered about 24,000 acres stretching between Wailuku in the west and Pā'ia on the east (Monsarrat 1882). During the Mahele, Wailuku was designated as Crown Lands. Numerous Land Commission awards to commoners were given out in the area around Wailuku and 'Īao Valley, but none were awarded in the project area.

In 1878, through his friendship with King Kalākaua, Claus Spreckels secured a lease of 40,000 acres of land, among which was the Commons. In 1882, he acquired fee simple title to all of Wailuku *ahupua'a*, including the Commons, through Grant 3343 (Kennedy et al. 1993:12). That same year, Spreckels founded the Hawaiian Commercial and Sugar Company (HC&S), the largest and best equipped sugar plantation in the islands (Kuykendall 1967:60). Within a very short time, he developed a state-of-the-art sugar mill, railways to transport his cane, and most importantly for the success of his efforts, irrigation ditches to bring water from the north slopes of Haleakalā and the West Maui mountains (Kennedy et al. 1993:12). By the turn-of-the-century, but possibly as early as 1885 (Dodge 1885, map updated by J.M. Donn in 1903), there was a reservoir inland of Pu'unēnē hill to the east of the project area and a network of irrigation ditches transporting water to sugar fields throughout the isthmus. Spreckels also had a store, office, and shipping facilities at the rapidly developing Kahului Harbor, where a small commercial landing for the sugar plantations had been opened in 1879 (Goodfellow 1991). The Spreckelsville Mill, actually four mills in one complex, was located just outside the northeast corner of the project area near the present intersection of Old Stable Road and Hana Highway.

An 1882 map of Kahului Harbor (Monsarratt 1882) shows the Commons as vacant land south of Kahului town, which is a conglomeration of about 20 buildings and a wharf extending off of what is now called Hobron Point (see also Jackson 1881) (T. Hobron established a sugar cane plantation at Waihe'e in the 1860s, operated a schooner between Kahului and Honolulu, and built the first railroad in the islands from Kahului to Wailuku). Roads emanate out of Kahului to Wailuku to the west, Spreckelsville to the east, and

Pu'unēnē to the southeast. Hobron's Kahului Railroad Company line from Kahului to Pā'ia, which was built in 1880 (Best 1978:15), runs along the coast.

Around this same time, the area is described as "a complete desert, a great, barren stretch of sand and dust spread from Wailuku to Paia, except for a little cattle grazing around the present location of Spreckelsville" (Burns 1991:72). This is an apt description of the project area which Jackson's 1881 map shows as "undulating sand hills" crossed only by dirt roads and the railroad line to Pā'ia (Fig. 5). A 1910 map by Shoemaker shows the seaward half of the project area as "pasture."

An 1896 map of Kahului (Howell 1896) shows that the town had expanded since Spreckels initiated his sugar plantation, but it had still not expanded into the present airport area. This Kahului, however, was burned to the ground in 1900 in an effort to halt the outbreak of bubonic plague. The modern town of Kahului was developed after this event (Burns 1991:48).

The 20th Century

In the early years of the new century, central Maui was still a "bare waste where little existed besides the prickly pear, the razor back hog and the wild indigo" (Baldwin 1915:47). Along the north coast in the east Wailuku area, Kahului, Pu'unēnē, and Spreckelsville were the only large communities, but there were several plantation camps, with most concentrated around Pu'unēnē (USGS 1922) (Fig. 6). Within the project area were Spreckelsville (Camp One) at the east end and Camp Three at the central-south edge. Two railroad lines crossed the airport area. Sugar was grown in the area inland of Old Paia Road (roughly the present Runway 2/20) and the coastal area was used for pasture. The harbor around Kahului had been further improved with two breakwaters. In 1902, a new mill was opened at Pu'unēnē and the original Spreckelsville Mill was closed.

World War II brought major changes to this area. In 1942, the U.S. Government annexed 3,800 acres at Pu'unēnē and Kahului for the construction of naval air stations. At Kahului, 1,350 acres were leased from HC&S for Naval Air Station, Kahului, which was intended for carrier-group operations and training (anonymous 1947). About one-third of the land was in cane fields and the remaining portion was "pasture containing swamps and fish ponds" (anonymous 1947:151). Two runways (17/35 and 2/20) were initially constructed, as were numerous support facilities including aircraft parking areas, hangars, ready-rooms, support facilities, barracks "of the cheapest and most temporary adequate construction," surface and underground aviation-gasoline storage tanks, and ammunition magazines (anonymous 1947:152).

In the early 1950s, NASKA was taken over by civilian authorities for use as a public airport. By 1954, a third runway (5/23) had been added (NASKA 1953), although the two original runways appear (on the map) to be the active runways (Fig. 7). At present, Runways 2/20 and 5/23 are in use. Runway 17/35 was taken out of use between 1964 and 1967.

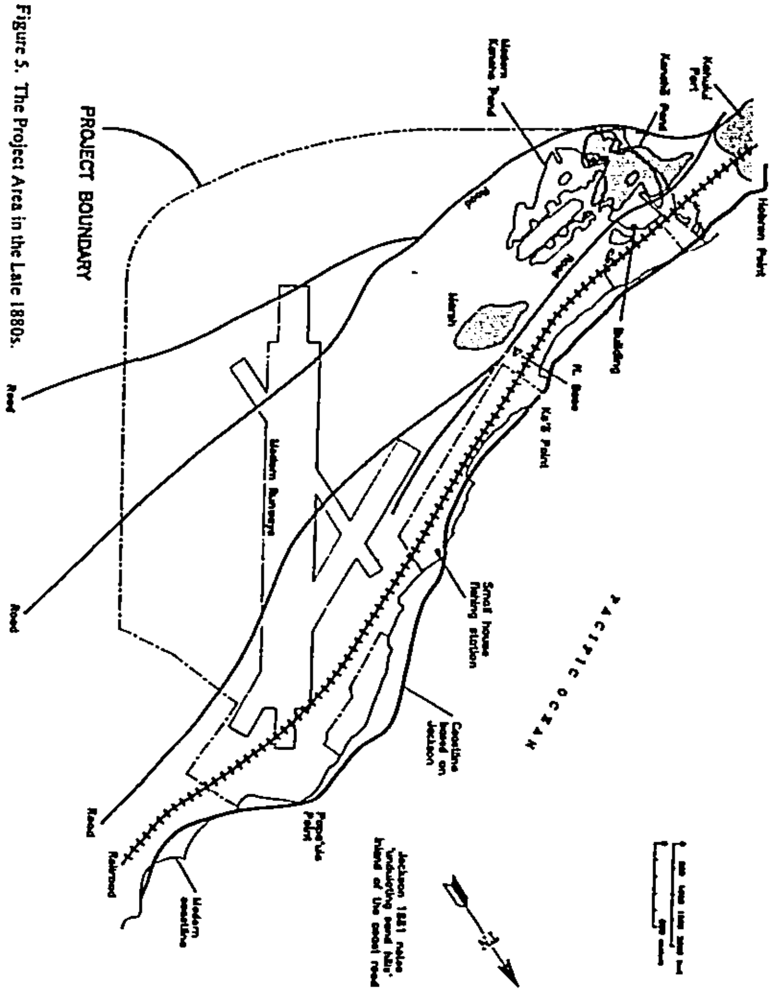

Figure 5. The Project Area in the Late 1880s.

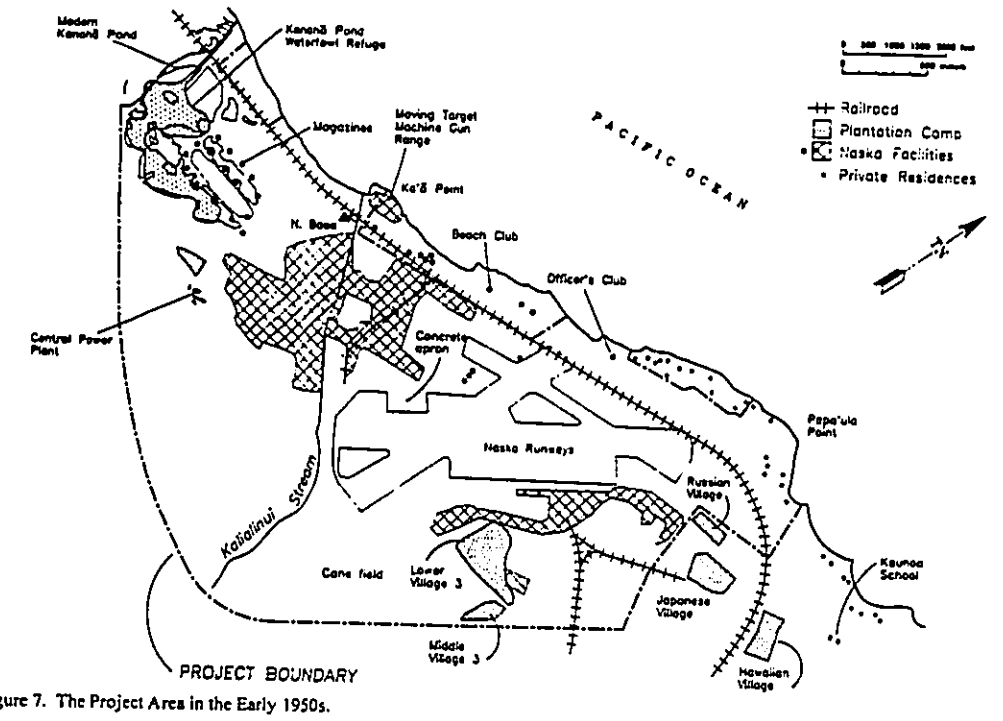

Figure 7. The Project Area in the Early 1950s.

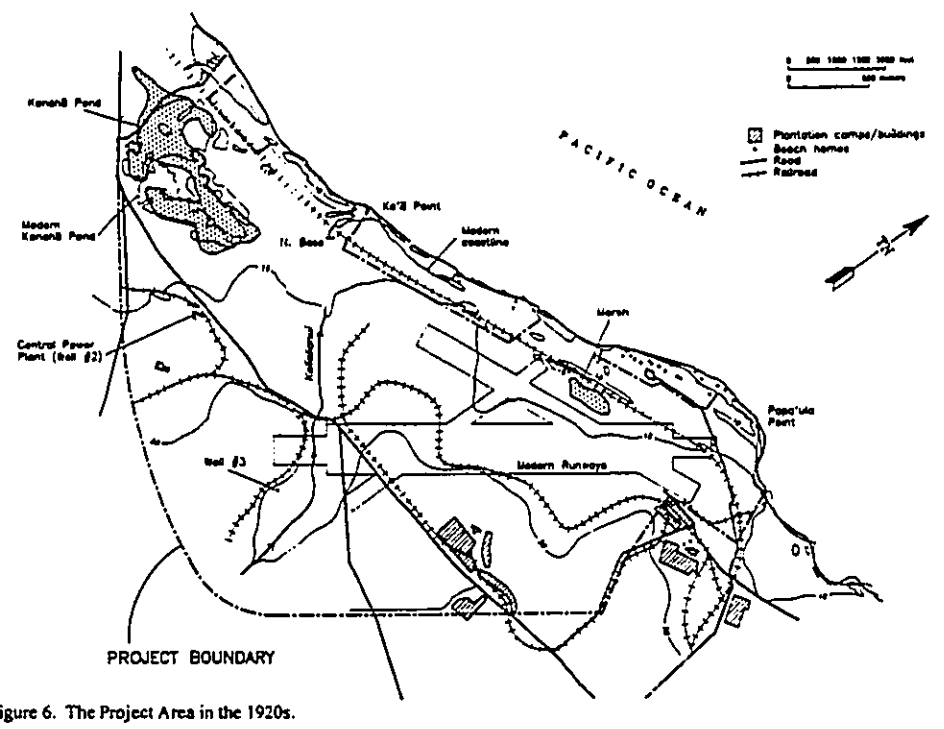

Figure 6. The Project Area in the 1920s.

In recent decades, Kahului Airport has expanded. Runways have been extended and at the northeast end of Runway 2/20, the private homes at Papa'ula Point were apparently acquired and demolished for the runway protection zone. Toenjes et al. (1991:27) note the presence of "cement sidewalk remnants and basalt boulder pavements and alignments...between the Spreckelsville Beach Road and the shoreline near the western beach lot homes." Although they suggest that these may have originated from Navy use of the area, it is more likely that these are the remnants of the beach homes.

The Changing Landform

Since the late 1800s, maps and photographs have documented the airport environs (Jackson 1881; Dodge 1885; USGS 1922, 1954, 1964; NASKA 1953). A study of these visual documents identifies changes in the landform that have had an effect on the preservation of archaeological sites.

The U.S. Geological Survey produced the earliest topographic map of the project area (USGS 1922) (see Fig. 6). Although it shows roads, several railroad alignments, and plantation camps in the airport area, this map is interpreted to represent the relatively natural and unmodified landform. The landscape of the project area, as shown on this map, is essentially a narrow, level coastal flat with a gradually rising, rolling slope to the south and southeast. Ten to twenty foot high coastal dunes front the shoreline around Ka'ā Point and Papa'ula Point. Kanahā Pond and the adjacent Kahului town mark the edge between the undulating Wailuku dunes to the west and southwest and the isthmus to the east. The intermittent Kalialinui Stream cuts a well-defined gulch just to the east of the pond. A small marsh exists behind the coastal dunes between Ka'ā and Papa'ula Points.

The Airport Proper

In the 1880s, the general area behind the coast consisted of rolling sand hills (Jackson 1881). Over the following 40 years, it does not appear to have been significantly altered by other than sugar cane cultivation; even by the 1920s, the area remained a gradually rising, undulating (on an east-west orientation) slope to the east of Kalialinui Gulch (USGS 1922). The landform at this time is a series of shallow, amorphous gullies separated by low, broad "ridges", the largest of which descends to the coast just east of Ka'ā. This ridge rises only about 30 m from the coast to what is now the Hana Highway-Haleakala Highway intersection, a distance of over 1.5 km.

Construction of Naval Air Station, Kahului in the 1940s altered the landform in a major way. Runway construction made the most impact: "Two strips were prepared, each 500 feet wide by 5,000 and 7,000 feet long, respectively, with work made difficult by the considerable blasting operations required" (anonymous 1947:152). It is assumed that blasting was required because of the geologic base of lithified sand (cf. Macdonald and Abbott 1971:Figure 203).

Figure 8 shows topographic changes in the 20, 40, and 60 foot contours between 1924 and 1964, that is, the areas of cut and fill. The figure is somewhat misleading in that the 1922 map has 10 foot contour intervals, but the 1964 map shows only 20 foot intervals. So it is likely that there was more cut and fill activity than what is illustrated; on-the-ground survey supports this contention. Portions of the inland edge of Runway 2/20, the area of the terminal apron and buildings, and a section of the NASKA facilities area to the east of Kalialinui Stream were cut. A major portion of Runway 5/23 and a section of what is now the present airport parking lot was filled.

In 1922, Kalialinui Stream was an intermittent drainage cutting through a very shallow but relatively well-defined gully. The stream flow terminated at the inland edge of the coastal flat. The gully was channelized during WWII construction and an outlet to the ocean was apparently constructed at this time. In the late 1980s, the portion of the stream seaward of Alahao Street was straightened and lined with concrete (Welch 1988a). Archaeological excavations along this portion of the stream suggest that "the land along the gulch now appears to be fill land, probably modified during channel cutting and airport construction" (Welch 1988a:3).

The Coastline

In 1881, the coastal strip was marked only by a road and the railway to Spreckelsville (Jackson 1881). A small house sat on the point of land east of Ka'ā. Just behind Ka'ā Point in the low terrain at the seaward end of the Kalialinui drainage was a marsh.

Since 1881, the coastline has receded along the entire length of the project area, but particularly around Ka'ā Point, where possibly up to 100 m has eroded west of the Kalialinui outlet. Maps from the late 1800s (Jackson 1881; Dodge 1885) up to the 1920s (USGS 1922) show a relatively smooth, unbroken coastal profile, with only a small point at Ka'ā. To the east of the point was a narrow coastal flat that extended to the more prominent Papa'ula Point; a small "intermittent lake" was on this flat. In contrast, the present coastline is a series of small sandy embayments, interrupted by coral outcrop projections or promontories, the largest and most pronounced of which is Ka'ā.

The early coastline was fronted by 3 to 6 m high dunes. The largest stretched from Hobron Point to Ka'ā and also around Papa'ula. Smaller dunes existed in the area between Ka'ā and Papa'ula.

Coastal changes probably resulted from development of Kahului Harbor, which began on a small scale in the 1880s with construction of a small jetty at Hobron Point. From here, Spreckels operated a steamship line between Kahului and North America (Kennedy et al. 1993:13). Major development of the present harbor began at the turn-of-the-century and continued over the following 30 years (Best 1978:30). Initial work included construction of

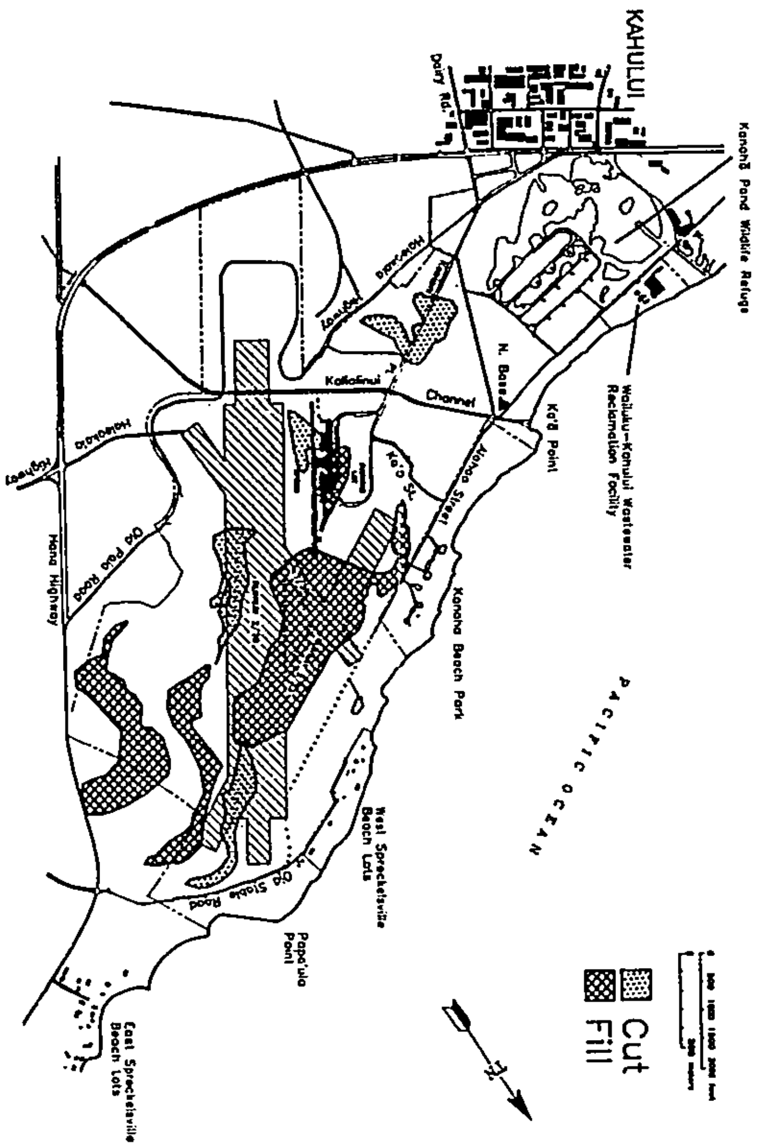

Figure 8. Areas of Cut and Fill Resulting from WWII Development.

the first harbor breakwater off of Hobron Point and dredging of the bay; construction of a second breakwater from the west side of the bay was begun in 1917. Since the 1920s (USGS 1922), Kahului Harbor has been further dredged and the two breakwaters improved, the larger extending from Hobron Point. In addition, groins have been built along the Ka'ā to Papa'ula coastline; these groins probably have had the most immediate impact on the project area coastline.

The Sugar Cane Fields

The area between Runway 2/20 and Hana Highway is presently under sugar cane cultivation, which has been the primary use of this area since sugar was introduced by Claus Spreckels in the 1880s. Archaeological excavations at the east end of the project area indicate a plow zone of dark reddish brown clay loam up to 60 cm thick (Toenjes et al. 1991). Along the east edge of the airport study area were also several HC&S plantation camps. A cluster of camps were located near the main Spreckelsville Mill (at the present intersection of Hana Highway and Old Stable Road). Another cluster was located northeast of the present intersection of Haleakala Highway and Hana Highway. Some of these camps were occupied until 1965 when they were bulldozed and the land converted to sugar cane cultivation.

The Developed Area West of the Airport

Like the airport proper, this subarea has seen considerable alteration. The first modern construction in the subarea was the Central Power Plant, which appears just inland of Kanahā Pond on the 1922 USGS map; this structure continued in operation at least into the mid-1950s (it appears on the 1953 NASKA map as the HC&S power plant). Major construction took place during World War II for NASKA development. As with the airfield, a large portion of the subarea seaward of the power plant was cut and levelled (see Fig. 8) and subsidiary buildings were constructed. It appears that Kalialinui Stream was channelized to the ocean and a secondary channel from the power plant to the intersection of the Kahului RR line and the Kalialinui drainage was constructed. More recently, the area has seen increasing development for commercial activities and new roadways.

Kanahā Pond

One of the prominent features shown on the 1922 USGS map is the large coastal flat around Kanahā Pond. The flat was about 2 km by 600 m, with Kanahā Pond sitting in the center of this coastal area. The formative Kahului town was built on the flat to the west of the pond. To the west lay the Wailuku sand hills; to the south and east were the level to gradual slopes of the mid-island isthmus. On the coastal side of the pond were 10 to 20 foot high barrier dunes. The intermittent Kalialinui drainage drained into the coastal flat but did not exit into the ocean.

Kanahā Pond itself appears on all of the historical maps of this area, a comparison of which indicates that the pond configuration, particularly the east edge, has been variable over the years; the western edge of the pond appears to have been relatively stable (Fig. 9). The earliest map (Jackson 1881) shows the pond about one-half of its present size with a stone wall cutting across its middle; also shown is a marsh about 750 m to the east on the coastal flat fronting the lower end of Kalialinui Stream. In 1922, the pond is only slightly smaller than at present, with its west half similar to the configuration shown in Jackson (1881) but with an extension to the east. There is no marsh at the outlet to Kalialinui Gulch. In the early 1950s, maps (USGS 1954; NASKA 1953) again show the west half as roughly consistent with earlier maps but the east half is again changed, this time most significantly by the construction of ammunition magazines and access roads. Kalialinui Stream has been dredged to the ocean; subsidiary drainage channels extend from the Central Power Plant inland of the pond to the mouth of Kalialinui Stream and from Kanahā Pond to the ocean.

The changes shown on the various maps suggest that the entire coastal flat around Kanahā Pond was marsh land and that the pond itself could have been a natural formation that was only slightly modified by Hawaiians for fish cultivation. When Samuel Wilder first dredged Kahului Bay in 1904, the dredge material was used to form the land on which the main business section of Kahului town sits (Burns 1991:48, in Kennedy et al. 1993:13). The fact that dredge material was needed as a base for at least a portion of the town supports the suggestion that this was marsh land, part of the Kanahā coastal flat. Also, the land in this area was described as "swamps and fish ponds" at the time that NASKA was constructed (anonymous 1947).

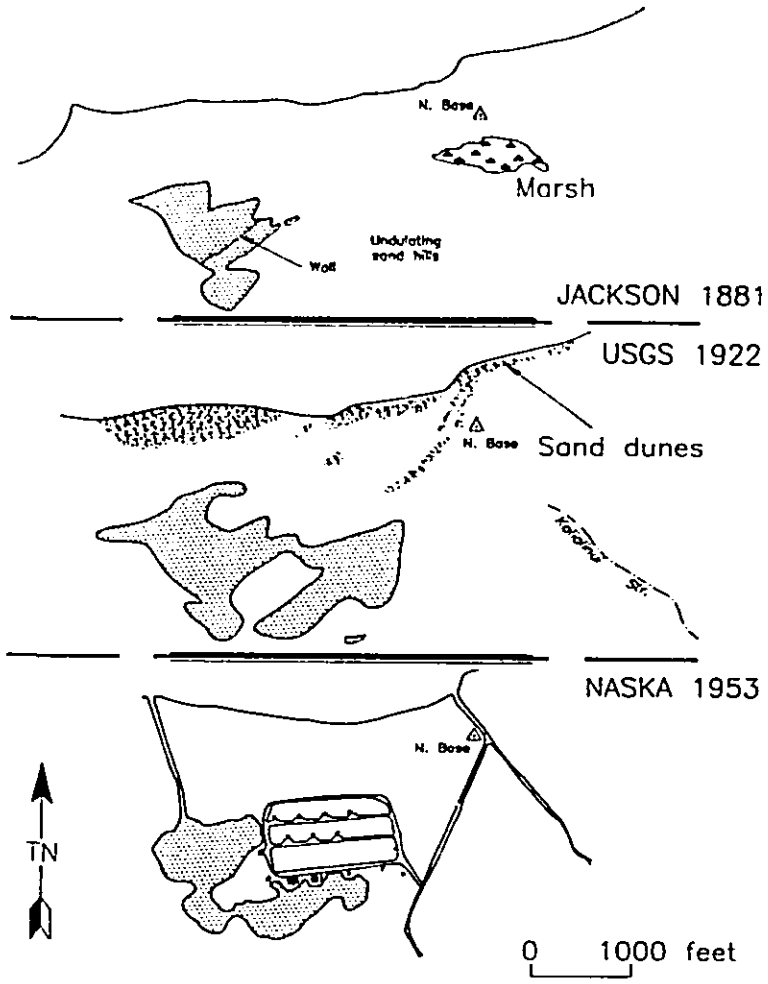

Figure 9. Changes in the Configuration of Kanahā Pond.

IV. ARCHAEOLOGY AT THE KAHULUI AIRPORT

This section of the report summarizes the archaeological work that has been carried out in and near Kahului Airport and describes and evaluates the archaeological sites that have been found. It also presents the results of limited low and medium intensity survey of selected areas of the airport study area carried out as part of the present assessment. It concludes with an analysis of site patterning in the airport area.

Previous Archaeological Studies

There have been several archaeological studies carried out in the area within and surrounding Kahului Airport. Table 1 summarizes the work that has been carried out in the immediate vicinity of the airport; Figure 10 locates the various studies. Table 2 lists the work that has been carried out in the general Kahului area that is pertinent to the present project. Discussion of the previous archaeological studies is organized by subarea.

The Airport Proper

Only limited work has been carried out in the immediate airport area. As part of a reconnaissance of the larger airport environs, Connolly (1981) carried out a vehicular survey of this subarea with the assistance of Thomas P. Hanchett, the airport superintendent. Hanchett pointed out an area where burials had been discovered during construction several years earlier. Conolly (1981:67) reports that:

> Upon finding the burials, work was stopped. Mr. Charles Maxwell was brought in to bless and rebury the bones off to the side of the construction area. Other, undisturbed burials were left in place, and to prevent any further disturbance of them large boulders were pushed around the site by the contractor.

In a subsequent project, Welch (1988b) attempted to relocate the burial and reburial sites, which he designated State Site 50-50-05-1798. Three years later, Welch (1991) excavated four backhoe trenches in the vicinity of Site 1798 as part of a larger investigation for Kanahā Beach Park expansion and airport improvements. He found a possible buried wall associated with a marsh type deposit in one of these trenches. Twelve other trenches were dug inland of Alahao Street between Kanahā Beach Park and Site 1798; almost all of these trenches showed evidence of construction fill almost to the water table.

Table 1. Archaeological Studies in the Kahului Airport Area.

REPORT (Author/date)	LOCATION	LEVEL OF SURVEY	SITE NO.*	COMMENTS
Kāluchi 1973	statewide	fishpond survey; Ph.D. dissertation	1783	described and classified Maʻoneʻone and Kanahā Ponds
Inventory 1973	airport area; specific location unknown	part of Statewide Inventory	—	burials to east and west of airport project area (referred to in Connolly 1981)
Connolly 1981	development areas of Kahului Airport	reconnaissance survey; Airport Master Plan EA	1798, 1799	Site 1 (1798)--burials in airport area; Site 2 (1799)--possible habitation site in sand dunes NW of runways
Kemi 1981	Kanahā Park/Wastewater Treatment Plant	overview; pedestrian survey	—	no surface evidence of sites but major storm had covered surface of the treatment plant
Clark and Toenjes 1987	sewerline from Spreckelsville to Kāʻae	monitoring of sewer line excavation	1777 (BPBM C9-37)	six sites exposed in sewerline trenches; only one near airport
Welch 1988a	mouth of Kalialinui Gulch	subsurface reconnaissance (coring and shovel tests)	—	no evidence for archaeological deposits
Welch 1988b	Short Term Kahului Airport Development areas	reconnaissance survey; revisit Connolly 1981 sites	1798, 1799	probable subsurface deposits in dune extending west of 1799; military remains around proposed access road at W end of airport
Fredericksen and Fredericksen 1988	232 acres S of airport in sugar fields	reconnaissance survey; limited subsurface work	—	survey limited to roads, ditches, open areas
Folk and Hammatt 1991	clear zone at W end of Runway 5/23	subsurface testing (16 backhoe trenches)	—	no cultural remains
Goodfellow 1991	warehouse site W of Kanahā Pond	surface survey/ subsurface testing (25 backhoe trenches)	—	no cultural remains; black beach sand 1 m b.s.
Welch 1991	Kanahā Park addition, airport transient apron	subsurface testing (82 test trenches)	—	possible buried wall in marsh area near 1798; no other cultural or human remains
Toenjes et al. 1991	runway extension/Clear Zone NE of airport	subsurface testing (99 backhoe trenches, 10 hand-dug units)	2849	extensive but discontinuous cultural horizon in beach and dune sands
Kennedy et al.1993	parking lot extension for Kanahā Beach Park	surface survey	—	no evidence of cultural remains; considerable modern disturbance
Folk and Hammatt 1993	VORTAC site at NE end of runways	subsurface testing (12 backhoe trenches)	—	VORTAC site is 60 m S of Site 2849

* State of Hawaii site number; four digit numbers preceded by "50-50-05-" for State of Hawaii, Maui Island, Paia quadrangle (USGS 7.5 minute series base map).

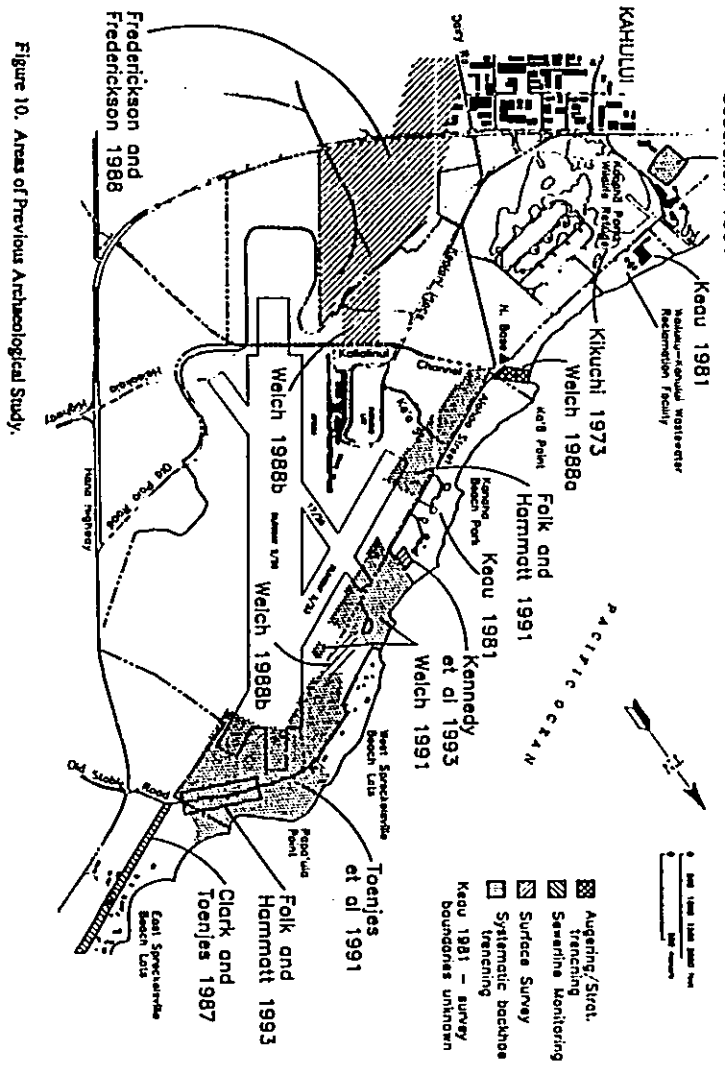

Figure 10. Areas of Previous Archaeological Study.

Table 2. Archaeological Studies in the Vicinity of Kahului Airport.

REPORT (Author/date)	LOCATION	LEVEL OF SURVEY	COMMENTS
Bowen n.d. (1968)	Maui Country Club; on beach 12 m from coast	excavation of burials disturbed by surf	Site 1171; four complete individuals and incomplete remains of four other individuals
Bowen and Merry n.d. (1970)	Kē'au, Makawao; in sea cliff face 10 m from coast	excavation of burials	Site 1064; burials, charcoal, midden in exposed cliff face
Inventory 1973	Kē'au, Makawao; revisit of Site 1064	part of Statewide Inventory	Site 1064; burials and charcoal lenses along 13 m of the cliff face
Barrera 1976	1,020 acres; Waiale	surface survey of disturbed areas	notes that human remains were previously found in cane fields to south
Bordner and Silva 1982	sewerline from Kē'au to Spreckelsville	reconnaissance survey	no surface evidence of sites
Miura and Bordner 1983	Kahului housing development	surface survey	in previously cleared area (for agriculture); no prehistoric or historic materials noted
Fredericksen et al. 1988	34 acres between Kaunoa School and Maui CC	surface survey and backhoe trenching	9 backhoe trenches; no cultural deposits
Kennedy 1990	300 m inland of Kahului Harbor; proposed Maui Community Arts and Cultural Center	backhoe trenching	51 trenches; no cultural remains; absence of cultural remains due to previous leveling of dunes
Sinoto 1990	70 acres; Mauna Lani sand barrow site	surface survey	no sites found
Donham 1990	4.6 acres; Maui Palms Hotel	surface survey and augering	40 auger cores; cultural deposit interpreted as secondary deposit imported as fill
Donham 1992	Maui Homeless Shelter site	?	one flexed burial and scattered remains of two individuals (Site 04-2916) but no burial features; also mentioned human remains found in sand hills at Kahului Intermediate School and at Mauna Lani development area (Site 04-2797)
Kennedy et al. 1992	TMK 3-5-03:01	inventory survey and subsurface testing	

Folk and Hammatt (1991) excavated 16 backhoe trenches on the inland side of Alahao Street between the end of Runway 5/23 and Kalialinui Channel. They defined four major stratigraphic units: basalt bedrock and C horizon sediments; beach sand; aeolian sand and fine silt; and modern fill (which they attributed to a combination of development and use of the airport, other military activities, and modern industry). They found no evidence of traditional Hawaiian cultural materials.

The Coastal Strip

The coastal strip east of the Kalialinui drainage has been the most intensively studied of the airport areas, with most of the investigations involving backhoe excavation. The majority of these projects have been cognizant of work elsewhere along the Kahului-Wailuku coastline that exposed burials and cultural deposits in beach dunes and sea cliffs (see Table 2). Bowen (1968) excavated a burial site at Maui Country Club that was exposed by wave action (Site 50-50-05-1171); a number of complete and incomplete remains along with scattered charcoal and marine shell were found. Bowen and Merry (1970) carried out excavations of a burial site in a sea cliff at Kū'au (Site 50-50-05-1064). Welch (1991:6) summarizes subsequent work at this latter site:

> Robert Connolly visited the site in 1973, noting the presence of burials and charcoal lenses along 13 m of the cliff face. At the time it was felt the site was safe from wave erosion, but in 1983 Muffy Mitchell in a letter to the State Historic Sites Section [now the State Historic Preservation Division] reported that at least seven burials were exposed in the cliff face. Between 1983 and 1985 on several visits to the site Earl Neller of the State Historic Sites Section excavated nine exposed burials, additional human bone, and pits containing midden and charcoal (State Inventory files).

Connolly (1981:66) states that, while working on the Statewide Inventory Survey, he recorded "numerous burial sites along the beach edge on either side of the present project area [the airport area]." There is no record of these burials, however, in the State Historic Preservation Division files.

Pedestrian surveys of the coastal strip include Connolly (1981), who identified a possible prehistoric habitation site just seaward of the intersection of the Runways 2/20 and 5/23 (later designated by Welch 1988a as State Site 50-50-05-1799), Keau (1981), who examined the Kanahā Beach Park and Kahului-Wailuku Wastewater Treatment Plant areas, and Kennedy et al. (1993), who surveyed a parking lot expansion area to the east of the beach park.

There have been several subsurface surveys of the coastal area, primarily east of the Kalialinui drainage. Between Kalialinui Channel and Spreckelsville, Welch (1991), Toenjes et al. (1991), and Folk and Hammatt (1993) excavated a total of 176 backhoe trenches and

several hand-dug trenches within the boundaries of the present subarea. No definitive subsurface evidence of cultural occupation was found in the excavations west of the end of the runways. Knowing that burials had been found along the coast to the east of the airport, Welch was concerned that the absence of burials in his 82 backhoe trenches (which include the 16 trenches dug inland of Alahao Street) was the result of the wide spacing of the backhoe trenches. He suggests that "it is still possible that individual or small group burials might be present in undisturbed areas" (Welch 1991:68).

Toenjes et al. (1991) whose work focused around and to the northeast of Papa'ula Point found subsurface traditional Hawaiian cultural remains in an extensive but discontinuous and faint cultural horizon. Designated Site 50-50-05-2849, this site may extend to the east to Site 1777, which was identified by Clark and Toenjes (1987) in the East Spreckelsville Beach Lots to the east of the project area. West of Papa'ula Point, Toenjes et al. (1991:47) found cultural deposits "originating on an old beach surface as much as 900 to 1200 feet inland from the present beach" indicating that the shoreline may have prograded.

Welch (1988a) carried out subsurface excavations along the west edge of Kalialinui Channel prior to new improvements to the channel. Further west, Goodfellow (1991) did an inventory level survey of a warehouse site west of Kanahā Pond. No surface sites and no subsurface cultural deposits were uncovered in either of these projects. In the west portion of Goodfellow's project area was a relatively undisturbed black sand beach deposit about 1 m below surface; this also, however, had no cultural material.

The Sugar Cane Fields

The sugar cane fields have seen only limited work, primarily surface surveys (Connolly 1981; Fredericksen and Fredericksen 1988; Welch 1988b). In all cases, dense, mature cane almost totally obscured the ground surface and made survey transects impossible. Surveyors were limited to access roads, irrigation ditches, and any other areas that were accessible. Fredericksen and Fredericksen (1988:13) also carried out probes, auger tests, and limited test excavations, and examined the sides of irrigation ditches which in some instances were more than 1 m deep.

The work by Toenjes et al. (1991) touched on the sugar cane fields at the northeast edge of the project area, with several backhoe trenches in areas that had been cultivated or used for plantation camps. They note that:

> Sediments in this area are typically a very hard dark reddish brown clay loam or silty clay with a recognizable plow zone to approximately 60 cm. below surface. Fragments of late historic artifacts including ceramics and bottle glass were evident in the mixed soil of the plow zone. Below the plow zone the deposit is distinguished by large inclusions of decomposing basalt (Toenjes et al. 1991:43).

This clay loam layer is described as Molokai silty clay loam by the Soil Conservation Service (Foote et al. 1972). The clay loam continues as a subsurface shelf to the west and northwest within the Toenjes survey area; in these areas, it is overlain by aeolian and wave-deposited sands and silts.

Folk and Hammatt (1991:5) note that the sugar cane fields between Hana Highway and Runway 2/20 were eliminated from their survey area, based on the recommendation of the State Historic Preservation Division:

> According to our aerial photos the project areas are now planted in sugarcane. Our records also indicate that the area for the runway extension has been previously surveyed and tested. The study identified no remains of significant historic sites. Based upon this negative finding and the extensive ground disturbance due to sugarcane cultivation, we believe that the proposed project will have "no effect" on significant historic sites (letter from SHPD to Pacific Planning & Engineering, Inc., dated June 5, 1990).

In a survey at Waiale, Barrera (1976) reported that human remains had been found in cane fields to the south of his project area; he also found two artifacts (flaked basalt and a possible hammerstone) in a disturbed area of cane field.

The Developed Area West of the Airport

This subarea is largely developed, originally as the Naval Air Station, Kahului (NASKA) and later as the support area for the commercial airport. Two pedestrian surveys have been carried out in this subarea. While Connolly (1981) does not describe his results (presumably he did not locate any sites), Welch (1988b) notes the presence of extensive remains of military development from World War II, including concrete surface and subsurface structures (possibly magazines or bunkers), asphalt roads, and concrete foundations. He notes that the lower area near Aalele Road "resembles in many ways the area around the former Ewa Marine Corps Air Station at Barbers Point Naval Air Station on O'ahu...which was also largely abandoned after World War II" (Welch 1988b:7).

Based on a comparison of contours on 1922 and 1964 USGS topographic maps (see Fig. 8), a portion of this subarea along Keolani Place was cut or graded during NASKA construction.

Kanahā Pond

This subarea encompasses the Kanahā Pond Wildlife Sanctuary. The only documented archaeological survey was by Connolly (1981), who states that he carried out a pedestrian survey of the refuge. He does not, however, describe his survey method nor any observations of his survey.

Archaeological Sites in the Kahului Airport Area

Based on previous historical and archaeological work, five sites have been identified in the project area (Fig. 11). Two sites are buried cultural deposits in beach dunes, one site is a burial/reburial area, one site is a possible surface habitation site, and one site is a fishpond with traditional origins.

Site 50-50-05-1777

Site 1777 (BPBM 50-Ma-C9-37) is a buried cultural deposit located east of Spreckelsville Beach Road beyond the northeast end of Runway 2/20 (technically outside the present study area but within the protection zone for the proposed parallel runway). The site was uncovered during grading in a horse pasture for an access road to sewerline trench excavations. Two test pits totaling 1.5 m^3 were excavated (Clark and Toenjes 1987). There were no surface cultural remains.

The site is defined by traditional Hawaiian cultural materials (faunal remains, charcoal, and volcanic glass, basalt, and coral artifacts) within a 10 to 15 cm thick deposit (Layer II). Based on trowel tests in areas of exposed deposit, the site is estimated to cover approximately 10 by 6.5 m (Clark and Toenjes 1987). One subsurface feature, a roughly oval-shaped hearth measuring 100 by 50 cm, was exposed during test pit excavation. It contained charcoal, volcanic glass, and a variety of artifacts, including a bone jabbing fishhook, coral and sea urchin abraders, a bone pick or awl, and basalt tools, including an awl, an adz fragment, three hammerstones, an anvil, flakes, and a sinker, (Toenjes et al. 1991:22). Two charcoal samples from the hearth (HRC-715) and the associated cultural layer (HRC-716) produced radiocarbon dates of A.D. 1381 to 1671 and A.D. 1445 to 1706 (Clark and Toenjes 1987:93).

This site is most aptly described as situated at the west end of a triangular-shaped coastal flat that is defined by Papa'ula Point on the west and Wawau on the east. It is about 145 m inland from the shoreline at an elevation of 1 to 1.5 m asl (Clark and Toenjes 1987). Three to 10 m high coastal dunes mark the west edge of the flat; low dunes gradually rise from the eastern side of the flat.

This site is evaluated to be significant for its information content, according to SHPD and National Register of Historic Places (NRHP) criteria; that is, it "has yielded, or may be likely to yield, information important for research on prehistory or history" (criterion D).

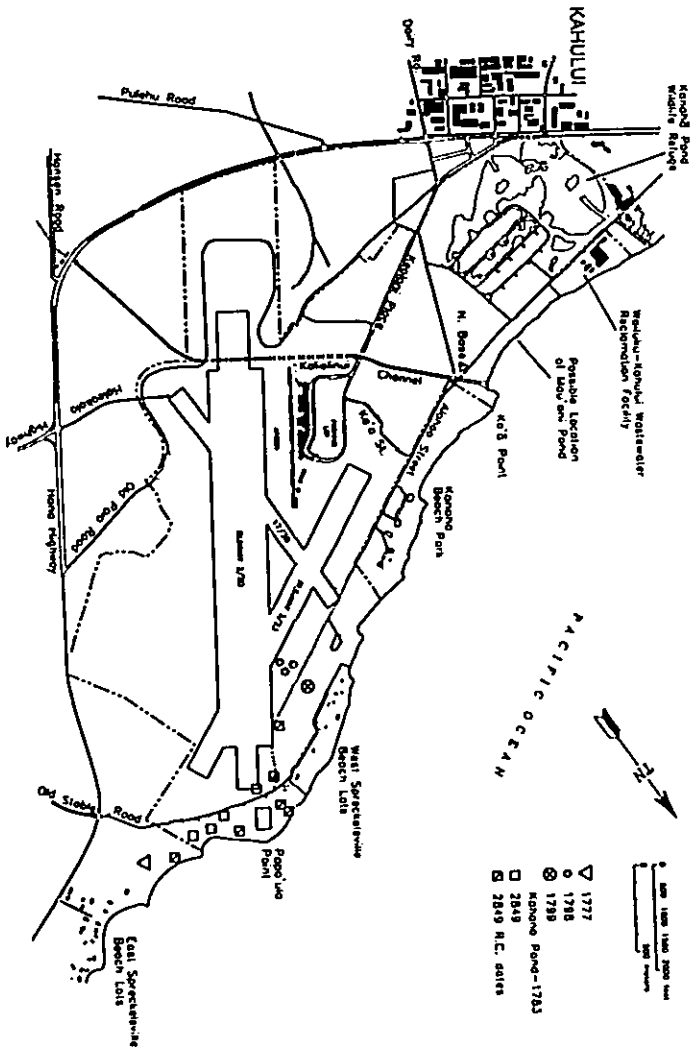

Figure 11. Archaeological Sites in the Kahului Airport Study Area.

Site 50-50-05-1783

Site 1783 is Kanahā and Mau'oni fishponds, which are located at the westernmost extent of the airport area. Kanahā Pond presently covers about 37 acres and is preserved as a wildlife refuge. It has appeared on historical maps from as early as 1881 (Jackson 1881); it should be noted that this map shows a stone wall across the pond, the only historical record of such a structure. Mau'oni Pond is only known from traditions; based on historical maps (especially USGS 1922), however, it is likely that Mau'oni Pond was located in the east half of the Kanahā coastal flat, below the natural, seaward end of Kalialinui Stream.

The Maui chief Kiha-a-Pi'i-Lani who lived around A.D. 1550 (Fornander, in Walker 1931) is said to have helped in the initial construction of a basalt stone wall that separated the two ponds (Welch 1991:6) (see comment about Jackson's map, above). The ponds are also associated with an early 18th century O'ahu chief, Ka-pi'i-oho-o-ka-lani, who ordered construction (or possibly reconstruction) of the ponds and named them for his son, Kanaha-o-ka-lani, and his daughter whose incognito name was Mau'oni (from notes by Catherine Summers, quoted in Kikuchi 1973; in Welch 1991:6).

Kikuchi (1973) classifies the ponds based on written records and interpretation of aerial photographs. Mau'oni Pond is a Type III pond, a *loko wai*, which is "an inland fresh water fishpond which is usually either a natural lake or swamp, which can contain ditches connected to a river, stream, or the sea, and which can contain sluice gates (Kikuchi 1973:228). Kanahā Pond is also a *loko wai*, but one "whose shape has been altered by man" (Type IIIa) (Kikuchi 1973:229). There has been no on-the-ground archaeological work carried out at the ponds.

Historical maps show the changes in the configuration of Kanahā Pond (see Fig. 9) but it was not until World War II that the pond was significantly impacted by the construction of ammunition magazines and access roads (see Fig. 7).

The fishponds are evaluated to be significant according to four SHPD and NRHP criteria: they "are associated with the lives of persons significant in our past" (criterion B); they "embody the distinctive characteristics of a type, period, or method of construction" (criterion C); they "have yielded, or may be likely to yield, information important in prehistory or history" (criterion D); and they have "important historical cultural value to an ethnic group of the State" (criterion E, specific to the State of Hawaii).

Site 50-50-05-1798

Site 1798 is an area of disturbed burials that consists of two localities: one is the main burial locale and the other is the site of reburial of human remains that were disturbed by construction activities in the mid-1970s. Backhoe trenching in the vicinity of the site shows that there are also subsurface cultural deposits indicating prehistoric occupation:

> The evidence from these trenches...indicate the construction of a wall, possibly marking the boundaries of a pond or taro pondfield at the location of Trench 82. Vegetable remains from the prehistoric layer in Trench 81, radiocarbon dated to 450 ± 60 years B.P., consisted of abundant soft fibrous material, which may have come from marsh or marsh edge vegetation such as sedges, ferns, or pandanus (Welch 1991:58).

The site is on a remnant sand dune that is now obscured by the fill from the construction of Runway 2/20. There are large basalt boulders, presumably those intentionally piled to protect the burials, covering the surface. The site is heavily overgrown with *koa haole*, tree heliotrope, grasses, and small shrubs.

This site was first documented by Robert Connolly in 1981. During the course of a surface survey of the airport area, he was told by airport superintendent Thomas F. Hanchett that several burials had been discovered several years previously (approximately 1975) when a section of the airport was being graded and grubbed. Work was halted when the burials were found. The human remains that had been disturbed were blessed by Charles Maxwell and reburied off to the side of the construction area. The other undisturbed remains were left in place and large basalt boulders were pushed around the site by the contractor to prevent any further disturbance. Connolly (1981:67) notes that "Mr. Maxwell was quoted as indicating at the time that these were the bones of warriors who had fallen during a prehistoric battle and were buried were they fell." The reburial area was designated Site 1a and the intact burials were designated Site 1b.

In a later survey to relocate the burial area, Welch (1988b) noted that the Site 1b area was heavily overgrown with *koa haole* and grasses and that many of the boulders were not visible under the thick vegetation. At Site 1a, the reburial pit did not appear to have been sufficiently filled and there was, at that time, a surface depression at the reburial locale.

In 1991, Welch (1991) revisited the site and spoke with local airport employees about airport development during World War II. He was told that the U.S. Navy brought in fill material from a volcanic cone hill near Pā'ia which was the location of a Japanese cemetery. Although the Navy gave notice of the project, apparently not all of the burials at the cemetery were moved before the transfer of fill began. Welch (1991:52) notes:

> Thus the fill placed beneath the runways contained some human bones derived from this early twentieth century cemetery. This raises the question of whether the bones found during the bulldozing in the area of Site 1798 are those of prehistoric Hawaiians or historic Japanese immigrants.

The burial and reburial locations were transit mapped and four backhoe trenches were excavated in the vicinity of Site 1798 (Welch 1991). One trench revealed a possible subsurface wall and buried pondfield soils.

The burials have been neither osteologically nor archaeologically examined. However, whether they are of Hawaiian or Japanese origin, they are nonetheless significant for their cultural value to either ethnic group (significance criterion E). In addition, the possible buried wall and marsh/pondfield soils are significant for their information content; the site has research potential and may contribute to a better understanding of Hawaiian prehistory (criterion D).

Site 50-50-05-1799

Site 1799 is located along the lower edge of the southwest facing slope of a low dune, seaward of Site 1798. The 4 m long alignment ranges from 50 to 100 cm wide and up to 50 cm high and consists of scattered, unstacked small basalt boulders. This alignment could be a remnant retaining wall, although Welch (1991:58) notes that it is "difficult to imagine what the function of such a wall would be in this locale." A possible coral paving, including many pieces of branch coral, is located on the downslope (south) side of the alignment. A possible grinding stone is 16 m south of the west end of the alignment. It measures 85 by 60 by 30 cm with an oval depression on the upper surface (although it is not clear if the depression is the result of human action or natural erosion processes).

This site is located at the east end of a line of low sand dunes less than 1 m in height. The dune on which Site 1799 is situated is covered by grass, small shrubs, and scattered small *kiawe* trees. There is a *hau* thicket in the low swales to the east and south. A mix of *hau* and a few ironwood trees extends from the dune to the shoreline. The site is located 100 m north of the airport security fence.

The site was first documented in 1981 (Connolly 1981:68-69) and reexamined in 1988 (Welch 1988b). Welch postulated that the sand dunes to the west may contain associated buried cultural deposits. The site has since been accurately located by transit and its features have been sketch mapped. The area to the west was tested by backhoe trenching but no cultural materials were uncovered (Welch 1991).

Site 1799 is evaluated as significant for its potential information content (criterion D).

Site 50-50-05-2849

Site 2849 is an extensive buried horizon of traditional Hawaiian cultural material exposed during backhoe trenching in 1991 (Toenjes et al. 1991). Cultural deposits were exposed in beach dune deposits in three of 99 backhoe trenches; deposits in 27 other trenches were interpreted as cultural based on "charcoal content and color (dark grayish brown to black), compaction, and comparison in aspect with the several deposits associated with artifacts, midden and buried pit features" (Toenjes et al. 1991:38). Deposits range from 0.3 to 1.8 m below surface.

The horizon occurs in ten discrete areas focused around Papa'ula Point, with seven of the areas lying seaward of Spreckelsville Beach Road. From the east along the coast, the ten areas by unit are:

Unit 61: This site area is a cultural deposit at the inland base of a high dune that forms a berm along the shore. It is a 10 cm thick deposit of black to dark greyish brown fine sand, containing charcoal and midden. Two pit features, one of which contained a basalt flake, were revealed in profile. Mottling of the contact between the cultural deposit and the overlying stratum suggests that the cultural layer has been eroded, probably by high surf. The site area is approximately 240 m west of Site 1777. One radiocarbon date of A.D. 1807 to 1933 was calculated from a sample from one of the pit features (CSH-16).

Unit 78: This site area is a small area defined by a single backhoe trench. It contains a 30 cm thick cultural deposit of fine brown sand overlying the Molokai silty clay loam base. The top of the deposit is 67 cm below surface.

Unit 97: This site area is defined by a single backhoe trench. The cultural deposit is a 4 to 7 cm thick, discontinuous black sand layer (Toenjes et al. 1991:Figure 31). It overlies a 20 cm thick, reddish yellow sand layer that sits on the clay loam base.

Unit 109: This site area is immediately seaward of the Spreckelsville Beach Road and is defined by a single backhoe trench. The cultural deposit is a dark gray sand with charcoal, 5 to 10 cm thick and discontinuous; it appears as a lens in the west profile of the backhoe trench (Toenjes et al. 1991:Figure 32). The top of the deposit is 60 cm below surface.

Unit 117: This site area is a cultural deposit exposed in a high sand berm facing the ocean. It is defined by two trenches. The hand-dug Trench 2 shows two cultural layers: the upper cultural layer (III) extends from 125 to 130 cm below surface and the lower layer (V) from 175 to 250 cm below surface. Layer III is black sand containing charcoal, sparse but varied midden (including *Cellana, Isognomon, Nerita picea, Trochus intextus, Turbo sandwicensis,* and echinoderms), coral, and a modified basalt cobble that may be a core or flake. The deposit is discontinuous and irregular, suggesting erosion by high surf action. Layer V is a grayish brown sand, 70 cm thick, with some midden; it overlies coarse, wet beach sand. It contained neither artifacts nor midden. Trench 1 shows evidence of only a single layer of fine black sand, 20 cm thick.

Charcoal samples from Trench 2 produced a radiocarbon date of A.D. 1207 to 1407 (Layer III; CSH-2) and a modern date (Layer V; CSH-3).

Units 128/136/137/138: This site area is located in the roughly level sandy area in back and south of the high dunes at Papa'ula Point. It is defined by six excavation units and is estimated to cover an area of over 3 acres. Based on aerial photographs and historical maps, the area appears to have once been developed in residences similar to those in the West Spreckelsville Beach Lots. The cultural deposit is discontinuous, generally dark gray to black sand, 10 to 20 cm thick, lying at or just above the water table. In Unit 137, Trench 2, the deposit (Layer II) is a brown to pale brown fine sand with marine shell and coral pebbles; it is partially exposed by an undetermined previous disturbance, possibly sand mining (Toenjes et al. 1991:27).

Units 156/157/167/168: This site area is located at the east edge of the West Spreckelsville Beach Lots and is estimated to cover approximately 2.5 acres. The 10 to 24 cm cultural deposit is a brown silty sand to black sand, with some charcoal flecking, overlying a yellow coarse sand; the top of the deposit varies from 85 to 115 cm below surface. All units show that overlying the cultural deposit are multiple layers (some of which are finely bedded) that represent dune formation and recent disturbances. The surfaces of trenches in Units 167 and 168 are grass.

Unit 157 produced charcoal sufficient for radiocarbon analysis. A sample from Layer V (CSH-7) generated a date of A.D. 1649 to 1823 (71% probability, 2 sigma). A sample from a pit feature (CSH-8) produced a date of A.D. 1434 to 1662 (100% probability, 2 sigma).

Unit 167 in the dune face shows two occupation layers: a very thin upper layer of brown fine sand with charcoal flecking, one basalt artifact, and marine shell fragments, and a lower layer of very dark gray to dark grayish brown sand with charcoal. The upper layer starts at 103 cm below surface. The lower layer is up to 28 cm thick, overlying pale brown coarse sand; it contains charcoal and marine midden, including shell and fish bone. The two layers are interrupted by 18 to 20 cm of bedded sands of varying coarseness, with charcoal flecking; these layers reflect dune formation and surf activity. A charcoal sample from the cultural deposit (CSH-11) produced a date of A.D. 1802 to 1939.

Unit 168, also dug in the low dune face, shows two occupations in Layers IV and V. Layer IV is a brown, fine to medium sand with discontinuous lenses of dark grayish brown sand, 35 to 40 cm thick, extending from 45 cm below surface. Layer V is very dark grayish brown, fine sand with organics and light charcoal staining, 7 to 22 cm thick.

Unit 140: This site area is located in the airport safety area at the east end of Runway 5/23 and is defined by a single backhoe trench. The cultural deposit, which extends from 20 to 40 cm below surface, is a pinkish white, medium to coarse sand with interbedded lenses of coarse sand. A pit feature contains sparse fragments of echinoderm, coral, and charcoal.

Units 151/159/160/161: This site area is defined by four excavations and is estimated to cover almost 2 acres on the inland side of Spreckelsville Beach Road near the east end of Runway 5/23. The cultural deposit is a 10 to 25 cm thick, brown to black silty sand and very fine sands, with charcoal flecking and some midden. In all units, the cultural deposit overlies coarse sand near the water table and ranges from 45 to 60 cm below surface, except in Unit 161 where it is 133 cm below surface. Two radiocarbon dates were generated: a sample from the cultural deposit in Unit 151 (CSH-6) is dated to A.D. 1301 to 1448; a sample from Unit 161 (CSH-9) dates a silty sand overlying the cultural deposit to A.D. 1432 to 1639.

Units 164/165/177: This site area is defined by three excavation units and covers less than 2 acres located seaward of the east end of Runway 5/23. The cultural deposit is a black silty sand to fine sand containing some charcoal and small midden fragments. It is 3 to 14 cm thick, and overlies fine sand to clayey sand at or near the water table. Excavations show this area to have been filled in the recent past, probably as part of runway construction. This site area is presently preserved under a grass lawn.

Very few artifacts (limited to basalt flakes and a possible core) were recovered from these excavations. Midden was generally sparse, except in Unit 61 (in the dune face east of Papa'ula Point), which contained abundant *Brachidontes cerebristriatus* shell in a pit feature. All deposits are subsurface, except in Unit 137 where the cultural stratum appears to have been exposed by sand mining and/or erosion.

This site is evaluated to be significant for its information content (criterion D). Toenjes et al. (1991:41) summarize:

> ...the substantial buried A-horizon deposits present across much of the project area are considered to be culturally significant. Though discontinuous, these deposits probably correlate and may in most cases be referred to as one cultural layer. Correlation of these deposits is based on their areal extent, their contact in many trenches with the old beach surface, their appearance and depth below the existing surface, and the several artifacts found in association with those deposits.

Radiocarbon Dates

Radiocarbon dates from work carried out in and near the airport area (Toenjes et al. 1991; Welch 1991; Clark and Toenjes 1987) are presented in Table 3. For comparative purposes, the calendrical ages for all samples have been recalibrated using the CALIB version 3.0.3 program (Stuiver and Reimer 1993).

Toenjes et al. (1991) submitted twelve charcoal samples for radiocarbon dating, of which nine are from cultural deposits and three are from non-cultural contexts. No wood species identification was carried out; the origin of the samples from non-cultural deposits (e.g. natural fires?) is not explained nor is the reasoning for dating non-cultural layers made clear. With two exceptions, all dates are probable prehistoric, post-A.D. 1200 dates. The two exceptions come from Unit 117-2, Layer V, where samples produced polar opposite results: CSH-3 produced a modern date and CSH-5 produced a very early date of A.D. 423 to 657.

Using two soil samples, Welch (1991) dates the wetland environment "which formerly lay behind the coastal berm before the build-up of the sand dunes" to a range of 367 B.C. to A.D. 38 (a black peaty loam) and A.D. 1184 to 1394 (a very dark brown mucky sandy clay loam). A third sample of compressed fibrous vegetable matter was submitted for species identification to Gail Murakami:

> The pieces appeared to be comprised of compressed layers of fibrous organic matter. Likely sources of such fibrous material would be pandanus, banana, ti or halapepe plants. Loulu palm (*Pritchardia*) or sedges would be other possible sources. However it was not possible to match any of the sample fragments with samples of known material. Also in the compressed mass are pieces of what appear to be ferns (Welch 1991:60).

Table 3. Radiocarbon Dates from Sites in the Kahului Airport Area.

ACCESSION NO.	LAB NO. Beta -	PROVENIENCE	MATERIAL	C-14 YRS B.P.	C12/C13 ADJUSTED AGE	CALENDRIC YRS	PROBABILITY *
CSH-2	45229	Unit 117-2, Str. III	charcoal	700 ± 70	710 ± 70	AD 1207-1407	1.00
CSH-3	45230	Unit 117-2, Str. V	charcoal	101.5 ± 0.8 % modern	101 ± 0.8 % modern	modern	
CSH-5	45231	Unit 117-2, Str. V	charcoal	1490 ± 70	1510 ± 70	AD 423-657	1.00
CSH-6	45232	Unit 151-1, Str. V	charcoal	470 ± 60	550 ± 60	AD 1301-1448	1.00
CSH-7	45233	Unit 157-1, Str. V	charcoal	110 ± 50	190 ± 50	AD 1649-1823 AD 1830-1885 AD 1910-1955	.71 .11 .18
CSH-8	45234	Unit 157-1, Str. V, Fea. 1	charcoal	170 ± 70	360 ± 70	AD 1434-1662	1.00
CSH-9	45234	Unit 161-2, Str. III (non-cultural)	charcoal	270 ± 60	400 ± 60	AD 1432-1639	1.00
CSH-10	45236	Unit 164-1, Str. IIa	charcoal	370 ± 60	420 ± 60	AD 1419-1530 AD 1531-1635	.63 .37
CSH-11	45237	Unit 167-1, Str. IV	charcoal	30 ± 60	70 ± 60	AD 1679-1770 AD 1802-1939	.31 .69
CSH-13	45238	Unit 186-1, Str. II (non-cultural)	charcoal	490 ± 60	610 ± 60	AD 1291-1424	1.00
CSH-14	45239	Unit 187-1, Str. VI (non-cultural)	charcoal	330 ± 60	370 ± 60	AD 1442-1646	1.00
CSH-16	45240	Unit 61-1, Str. III, Fea. 2	charcoal	100.3 ± 0.7 % modern	10 ± 60	AD 1684-1744 AD 1807-1933	.23 .77
IARII-42-7	40224	Trench 42, Layer IX (non-cultural)	soil	640 ± 60	740 ± 60	AD 1184-1324 AD 1336-1394	.83 .17

Table 3. (cont.)

ACCESSION NO.	LAB NO. Beta -	PROVENIENCE	MATERIAL	C-14 YRS B.P.	C12/C13 ADJUSTED AGE	CALENDRIC YRS	PROBABILITY *
IARII-61-15	40225	Trench 61, Layer V (non-cultural)	soil	1990 ± 60	2150 ± 60	367-271 BC 269 BC - AD 38	.25 .75
IARII-81-20	40226	Trench 81, Layer IV (non-cultural)	unburned fibrous material	260 ± 60	450 ± 60	AD 1400-1529 AD 1544-1634	.77 .23
HRC-715	12414	Test Pit 1, Hearth 22 cm b.s.	charcoal	—	420 ± 100	AD 1308-1358 AD 1381-1671 AD 1783-1794 AD 1947-1953	.04 .95 .01 .00
HRC-716	12415	Test Pit 1, Layer II 11-15 cm b.s.	charcoal	—	280 ± 90	AD 1445-1706 AD 1714-1820 AD 1838-1872 AD 1915-1955	.71 .19 .03 .07

All dates calibrated to Stuiver and Reimer 1993, 2 sigma range.

* Relative area under probability distribution

CSH = Toenjes et al. 1991
IARII = Welch 1991
HRC = Clark and Toenjes 1987

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The calibrated date from this sample is a 2 sigma range of A.D. 1400 to 1634, which Welch (1991:62) interprets as the continued presence of the wetland marsh. A buried wall was exposed in an adjacent backhoe trench and suggests that the marsh may have been used for taro cultivation or as a fishpond.

Clark and Toenjes (1987) submitted two charcoal samples for radiocarbon analysis. HRC-715 comes from a hearth in a cultural deposit and is dated to A.D. 1381 to 1671; this date correlates with the apparent traditional Hawaiian artifacts that were recovered from the feature. HRC-716 comes from the charcoal concentration in the cultural deposit, collected from just above and to the north of the hearth feature, and is dated to a range of A.D. 1445 to 1706. It was not clear if Clark and Toenjes' radiocarbon years had been corrected for C12/C13 isotope fractionation; the present work has recalibrated their data under the assumption that the radiocarbon years had been adjusted.

Archaeological Survey of Portions of Kahului Airport

Between May 17 and 19, 1994, archaeological field inspection was conducted at Kahului Airport by David J. Welch, principal investigator, and Audré Harlow, field assistant. Approximately 30 person-hours were expended on a generally low to medium intensity transect survey with field crew spaced 20 to 30 m distant from one another. The known locations of former NASKA structures throughout the airport area were also inspected.

The first purpose of the fieldwork was to inspect areas that would be impacted by airport construction projects that form the Kahului Airport Master Plan. Specifically, these include areas that had not been previously surveyed or areas for which it was not possible to determine from existing reports whether adequate survey had been conducted. In the latter case, the only previous survey would have been that conducted by Connolly in 1981, in which he carried out a low intensity survey, primarily by vehicle inspection; no map was prepared showing the areas actually surveyed.

The second fieldwork objective was to examine the locations of structures that formed the Naval Air Station, Kahului (NASKA). During previous surveys, these features were either ignored or only briefly described and their significance not clearly evaluated. There is an increasing recognition of the importance of recording and preserving a portion of the remaining structures associated with World War II and, now that 50 years have passed since the war, these structures are potentially eligible for inclusion in the National Register of Historic Places. Therefore, compliance with historic preservation laws clearly requires an evaluation of the significance of these World War II features. During this survey, site locations of as many of the NASKA structures shown on a 1953 NASKA station map as possible were visited, their presence or absence and present condition noted, and a preliminary evaluation of their significance made. Table 4 summarizes the 1953 building inventory for NASKA in terms of the present condition of the structures.

Table 4. NASKA Building Inventory, 1953.

BUILDING FUNCTION	PRESENT CONDITION			
	Standing	Foundation Only	Destroyed	Unknown/Probably Destroyed
family housing	-	-	-	204-207, 211, 212, 215, 357-361
bachelor officers' quarters	-	-	-	306-308, 328, 341, 342
barracks	-	-	-	33, 203A-207A, 209A, 211A, 212A, 213, 214, 214A, 215A, 231C, 302A-E, 303, 303A, 310, 313, 314, 314A, 315-317, 316A, 317A, 319-324, 319A-322A
messes, galleys, and garbage houses	-	250	-	204, 305, 305A, 305B, 318, 318A
oil tanks	-	-	-	125, 126, 822
pump house	-	-	727	127
loading rack	-	-	-	227, 823
underground oil pit	-	-	-	228, 229, 229A, 229B
transformer house	-	716 (rubble mound)	-	241, 280, 329, 405
telephone exchange	-	-	-	335
water storage	-	-	850	402
chlorinator	-	-	-	825
auxiliary power plant	-	-	-	830
magazines	103-117, 122	-	-	302F, 302G, 413A-C, 417
warehouses	101, 771, 772	102, 222, 223, 705, 773 (102 foundation reused)	226, 714	210, 220, 221, 232, 309, 325, 332, 338, 350-356, 715, 807
office buildings	-	225, 240	-	31, 219, 220, 231, 302, 304, 333, 344, 501, 502, 514, 521

Table 4. (cont.)

BUILDING FUNCTION	PRESENT CONDITION			
	Standing	Foundation Only	Destroyed	Unknown/Probably Destroyed
garages	--	248, 248C	235, 236	240A, 248A
laundry	--	--	--	123
boiler house	--	--	--	124
brig	--	--	--	217
beer garden	--	--	--	259
swimming pool	260	--	--	--
beach club	262	--	--	--
bus terminal	--	--	--	311
fire station	--	--	--	312
library	--	--	--	313A
theater	--	330 (buried under construction supplies in DOT basyard)	--	--
chapel	--	--	--	343
officers' club?	--	411	--	--
unknown	242, 244, 411B	255-258, 255A-258A, 315A, 414-416, 415A, 416A, 774, 805, 810, 813, 817 (774 probably incorporated into cane processing station)	233, 239, 239A, 245, 246, 251-254, 339	1, 2, 4, 5, 8, 9, 11-14, 16, 17, 19, 21-24, 29, 30, 32, 208A, 234, 248-254, 248A, 250A, 301A, 326-328, 326A-328A, 331, 334, 342, 401, 410, 418, 503, 516, 517, 520, 528, 721-726, 770, 808, 815, 820, 821, 824, 830A

SOURCE: unsigned quitclaim deed (dated September 28, 1951) between the U.S. Navy and the Territory of Hawaii, on file in the State Department of Transportation, Airports Division. The unknown category (under the column "Building Function") consists of those buildings not included on the quitclaim deed but which appear on a 1953 NASKA map.

Figure 12 shows the areas that were surveyed during the present fieldwork. These include an area northeast of the runways that is not planted in sugar cane, the area between Runway 2/20 and Hana Highway, partially developed parcels in the area west of the airport, the coastal strip west of Kalialinui Gulch, and a strip of land inland of the West Spreckelsville beach lots.

Two areas were excluded from the present survey even though they had not been previously surveyed and also contained military structures: the Kanahā Pond Wildlife Sanctuary and the present sugar cane fields. Access to the sanctuary was not permitted because it was breeding season. However, because this area will not be directly impacted by any construction projects and the archaeological resources will be protected from indirect impacts, the lack of a survey is not critical in terms of the present EIS project. The sugar cane fields south of the runways are either owned or leased by HC&S; permission to survey the HC&S-owned land had not been granted and for both areas, the dense sugar cane plantings precluded any kind of archaeological survey. Construction is not planned in these areas until Phase III; an inventory survey of these areas can be conducted at a later date when and if a decision is made to proceed with that phase of airport development.

The Airport Proper

Survey has been previously conducted on most of the undeveloped areas within the airport proper, particularly along the coastal edge (Welch 1991; Folk and Hammatt 1991; Toenjes et al. 1991). Present survey within this subarea was limited to inspecting NASKA remains. With the exception of the original runways that are now incorporated into the runways and taxiways of Kahului Airport, most NASKA structures within the boundaries of the airport proper have been destroyed. A few structures were observed during the present survey. On the inland side of Alahao Street at the northwest edge of the subarea (in the Budget rental car parking lot) is the rectangular foundation of Building 240, enclosing an inner courtyard. Farther east, the foundations of a line of structures (Buildings 255-258, 255A-258A, 414-416, 415A, 416A) are still present.

Survey was also conducted of an area now in grass inland of the northeast end of Runway 2/20. This area abuts present sugar cane fields, which were probably first planted in the 1960s; a 1966 HC&S map of Field 608 shows newly planted sugar cane fields up to but not including this grassy area. The foundations of Buildings 705, 728, and 773 were identified. The Quonset hut superstructures of Buildings 771 and 772 are still partly intact, though in poor condition (Photo 1). The metal framing beams of Building 772 remain in place, but much of the roofing is gone; for Building 771, the metal roofing is still largely present. The lumber yard that stood in front of the 771-773 Quonset huts can still be recognized from the metal and wooden debris that lies scattered over the area and barbed wire fencing that still lies on the ground along the lumber yard boundaries. On the southwest side of the lumber yard is the concrete foundation of a large structure that is not shown on the 1953 NASKA map; in the center of this foundation is a square, windowless building. Broken

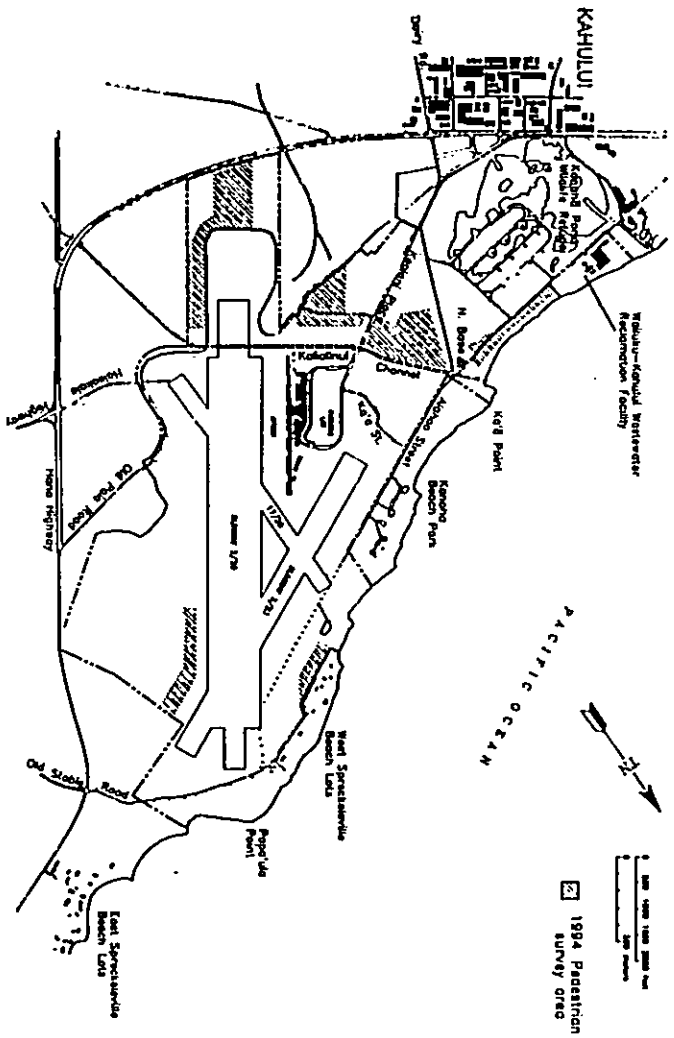

Figure 12. Areas Surveyed during the Present Project.

thick porcelain, probably from bathroom fixtures, is scattered across the surface. While not shown on the map, it is assumed that this was also a NASKA structure. West of this complex are the foundations of Buildings 817, 814, 813, 810, and 805. Structures 727, 714, and 850 are no longer extant.

Also in this area are three localities with non-military 20th century cultural remains. Nearest the runway is a scatter of artifacts, including Japanese blue and white porcelain and metal pots, that appear to be mid-20th century domestic debris; this may be bulldozed debris from the adjacent Russian and Japanese plantation villages (to the east) when they were converted into sugar cane fields in 1965 (1965 HC&S "Addition to Field 609" map). Farther inland is an approximately 20 m long, 1 m wide, 50 cm high basalt alignment, with pieces of brick and mortar included in places. At the corner of Paia and East Avenues are several concrete platforms, on one of which is the remains of a machine that was probably used in the initial processing of cane as it was being harvested in the nearby fields.

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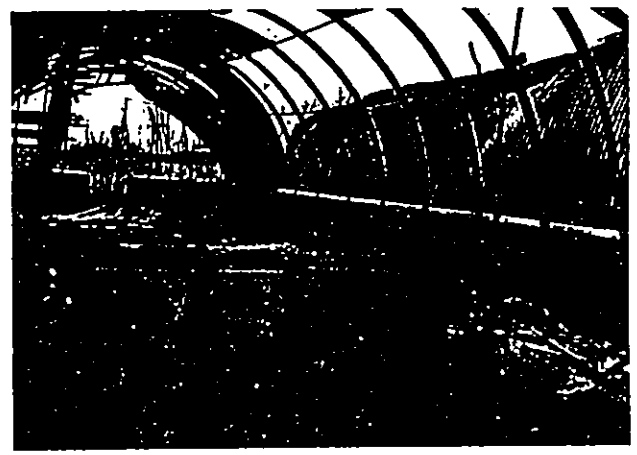


Photo 1. NASKA Building 771.

The Coastal Strip

A low intensity pedestrian survey was conducted of two coastal sections which had not been previously surveyed. The first section is the area between the shoreline and the Kanahā Pond Wildlife Sanctuary stretching from Kalialinui Gulch to the Kahului-Wailuku Wastewater Treatment Plant. Dune formations remain intact on the coastal side of Alahao Street, but the area has been heavily impacted by recent human use, and several squatter residences have been set up along this section. On the inland side of Alahao Street, only a few sections of land outside the wildlife sanctuary were accessible and these appear to have been graded. No surface sites were identified in this survey area. There is a possibility that the coastal dunes could still contain burials or other buried cultural deposits.

A pedestrian survey was attempted of the airport land along the boundary with the West Spreckelsville Beach lots, seaward of Site 1799, an area that had not been surveyed by Welch during his 1988 or 1991 surveys of adjacent areas. Except along a transmission line corridor, the area was covered by an extremely dense growth of *kiawe*, which made movement through the area almost impossible. Ground visibility was very poor. No archaeological sites were observed.

The remains of most of the NASKA features in this area are still present. Beginning at Kalialinui Gulch and working east, the results of the survey are as follows.

The Building 239 group along Kalialinui Gulch has been destroyed. At the mouth of Kalialinui Gulch, a long, narrow, 2 m high berm stands along what would have been the approximate location of the inland side of the oval-shaped moving-target machine-gun range. This is probably a portion of the protective berm that would have surrounded the firing range. At the location of the four structures that form the Building 242 group, four cinder block features on concrete foundations are standing in a pattern identical to that shown on the 1953 base map (Photo 2). The coastal structure of the Building 244 group remains standing, but no evidence of the three inland structures nor of Building 245 could be seen. The remains of Building 244 stand on top of a dune overlooking the ocean. The building has walls of basalt cobbles, separating three large openings on each side of the building (Photo 3). Concrete steps lead up to the structure on the north and south sides. A cement foundation lies on the inland side of the structure. This structure is unidentified, but would appear to have been a fairly fancy beach recreation facility. One Maui veteran talked of a beach club structure with 12 large windows (which would fit the three openings in each wall of this structure) where dances were held outdoors in the evenings. A 1951 partial building list for NASKA identifies Building 262 as the beach club; this structure was located east of Building 244 within the present boundaries of Kanahā Beach Park. Building 244 is not on this building list and therefore, its function is not documented; it is possible that there were two beach clubs.

Photo 2. NASKA Building 242 Group. View to the southwest.

Photo 3. NASKA Building 244. View to the southwest.

East of Kanahā Beach Park and at the north end of Runway 17/35 are the remains of the Building 411 complex, which served as the Officers' Club according to local informants (Welch 1991:5). The main stricture remains only as a concrete slab with steps on the inland side. To the east is a standing small rectangular building, probably Building 411B (Photo 4). Just inland of the concrete slab are the ruins of two World War II aircraft (Photo 5).

The locations of NASKA buildings in Kanahā Beach Park were not inspected.

The Sugar Cane Fields

No attempt was made to survey the lands still under sugar cane cultivation, although several Spreckelsville plantation camps are known to have been on the inland side of Runway 2/20. However, an area along the edge of the airport proper that is not currently in sugar cane was inspected.

Survey was conducted on land between the southwest end of Runway 2/20 and Hana Highway and along the south side of the Airport Perimeter (Haleakala) Road. The area at the end of the runway was clearly formerly sugar cane land, though now in grass and weeds. Several irrigation ditches, including a main channel with side channels leading out from it, cross this area. Sluice gates are still present. Near the center of the field is an area of low *koa haole* trees with broken concrete slabs and rusted metal drums. This was probably an area which was not cultivated and in which all debris was piled when the cane fields were cleared for first planting. Survey revealed no archaeological sites; if surface sites had been present, they were probably destroyed by preparation of the cane field.

The area south of the perimeter road is covered in low grass; much of it appears graded. No archaeological sites were observed in the area between the road and the sugar cane fields.

Locations of former military structures on the inland side of the airport were also inspected. Structures in this area, such as the 815 group and Buildings 721 through 726, were almost certainly destroyed when sugar cane fields were prepared. They do not appear on the current aerial photograph of the airport area, but their locations were not inspected on the ground to confirm this. Building 716 is now a mound of rubble; the foundation of Building 774 across Paia Avenue was probably incorporated into the cane processing station that was set up at this location.

The Developed Area West of the Airport

Pedestrian and vehicle inspection of the developed area west of the airport was conducted to identify remaining military sites. Most of this area was covered, although survey of a few areas was restricted by locked gates and fences.

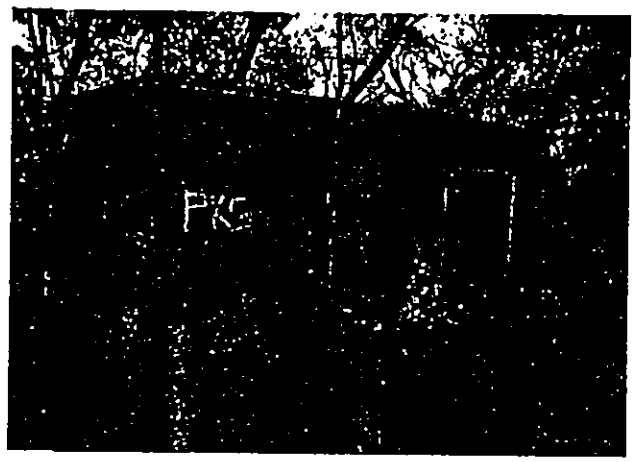


Photo 4. NASKA Building 411, Officers' Club.

Photo 5. Ruins of World War II Aircraft Near NASKA Building 411.

According to the 1953 NASKA map, this area contained the densest concentration of structures on the military station. The extent of construction could be expected to have destroyed any prehistoric sites in this area. In turn, modern construction of commercial structures and state government facilities has destroyed many of the military structures. However, the remains of several foundations are still in place and a few structures remain intact.

On the inland side of Keolani Place, most of the NASKA structures have been completely destroyed as a result of massive bulldozing and construction of new buildings. The foundation of the front portion of the base theater (Building 330) remains standing under a pile of miscellaneous construction supplies in a DOT base yard. Circle Avenue is still present but unused, along with the asphalt paving in front of Building 339 (but not the building foundation itself). The foundation of Building 315A is still present and the asphalt paving of the tennis court as well, but there is otherwise no evidence of other buildings.

On the coastal side of Keolani Place, extensive destruction has come from commercial development. Between Kanahā Pond and Kalialinui Gulch, there has been extensive bulldozing and some re-use of the area, mainly for storage. Building 101, however, remains intact. This structure, now apparently used as a government warehouse, consists of three Quonset hut-shaped concrete buildings joined together in front and constructed on a raised concrete foundation (Photo 6). The concrete foundation of Building 102 appears to have been re-used for a new and larger building. Also in the area between Circle Avenue and Keolani Place are several structures or foundations, including the remains of Buildings 225 and 225T, the asphalt foundation of the tennis court, the concrete wall of the handball court, and the slightly damaged remains of the swimming pool (partially overgrown with vegetation) (Photo 7).

In the vicinity of Buildings 16, 17, and 22 is one other structure, a storage building. It could not be determined which of the three buildings this was. Some scattered remains of NASKA structures could also be seen in the general area, but bulldozing and post-war construction have destroyed all other structures and their foundations west of Kalialinui Gulch.

On the east side of Kalialinui Gulch, modern commercial activities have also eliminated most evidence of the NASKA buildings. Car rental facilities have replaced all structures that lay inland of Circle Avenue. On the seaward side, however, the foundations of Buildings 259, 248C, 248, 222, and 223 can still be identified, several forming the base of post-military buildings.

Kanahā Pond

Survey of the Kanahā Pond Wildlife Sanctuary area was not carried out because it is currently nesting season and entrance was not permitted. The pond itself, a Hawaiian

Photo 6. Front of NASKA Building 101. View to the south-southwest.

Photo 7. NASKA Building 260, Swimming Pool. View to the east.

fishpond, forms Site 1783. Though disturbed by modern activity, it remains partially intact. In the absence of any archaeological survey of the area, it remains unknown whether any cultural features associated with Hawaiian use of the pond are still present.

A series of ammunition magazines (Buildings 103 to 117 and 122) were constructed in the east section of the pond during World War II. It is reported by those who have been in the area that these remain intact and in good condition. A few military structures that lie to the east of the Kanahā Pond drainage ditch (seaward of the old railroad line) and Buildings 120, 123, and 124 that are along the present Keolani Place may be within the wildlife sanctuary boundaries. The present condition of these structures is unknown.

Summary of Survey Results

Selected areas within the airport study area were inspected by low and medium intensity pedestrian survey (see Fig. 12). No significant archaeological sites were found during the course of this work. No prehistoric sites were located. Only three non-military features of historic age and no longer in use were located at the northeast end of Runway 2/20 at the edge of the sugar cane fields.

The locations of approximately 200 of the 253 buildings shown on the 1953 map of military structures were inspected. Of these, the foundations of 49 structures are still extant, and eight of the superstructures are wholly or partially intact. A number of standing structures apparently also remain in the Kanahā Pond Wildlife Sanctuary. The standing structures and foundations should be considered potentially significant and eligible for the National Register. Buildings 101, 244, and the remaining foundation of Building 411 should be considered for preservation. These structures and a sample of the remaining structural foundations should be recorded in detail by an architectural historian as part of the data recovery for the airport construction. Data recovery should include recording and photographing of a representative of each of the major types of buildings that composed the air station.

Site Patterning in the Kahului Airport Area

There are only two clusters of traditional Hawaiian sites within the project area. One cluster consists of the fishponds at the west end of the airport and the other cluster consists of buried cultural deposits at the east end around Papa'ula Point. No traditional Hawaiian sites have been found in any other part of the airport project area.

The fishponds, which are known only from traditional and historical sources, were at the center of a marshy coastal flat that was surrounded by sand hills to the inland side and probably fronted by low sand dunes along the coast. The extent of settlement around the ponds is unknown due to the lack of archaeological investigations and the considerable disturbances caused by the development of Kahului on one hand and NASKA and the airport on the other. However, it might be argued that intensive settlement of this area may have been precluded by chiefly authority over the ponds. Kikuchi (1876:299) writes that fishponds were symbols of chiefly status and power and reflected a chief's "ability to control and tap his resources." The ponds and their contents were usually under the direct control of the chiefs or their land managers. Following a battle between the chiefs of Maui and Hawai'i in the late 1700s, the victorious Maui chief responded to the Hawai'i chief's suit for peace with: "Take the fish of Kanaha and Mau'oni and the vegetable food of Nawaiehu" (Kamakau 1961:88-89). This gesture of reconciliation certainly reflects the valuable assets of the district (i.e. the fish of the ponds and the taro of the highly productive valleys of the West Maui mountains) which were under the control of the Maui chief. It might follow then that the ponds themselves and the area immediately surrounding were restricted from general settlement, occupied perhaps only by the chief's caretakers.

The other cluster of sites is at the east edge of the project area. All are buried deposits, possibly part of one cultural horizon reflecting a series of short term events in shifting locales, possibly over a long span of time. Within the project area, the deposits are focused around Papa'ula Point but probably extend eastward to Wawau near the boundary between the districts of Wailuku and Hāmākuapoko. Papa'ula Point and Wawau mark the endpoints of a small but well-defined bay.

The Absence of Sites along the Coast

There is a notable paucity of cultural remains in the coastal strip between Kahului and Papa'ula Point. This is notable because the coastal area has attributes that are generally associated with traditional Hawaiian settlement: sand beaches; a rich, offshore reef habitat; access to at least brackish water; and marshes which might have been a source for food resources as well as a cultivatable area. Discussion of site patterning in the Kahului Airport area must focus on explaining the absence of sites along the coast. There are several alternative hypotheses: historic period disturbance; beach erosion that has eradicated evidence of sites; social or political reasons precluding settlement in this area; and environmental factors for precluding settlement.

Historic Period Disturbance

Folk and Hammatt (1991) argue that "dearth of evidence of use of this area is the result of historic period disturbance." The most recent disturbance is from WWII airport construction. Earlier historical uses include possible grading of the area in the late 1800s for pasture improvements and sand mining by the sugar plantations in early 20th century (Folk and Hammatt 1991). It is also possible that construction of the Kahului Railroad line along the coast impacted site preservation.

Folk and Hammatt (1991:29) exposed two major dune strata: a lower stratum of only calcareous sand and an upper stratum of calcareous sand interbedded with lenses of reddish

brown silt. They interpret the upper layer to postdate the development of sugar cane cultivation "with widespread clearing of fields providing the source for the fine silt inclusions." In addition, the upper surfaces of both strata are unnaturally level, with the upper stratum covered with rubble and pavements in several trenches. These level surfaces are attributed to historic grading, with the lower stratum graded in the late 1800s and the upper stratum attributed to the period since the beginning of sugar cultivation

The argument for the lower stratum is problematic because of the lack of cultural markers that would support a late 1800s event. It should also be noted that the rubble and pavements observed above the upper stratum are probably the result of NASKA development (which was extensive in this project area) rather than the sugar industry.

Welch (1991:67) counters that there are natural deposits within the high dunes that contain finely interbedded bands of fine and medium sands that "could only result from natural aeolian deposition." Some of these natural deposits extend up to 4 m below surface; the lowest red silt band was "found as much as 180 cm below the surface." While not impossible, this would indicate extremely rapid deposition of aeolian sands since the late 1800s.

Beach Erosion

It is possible that beach deposits indicating settlement or ocean-related activities may have been eroded. While there is evidence for progradation of the beach in pre-Polynesian and early prehistoric times, there is evidence of more recent erosion, possibly set in motion by modifications to the shoreline associated with the building of Kahului Harbor to the west, including wharves, breakwaters, and groins. Modern records show that this coastline has been impacted by tsunami, with waves measured up to 8.5 m high. Late prehistoric period deposits close to the shoreline may have been eroded as the shoreline receded, in one section (the coast between Ka'ā and Kahului Harbor) possibly up to 100 m.

Papa'ula Point and the area to east, on the other hand, appears to have been more stable in the historic period, with a concomitant better preservation of sites (e.g. Sites 2849 and 1777). During prehistoric times, the area appears to have been similarly stable. Toenjes et al. (1991:43) describe:

> ...multiple, graded beds of coarse to fine sand with some silt were exposed 20 to 60 cm. below surface and overlying a shelf of clay loam. These layered beds denote a period of gentle high tide wave action such as might be active in a sheltered, short-term embayment.

Socio-Political Reasons for Settlement

In the context of traditional land organization, the project area is at the periphery of the main settlement of both the district and the *ahupua'a* of Wailuku. 'Īao Valley was certainly the focus of traditional settlement in the *ahupua'a* and comparably, Nawai'eha (The Four Waters, or the four main drainages of this part of the West Maui mountains) were the focus of district settlement. These were arable lands allowing for intensive taro cultivation. Kahekili, the 19th century Maui chief, held his court at 'Īao Valley, at the mouth of which stood the pair of *hetau* Haleki'i and Pihana.

The project area, on the other hand, is in a location that may not have been optimum for intensive settlement. While it was probably rich in ocean resources, it offered little for cultivation and it was also easily accessible from the assumed population center of the *ahupua'a* (Ka'ā Point is only about 2 miles across Kahului Bay from the mouth of 'Īao Valley). It is also situated near the boundary of Wailuku, Kula, and Hāmākuapoko districts in an area that may have served as a political as well as geographic buffer.

As noted above, it is also possible that settlement along this stretch of coastline was precluded by chiefly control of Kanahā and Mau'oni fishponds. Based on genealogical calculations from traditional accounts of its initial construction, Kanahā Pond is said to have been built in the mid-AD 1500s. This falls within a broad time frame of the late prehistoric period in which increasing complexity of political organization and hierarchy was matched by intensification of agricultural (and aquacultural) production. Given the importance of fishponds as a reflection of chiefly authority, one could posit that occupation of the immediately surrounding area was limited to the chief's manager of the ponds.

Environmental Reasons for Settlement

There may be environmental factors for the absence of sites west of Papa'ula Point. It is clear from excavations and historical maps that the coastal flat west of Papa'ula Point was marshy. Welch (1991) utilized charcoal identification, pollen analysis, and invertebrate faunal analysis to argue the presence of a marsh; radiocarbon dates indicate that the marsh was in existence from possibly as early as 367 BC to at least AD 1634. Its continued existence into the historic period is shown on a late 19th century government map (Jackson 1881) as well as the 1922 USGS map. Toenjes et al. (1991:46) also conclude that:

> Topography and the stratigraphic sequence evident in trenches excavated in units 107, 108, 109, 110 and 120 indicate a late marine or estuarial environment in this area. Tide waters have deposited sand as far inland as the northern boundary of the airport runway safety area.

If marshes were indeed present immediately behind the shore berm, then settlement may have focused on the slopes behind the marsh (in the area now occupied by the airport runways) or around and to the east of Papa'ula Point, as shown by archaeological excavation.

Possible Historical Sites in the Kahului Airport Area

The presence of historical cultural materials has been mentioned in the course of previous archaeological investigations but no historical sites have been specifically recorded. Figure 13 shows the location of possible historical features that might warrant designation as sites. These include plantation camps, railroads, and the remains of Naval Air Station, Kahului.

There were at least three plantation camps located within the airport area. Portions of Camp One, including a school, were located just southeast of the east end of Runway 5/23 (USGS 1922); on a 1954 USGS map, these camps are specifically named as Russian Village and Japanese Village 1 (see Fig. 7). The 1922 USGS map also shows Camp Three located near the present intersection of Hana Highway and Haleakala Highway; the 1954 map splits the camp into Lower Village 3 and Middle Village 3. Toenjes et al. (1991) placed a backhoe trench in the vicinity of Camp One; Layer I in Trench 1, Unit 59 is a 60 cm thick reddish brown clay loam plow zone which contains historic glass and ceramic debris. The present survey identified an artifact scatter of mid-20th century domestic debris that could have come from either Russian or Japanese Village.

Several narrow gauge rail lines ran through the project area. The Kahului Railroad Company had a line along the coast, roughly following the present Alahao Street alignment, between Kahului and Spreckelsville. Toenjes et al. (1991:17) suggest that the name Alahao, translated as "iron road," comes from the railroad track. Portions of this track are still visible near Papa'ula Point and a railroad spike was recovered from Layer I of a backhoe trench adjacent to the railroad alignment at the east end of Runway 5/23 (Toenjes et al. 1991). Welch (1991) found a remnant of a track in one of his backhoe trenches. HC&S also had a network of narrow gauge lines that ran through the middle of the airport area. Because of this location, however, it is unlikely that remnants of these tracks remain.

Naval Air Station, Kahului (NASKA) was one of several facilities constructed on the neighbor islands at the beginning of World War II and one of three principal naval facilities on Maui (anonymous 1947). Construction was begun in 1943 and included development of runways, aircraft maintenance buildings, other support buildings, barracks, magazines, and aviation gasoline storage tanks. Training facilities included a malfunction range, a moving-target machine-gun range, a skeet and trap range, and a machine-gun school. Infrastructure for sewage treatment, electrical lines, and water mains were installed.

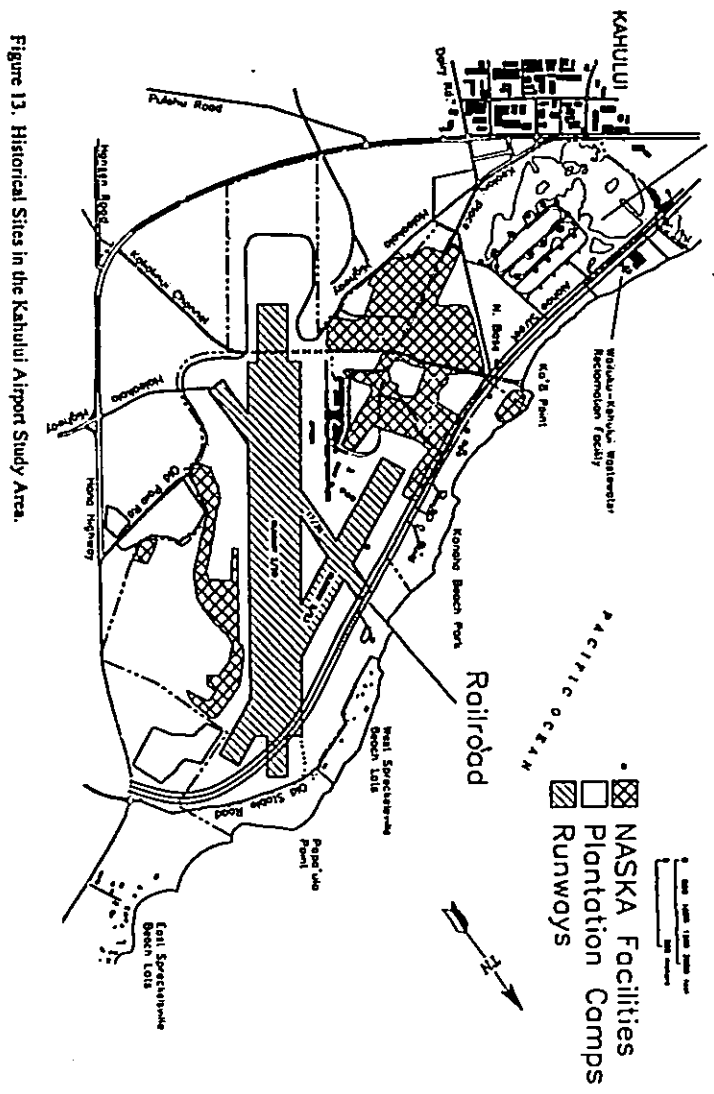


Figure 13. Historical Sites in the Kahului Airport Study Area.

There are NASKA remains in all areas that have been archaeologically studied along the seaward side of the airport. On the surface, these include concrete foundations, leveled areas, asphalt driveways or pavements, and concrete slabs. In subsurface contexts, the uppermost layers of backhoe trenches show evidence for imported fill related to NASKA development. For example, Folk and Hammatt (1991:25) found evidence of considerable grading in the area just inland of Kanahā Park; this interpretation is based on "the high percentage (25-75%) of pebble sized gravel mixed in the very compacted upper soil layers and the almost complete absence of wind blown sediments in this geographically widespread environment of dune sand." This locale was the site of a row of NASKA buildings along the inland side of the Kahului Railroad track (NASKA 1953).

The present survey has identified numerous remains of NASKA buildings, the foundations of 49 structures and eight for which the superstructures are wholly or partially intact. Intact ammunition magazines apparently also remain in the Kanahā Pond Wildlife Sanctuary. Buildings 101, 244, and the remaining foundation of Building 411 are in particularly good condition.

VI. POTENTIAL IMPACTS AND RECOMMENDATIONS FOR MANAGEMENT AND MITIGATION

This section of the report summarizes the potential impacts from airport expansion, based on the Kahului Airport Master Plan prepared by Belt Collins Hawaii in 1993 (BCA 1993). It concludes with recommendations for site management and/or mitigation of adverse impacts from airport development. Appendix A summarizes survey and site information, potential impacts, and general actions to mitigate adverse impacts to archaeological and historical sites, organized by proposed airport projects.

Potential Impacts

It is interpreted that all proposed actions of the Kahului Airport Master Plan will have some sort of ground altering results and therefore may have adverse impact on subsurface archaeological sites. The recommendations of this report balance the possible affects of these actions with the potential for site occurrence based on previous work that has been carried out in the airport area.

During Phase I, the survey subarea that will be most impacted is the sugar cane fields where a new access road and the extension of Runway 2/20 will carry airport activities to the southwest. The airport subarea will be affected by VORTAC relocation at the northeast end of Runway 2/20, development of an ARFF training facility at the north end of Runway 17/35, and development of a small parcel near the FAA control tower. The developed area west of the airport will be impacted by construction of a cargo facility on a small vacant lot. In general, activities in this phase will also include development and/or reconstruction of perimeter roads and access roads to existing facilities.

Phase II actions focus on developed areas. In the subarea to the west of the airport, proposed actions fall within the former NASKA boundaries: development of ground transportation facilities, bulk fuel storage tanks, and underground fuel pipelines. Within the airport subarea, parcels along the southeast side of Runway 2/20 are proposed for development. Along the coast, actions include extension of the perimeter service road and fencing along the seaward side of the airport and construction of a road to connect Alahao Street with Spreckelsville Beach Road/Old Stable Road; expansion of Kanahā Beach Park is also planned for this phase. It is proposed that, during this phase, the sugar cane fields between Runway 2/20 and Hana Highway be acquired for the parallel runway.

Phase III actions include construction of the parallel runway, extension of the Runway 2/20 parallel taxiway, and recharuneling of Kalialinui Channel in the sugar cane subarea. Widening of the runway safety areas, construction of a transient aircraft parking apron, parallel taxiways for both of the main runways are planned within the airport subarea. Construction of support facilities and expansion of the passenger terminal parking lot is planned for the developed area to the west of the airport.

General Recommendations by Subarea

Recommendations for future archaeological work are discussed by subarea.

The Airport Proper

Archaeological work in the airport proper has focused along the seaward edge, with Site 1798 and portions of Site 2849 identified in this subarea. There has been no archaeological work in inland areas of the airport. The present survey identified the remains of NASKA structures at the northwest and east corners of the subarea, as well as three historic period features between the northeast end of Runway 2/20 and the adjacent cultivated fields: a scatter of mid-20th century domestic debris; a 20 m long basalt rock alignment with brick and mortar fragments; and several concrete platforms.

Phase I development will include VORTAC relocation at the northeast end of Runway 2/20, development of a training facility at the north end of Runway 17/35, and development of a small parcel near the FAA control tower. The planned East Ramp Sewer System will loop from the inland side of Runway 2/20 around the east end of the runways to the seaward edge of Runway 5/23. In Phase II, parcels along the southeast side of Runway 2/20 are proposed for development. Phase III proposals include widening of the runway safety areas, construction of a transient aircraft parking apron near the coast, and parallel taxiways for both of the main runways.

Given the apparent ground alterations (including blasting) that have taken place within the airport proper, it is not likely that extensive archaeological deposits remain intact. However, Welch's excavations (1991) show that some deposits may remain in areas that have been filled by construction (rather than cut and/or graded). Therefore, it is recommended that prior to any construction activities in areas that have been shown not to have cut/graded (see Fig. 8), backhoe trenching be carried out to examine subsurface deposits for cultural remains.

The remains of NASKA structures should be recorded. For the three historic period features, while the preliminary evaluation is that these are not significant, it is recommended that they be reinspected at the time of any inventory survey connected with the development of the proposed third runway (Phase III). Although the artifact scatter lacks integrity, a collection of a sample of the surface materials may yield information about the plantation camps in the vicinity of this dump.

The Coastal Strip

The coastal strip has seen the most archaeological research with the least positive results, except at the east end of the project area. It appears that the western half of the coastal strip has been considerably eroded in modern times. In the area west of Ka'ā Point, up to 400 feet may have been lost to beach erosion including 10 to 20 foot high sand dunes that fronted the Kanahā coastal flat.

The present survey identified the remains of NAKSA structures between Ka'ā Point and the West Spreckelsville beach lots, including the exceptionally designed building that is said to have been the beach club (Building 244) and Building 411, the Officers' Club.

This subarea will be primarily affected during Phase II, at which time project actions include extending the perimeter service road and fencing along the seaward side of the airport, connecting Alahao Street with Spreckelsville Beach Road/Old Stable Road, and expanding Kanahā Beach Park.

Although there has been extensive backhoe trenching throughout the west half of the subarea, with no cultural deposits nor any burials exposed, it is still recommended that an archaeological monitor be present during ground disturbing activities. It is impossible to accurately predict the location of isolated burials in dune deposits and, given the occurrence of burials along this entire coastline, burials may yet exist in this subarea. A monitor will ensure that burials that have not previously been identified are recognized and treated in accordance with State regulations.

Recommendations for the east end of the coastal strip are presented by site (see below).

The remains of NASKA structures should be recorded. The standing remains of NASKA buildings in this subarea should be evaluated for eligibility to the National Register of Historic Places. Buildings 244 and 411, in particular, should be considered for preservation.

The Sugar Cane Fields

Archaeological work in the sugar cane subarea has been limited to the east and west ends of the project area and has produced no evidence for traditional Hawaiian occupation. Backhoe trenching near the east end of the main runways showed disturbed plantation era remains within a plow zone deposit; this is probably a portion of the Spreckelsville Camp One. The present survey examined one area at the southwest end of Runway 2/20 that is currently not under cultivation. Some NASKA building locations inland of Runway 2/20 were also checked.

Phase I development will affect a large portion of this subarea as a new access road and the extension of Runway 2/20 will expand airport activities to the southwest; planned changes to Pulehu and Hansen Roads will also affect sugar cane lands to the southwest of Hana Highway. Phase II involves acquisition of sugar cane fields between Runway 2/20 and Hana Highway for a new parallel runway. Phase III development within this subarea includes construction of the parallel runway, extension of a Runway 2/20 parallel taxiway, and rechanneling of Kalialinui Channel.

It is recommended that, prior to any ground disturbing activities, backhoe trenching be carried out in any areas of known plantation camps (primarily during Phase III). The archaeologist in charge should be knowledgeable of late 19th and early 20th century materials, particularly those related to sugar plantations and the sugar industry.

The Developed Area West of the Airport

Second to the airport proper subarea, this portion of the project area has seen the most modern alterations. A major section of along Keolani Place was cut/graded by NASKA construction, which focused facilities development in this area. However, NASKA itself is a significant event in the history of Kahului and Maui as a whole; it is also a part of World War II base build-up throughout Hawai'i that represents the importance of the islands to the U.S. Navy's Pacific war efforts (cf. Landrum et al. 1993:222). The present survey identified several extant NASKA structures and numerous foundations, although it was recognized that the large majority of military structures have been destroyed by modern construction.

Phase I development in this subarea involves construction of a cargo facility on a small vacant lot. Phase II development involves construction of ground transportation facilities, bulk fuel storage tanks, and underground fuel pipelines. In Phase III, construction of support facilities and expansion of the passenger terminal parking lot is planned for this subarea.

The standing remains of NASKA buildings in this subarea should be evaluated for eligibility to the National Register of Historic Places. Building 101, in particular, should be considered for preservation. A sample of structural foundations should be recorded in detail by an architectural historian as part of data recovery for airport construction and expansion, with sampling to include the recording and photographing of a representative of each of the major different types of buildings that made up the base.

In addition, backhoe trenching and sediment coring in the area between Kanahā Pond and Kalialinui Channel should be carried out should any development be initiated for this area. This area is suggested as the location of Mau'oni Pond; it was probably only surficially graded or at most filled during NASKA development and subsurface pond deposits may still exist.

Kanahā Pond

Kanahā Pond is presently protected as a wildlife refuge and no development actions related to the Airport Master Plan are proposed. No archaeological work has been carried out within the immediate bounds of the pond, although nearby research indicates that considerable historical and natural disturbances have probably obscured any habitational deposits that may have once existed (if at all) in adjacent areas. If any construction within the refuge is planned, it is recommended that archaeological investigations, including coring of pond deposits for palynological analysis, be conducted.

The NASKA magazines remain intact within the wildlife refuge. Structures along Keolani Place and the pond drainage ditch may also remain. Should any development occur within the refuge, these NASKA buildings should be recorded through written documentation and photography.

Recommendations for Identified Sites

Recommendations are made for data recovery and other mitigation actions at known archaeological sites in the airport area. These recommendations are based on and summarized from the source archaeological investigations. Recommendations are detailed by proposed airport projects in Appendix A.

Site 1777 is located in the East Spreckelsville Beach Lots to the east of the airport project area. Toenjes et al. (1991:4) report that "representatives of the State Historic Preservation Office (SHPO)... have stated testing must take place in the area of these lots [East Spreckelsville Beach Lots] before this area can be utilized for any airport construction."

Site 1798 is located seaward of the intersection of Runways 2/20 and 5/23. The site is recommended for preservation as-is (Welch 1988b), with no further disturbance to the main burial area. An undisturbed buffer zone extending 50 feet beyond the probable boundary of the burial area should be maintained. For the reburial area, Welch (1988b:8) notes that "while little archaeological information would be lost by disturbing these secondary burials, for reasons of cultural sensitivities, it is strongly recommended that every effort be made to preserve these burials, already disturbed, at the present location." He recommends that an undisturbed buffer zone of 30 feet in diameter be maintained around the reburial area.

Site 1798 also includes a component of buried marsh deposits with a possible constructed wall indicating taro pondfield or fishpond construction. This component should be further investigated through initial backhoe trenching followed by more intensive hand excavation expanding on any exposed deposits or features.

Site 1799 is located seaward of Site 1798. This report concurs with previous recommendations (Welch 1988b; 1991:68): should any development be planned within 20

feet of the site, test excavations should be conducted to further assess site significance and to determine if in situ preservation or data recovery should be necessary.

Site 2849 is located at the eastern end of the project area around Papa'ula Point. Toenjes et al. (1991:50) recommend "intensive recovery of information from these deposits" through implementation of a thorough data recovery plan -- in accordance with State Historic Preservation Office guidelines -- for the correlation and analysis of Hawaiian occupation of this region of Maui." Because of the extensive but discontinuous nature of the cultural horizon, it is recommended that the data recovery plan employ a two phase approach: initial backhoe trenching in the immediate impact area followed by intensive hand excavation to expand investigations of any exposed deposits.

REFERENCES

Anonymous
1947 *Building the Navy's Bases in World War II. History of the Bureau of Yards and Docks and the Civil Engineer Corps, 1940-1946, Vol. II.* U.S. Government Printing Office, Washington, D.C.

Baldwin, Arthur
1915 *A Memoir of Henry Perrine Baldwin 1842 to 1911.* Arthur Baldwin, Cleveland.

Barrera, William J.
1976 *Archaeological Survey at Waiale, Maui.* Prepared for Belt Collins and Associates. Chiniago, Honolulu.

BCA
1993 *Kahului Airport Master Plan.* Prepared for Airports Division, State Department of Transportation. Belt Collins & Associates, Honolulu.

Best, Gerald M.
1978 *Railroads of Hawaii.* Golden West Books, San Marino, California.

Bordner, Richard and Carol Silva
1982 *Archaeological Reconnaissance, Paia Sewerage System, Part A, Paia, Maui, Hawaii.* Environmental Impact Study Corporation, Honolulu and Maui.

Burns, Irma
1991 *Maui's Mittee and the General.* Ku Pa'a Inc., Honolulu.

Bowen, Robert
1968 Site card, on file at the B.P. Bishop Museum, Honolulu.

Bowen, Robert and Dwayne Merry
n.d. Site card, on file at the B.P. Bishop Museum, Honolulu.

Clark, Stephan D. and James H. Toenjes
1987 *Archaeological Monitoring of Sewer Line Construction from Spreckiesville to Ku'au, Maui, State of Hawaii.* Ms. 031687. Department of Anthropology, B.P. Bishop Museum, Honolulu.

Connolly, Robert
1981 *Environmental Field Surveys at Kahului Airport and Vicinity, Kahului, Maui.* AECOS, Kaneohe.

Dodge, F.
1885 Map of Maui, Hawaiian Islands. Hawaiian Government Survey. Scale 1:60,000.

Donham, Theresa
1990 *Archaeological Inventory Survey, Maui Palms Site, Land of Wailuku, Wailuku District, Island of Maui.* Ms. 852-082390. Prepared for Elleair Hawaii Inc. Paul H. Rosendahl, Ph.D., Inc., Hilo.

1992 *Human Skeletal Remains Discovered at the Maui Homeless Shelter Construction Site (50-50-04-2916), Wailuku, Maui.* State Historic Preservation Division - Maui.

Folk, W.H. and H.H. Hammatt
1991 *Archaeological Survey and Subsurface Testing for the Kahului Airport, Kahului, Maui.* Prepared for Pacific Planning and Engineering. Cultural Surveys Hawai'i, Kailua.

1993 *Archaeological Testing for Subsurface Deposits in the Federal Aviation Administration (FAA) VORTAC Site, Kahului Airport, Kahului, Maui.* Prepared for Advanced Sciences, Inc. Cultural Surveys Hawaii, Kailua.

Foote, D., E. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* U.S. Department of Agriculture, Soil Conservation Service and University of Hawaii Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.

Fredericksen, D.L. and W.M. Fredericksen
1988 *An Archaeological Inventory Survey Preliminary Report on a Parcel of Land 232 Acres in Kahului, Maui, Hawaii.* Prepared for Alexander and Baldwin, Inc. Xamanek Researches, Pukalani, Maui.

Fredericksen, D.L., W.M. Fredericksen, and E.M. Fredericksen
1988 *An Archaeological Inventory Survey on a Parcel of Land (34 Acres) in Spreckelsville, Maui, Hawaii.* Prepared for Alexander and Baldwin, Inc. Xamanek Researches, Pukalani, Maui.

Goodfellow, Susan T.
1991 *Archaeological Inventory Survey VIP Food Service New Warehouse Site. Land of Wailuku, Wailuku District, Island of Maui.* Ms. 1029-042991. Prepared for Nelson Okumura, VIP Food Service. Paul H. Rosendahl, Ph.D., Inc., Hilo.

Handy, E.S.C. and E.G. Handy
1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment.* B.P. Bishop Museum Bulletin 233, Honolulu.

Howell, Hugh
1896 Map of Lands Between Kahului and Wailuku, Maui, Hawaii.

'I'i, John Papa
1959 *Fragments of Hawaiian History.* Bishop Museum Press, Honolulu.

Inventory
1973 Records of the Statewide Inventory of Historic Places. State Historic Preservation Division, Department of Land and Natural Resources.

Jackson, George E.G.
1881 Map of Kahului Harbor and Adjacent Coast Line, Maui. Hawaiian Government Survey. September.

Kamakau, Samuel M.
1961 *Ruling Chiefs of Hawaii.* Kamehameha Schools Press, Honolulu.

Keau, Charles
1981 Letter Report Archaeological Reconnaissance. Maui County Department of Parks and Recreation, Wailuku, to State Director of Parks and Recreation. February 23.

Kennedy, Joseph
1990 *Archaeological Subsurface Testing Results at the Site of the Proposed Maui Community Arts and Cultural Center, TMK 3-8-07, Located at Kahului, Maui.* Prepared for Vern Stafford, MCACC. Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawaii.

Kennedy, J., T. Denham, and L. Reintsema
1992 *Inventory Survey and Subsurface Testing Report for a Property at TMK 3-5-03:01, Wailuku Ahupua'a, Wailuku District, Island of Maui.* Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawaii.

Kennedy, J., P. Brennan, and S. Ireland
1993 *Archaeological Inventory Survey with Subsurface Testing Report for a Property Located at TMK 3-8-01:119 (por.), Wailuku Ahupua'a, Wailuku District, Island of Maui.* Prepared for Maui County Department of Parks and Recreation. Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawaii.

Kikuchi, William K.
1973 *Hawaiian Aquacultural System.* Ph.D. dissertation, Department of Anthropology, University of Arizona, Tucson.

Kuykendall, Ralph S.
1967 *The Hawaiian Kingdom, 1871-1893. The Kalakaua Dynasty, Vol. III.* University of Hawaii Press, Honolulu.

1968 *The Hawaiian Kingdom, 1778-1854. Foundation and Transformation. Vol. I.* University of Hawaii Press, Honolulu.

Landrum, J., R. Drolet, and K. Bouthillier
1993 *Preliminary Report. Cultural Resources Overview Survey, Naval Magazine Lualualei, Island of Oahu, Hawaii.* Prepared for the Department of the Navy, Pacific Division, Naval Facilities Engineering Command. Ogden Environmental and Energy Services Co., Inc., Honolulu.

Macdonald, Gordon A. and Agatin T. Abbott
1970 *Volcanoes in the Sea.* University of Hawaii Press, Honolulu.

Miura, Marvin and Richard Bordner
1983 *Archaeological Reconnaissance, Kahului Housing - Phase I.* Prepared for Department of Human Concerns, County of Maui. EIS Corporation, Honolulu.

Monsarratt, M.
1882 Map of a Portion of Wailuku, Maui.

NASKA
1953 *Naval Air Station Kahului, Maui, T.H. Master Shore Station Development Plan. Part III, Section 2.* General Development Plan, showing conditions as of 30 June 1953. Department of the Navy, Bureau of Yards and Docks.

Shoemaker, H.I.
1910 Map of Sugar Plantation at Puunene, Maui, Owned by Hawaiian Commercial & Sugar Co.

Silva, Carol
n.d. *Historical Report, Halekii-Pihana State Monument, Wailuku, Maui.* In the files of the State Historic Preservation Division, Honolulu.

Sinoto, Aki
1990 *Post-field Summary, Mauna Lani Sand Borrow Site, Wailuku, Maui Island.* Department of Anthropology, B.P. Bishop Museum, Honolulu.

Speakman, Cummins E.
1978 *Mowee: An Informal History of the Hawaiian Island.* Peabody Museum of Salem. Salem, Massachusetts.

Stearns, Harold T. and Gordon A. Macdonald
1942 *Geology and Ground-water Resources of the Island of Maui, Hawaii.* Bulletin 7. Hawaii Division of Hydrography.

Stuiver, M. and P.J. Reimer
1993 Extended ^{14}C Data Base and Revised CALIB 3.0 ^{14}C Age Calibration Program. *Radiocarbon* 35 (1):215-230.

Toenjes, J.H., W.H. Folk, and H.H. Hammatt
1991 *Archaeological Testing of Subsurface Deposits Proposed Approach "Clear Zone", North End of Runway 2-20, Kahului Airport, Kahului, Maui.* Prepared for Pacific Planning and Engineering. Cultural Surveys Hawaii. Revised, November.

USGS
1922 Paia Quadrangle. U.S. Geological Survey topographic map.

1954 Paia Quadrangle. U.S. Geological Survey topographic map.

1964 Paia Quadrangle. U.S. Geological Survey topographic map.

Walker, Winslow
1931 *Archaeology of Maui.* Manuscript. B.P. Bishop Museum, Honolulu.

Welch, David J.
1988a *Archaeological Subsurface Survey at Kaitalimu Gulch, Kahului Airport, Maui.* Prepared for R.T. Tanaka Engineers, Inc. International Archaeological Research Institute, Inc., Honolulu.

1988b *Archaeological Survey at Kahului Airport, Maui.* Prepared for KFC Airport, Inc. International Archaeological Research Institute, Inc., Honolulu.

1991 *Archaeological Subsurface Testing for Kanaha Beach Park Addition and Kanaha Airport Transient Apron, Kahului Airport, Wailuku, Maui, Hawaii.* Prepared for R.T. Tanaka Engineers, Inc. International Archaeological Research Institute, Inc., Honolulu.

APPENDIX A.

SUMMARY OF AIRPORT PROJECTS AND EVALUATION OF IMPACTS

This appendix summarizes survey and site information and potential impacts on archaeological and historical sites, organized by proposed airport projects. The following categories of information are presented:

Project number:	refers to the phase and specific airport project, based on the Airport Master Plan prepared by Belt Collins & Associates (BCA 1993) and presented as Figures 1, 2, and 3 of "Environmental Assessment/ Determination for Proposed Improvements at Kahului Airport", prepared by Edward K. Noda and Associates, Inc., May 1994
Project description:	describes the airport project, based on the Master Plan Figures 1, 2, and 3 of the aforementioned EA
Subarea:	refers to the survey subareas used for descriptive purposes in this report
Inventory survey:	identifies the level and findings of archaeological work carried out in the airport area, including the results of survey conducted as part of the present project
Additional sites:	describes potential cultural sites, based on non-archaeological sources (e.g., historical research, cartographic sources)
Potential impact:	identifies the potential impact on archaeological and historical sites from the proposed airport project
Preservation/ mitigation measures:	proposes actions to mitigate the adverse effects of the airport project on identified archaeological and historical sites
Comments:	presents additional or explanatory information

Project No: Phase I-1
Project description: acquire land for access road and interchange
Subarea: sugar cane fields; west of airport
Inventory survey:
- Level: surface survey; subsurface testing
- Findings: no sites
- Site Numbers: none
- Significance: n/a
- Reference: Fredericksen and Fredericksen 1988; Welch 1988

Potential impact: none; land acquisition only
Preservation/ mitigation measures: none
Comments: portion of area lies outside of study area

Project No: Phase I-2
Project description: acquire aviation easement for portion of Runway 2/20 protection zone south of Hana Highway
Subarea: outside of study area
Inventory survey:
- Level: none
- Findings: none
- Sites: none
- Significance: n/a
- Reference: none

Potential impact: none
Preservation/ mitigation measures: none
Comments: site potential very low; nearby areas surveyed

Project No: Phase I-3
Project description: extend Runway 2/20 with associated taxiways; relocate NAVAIDS
Subarea: airport proper/sugar cane fields; southwest of Runway 2/20
Inventory survey:
- Level: surface survey
- Findings: no sites
- Sites: none
- Significance: n/a
- Reference: Tomonari-Tuggle and Welch 1995

Potential impact: probably none
Preservation/ mitigation measures: none
Comments: site potential very low; area disturbed

Project No: Phase I-4
Project description: repave and strengthen existing Runway 2/20
Subarea: airport proper
Inventory survey:
- Level: none
- Findings: none
- Sites: none
- Significance: n/a
- Reference: none

Potential impact: none; area is under existing runway
Preservation/ mitigation measures: none; no survey needed
Comments: none

Project No: Phase I-5
Project description: relocate VORTAC
Subarea: coastal strip/airport proper/sugar cane fields; east end of runways
Inventory survey:

Level: surface survey; subsurface testing
Findings: subsurface cultural deposits; discontinuous but extensive
Sites: 2849
Significance: NRHP criterion D
Reference: Folk and Hammatt 1993; Tomojes et al. 1991

Potential impact: only if construction planned for 1,000 foot radius restricted area
Preservation/
mitigation measures: additional testing/data recovery in restricted area, if necessary
Comments: Folk and Hammatt tested only in the VORTAC building site, access road, and utility easements and found no subsurface deposits. They did not test within the surrounding restricted area that extends into Site 2849 identified by Tomojes et al.

Project No: Phase I-6
Project description: construct cargo facility including access road
Subarea: developed area west of the airport
Inventory survey:

Level: surface survey
Findings: no sites
Sites: none
Significance: n/a
Reference: Tomonari-Tuggle and Welch 1995; Welch 1988b

Potential impact: none
Preservation/
mitigation measures: none
Comments: none

Project No: Phase I-7
Project description: construct airport access road and interchange
Subarea: sugar cane fields; west of airport
Inventory survey:

Level: surface survey; limited subsurface testing
Findings: no sites
Sites: none
Significance: n/a
Reference: Frederiksen and Frederiksen 1988; Welch 1988b

Potential impact: none
Preservation/
mitigation measure: may require additional subsurface testing
Comments: portion lies outside of study area

Project No: Phase I-8
Project description: construct perimeter/service road and fencing
Subarea: sugar cane fields; south and southeast of Runway 2/20
Inventory survey:

Level: surface survey
Findings: no sites
Sites: none
Significance: n/a
Reference: Tomonari-Tuggle and Welch 1995

Potential impact: none
Preservation/
mitigation measures: none
Comments: none

Project No: Phase I-9
Project description: ARFF training facility
Subarea: coastal strip/airport proper; east of Kanaloa Beach Park
Inventory survey:

Level: surface survey; subsurface testing
Findings: no sites; backhoe trenches show modern construction fill almost to water table
Sites: none
Significance: n/a
Reference: Welch 1991

Potential impact: none; most of area has already been developed
Preservation/
mitigation measures: none
Comments: none

Project No: Phase I-10
Project description: ARFF facility
Subarea: airport proper; south of intersection of Runways 2/20 and 5/23
Inventory survey:

Level: surface survey
Findings: foundation of NASKA buildings
Sites: NASKA 705
Significance: significant as part of NASKA, NRHP criteria A
Reference: Tomonari-Tuggle and Welch 1995

Potential impact: demolition of NASKA foundation; disturbance to possible deposits
Preservation/
mitigation measures: recording architectural data; backhoe testing
Comments: Building already constructed, NASKA Building 727 destroyed

Project No: Phase I-11
Project description: post office ramp access road
Subarea: developed area west of airport
Inventory survey:

Level: surface survey
Findings: no sites
Sites: none
Significance: n/a
Reference: Tomonari-Tuggle and Welch 1995; Welch 1988

Potential impact: none
Preservation/
mitigation measures: none
Comments: NASKA features destroyed by previous bulldozing

Project No: Phase I-12?
Project description: east ramp sewer system
Subarea: airport proper; inland edge of Runway 2/20; seaward edge of Runway 5/23
Inventory survey:

Level: surface survey; subsurface testing
Findings: subsurface cultural deposits (discontinuous but extensive) on coastal side
Sites: Kahului Railroad; 2849; 1798 and 1799 in vicinity
Significance: NRHP criterion D
Reference: Welch 1991; Tomojes et al. 1991; Tomonari-Tuggle and Welch 1995

Additional sites: possible cultural deposits buried under airport construction fill on inland side of Runway 2/20
Potential impact: disturbance to possible deposits
Preservation/
mitigation measures: monitoring
Comments: none

Project No: Phase II-1
Project description: acquire land for new parallel runway, runway protection zones, and realignment of Hana Highway
Subarea: sugar cane fields south of Runway 2/20, coastal strip around East Spreckelsville beach lots
Inventory survey:

Level: surface survey; subsurface testing
Findings: buried deposits near East Spreckelsville beach lots
Sites: 1777; 2849
Significance: NRHP criterion D
Reference: Tomonari-Tuggle and Welch 1995; Folk and Hammatt 1993; Toenjes et al. 1995; Clark and Toenjes 1987

Additional sites: possible historical remains around Russian and Japanese plantation villages and Camp Three
Potential impact: none; land acquisition only
Preservation/
mitigation measures: none; only when and if parallel runway is planned/constructed
Comments: only small portion of project area has been surveyed

Project No: Phase II-2
Project description: acquire aviation easement for runway protection zone south of Hana Highway (for proposed parallel runway)
Subarea: outside of study area
Inventory survey:

Level: none
Findings: none
Sites: none
Significance: n/a
Reference: none

Potential impact: none; land acquisition only
Preservation/
mitigation measures: none
Comments: none

Project No: Phase II-3
Project description: acquire land for cargo expansion
Subarea: developed area west of airport
Inventory survey:

Level: surface survey; subsurface testing
Findings: no sites
Sites: none
Significance: n/a
Reference: Frederickson and Frederickson 1988

Potential impact: none; land acquisition only
Preservation/
mitigation measures: none
Comments: none

Project No: Phase II-4
Project description: construct new cargo facility on east ramp
Subarea: airport proper; south of intersection of Runways 2/20 and 5/23
Inventory survey:

Level: surface survey
Findings: World War II features; scattered remains of plantation debris
Sites: NASKA 725, 726, lumber yard; artifact scatter; boulder alignment
Significance: significant as part of NASKA; NRHP criteria A
Reference: Tomonari-Tuggle and Welch 1995

Additional sites: possible cultural deposits buried under airport construction fill
Potential impact: demolition of NASKA structures; disturbance to possible deposits
Preservation/
mitigation measures: record architectural data; collect surface scatter; backhoe testing
Comments: cane fields in area not yet surveyed

Project No: Phase II-5
Project description: additional T-hangars
Subarea: airport proper; southeast of intersection of Runways 2/20 and 5/23
Inventory survey:

Level: surface survey
Findings: no sites
Sites: none
Significance: n/a
Reference: Tomonari-Tuggle and Welch 1995

Additional sites: possible cultural deposits buried under airport construction fill
Potential impact: none; although there is possibility of disturbance to subsurface deposits, if any
Preservation/
mitigation measures: backhoe testing
Comments: area has been graded and paved

Project No: Phase II-6
Project description: new scenic air tour facilities
Subarea: airport proper; south of Runway 2/20
Inventory survey:

Level: none
Findings: none
Sites: none
Significance: n/a
Reference: none

Potential impact: none
Preservation/
mitigation measures: none
Comments: area has already been developed

Project No: Phase II-7
Project description: commercial aviation lease lots at east ramp area
Subarea: airport proper; southeast of intersection of Runways 2/20 and 5/23
Inventory survey:

Level: surface survey
Findings: World War II features
Sites: NASKA 705; unnumbered structure
Significance: significant as part of NASKA; NRHP criteria A and D
Reference: Tomonari-Tuggle and Welch 1995

Additional sites: possible cultural deposits buried under airport construction fill
Potential impact: demolition of NASKA structures; disturbance to subsurface deposits, if any
Preservation/
mitigation measures: record architectural data; backhoe testing
Comments: cane fields not yet surveyed

Project No: Phase II-8
Project description: relocate airline ground support equipment facility
Subarea: airport proper; within airport terminal complex
Inventory survey:

Level: none
Findings: none
Sites: none
Significance: n/a
Reference: none

Potential impact: none
Preservation/
mitigation measures: none
Comments: area already developed

Project No: Phase II-9
Project description: expand ground transportation facilities
Subarea: developed area west of airport
Inventory survey:
- Level: surface survey
- Findings: no sites
- Sites: none
- Significance: n/a
- Reference: Tomonari-Tuggle and Welch 1995

Potential impact: none
Preservation/ mitigation measures: none
Comments: area was used as NASKA baseball field

Project No: Phase II-10
Project description: bulk fuel storage tanks
Subarea: developed area west of airport
Inventory survey:
- Level: surface survey
- Findings: World War II features
- Sites: NASKA sports facilities
- Significance: significant as part of NASKA; NRHP criteria A
- Reference: Tomonari-Tuggle and Welch 1995

Potential impact: demolish structures
Preservation/ mitigation measures: record architectural data
Comments: swimming pool and handball court still present

Project No: Phase II-11
Project description: underground fuel pipeline
Subarea: developed area west of airport; coastal strip west of Kalialinui Stream
Inventory survey:
- Level: surface survey
- Findings: no sites
- Sites: none
- Significance: n/a
- Reference: Tomonari-Tuggle and Welch 1995

Potential impact: disturbance of possible subsurface deposits and/or features, especially relating to Mas'oni fishpond
Preservation/ mitigation measures: monitor pipeline construction; testing/sediment coring
Comments: pipeline will cross through coastal dunes in which there may be buried prehistoric deposits; the area between Kanaha Pond and Kalialinui Channel may be the location of Mas'oni Pond

Project No: Phase II-12
Project description: roadway to connect Alahao Street with Old Stable Road
Subarea: coastal strip east of Kanaha Beach Park
Inventory survey:
- Level: subsurface testing
- Findings: World War II feature; no prehistoric deposits
- Sites: NASKA 411 (Officers' Club); ruins of airplanes
- Significance: significant as part of NASKA; NRHP criteria A
- Reference: Tomonari-Tuggle and Welch 1995; Welch 1991

Potential impact: demolish foundations and standing remains of NASKA structures
Preservation/ mitigation measures: record architectural data; avoid Officers' Club during construction
Comments: The floor of the Officers' Club is paved with the image of a compass.

Project No: Phase II-13
Project description: north section of east ramp access road
Subarea: sugar cane fields; southeast of intersection of Runways 2/20 and 5/23
Inventory survey:
- Level: none
- Findings: none
- Sites: none
- Significance: n/a
- Reference: none

Potential impact: none
Preservation/ mitigation measures: none
Comments: in existing sugar cane fields; very low site potential

Project No: Phase II-14
Project description: extend perimeter service road and fencing around northwest side of airport
Subarea: coastal strip; east of Kanaha Beach Park
Inventory survey:
- Level: building inspection; subsurface testing
- Findings: World War II features; no subsurface deposits
- Sites: foundations of NASKA 414, 415, 416, 256, 257, 258
- Significance: significant as part of NASKA; NRHP criteria A
- Reference: Tomonari-Tuggle and Welch 1995; Folk and Hammatt 1991; Welch 1991

Potential impact: demolish NASKA foundations
Preservation/ mitigation measures: record architectural data
Comments: none

Project No: Phase II-15
Project description: relocate ground transportation facilities in Runway 5/23 and runway protection zones
Subarea: airport proper; at west end of Runway 5/23
Inventory survey:
- Level: surface survey
- Findings: most NASKA structures destroyed
- Sites: NASKA 248
- Significance: significant as part of NASKA; NRHP criteria A
- Reference: Tomonari-Tuggle and Welch 1995

Potential impact: demolish NASKA remains
Preservation/ mitigation measures: record architectural data
Comments: only concrete foundations remaining

Project No: Phase II-16
Project description: expand Kanaha Beach Park
Subarea: coastal strip
Inventory survey:
- Level: subsurface survey
- Findings: no sites, although this might be due to sampling rather than actual presence or absence of cultural deposits
- Sites: none
- Significance: n/a
- Reference: Welch 1991

Potential impact: disturbance of possible burials and subsurface features
Preservation/ mitigation measures: monitoring; check for NASKA structures, especially Building 262
Comments: Possible burials may exist in coastal dune areas that were not tested by Welch.

Project No: Phase III-1
Project description: construct parallel runway and taxiways; install NAVAIDS
Subarea: sugar cane fields; inland of Runway 2/20
Inventory survey:

Level: none
Findings: none
Sites: none
Significance: n/a
Reference: none

Additional sites: possible remains of plantation villages, NASKA 115 group, 721-725; possible deposits buried under airport construction fill
Potential impact: disturbance to historical remains, buried cultural deposits, if any
Preservation/ mitigation measures: subsurface testing
Comments: Plantation camps and NASKA structures were identified through cartographic sources. The area is presently under sugar cane cultivation and was not examined.

Project No: Phase III-2
Project description: extend parallel taxiway for Runway 5/23
Subarea: airport proper; along inland side of Runway 5/23
Inventory survey:

Level: surface survey
Findings: World War II features (foundations)
Sites: NASKA 728, 771, 772, 773 and possibly 726 and 770
Significance: significant as part of NASKA; NRHP criteria A
Reference: Tomonari-Tuggle and Welch 1995

Additional sites: possible cultural deposits buried under airport construction fill
Potential impact: demolition of NASKA structures; disturbance to buried cultural deposits, if any
Preservation/ mitigation measures: record architectural data; backhoe testing
Comments: only part of area surveyed

Project No: Phase III-3
Project description: extend eastside parallel taxiway for Runway 2/20
Subarea: airport proper; along inland side of Runway 2/20
Inventory survey:

Level: surface survey
Findings: no sites
Sites: none
Significance: n/a
Reference: Tomonari-Tuggle and Welch 1995

Potential impact: none
Preservation/ mitigation measures: none
Comments: most of area is already developed

Project No: Phase III-4
Project description: widen runway safety areas for Runways 2/20 and 5/23
Subarea: airport proper; both ends of Runway 5/23; northeast end of Runway 2/20
Inventory survey:

Level: subsurface testing
Findings: extensive but discontinuous cultural layer throughout general area
Sites: 2849
Significance: NRHP criterion D
Reference: Toenjes et al. 1991

Potential impact: disturbance to subsurface deposit
Preservation/ mitigation measures: data recovery; monitoring
Comments: pit feature and midden found in Toenjes et al. Unit 140

Project No: Phase III-5
Project description: construct transient aircraft parking apron
Subarea: airport proper; north of intersection of Runways 2/20 and 5/23
Inventory survey:

Level: surface survey; subsurface testing
Findings: burials; possible buried wall and pondfields
Sites: 1798, 1799
Significance: NRHP criteria D and E
Reference: Welch 1991; Welch 1988b; Connolly 1981

Potential impact: disturbance to burials and buried cultural deposit
Preservation/ mitigation measures: avoid 1798 burials or alternatively, data recovery and/or institute burial plan; additional testing in 1799
Comments: preservation of 1798 burials is preferred treatment

Project No: Phase III-6
Project description: construct additional air cargo facility on west side
Subarea: developed area west of airport
Inventory survey:

Level: surface survey
Findings: asphalt parking lot
Sites: NASKA tennis court
Significance: not significant
Reference: Tomonari-Tuggle and Welch 1995; Welch 1988b

Potential impact: none
Preservation/ mitigation measures: none
Comments: none

Project No: Phase III-7
Project description: construct Keolani Place lease lots
Subarea: Kanaha Pond Wildlife Sanctuary; along Keolani Place
Inventory survey:

Level: none
Findings: none
Sites: none
Significance: n/a
Reference: none

Additional sites: possibly NASKA 120, 123, and 124, if still intact
Potential impact: demolition of NASKA structures, if present
Preservation/ mitigation measures: record architectural data, if structures present
Comments: This area is within Kanaha Pond Wildlife Sanctuary which was not surveyed.

Project No: Phase III-8
Project description: expand new ground transportation facilities
Subarea: developed area west of airport; along Keolani Place
Inventory survey:

Level: surface survey
Findings: NASKA structure intact
Sites: NASKA 101 and 102
Significance: significant as part of NASKA; NRHP criteria A and C; possible interpretive potential
Reference: Tomonari-Tuggle and Welch 1995

Potential impact: possible demolition of NASKA structures
Preservation/ mitigation measures: preservation; HABS recording of architectural features
Comments: well-preserved NASKA building with interpretive potential

Project No: Phase III-9
Project description: expand passenger terminal parking lot
Subarea: airport proper/developed area west of airport; west of existing parking lot
Inventory survey:

Level:	surface survey
Findings:	no intact sites
Sites:	none
Significance:	n/a
Reference:	Tomonari-Tuggle and Welch 1995

Potential impact: none
Preservation/
mitigation measures: none
Comments: area already bulldozed or developed

Project No: Phase III-10
Project description: construct east ramp access road from Hana Highway
Subarea: sugar cane fields; inland of Runway 2/20
Inventory survey:

Level:	building inspection
Findings:	World War II features
Sites:	NASKA 805, 810
Significance:	significant as part of NASKA; NRHP criteria A and D
Reference:	Tomonari-Tuggle and Welch 1995

Additional sites: possible remains of Camp Three and NASKA 813, 814, 817, and 818
Potential impact: demolition of NASKA structures, disturbance to plantation village remains, if any
Preservation/
mitigation measures: recording architectural features; subsurface testing
Comments: only portion of area surveyed

Project No: Phase III-11
Project description: construct perimeter/service road and fencing around airport
Subarea: through all subareas except Kanahi Pond
Inventory survey:

Level:	surface survey; subsurface testing
Findings:	subsurface cultural deposit
Sites:	2849
Significance:	NRHP criteria D
Reference:	Folk and Hammatt 1993; Toenjes et al. 1991; Welch 1991; Folk and Hammatt 1991; Welch 1991b

Potential impact: disturbance to subsurface cultural deposits
Preservation/
mitigation measures: additional testing/data recovery; monitoring
Comments: Only the portion of the area near the East Spreckelsville beach lots and sections along the coast have been tested.

Project No: Phase III-12
Project description: re-channel Kalialinui Ditch for parallel runway
Subarea: sugar cane fields; south edge of study area
Inventory survey:

Level:	none
Findings:	none
Sites:	none
Significance:	n/a
Reference:	none

Potential impact: disturbance to possible buried cultural deposits
Preservation/
mitigation measures: subsurface testing
Comments: no intensive subsurface testing in this area; presence of subsurface remains cannot be discounted

Project No: Phase III-13
Project description: realign Hana Highway at northeast end of airport
Subarea: sugar cane fields; along present Hana Highway
Inventory survey:

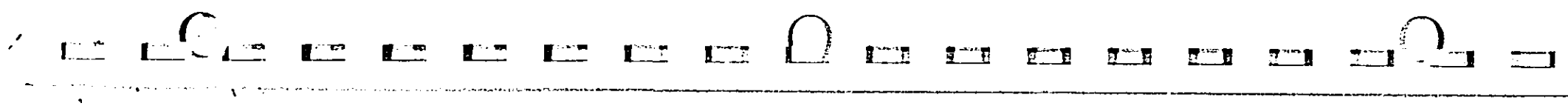
Level:	none
Findings:	none
Sites:	none
Significance:	n/a
Reference:	none

Additional sites: possible remains of Spreckelsville plantation complex
Potential impact: disturbance to plantation remains, if any
Preservation/
mitigation measures: subsurface testing; monitoring
Comments: none

Project No: Phase III-14
Project description: provide lease lot for flight kitchen
Subarea: developed area west of airport
Inventory survey:

Level:	surface survey
Findings:	foundation of military structures
Sites:	NASKA 225
Significance:	significant as part of NASKA; NRHP criteria A
Reference:	Tomonari-Tuggle and Welch 1995

Potential impact: demolition of NASKA foundation
Preservation/
mitigation measures: record architectural features
Comments: none



APPENDIX I

BOTANICAL SURVEY

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BOTANICAL SURVEY REPORT FOR THE KAHULUI AIRPORT
WAILUKU DISTRICT, MAUI, HAWAII

for

EDWARD K. NODA and ASSOCIATES, INC.
615 Piikoi Street, Suite 1000
Honolulu, Hawaii 96814

by

Evangeline J. Funk, Ph.D.
Botanical Consultants
Honolulu, Hawaii

1995

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INTRODUCTION

Botanical and wetland surveys of the approximately 2000 acre proposed Kahului Airport expansion site, Kahului, Maui, Hawaii were carried out in April and May 1994 and in March 1995.

The purpose of these surveys were as follows: (1) to describe the vegetation of the study site, (2) to prepare a species list of all plant taxa found on the study site, (3) to seek out and identify any proposed or listed threatened or endangered plant species, and (4) to locate and delineate any ephemeral or permanent wetland conditions on the site.

The study site (Figure 1) is bounded on the north by the Pacific Ocean, koa haole scrub on the east, light industrial development on the west and sugar cane fields and Hana Highway on the south.

METHODS

Before beginning field data collection, field team members reviewed the available literature pertinent to the site, recent aerial photographs and maps, and one member of the team attended a field orientation session sponsored by the airport manager's office.

The walk through method was used during the data collection phase of the survey. Access to the vegetation was gained by way of forays from existing roads and trails.

Wetlands were delineated using the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1). The wetlands delineated were flagged using double white and blue flagging (Figure 1). All plant taxa were recorded and plant associations were noted. The collected data are presented in this report.

WETLANDS

Wetlands found on the Kahului Airport Study Site are ephemeral or short lived. They do, however, meet the three criteria set forth in the Corps of Engineers Wetland Delineation Manual. There is standing water for more than seven days of the growing season, more than fifty percent of the vegetation is made up of obligate or facultative wetland plants, and hydric or wetland soils are present within two feet of the surface layer. These conditions prevail in several places. The largest (Figure 1, Number 1) is located both mauka and makai of Alahao Street just east of the entry road into Kanaha State Park. Wetland conditions extend from the edge of the airport paving to Alahao Street. On the makai side of Alahao street, wetland conditions extend both eastward and westward. The full extent of the wetland has been flagged with double blue and white ribbons.

At the time of the survey, standing water, from thirty centimeters to one meter in depth, was present within the flagged area. The obligate wetland plants, cat tail (*Typha latifolia* L.), duck weed (*Lemna perpusilla* Terr.), Kaluha (*Bolboschoenus maritimus* (L.) Palla), and pickle weed (*Batis maritima* L.) were growing in and at the edges of the wetland. In addition several facultative wetland taxa such as 'ahu'awa (*Mariscus javanicus* (Houtt.) Merr. & Metcalfe), barnyard grass (*Echinochloa crus-galli* (L.) P. Beauv.), *Leptochloa uninervia* (K. Presl Hitchc. & Chase), California grass (*Brachiaria mutica* (Frossk.) Stapf.) and the small, white daisy, *Eclipta alba* (L.) Hassk., are found throughout the wetland area which is almost entirely surrounded by a broad band of the transition zone shrub, Indian fleabane (*Pluchea indica* (L.) Less.). At the time of the survey several water birds were using this site including Hawaiian stilts,

ducks, and a night heron.

Wetland conditions were also found just east of the makai gate into the airport (Figure 1, Number 2). This is a long, narrow, approximately one hundred meters long, series of small, intermittent, open water ponds located between the dunes north of the dirt road. The ponds vary in size from one meter to five meters across. Many of the ponds are hidden from view by overhanging milo trees (*Thespesia populnea* (L.) Sol. ex Correa), date palms (*Phoenix dactylifera* L.), and dense patches of Indian fleabane. However, obligate wetland vegetation in the form of kaluha, duck weed and alu'awa is abundant in the open ponds.

In the northeastern corner of Runway 2-20 there is a broad drainage ditch which, at the time of the survey, was partially filled with standing water (Figure 1, Number 3). The vegetation was partially hydrophytic and hydric soils were found. The total wet area was probably less than three square meters. The water source for this wet place is the drainage from the central part of the airport. It emerges from underground pipes, passes through this drainage area, and disappears into the sand on the makai side of the perimeter fence.

CANE FIELD/RUDERAL BORDERS

Large portions of the Maui Airport Study Site are presently being used to cultivate sugar cane (*Saccharum officinarum* L.) (Figure 1). While individual fields are monotypic, the margins of the cane haul roads and fields support an extremely rich mosaic of ruderal (weed) vegetation. In some places the yellow flowered Mexican poppy (*Argemone mexicana* L.) is everywhere, in others it is the reddish-yellow flowers of *Crassocephalum crepidinides* (Benth.) S. Moore which are common. Grasses such as Natal redtop (*Rhynchelytrum repens* C.E. Hubb), *Chloris barbata* Swartz, and Guinea

grass (*Panicum maximum* Jacq.) form fringing borders to the sugar cane fields and many were in flower. Big, gray green plants of wild tobacco (*Nicotiana glauca* R. C. Graham), some six to seven meters in height, purple flowered Chinese violets (*Asystasia gangetica* (L.) T. Anders) and yellow golden crown beard (*Verbesina encelioides* Cav.) were common around the fields.

The ruderal border along the Sprecklesville Beach Road side of the cane field varies from thirty to forty meters across. Here the koa haole reaches ten meters in height with a dense understory of elephant grass (*Pennisetum purpureum* Schumach.) and other weedy species. The cane itself is dense and thick and few weed species can penetrate into the deep shade.

Paved Road Plantings. Two paved roads traverse the Cane Fields/Ruderal Borders Vegetation Type, Kala Road and Haleakala Highway. Some time ago the shoulders of Kala Road, from Eena street to Hana Highway, were landscaped with monkey pod (*Samanea saman* (Jacq.) Merr.), Kassod (*Cassia siamea* Lam.), earpod (*Enterolobium cyclocarpum* (Jacq.) Griseb.), and kiawe trees (*Prosopis pallida* (Humb. & Bonpl. ex Willd.) Kunth). These trees, although severely windsheared, now reach a height of fourteen to sixteen meters. An understory of purple bougainvillea vines (*Bougainvillea spectabilis* Willd.), planted on the southeastern shoulder of Kala Road, is now three to five meters in height.

Along Haleakala Highway near its junction with Hana Highway, there are four or five planted monkeypod trees and one silk oak tree (*Grevillea robusta* A. Cunn). These trees are twelve to eighteen meters in height and like those on Kala Road, are badly wind sheared.

Waterways. The cane field which lies between Haleakala Highway and the

Open Grassland (Figure 1) and northwest of Hana Highway, is still irrigated by way of open water ditches. These canals are filled with dense stands of barnyard grass (*Echinochloa crus-galli* (L.) Beauv.) and fringed by a variety of other grasses and forbs.

The big drainage ditch that enters the cane field under Hana Highway is unpaved until it exits the cane field under Haleakala Highway. Along this waterway wild tobacco, neem trees (*Melia azedarach* L.), and koa haole shrubs from four to ten meters in height are common. Panic grass covers the berms along both sides of this canal along with other weedy plants.

KOA HAOLE SCRUB/MIXED UNDERSTORY

Koa haole Scrub/Mixed Understory is found in several places on the study site (Figure 1). In the area between the airport perimeter fence and Kala Road or the southern edge of the site, the Koa haole (*Leucaena leucocephala* de Wit) has been burned. In some places it has begun to regenerate and the shrubs are less than one meter in height. Here the weed community is thriving. Buffel grass (*Cenchrus ciliaris* L.), Guinea grass, natal red top, pitted beard grass (*Bothriochloa pertusa* (L.) A. Camus), and beach wiregrass (*Eleusine indica* (L.) Gaertn.) are the most abundant grasses. Some leguminous weeds such a wild bean (*Macroptilium* spp.), rattle box (*Crotalaria* spp.), beggar weed (*Desmodium*), virgate mimosa (*Desmanthus virgatus* Willd.), and burr clover (*Medicago polymorpha* L.), are found here. The Hawaiian medicinal plant, 'uhaloa (*Waltheria indica* L.) and other native species such as pa'uohi'iaka (*Jacquemontia ovalifolia* (Choisy) H. Hallier), pohuehue (*Ipomoea pes-caprae* (L.) R. Br.), and 'akulikuli (*Portulaca pilosa* L.) are persisting in this part of the study site.

The koa haole at the northeastern end of the site, between the wooden fence and the cane fields is one to two meters in height and in this area the understory is almost solid buffel grass.

Between the perimeter fence and Runway 5-23 there is a large undeveloped area. The vegetation of the eastern two thirds of this area is koa haole of varying height from thirty centimeters to three meters in height. There are a few scattered kiawe (*Prosopis pallida* (Humb. & Bonpl. ex Willd.) Kunth) trees, and shrubs of Christmas berry (*Schinus terebinthifolius* Raddi), Indian fleabane and the native shrub, 'aheahea (*Chenopodium oahuense* (Meyen) Aellen). The ground layer is mixed grasses, mostly buffel grass and at least two species of alena (*Boerhavia* spp.) and the native vine pa'uohi'iaka

OPEN GRASSLAND

Grasslands are defined as places where more than forty percent of the vegetation is made up of grass species. There are several places on the Maui Airport Study Site where such conditions prevail (Figure 1). The largest grassland extends from the southwestern perimeter fence to Hana Highway. Buffel grass, guinea grass, love grass (*Eragrostis* spp.) and various species of Chloris are common. There are others and there are scattered patches of koa haole shrubs one to two meters in height.

Within the perimeter fence there are several places where grassland conditions are maintained. For example, at the northeast end of Runway 2-20, at the western end of Runway 5-23, off Kaa Street, and inside the perimeter fence near the control tower. The most common type of grass is buffel grass, but there is also pitted beard grass, also guinea grass, star grass (*Chloris divaricata* R. Br.) and others. Many herbaceous plants are also found in

these grasslands, but all are regularly mowed which keeps the vegetation less than thirty centimeters in height.

KIAWE/MIXED UNDERSTORY

From Kanaha Beach Park Road, on both sides of Alahao Street eastward to the edge of Runway 2-20 and in the area north of Aaele Street (Figure 1) the canopy trees are kiawe (*Prosopis pallida* (Humb. & Bonpl. ex Willd.) Kunth) and the understory is mixed. Between Alahao Street and the perimeter fence the kiawe trees form a closed canopy and are between 10 to 18 meters in height. The understory is buffelgrass with Indian fleabane, 'aheahea, and Chinese violet forming a thick border along the roads. Makai of Alahao Street the substrate is rolling sand dunes and the vegetation cover is more complex. Kiawe is still the main canopy tree, but others such as ironwoods (*Casuarina equisetifolia* L.), date palm, hau (*Hibiscus tiliaceus* L.), milo, and Chinese banyan (*Ficus microcarpa* L. f.) can also be found. The shrub layer includes Christmas berry, koa haole, three species of *Pluchea*, and 'aheahea plants from 2 to 5 meters in height. The ground layer is made up of weedy species such as buffelgrass, Guinea grass, California grass, Chinese violet, and 'akulikuli (*Sesuvium portulacastrum* L.).

Between the beach houses at Papa'ula Point and the Kiawe/Mixed Understory vegetation type is a dense planting of big trees. Here can be found ironwoods, date palms, coconut, hau, kiawe, Christmas berry, and milo trees. The understory is Indian fleabane, koa haole, and 'aheahea. The closed canopy trees are 18 to 20 meters in height. This thick belt of tall trees probably absorbs some of the airport noise.

Kiawe/Mixed Understory is also found makai of Aaele Street. The kiawe trees are widely spaced and are from 10 to 15 meters in height. Some wili wili

haole (*Erythrina variegata* (L.) Merr.) is coming into this area as is castor bean (*Ricinus communis* L.), koa haole and wild tobacco. Because this part of the site is currently used to dump organic waste material, the ground layer is composed of a very wide variety of weedy plants. Commonly found are wild tomato (*Lycopersicon pimpinellifolium* (Jusl.) Mill.), apple of Peru (*Nicandra physaloides* (L.) Gaertn.), 'aheahea, balsam apple (*Momordica charantia* L., *Chamaesyce* spp., wild spider flower (*Cleome gynandra* L.), and alena species (*Boerhavia* spp.). Many types of wild beans including rattle pod (*Crotalaria* spp.), *Macroptilium* spp., *Glycine wightii* (Wight & Arnot:) Verdc., partridge pea (*Chamaecrista nictitans* (L.) Moench) and indigo (*Indigofera* spp.) are also common.

About half of the area in the triangle of land east of Kanaha Pond is being used for light industrial purposes. In the undeveloped portion, Kiawe/Mixed Understory vegetation persists. The kiawe trees are scattered and from 10 to 15 meters in height. Along the canal there is Indian fleabane and koa haole. A fairly dense ground cover is found in most of this area and it is made up of mixed grasses and weedy herbs including large patches of corn spurry (*Spergula arvensis* L.).

WIND SHEARED DUNE VEGETATION

Makai of the beach road from the Papa'ula Point houses to the southeastern boundary of the study site, the low dunes are covered by a dense mantle of wind sheared vegetation (Figure 1). This cover is made up of a rich mix of native and introduced vegetation. No species achieves dominance. There are broad patches of naupaka kahakai (*Scaevola sericea* Vahl.), tree heliotrope (*Tournefortia argentea* L. fil), Christmas berry, Spanish reed (*Arundo donax* L.), sea grape (*Coccoloba uvifera* (L.) L.), koa haole, beach vitex

(*Vitex* spp.), 'aheahea, hau, beach morning glory, seashore rush (*Sporobolus virginicus* (L.) Kunth), buffalo grass (*Stenotaphrum secundatum* (Walt.) Kuntze, yellow oleander (*Cascabela thevetia* (L.) Lippold), as well as remnant landscape plantings around former house sites. It appears that plants which have the potential to grow tall such as ironwood trees have been topped.

ENDANGERED SPECIES

No Category 1, proposed or listed threatened or endangered species of plants were found on this site (USFWS 1993, DLNR 1991). Previous surveys (AECOS 1981, Pacific Planning & Engineering 1990), similarly, have not reported sensitive species from this area.

RESULTS AND DISCUSSION

This survey was carried out during April and May of 1994, and March 1995. In Hawaii, these months are very favorable times for doing plant surveys because many annuals are only seen during the early growing season.

It was also a favorable time to determine the extent of the ephemeral wetlands that are located on the site. Thanks to the cooperation of the airport security personnel we were given access to the area along the boundary fence, near the tower, where, during the rainy season, run-off accumulates and attracts water birds. There is no evidence to indicate that this area is a wetland. The vegetation is mixed, upland grasses and the substrate is a thin layer of compacted soil over a crushed rock base. It may be that the birds are attracted to this area to feed on the insects that get caught when the water level is high. A different ground cover, such as beach morning glory or pa'uohi'iaka, which are not attractive to the birds, may discourage their use of this area. Both these plant species are native to the Hawaiian Islands, are

found on the site and because they are low growing, they would not require mowing.

A total of one-hundred and ninetythree plant species in fiftyone plant families were found during the survey. Ninety percent of the species have been introduced into the Hawaiian Islands. As might be expected, the largest number of taxa (40) are members of the grass family (Poaceae), followed by the bean family (Fabaceae) with 30 taxa and the sunflower family (Asteraceae) with 24 taxa. Many families contained only a single species.

Twenty taxa or ten percent of all the taxa found are native to the Hawaiian Islands. This is a far greater number than would be expected in such a highly urbanized site.

SPECIES LIST

The plant families in the following species list have been alphabetically arranged within three groups, Ferns and Fern Allies, Monocotyledons, and Dicotyledons. The genera and species are arranged alphabetically within families. The taxonomy and nomenclature follow that of St. John (1973) and Wagner, Herbst and Sohmer (1990). For each taxon the following information is provided:

1. An asterisk before the plant name indicates a plant introduced to The Hawaiian Islands since Cook or by the aborigines.
2. The scientific name.
3. The Hawaiian name and or the most widely used common name.
4. Abundance ratings are for this site only and they have the following meanings:

   Uncommon = a plant that was found less than five times.

   Occasional = a plant that was found between five to ten times.

   Common = a plant considered an important part of the vegetation.

   Locally abundant = plants found in large numbers over a limited area. For example the plants found in grassy patches.

This species list is the result of an extensive survey of these areas during the growing season (April and May 1994) and it reflects the vegetative composition of the flora during a single season. Minor changes in the vegetation will occur due to introductions and losses and a slightly different species list would result from a survey conducted during a different season.

Scientific Name	Common Name	Abundance
FERNS AND FERN ALLIES		
PSILOTACEAE - Psilotum Family		
Psilotum nudum L.	Moa	Uncommon
MONOCOTYLEDONS		
AGAVACEAE - Agave Family		
**Agave sisalana* Perrine	Sisal	Locally abundant
ARECACEAE - Palm Family		
**Archontophoenix alexandrae* Wendl. & Drude	Date Palm	Common
**Cocos nucifera* L.	Coconut	Occasional
CYPERACEAE - Sedge Family		
**Bolboschoenus maritimus* (L.) Palla	Kaluha	Locally abundant
**Cyperus alternifolius* subsp. flabelliformis (Rottb.) Kukenth.	'ahu'awa haole	Locally abundant
**Cyperus gracilis* R. Br.	McCoy grass	Occasional
**Cyperus rotundus* L.	Nut grass	Locally abundant
Mariscus javanicus (Houtt.) Merr. & Metcalfe	'ahu'awa	Locally abundant
**Schoenoplectus californicus* (C.A.Mey.) Palla	Kaluha	Locally abundant
LEMNACEAE - Duckweed Family		
Lemna perpusilla Torr.	Lemna	Locally abundant
POACEAE - Grass Family		
**Arundo donax* L.	Spanish reed	Locally abundant
**Bothriochloa barbinodis* (Lag.) Herter	Fuzzy top	Common
**Bothriochloa pertusa* (L.) A. Camus	Pitted beardgrass	Common
**Brachiaria mutica* (Forssk.) Staph	Paragrass	Locally abundant
**Brachiaria subquadripara* (Trin.) Hitchc.		Locally abundant
**Cenchrus ciliaris* L.	Buffelgrass	Common
**Cenchrus echinatus* L.	Sandbur grass	Common
**Chloris barbata* (L.) Sw.	Swollen fingergrass	Locally abundant
**Chloris divaricata* R. Br.	Stargrass	Locally abundant
**Chloris radiata* (L.) Sw.	Radiate fingergrass	Occasional
**Cynodon dactylon* (L.) Pers.	Bermuda grass	Common
**Dactyloctenium aegyptium* (L.) Willd	Beach wiregrass	Locally abundant
**Digitaria ciliaris* (Retz.) Koeler	Henry's crabgrass	Occasional

Scientific Name	Common Name	Abundance
POACEAE - Grass Family con't		
**Digitaria insularis* (L.) Mez ex Ekman	Sourgrass	Occasional
**Digitaria radicosa* (Presl. Miq.		Locally abundant
**Echinochloa colona* (L.) Link	Jungle rice	Common
**Echinochloa crus-galli* (L.) Beauv.	Barnyard grass	Locally abundant
**Eleusine indica* (L.) Gaertn.	Wiregrass	Common
**Eragrostis cilianensis* (All.) Link Stinkgrass		Uncommon
**Eragrostis pectinacea* (Michx.) Nees	Carolina lovegrass	Common
**Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schultz	Lovegrass	Locally abundant
**Leptochloa uninervia* (K. Presl Hitchc. & Chase	Slender grass	Locally abundant
**Panicum maximum* Jacq.	Guinea grass	Common
**Panicum repens* L.	Quack grass	Locally abundant
**Paspalum conjugatum* Bergius	Hilo grass	Locally abundant
**Paspalum dilatatum* Poir.	Dallis grass	Locally abundant
**Paspalum fimbriatum* Kunth	Panama paspalum	Occasional
**Paspalum urvillei* Steud.	Vasey grass	Occasional
**Pennisetum purpureum* Schumach.	Elephant grass	Occasional
**Rhynchelytrum repens* (Willd.) Hubb.	Natal redtop	Common
**Saccharum officinarum* L.	Sugar	Common
**Saccharum spontaneum* L.	Wild sugar	Occasional
**Setaria gracilis* Kunth	Yellow foxtail	Occasional
**Setaria verticillata* (L.) P. Beauv.	Bristly foxtail	Occasional
**Sorghum halpense* (L.) Pers.	Johnson grass	Uncommon
**Sporobolus indicus* (L.) R. Br.	West Indian Dropseed	Occasional
**Sporobolus virginicus* (L.) Kunth	Seashore rush	Locally abundant
**Stenotaphrum secundatum* (Walt.) Kuntze	Buffalo grass	Occasional
**Zoysia tenuifolia* Willd. ex Trin.	Temple grass	Locally abundant
TYPHACEAE - Cattail Family		
**Typha latifolia* L.	Cat tail	Locally abundant
DICOTYLEDONS		
ACANTHACEAE - Acanthus Family		
**Asystasia gangetica* (L.) T. Anders.	Chinese violet	Common
AIZOCEAE - Fir marigold Family		
Sesuvium portulacastrum (L.) L.	'Akulikuli	Common

Scientific Name	Common Name	Abundance
AMARANTHACEAE - Amaranth Family		
**Alternanthera pungens* Kunth	Khaki weed	Occasional
**Amaranthus spinosus* L.	Spiny amaranth	Common
**Amaranthus viridis* L.	Slender amaranth	Common
ANACARDIACEAE - Mango Family		
**Schinus terebinthifolius* Raddi	Christmas berry	Occasional
APIACEAE - Parsley Family		
**Centella asiatica* (L.) Urb.	Asiatic pennywort	Occasional
**Ciclospermum leptophyllum* (Pers.) Sprague	Fir-leafed celery	Locally abundant
**Daucus pusillus* Michx.	American carrot	Locally abundant
APOCYNACEAE - Dogbane Family		
**Cascabela thevetia* (L.) Lippold	Be-still tree	Uncommon
ASCLEPIADACEAE - Milkweed Family		
**Asclepias physocarpa* (E. Mey.) Schlechter	Balloon plant	Occasional
ASTERACEAE - Sunflower Family		
**Ageratum conyzoides* L.	Maile honohono	Occasional
**Bidens alba* (L.) DC		Common
**Bidens cynapiifolia* Kunth		Common
**Bidens pilosa* L.	Spanish needle	Common
**Calyptocarpus vialis* Less.		Locally abundant
**Conyza bonariensis* (L.) Cronq.	Canadian fleabane	Occasional
**Crassocephalum crepidioides* (Benth.) S. Moore		Common
**Eclipta alba* (L.) Hassk.	False daisy	Locally abundant
**Emilia fosbergii* Nicolson	Pualele	Occasional
**Emilia sonchifolia* (L.) DC	Flora's paint brush	Common
**Heterotheca grandiflora* Nutt.		Locally abundant
**Lactuca serriola* L.	Prickly lettuce	Occasional
**Pluchea x fosbergii* Cooperr. & Galang		Locally abundant
**Pluchea indica* (L.) Less.	Indian fleabane	Common
**Pluchea symphytifolia* (Mill.) Gillis	Sourbush	Common
**Sonchus oleraceus* L.	Pualele	Occasional
**Synedrella nodiflora* (L.) Gaertn.	Nodeweed	Occasional
**Tridax procumbens* L.	Coat buttons	Locally abundant
**Verbesina encelioides* Cav.	Golden crown-beard	Occasional
**Vernonia cinerea* (L.) Less.	Little ironweed	Occasional
**Wedelia trilobata* (L.) Hitchc.		Locally abundant
**Xanthium strumarium* L.	Cockle bur	Occasional
**Youngia japonica* (L.) DC	Hawksbeard	Occasional

Scientific Name	Common Name	Abundance
BATACEAE - Saltwort Family		
**Batis maritima* L.	Pickle weed	Locally abundant
BIGNONIACEAE - Bignonia Family		
**Spathodea campanulata* P. Beauv.	African tulip	Occasional
BORAGINACEAE - Borage Family		
**Heliotropium amplexicaule* Vahl		Uncommon
**Heliotropium curassavicum* L.	Seaside heliotrope	Common
**Heliotropium procumbens* Mill.	Heliotrope	Common
**Tournefortia argentea* L. fil	Tree heliotrope	Locally abundant
BRASSICACEAE - Mustard Family		
**Lepidium virginicum* L.	Pepperwort	Locally abundant
CAPPARACEAE - Caper Family		
**Cleome gynandra* L.	Wild spider flower	Common
CARICACEAE - Papaya Family		
**Carica papaya* L.	Papaya	Occasional
CARYOPHYLLACEAE- Carnation Family		
**Polycarpon tetraphyllum* (L.) L.		Occasional
**Spergula arvensis* L.	Corn spurry	Locally abundant
CASUARINACEAE - Casuarina Family		
**Casuarina equisetifolia* L.	Ironwood	Locally abundant
CHENOPODIACEAE - Goosefoot Family		
**Atriplex semibaccata* R. Br.	Australian saltbush	Locally abundant
**Atriplex suberecta* L.	Salt bush	Occasional
**Chenopodium carinanum* R. Br.	Keeled goose foot	Occasional
**Chenopodium murale* L.	'Aheahea	Common
Chenopodium oahuense (Meyen) Aellen	'Aheahea	Common
CONVOLVULACEAE - Morning Glory Family		
**Ipomoea obscura* (L.) Ker-Gawl.		Occasional
Ipomoea pes-caprae (L.) R. Br.	Beach morning glory	Common
**Ipomoea triloba* L.	Little bell	Occasional

Scientific Name	Common Name	Abundance
CONVOLVULACEAE - Morning Glory Family con't		
Jacquemontia ovalifolia (Choisy) H. Hallier	Pa'uohi'iaka	Common
**Merremia aegyptia* (L.) Urb.	Hairy merremia	Common
CUCURBITACEAE - Cucumber Family		
**Momordica charantia* L.	Balsam apple	Occasional
EUPHORBIACEAE - Spurge Family		
Aleurites moluccana (L.) Millsp.	Kukui	Occasional
**Chamaesyce hirta* (L.) Millsp.	Hairy spurge	Common
**Chamaesyce hypericifolia* (L.) Millsp.	Graceful spurge	Common
**Chamaesyce hyssopifolia* (L.) Small		Locally abundant
**Chamaesyce prostrata* (Ait) Millsp.	Prostrate spurge	Occasional
**Euphorbia cyathophora* J. A. Murray	Mexican fire plant	Locally abundant
**Phyllanthus debilis* Klein & Willd.	Niruri	Occasional
**Ricinus communis* L.	Castor bean	Occasional
FABACEAE - Bean Family		
**Acacia farnesiana* (L.) Willd.	Klu	Occasional
**Alysicarpus vaginalis* (L.) DC	One-leaved Clover	Locally abundant
Canavalia sericea A. Gray	Silky jackbean	Uncommon
**Cassia grandis* L. f.	Pink shower	Occasional
**Cassia siamea* Lam.	Kassod tree	Occasional
**Chamaecrista nictitans* (L.) Moench	Partridge pea	Common
**Crotalaria incana* L.	Fuzzy rattlepod	Occasional
**Crotalaria pallida* Aiton	Smooth rattlepod	Occasional
**Crotalaria retusa* L.		Common
**Desmanthus virgatus* Willd.	Virgate mimosa	Occasional
**Desmodium incanum* DC	Spanish clover	Common
**Desmodium intortum* Mill. DC	Flordia beggar weed	Occasional
**Desmodium triflorum* (L.) DC	Three-flowered beggar weed	Occasional
**Enterolobium cyclocarpum* (Jacq.) Griseb.	Earpod	Uncommon
**Erythrina variegata* (L.) Merr.	Haole wili wili	Occasional
**Glycine wightii* (Wight & Arnott) Verdc.		Locally abundant
**Indigofera spicata* Forssk.	Creeping indigo	Occasional
**Indigofera suffruticosa* Mill.	Indigo	Occasional
**Lablab purpureus* (L.) Sweet	Hyacinth bean	Uncommon
**Leucaena leucocephala* (Lam.) deWit	Koa-haole	Common
**Macroptilium atropurpureum* (DC) Urb.		Locally abundant
**Macroptilium lathyroides* (L.) Urb.	Wild bean	Common
**Medicago polymorpha* L.	Bur clover	Locally abundant
**Melilotus indica* (L.) All.	Clover	Common
**Paraserianthes falcataria* (L.) I. Nelson		Occasional
**Pithecellobium dulce* Benth.	Madras thorn	Occasional
**Prosopis pallida* (Humb. & Bonpl. ex Willd.) Kunth	Kiawe	Common

Scientific Name	Common Name	Abundance
FABACEAE - Bean Family con't		
**Samanea saman* (Jacq.) Merr.	Monkeypod	Occasional
**Senna occidentalis* (L.) Link	Coffee senna	Occasional
Vigna marina J. Burm. Merr.	Beach pea	Occasional
GOODENIACEAE - Naupaka Family		
Scaevola sericea Vahl	Naupaka kahakai	Common
LAMIACEAE - Mint Family		
**Leonotis nepetifolia* (L.) R. Br.	Lion tail	Locally abundant
MALVACEAE - Hibiscus Family		
**Abutilon grandifolium* (Willd.) Sweet	Hairy abutilon	Uncommon
**Gossypium barbadense* L.	Sea island cotton	Uncommon
Hibiscus tiliaceus L.	Hau	Common
**Malva parviflora* L.	Cheese weed	Common
**Malvastrum coromandelianum* (L.) Garcke	False marrow	Common
**Sida fallax* Walp.	'Ilima	Common
**Sida rhombifolia* L.	Cuba jute	Occasional
**Thespesia populnea* (L.) Sol. ex Correa	Milo	Common
MELIACEAE - Mahogany Family		
**Melia azedarach* L.	Neem tree	Uncommon
MORACEAE - Fig Family		
**Ficus microcarpa* L. fil.	Chinese banyan	Uncommon
MYRTACEAE - Myrtle Family		
**Syzygium cumini* (L.) Skeels	Java plum	Uncommon
NYCTAGINACEAE - Four-o'clock Family		
**Boerhavia coccinea* Mill.	Alena	Locally abundant
**Boerhavia repens* L.	Alena	Occasional
**Bougainvillea spp.*	Bougainvillea	Occasional
**Mirabilis jalapa* L.	Four-o'clock	Occasional
OLEACEAE - Olive Family		
**Jasminum fluminense* Vell.		Uncommon
ONAGRACEAE - Evening Primrose Family		
**Ludwigia octovalvis* (Jacq.) Raven	Primrose willow	Locally abundant

Scientific Name	Common Name	Abundance
OXALIDACEAE - Wood sorrel Family		
**Oxalis corymbosa* DC	Pink wood sorrel	Occasional
PAPAVERACEAE - Poppy Family		
**Argemone mexicana* L.	Mexican poppy	Locally abundant
PASSIFLORACEAE - Passionflower Family		
**Passiflora foetida* L.	Love-in-a-mist	Occasional
**Passiflora suberosa* L.	Huehue haole	Occasional
POLYGONACEAE - Buckwheat Family		
**Coccoloba uvifera* (L.) L.	Sea grape	Occasional
PORTULACACEAE - Purslane Family		
**Portulaca oleracea* L.	Pigweed	Occasional
**Portulaca pilosa* L.	'Akulikuli	Rare
PRIMULACEAE - Primrose Family		
**Anagallis arvensis* L.	Scarlet pimpernel	Rare
PROTEACEAE - Silk Oak Family		
**Grevillea robusta* A. Cunn. ex R. Br.	Silk oak	Occasional
RUBIACEAE - Coffee Family		
**Pentas lanceolata* (Forsk.) Deflers.	Pentas	Occasional
RUTACEAE - Citrus Family		
**Murraya paniculata* (L.) Jack	Mock orange	Uncommon
SCROPHULARIACEAE - Figwort Family		
Bacopa monnieri (L.) Wettst.	'Ae'ae	Locally abundant
SOLANACEAE - Tomato Family		
**Datura stramonium* L.	Jimson weed	Occasional
Lycium sandwicense A. Gray	'Ohelo kai	Uncommon
**Lycopersicon esculentum* Mill.	Tomato	Uncommon
**Lycopersicon pimpinellifolium* (Jusl.) Mill.	Wild tomato	Uncommon

SOLANACEAE - Tomato Family con't		
**Nicandra physalodes* (L.) Gaertn.	Apple of Peru	Occasional
**Nicotiana glauca* R.C. Graham	Tree tobacco	Common
Solanum americanum Mill.	Popolo berry	Occasional
STERCULIACEAE - Stink tree Family		
**Waltheria indica* L.	Hi'aloa, uha-loa	Locally abundant
VERBENACEAE - Verbena Family		
**Lantana camara* L.	Lantana	Occasional
**Phyla nodiflora* (L.) Greene	Lippia	Locally abundant
**Stachytarpheta jamaicensis* Vahl	Vervain	Common
**Verbena litoralis* L.	Owi	Occasional
Vitex rotundifolia L. f.	Pohinahina	Locally abundant
Vitex trifolia L.	Vitex	Occasional
ZYGOPHYLLACEAE Creosote bush Family		
**Tribulus terrestris* L.	Puncture vine	Occasional

Bibliography

AECOS, Inc. 1981. Environmental Field Surveys at Kahului Airport and Vicinity, Kahului, Maui. Austin, Tsuisumi & Associates Inc. Honolulu, Hawaii.

Dept. of the Army. 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1

DLNR. 1991. Conservation of Aquatic life, Wildlife and Land Plants. 195-D, H.R.S.

Haselwood, E. L. and G. G. Motter. 1976. Handbook of Hawaiian Weeds. Lyon Arboretum Assn.

Neal, M. C. 1965. In Gardens of Hawaii. Special Publication 50. Bis. Mus. Press

Pacific Planning and Engineering, Inc. 1991. Botanical Survey Report. Environmental Impact Statement Kahului Airport Master Plan Update. Pacific Planning and Engineering. Honolulu, Hawaii.

Reed, P.B. 1988. National List of Plant Species That Occur in Wetlands: Hawaii (Region H). Dept. of the Interior. Washington D.C. 2040.

Ripperton, J. C. & E. Y. Hosaka 1942. Vegetation Zones of Hawaii. Bull. 89 University of Hawaii.

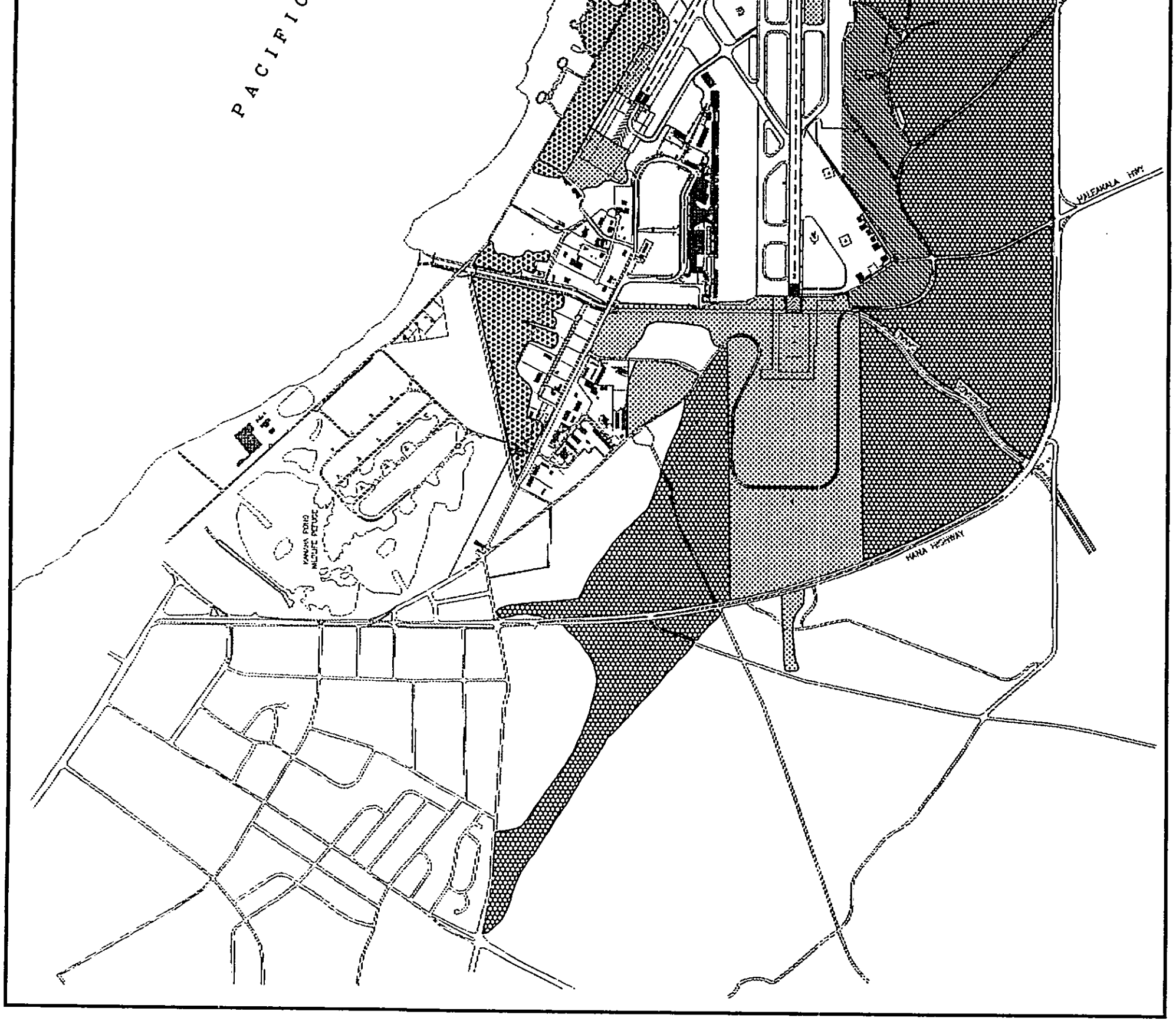
Skolman, R. G. 1980. Plantings on the Forest Reserves of Hawaii 1910 - 1960. Institute of Pacific Islands Forestry.

St. John, H. 1973. List and Summary of the Flowering Plants of the Hawaiian Islands. PTBG. Lawai, Kauai, Hawaii.

USFWS. 1992. Endangered and Threatened Wildlife and Plants. 50 CFR 17.11 & 17.12

Wagner, W. L., D. R. Herbst and S. H. Sohmer. 1990. Manual of the Flowering Plants of Hawaii. Bishop Museum Special Publication #83. Univer. Hawaii Press. Vols. 1 & 2.

USFWS. 1993. Endangered and Threatened Wildlife and Plants.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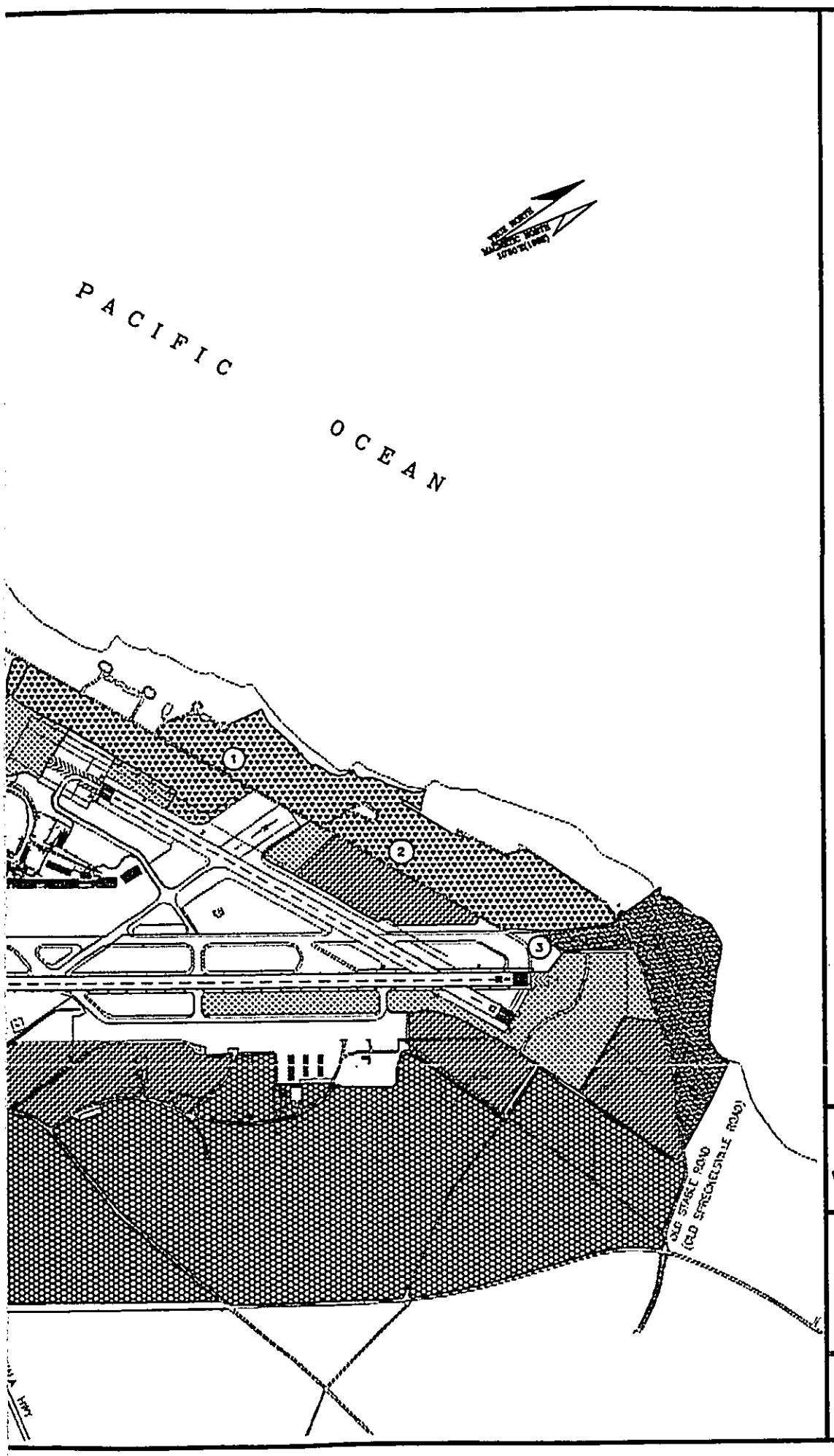
HANA HIGHWAY
HALEAKALA HWY



LEGEND:

- WIND SHEARED DUNE VEGETATION
- KEAWE/MIXED UNDERSTORY
- OPEN GRASSLAND
- KOA HAOLE SCRUB/ MIXED UNDERSTORY
- CANE FIELDS/RUDERAL BORDERS
- ① ② ③ WETLANDS

0 1000 2000

GRAPHIC SCALE IN FEET

BOTANICAL SURVEY REPORT FOR THE KAHULUI AIRPORT WAILUKU DISTRICT, MAUI, HAWAII

VEGETATION MAP

DATE	FIGURE
MAY, 1995	1

ADDENDUM TO THE BOTANICAL SURVEY FOR THE KAHULUI, MAUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

FOR
EDWARD K. NODA AND ASSOCIATES
615 PIIKOI STREET, SUITE 1000
HONOLULU, HAWAII 96814-3116

BY
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BOTANICAL CONSULTANTS
HONOLULU, HAWAII
1996

INTRODUCTION

In March 1996 a botanical survey for a proposed road right-of-way, twenty meters wide and approximately one and a quarter kilometers long, from Hana Highway to the intersection of Hansen Road and Pulehu Road, Kahului, Maui was carried out. The purpose of the survey and methods can be found in the original botanical survey report.

RESULTS

About three quarters of the proposed road right-of-way, including the area where the new road will join Hana Highway, is presently in sugarcane (*Saccharum officinarum* L.) cultivation. Between the sugarcane field and the proposed hook-up with Hansen Road and Pulehu Road, the right-of-way will cross a water ditch, the Maui composting facility, and another small cane field which abuts Hansen Road.

A fairly large number of weedy species were found along this proposed road right-of-way. All are listed in the accompanying species list and none are native to the Hawaiian Islands.

ENDANGERED SPECIES

No candidate, proposed, or listed threatened or endangered species as set forth in the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543), were found along this proposed road right-of-way.

SPECIES LIST OF PLANTS FOUND ALONG THE PROPOSED ROAD

RIGHT-OF-WAY HANA HIGHWAY TO HANSEN ROAD AN PULEHU ROAD, KAHULUI, MAU

The plant families in the following species list have been alphabetically arranged within two groups, Monocotyledons, and Dicotyledons. The genera and species are arranged alphabetically within families. The taxonomy and nomenclature follow that of St. John (1973) and Wagner, Herbst and Sohmer (1990). For each taxon the following information is provided:

1. An asterisk before the plant name indicates a plant introduced to the Hawaiian Islands since Cook or by the aborigines.
2. The scientific name.
3. The Hawaiian name and or the most widely used common name.
4. Abundance ratings are for this site only and they have the following meanings:

   Uncommon = a plant that was found less than five times.

   Occasional = a plant that was found between five to ten times.

   Common = a plant considered an important part of the vegetation

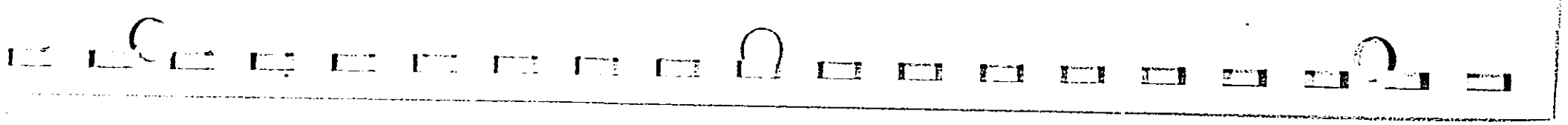
   Locally abundant = plants found in large numbers over a limited area. For example the plants found in grassy patches.

This species list is the result of an extensive survey of this site during the wet season (March 1996) and it reflects the vegetative composition of the flora during a single season. Minor changes in the vegetation will occur due to introductions and losses and a slightly different species list would result from a survey conducted during a different growing season.

Scientific Name	Common Name	Abundance
MONOCOTYLEDONES		
CYPERACEAE -Sedge Family		
**Cyperus rotundus* L.	Nutsedge	Common
POACEAE - Grass Family		
**Cenchrus ciliaria* L.	Buffelgrass	Common
**Chloris barbata* Swartz	Swollen fingergrass	Common
**Chloris divaricata* R. Br.	Stargrass	Common
**Chloris virgata* Sw.	Feather fingergrass	Occasional
**Cynodon dactylon* (L.) Pers.	Bermuda grass	Locally abundant
**Digitaria insularis* (L.) Mez. ex Ekman	Sourgrass	Common
**Echinochloa crus-galli* (L.) P. Beauv.	Barnyard grass	Locally abundant
**Eleusine indica* (L.) Gaertn.	Wiregrass	Common
**Eragrostis cilianensis* (All.) Link	Stinkgrass	Common
**Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult		Common
**Leptochloa uninervia* (K. Presl) Hitchc. & Chase		Locally abundant
**Panicum maximun* Jacq.	Guinea grass	Locally abundant
**Rhynchelytrum repens* C.E.Hubb.	Natal redtop	Common
**Saccharum officinarum* L.	Sugar	Common
DICOTYLEDONES		
ACANTHACEAE - Acanthus Family		
**Asystasia gangetica* (L.) T. Anderson	Chinese violet	Uncommon
AMARANTHACEAE - Amaranth Family		
**Amaranthus spinosus*L.	Spiny amaranth	Common
**Amaranthus viridus* L.	Slender amaranth	Locally abundant
ASTERACEAE - Sunflower Family		
**Bidens cynapiifolia* Kunth		Locally abundant
*Emilia coccinea (Sims) G. Don	Flora's paintbrush	Common
**Erechtites hieracifolia* (L.) Raf. ex DC		Common
**Sonchus oleraceus* L.	Sow thistle	Occasional
**Tridax procumbens* L.	Coat buttons	Locally abundant
**Verbesina enceliodes* (Cav.) Benth. & Hook	Golden crown-beard	Occasional
CAPPARIDACEAE - Caper Family		
**Gynandropsis gynandra* (L.) Briq.	Spider flower	Common
CUCURBITACEAE - Cucumber Family		
**Momordica charantia* L.	Bitter melon	Occasional

Scientific Name	Common Name	Abundance
EUPHORBIACEAE - Spurge Family		
**Chamaesyce hirta* (L.) Millsp.	Hairy spurge	Common
**Chamaesyce hypericifolia* (L.) Millsp.	Graceful spurge	Locally abundant
**Euphorbia cyathophora* J. A. Murry	Mexican fire plant	Occasional
**Ricinus cumminus* L.	Castor bean	Occasional
FABACEAE - Bean Family		
**Indigo spicata* Forssk.	Creeping indigo	Occasional
**Leucaena leucocephala* (Lam.) deWit	Koa-haole	Common
**Samanea saman* (Jacq.) Merr.	Monkey pod	Uncommon
MALVACEAE - Hibiscus Family		
**Malva parviflora* L.	Cheese weed	Common
NYCTAGINACEAE - Four-o'clock Family		
**Boerhavia coccinea* Mill.		Common
PORTULACACEAE - Pursland Family		
**Portulaca oleracea* L.	Pigweed	Occasional
SOLANACEAE - Nightshade Family		
**Solanum americanum* Mill.	Popolo	Occasional
ZYGOPHYLLACEAE - Cresosote Family		
**Tribulus terrestris* L.	Puncture vine	Occasional

A bibliography for this report is to be found in the original report.



APPENDIX J

FAUNAL (BIRD AND MAMMAL) STUDIES

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TABLE OF CONTENTS

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FIRST QUARTER FAUNAL (BIRD AND MAMMAL) REPORT FOR THE ENVIRONMENTAL IMPACT STATEMENT KAHULUI AIRPORT, KAHULUI, MAUI

Prepared for
Edward K. Noda and Associates, Inc.
by

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BYU-Hawaii
Environmental Consultant - Faunal (Bird and Mammal) Surveys

22 April 1994

INTRODUCTION

The purpose of this report is to present the findings of a three day (15-17 April 1994) faunal investigation at Kanaha Pond Wildlife Sanctuary, Kahului Airport and nearby wetland habitat.

The objectives of the faunal investigation were:

1- Conduct night observations at Kanaha Pond Wildlife Sanctuary (KPWS) to ascertain if noise and lights from aircraft startle birds causing them to fly around and/or call.

2- Conduct a brief census of shorebirds and waterbirds at KPWS in order to obtain baseline data on the numbers of birds that might be impacted by nightime aircraft disturbance. Compare these data with some past counts made at Kanaha Pond.

3- Examine wetland habitat makai of the airport in order to determine the possible use of these sites by waterbirds and shorebirds. Future census at these sites may also provide data on whether or not these wetlands are seasonal, and the extent to which these areas provide usable waterbird habitat.

RESULTS AND DISCUSSION

Night Observations

Data were collected on both the 15 and 16 April from 1900 to 2130 hours. The operation schedule for these dates indicated that the majority of night arrivals and departures occurred during this time period. Notes on bird activity such as flying and calling were kept during aircraft landings and take offs as well as when there was no aircraft activity. During the times planes were landing or departing no direct response by birds was observed. Black-crowned Night Heron (Nycticorax nycticorax) were calling, before, during and after planes were present. Black-necked Stilt (Himantopus mexicanus knudseni) vocalized at dusk but were relatively quiet after 1930 hours. One unusual observation occurred on the second night. A flock of 30+ Pacific Golden-Plover (Pluvialis fulva) were startled and chased by a Barn Owl (Tyto alba). Plover were heard calling off and on throughout the observation period. This is typical of plover which frequently interact at roosts. No shorebirds or waterbirds were startled by aircraft activity. It should be noted that runway 2-20, not 5-23, was in use. This did not bring aircraft directly over the pond. It will be important to conduct observations when runway 5-23 is in use. Time of year and weather may also play a role in how birds respond. Hopefully the three remaining visits will help answer these questions.

Kanaha Pond Census Data:

Table 1 shows the numbers of waterbirds and shorebirds recorded at Kanaha Pond in past years and the results of my brief daytime survey taken on 17 April. This census was made by a drive through and may have missed some birds. It is important not to make too much of these comparative data since the census methods, time and weather may have varied greatly between each census. Despite these limitations it would seem that for most species there has been a decline in their abundance at this wetland. This trend is particularly noticeable in migratory ducks and was so noted in a 1988 Job Progress Report Project No:W-18-R-13 Job No:R-III-A prepared by Division of Forestry and Wildlife (DOFAW). The endangered Hawaiian Duck or Koloa (Anas wyvilliana) observed at Kanaha Pond may be birds recently (last few years) released on Maui. They may also be hybridizing with feral Mallards (Anas platyrhynchos) (R. Pyle - Bishop Museum pers. comm.)

Wetland Habitat Makai of The Airport

Several small wetlands near the airport and Kanaha Pond were censused on the 16 and 17 April. Black-crowned Night Heron, Koloa, Northern Shoveler (Anas clypeata) and Pacific Golden-Plover were the only species observed. These wetlands varied from deep water sites, such as the area near the industrial facilities at the western edge of Kanaha Pond, to small ephemeral patches near Kanaha Beach Park.

Data obtained from USDA-Animal Damage Control reveal that Black-necked Stilt have been seen on the airport and some have apparently been killed by aircraft. Rain was present on most of these stilt observations. Stilt are attracted to areas that have been recently flooded. These temporary wet sites may provide foraging opportunities. Stilt may also loaf and bathe at these ephemeral sites. Areas that collect rain near the airstrips, due to poor drainage, should be corrected to discourage stilts from using these sites. Stilt actually on the runway or in harms way should be hazed to reduce the number that are apparently falling prey to airstrikes.

CONCLUSIONS

This first faunal study looked at nocturnal as well as diurnal bird activity. No evidence of nightime aircraft disturbance of birds at Kanaha Pond was observed. If and when runway 5-23 is in use night observations should be conducted. Direct overflights of the pond may disturb birds. This needs to be investigated.

The several small wetlands around the airport lands should be censused and evaluated on each of the subsequent faunal studies. This visit found several species using these sites for foraging and loafing. The extent to which waterbirds move between Kanaha Pond and other more distant wetlands such as those at Kealia and Waihee is difficult to determine. Some Job Progress Reports of DOFAW alluded to this interchange but provide no conclusive evidence. I hope to look further into this question. It is my view at present that waterbirds are probably moving between wetlands but not necessarily in any regular pattern such as a daily exodus from Kanaha Pond to Kealia. Many factors such as changing water levels, prey availability and perhaps disturbance may stimulate faunal interchange between wetlands.

TABLE 1

Kanaha Pond census data. The 1978-86 data are maximum numbers from Div. of Forestry and Wildlife semi-annual waterbird surveys. The 1994 data are the result of a brief drive-through count by Bruner on 17 April.

Census year	Black-necked Stilt	American Coot	Koloa	Night Heron	Pacific Golden-Plover	Ruddy Turstone	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	-	-
1994	60	13	14	17	20	6	6	2	-	36	2 (Mallard)	7

SECOND QUARTER FAUNAL (BIRD AND MAMMAL) REPORT FOR THE ENVIRONMENTAL IMPACT STATEMENT KAHULUI AIRPORT, KAHULUI, MAUI

Prepared for

Edward K. Noda and Associates, Inc.

by

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9 August 1994

INTRODUCTION

The purpose of this report is to provide the findings of a three day (13-15 July 1994) faunal investigation at Kanaha Pond Wildlife Sanctuary (KPWS), Kahului Airport and nearby wetland habitat.

The objectives of the faunal investigation were:

1- Conduct night observations at KPWS to ascertain if noise and lights from aircraft startle or otherwise disturb birds causing them to take flight and/or call.

2- Conduct a census of shorebirds and waterbirds at KPWS in order to obtain baseline data on the numbers of birds that might be impacted by nightime aircraft disturbance. Compare these data with past summer counts taken at KPWS by Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW).

3- Examine wetland habitat makai of the airport in order to evaluate the use of these sites by waterbirds and shorebirds.

METHODS

The methods employed in this second quaterly study involved a walking/driving survey and population count of waterbirds and shorebirds at KPWS and nearby wetlands (Fig. 1). These surveys were made both early, before 0900 hours and late, after 1600 hours. Table One reports the findings of these surveys and compares these data with information acquired from 1989 to 1993 by DOFAW. Night observations at Kanaha Pond began at dusk, 1900 hours and ran through 2300 hours when most airtraffic had ceased. These night studies were made at two different locations (Fig. 1). Notes were kept of all waterbird/shorebird activity before, during and after aircraft landings and departures.

RESULTS AND DISCUSSION

Night Observations:

On the night of the 13 July the sky was clear and winds were from the NE at approximately 20 mph. The endangered Black-necked Stilt (Himantopus mexicanus knudseni) were actively calling and flying about the pond at dusk but gradually settled down and with the exception of an isolated call there was little activity after 2000 hours. Black-crowned Night Heron (Nycticorax nycticorax) were active before and after dusk. This species forages at night as well as during the day so it was not unusual to find them flying and calling after dark. The endangered Hawaiian Coot (Fulica alai) and Hawaiian Duck or Koloa (Anas wyvillana) were both inactive after 1930 hours. Few (Table 1) migratory shorebirds were at KPWS on this visit. At this time of the year most migrants are in the Arctic on their breeding grounds. No shorebird activity was recorded on the night observations.

On 14 July the skies were overcast and lights from Kahului reflected off the clouds creating much lighter conditions than on the previous night. Stilt were feeding and calling throughout the period of night observations. Night Heron were also active. The pond area was so well lighted that I could read and take notes without the use of a flashlight! Rain showers began around 2300 hours. This did not seem to reduce the foraging activity of stilts and herons.

I did not record any direct responses of waterbirds and shorebirds to aircraft landings and departures. Again, runway 2-20 was in use and did not bring the aircraft directly over the pond. The loudest aircraft noise was always on departures. There was no noticeable increase in calling or movements when aircraft were present. A few small propeller aircraft flew over the pond and landed on runway 5-23. These flights produced no bird responses.

Kanaha Pond Wildlife Sanctuary Census Data:

Table 1 shows the number of waterbirds and shorebirds recorded at KPWS in past years plus the results of this July survey. These data are intended to provide a general overview of waterbird/ shorebird populations and are not to be construed as the definitive word on the populations of these species. Shorebird counts were low due to time of year. The most notable sighting was a winter plumaged Semipalmated Plover (Charadrius semipalmatus). This species is not endangered or threatened but is a regular visitor to Hawaii (Hawaii Audubon Society 1993). Feral Mallards (Anas platyrhynchos) were also observed on the survey. They were seen with Hawaiian Ducks and are likely hybridizing with them. I saw only three or four Hawaiian Ducks that were in the size range and plumage of "pure" Koloa. Most were as large as mallards and some had drake Mallard plumage characteristics.

Wetland Habitat Makai of the Airport:

All of the small wetlands near the airport and KPWS were censused on the 13-15 July. Three Black-crowned Night Heron, two Koloa and two Black-necked Stilt were the only species observed. Water levels in these wetlands were similar to conditions during the April 1994 visit. Rain showers on 15 July did not dramatically increase water depth in these wetlands. Wet spots around the north end of runway 5-23 attracted stilt. This is probably a normal occurrence and undoubtedly increases the chances that stilt and aircraft may interact.

CONCLUSIONS

This second faunal study examined nocturnal as well as diurnal bird activity. No evidence of nightime aircraft disturbance of birds at KPWS was observed. Lights from urban areas around KPWS create some illumination of the sanctuary. On cloudy nights, such as on the 14 July 1994, the reflection of these lights off the clouds intensified the illumination. Stilt took advantage of this situation and were observed foraging and interacting with each other. This behavior is not unusual nor detrimental. Birds are not constrained to a set number of hours of "sleep". I have seen stilt actively feeding on full moon nights at James Campbell National Wildlife Refuge, Kii Unit in Kahuku, Oahu. Pacific Golden-Plover (Pluvialis fulva) continually interact at their night time roosts (personal observations).

The wetlands near KPWS and the airport were examined and relatively few birds were found. Some of the wetlands had become more overgrown with emergent vegetation and brush since the previous (April) visit. Water levels were similar to those during the April survey. Stilt were observed on the north end of runway 5-23 following a night of passing rain showers. This is apparently a

TABLE 1

Kanaha Pond census data. The 1989-93 data are total numbers from DLNR - DOFAW semi-annual waterbird surveys summer data. The 1994 data are averages of three days data taken on this July 1994 survey.

.ta ›llecto	Census year	Black-necked Stilt	American Coot	Koloa hybrids	High Heron	Pacific Golden-Plover	Ruddy Turnstone	Sanderling	Wandering Tattler	Mallard	Northern Shoveler	Domestic Ducks	Cattle Egret
FAW	1989	75	8	-	29	13	-	-	-	-	-	8	-
FAW	1990	108	47	-	58	18	2	13	1	-	20	10	4
FAW	1991	168	33	-	17	59	8	4	3	-	-	31	2
FAW	1992	102	17	-	12	9	2	-	-	8	-	4	-
FAW	1993	80	13	-	11	33	6	4	2	-	-	10	1
INER	1994	69	8	10	22	-	-	-	3	1	-	5	4

common occurrence based on USDA-ADC reports. There will continue to be problems of stilt/aircraft interaction unless more effort is made to haze the birds and keep them clear of this area. Temporary flooding of open habitat will attract stilt and other birds. The choice seems fairly clear, either a constant determined effort to haze birds from these temporary wet areas is conducted or there will be bird fatalities and perhaps damage to aircraft. It should be easy to identify what conditions are going to most likely attract stilts and then focus the control effort during these periods. A 9 to 5 effort will not be adequate. USDA-ADC or airport personal must be ready to respond 24 hours a day if stilt and aircraft encounters are to minimized.

THIRD QUARTER FAUNAL (BIRD AND MAMMAL) REPORT FOR THE KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT, KAHULUI, MAUI

Prepared for
Edward K. Noda and Associates, Inc.
by

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2 December 1994

INTRODUCTION

The purpose of this report is to provide the findings of a three day (25-27 November 1994) faunal investigation at Kanaha Pond Wildlife Sanctuary (KPWS), Kahului Airport and nearby wetland habitat.

The objectivesof the faunal investigation were:

1- Conduct night observations at KPWS to ascertain if noise and lights from aircraft startle or otherwise disturb birds causing them to take flight and/or call.

2- Conduct a census of shorebirds and waterbirds at KPWS in order to obtain baseline data on the numbers of birds that might be impacted bynightime aircraft disturbance. Compare these data with past winter counts taken at KPWS by Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW).

3- Examine wetland habitat makai of the airport and Kanaha Pond Wildlife Sanctuary in order to evaluate the use of these sites by waterbirds and shorebirds.

METHODS

The methods employed in this third quarterly study involved a walking/driving survey and population count of waterbirds and shorebirds at KPWS and nearby wetlands. These surveys were made both early, before 0900 hours and late, after 1600 hours. Table One reports the findings of these surveys and compares these data with information acquired from 1989 to 1993 by DOFAW. Night observations at Kanaha Pond began at dusk, 1700 hours and ran through 2200 hours when most air traffic had ceased. These night studies were made at two separate locations at opposites ends of the sanctuary. Notes were kept of all waterbird and shorebird activity before, during and after aircraft landings and departures. Runway 2-20 was in use during the survey. A few small propeller aircraft landed on runway 5-23 which brought the plane directly over the sanctuary.

RESULTS AND DISCUSSION

Night Observations:

On both nights (25,26 November) the sky was clear and winds were gusting from the NE at approximately 30+ mph. There was no moon and the sanctuary was darker than on the July survey. There was relatively little bird activity after 1830 hrs. During the July survey Black-necked Stilt (Himantopus mexicanus knudseni) and Black-crowned Night Heron (Nycticorax nycticorax) were active before and after dusk. The strong winds, dark skies and the fact that the breeding season was over may explain why birds were less active on this visit. No night foraging was observed.

Migratory shorebirds and ducks were present during this survey. After dusk no shorebirds or ducks were observed flying or calling.

I did not record any direct responses of waterbirds and shorebirds to aircraft landing and departures. Runway 2-20 was in use and did not bring the aircraft directly over the pond. The loudest aircraft noise was on departures. There was no noticeable increase in bird activity when aircraft were present. A few small propeller aircraft flew over the pond and landed on runway 5-23. These flights produced no bird responses. The lights from landing aircraft could be seen reflecting on the pond. I saw no overt response by birds to the presence of this light.

On 25 November at 2015 hours a Common Barn Owl (Tyto alba) flew low over the pond and approached within three meters of my position. This owl apparently startled a few stilt nearby which began calling. The owl flew off in the direction of the airport and after five minutes the stilts ceased calling. Black-crowned Night Heron were occasionally heard calling and squabling. This behavior is typical of this nocturnal active species.

Kanaha Pond Wildlife Sanctuary Census Data:

Table 1 shows the number of waterbirds and shorebirds recorded at KPWS during the winter (1989 to 1994) plus the results of this November (winter) survey. These data are intended to provide a general overview of waterbird and shorebird populations of these species at Kanaha Pond Sanctuary. A semipalmated Plover (Charadrius semipalmatus) was again seen in the same area of the sanctuary where it was first noted on the July survey. This species is not endangered or threatened but is a regular visitor to Hawaii. Feral Mallards (Anas platyrhynchos) were observed on the survey. They were seen swimming with Hawaiian Ducks and are likely hybridizing with them. Two species of migratory ducks were noted: Northern Shoveler (Anas clypeata) and American Wigeon (Anas americana).

Wetland Habitat Makai of the Airport:

The small wetlands near the airport and KPWS were censused on the 25-27 November. One Black-crowned Night Heron, two feral Mallards, five Black-necked Stilt and six Pacific Golden-Plover (Pluvialis fulva) were observed foraging and resting in these wetlands. Water levels were similar to conditions during the two previous visits.

CONCLUSIONS

The third faunal study examined nocturnal as well as diurnal bird activity. No evidence of nightime aircraft disturbance of birds at KPWS was observed. The only time birds became agitated was when a Common Barn Owl flew over the pond. This nocturnal predator is an introduced species. Bird activity was noticeably reduced over that recorded on the July visit. Strong winds, dark moonless skies and the absence of breeding probably accounts for these results.

The wetlands near KPWS and the airport were visited and a few birds were found. Water levels were similar to those during the previous surveys. These sites are used for foraging and resting. Accessibility to predators makes it unlikely nesting would be successful in these sites.

An examination of the number of species and their abundance at Kanaha Pond Santuary obtained from data gathered in January 1989-1994 along with this third quarter survey reveal some interesting trends. Northern Pintail (Anas acuta) have declined dramatically since 1989. This migratory duck has not been recorded on the DOFAW semi-annual waterbird survey at Kanaha Pond since 1991. By contrast Northern Shoveler have steadily increased over the same time period. Black-necked Stilt have declined slightly while Black-crowned Night Heron numbers have remained relatively constant.

TABLE 1

Kanaha Pond census data. The 1989-94 data are total numbers from DLNR - DOFAW semi-annual waterbird surveys winter data. The Bruner 1994 data are averages of morning and afternoon data taken on November 1994 survey.

ata collector	Census year	Black-necked Stilt	Hawaiian Coot	Koloa hybrid	Night Heron	Pacific Golden-Plover	Ruddy Turnstone	Sanderling	Wandering Tattler	Mallard	Northern Shoveler	Domestic Ducks	Cattle Egret
DFAW	Jan 1989	119	39	3/-	25	32	8	49	2	-	32	10	4
FAW	Jan 1990	109	27	-	22	26	2	6	4	3	35	4	15
FAW	Jan 1991	90	23	-	21	24	6	11	1	7	46	9	2
FAW	Jan 1992	103	42	4	14	47	4	-	3	5	57	12	-
FAW	Jan 1993	98	32	-	13	54	15	21	3	5	65	8	-
FAW	Jan 1994	88	28	-	29	10	18	12	-	19	124	4	-
UNER	Nov 1994	41	5	11	8	21	13	9	1	2	52	-	2

Migratory shorebird numbers have also been fairly stable with an occasional high or low count. It is obvious that in the case of Black-necked Stilt, Hawaiian Coot, Black-crowned Night Heron and Northern Shoveler that the numbers tallied on this third quarter survey are considerably lower than data obtained by DOFAW for these species. This is probably due to different census methods. The third quarter survey was conducted by driving the existing roads in the sanctuary and counting all birds within sight of the roads accessible view points. No attempts was made to wade into ponds out of view of these areas. To do so would have have created considerable disturbance which I chose not to do. DOFAW personel may conduct a more exhaustive search and hence obtain a more accurate census of the sanctuary waterbirds and shorebirds. In any case census data acquired on a single day or two, twice a year can give only a snapshot view of the populatio dynamics of this site. Such limited information, however, reveal trends, such as the steep decline and eventual absence of Northern Pintail

TABLE 1 (cont.)

Data Collector	Census year	Northern Pintail	American Wingeon	Great Blue Heron	Canvasback	Lesser Scaup	Osprey
DOFAW	Jan 1989	40	-	1	-	-	-
DOFAW	Jan 1990	13	-	-	-	-	-
DOFAW	Jan 1991	3	-	-	-	-	-
DOFAW	Jan 1992	-	-	-	1	1	1
DOFAW	Jan 1993	-	-	-	-	-	-
DOFAW	Jan 1994	-	-	-	-	-	-
BRUNER	Jan 1994	-	2	-	-	-	-

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FIELD SURVEY OF NIGHT OVERFLIGHTS BY LARGE TURBOJET AIRCRAFT ON ENDANGERED WILDLIFE AT KANAHA POND, DECEMBER 10, 1994

December 1995

1.0 INTRODUCTION

This Field Survey (Study) was conducted by the State of Hawaii, Department of Transportation, Airports Division (HDOT-AIR), and prepared for the Kahului Airport Environmental Impact Statement (EIS) Project. The EIS assesses the impacts of the 1993 Kahului Airport Master Plan, which recommended improvements to the Airport to the year 2010. This Field Survey is one of a series of faunal studies being prepared for this EIS.

2. 0 STUDY OBJECTIVES

The objectives of this Study were to assess: (i) if the intermittent and temporary use of Runway 5-23 at Kahului Airport at night (10 p.m. to 7 a.m.) by Interisland turbojet aircraft (B-737 and DC-9) would have an effect on the endangered wildlife (avifauna) inhabiting Kanaha Pond Wildlife Sanctuary (KPWS); and (ii) determine the significance of observed effects, if any. The survey focussed on the potential effects of the aircraft noise and landing lights on the behavior of the two endangered species, the Hawaiian Stilt (*Himantopus mexicanus knudseni*) and the American Coot (*Fulica americana alai*).

3.0 STUDY AREA

The Kanaha Pond Wildlife Sanctuary (KPWS) was designated a wildlife refuge in 1952 and a National Natural Landmark in 1973. KPWS encompasses approximately 235 acres, and is located within the Airport's boundary, to the west of the airfield (see Figure 1). Resident endemic (native) birds recorded at KPWS include the Hawaiian Stilt and the Hawaiian Coot. Both of these species are considered Endangered. The Endangered Hawaiian Duck or Koloa (*Anas wyvilliana*) has been observed at KPWS. In addition, other bird species observed in the KPWS included the winter plummaged Semipalmated Plover, feral Mallards, migratory indigenous birds and migratory waterfowl. The only *resident* indigenous species sighted during previous surveys was the Black-crowned Night Heron (*Nycticorax nycticorax*).

4.0 BACKGROUND

One of the recommended improvements of the 1993 Master Plan is the strengthening and extension to the southwest of Runway 2-20. This Runway Project, strengthening and extending Runway 2-20, and the other Phase 1 improvements are shown on Figure 1, and are expected to be completed in the near-term (prior to the year 2000). Although none of the near-term improvements directly impact the KPWS, the Runway Project may have a short-term

construction impact. The impact is due to the need to close Runway 2-20 to all aircraft operations to construct the runway improvements. The nature of the Airport and aircraft operations, by various aircraft types, necessitates that Kahului Airport remain open and operational twenty-four (24) hours a day. Therefore, to allow the Airport to remain operational, the closure of Runway 2-20 will divert aircraft traffic to Runway 5-23. To minimize the impact on the Airport operations, the Runway Project may require the closure of Runway 2-20 during the nighttime period. The nighttime hours are the most opportune time to complete the Runway Project for the following reasons:

- the frequency of aircraft operations at Kahului Airport are at a minimum; and
- the aircraft using Kahului Airport at that time can be accommodated on Runway 5-23.

In the past, Runway 5-23 has been used to accommodate interisland aircraft operations diverted from Runway 2-20, due to the closure of Runway 2-20. Runway 5-23 is used during strong tradewind weather, known as turbulent trades, by interisland turbojet aircraft. However, this is a very infrequent approach pattern. The latest long term use of Runway 5-23 by interisland jet aircraft was during the repair to Runway 2-20 in 1992. During this period, the runway was closed at night from June to November with no apparent affects on the wildlife.

During the Runway Project, it is anticipated that the runway will be closed from approximately 10 p.m. or after the last heavy overseas aircraft (DC-10, L-1011, B-757) departs from Kahului Airport. The runway will be reopened at 7 a.m. the following morning for the daytime interisland and heavy overseas aircraft. During this time, Runway 5-23 will accommodate its normal traffic, which include single and twin engine propeller aircraft, usually weighing under 12,500 lbs.

Based on 1993 aircraft operations at Kahului Airport, the closure of Runway 2-20 at nighttime will cause the diversion of approximately 20 operations (takeoff or landing) to Runway 5-23. Of these 20 operations, 10 landings would overfly KPWS. The majority of the operations will be flown with B-737 aircraft, operated by Aloha Airlines. The remainder of the aircraft operations will be by Hawaiian Airlines' DC-9. The approximate frequency of flights would be as follows:

- 10 p.m. to 11 p.m.- six to seven flights
- 11 p.m. to 5 a.m. - six to seven flights
- 5 a.m. to 7 a.m. - six to seven flights

The closure of Runway 2-20 for construction will range from zero (0) nights to approximately two (2) months (nights only), depending on the method of construction and the amount of repair necessary.

5.0 FIELD PROGRAM

5.1 METHODOLOGY

During previous studies, baseline populations and wildlife behavior has been established at Kanaha Pond by the Ornithologist, Mr. Philip Bruner.[1] Mr. Bruner has been conducting quarterly wildlife surveys at Kanaha Pond throughout 1994. The surveys have been conducted during both the day and night hours with emphasis on the endangered wildlife species. In addition, Mr. Bruner has been surveying the inhabitants of KPWS since 1990.

The number of birds present at Kanaha Pond varies throughout the year and the number of birds monitored for overflight observation was limited to those within the observers immediate area. The only endangered wildlife bird observed on the night of December 10, 1994 was the Hawaiian Stilt. On the night of December 10, 1994, arrangements were made to have large turbojet aircraft land on Runway 5-23, which would require the overflight of KPWS from approximately 1730 to 2200 hours. As a baseline, a second observation was conducted on the night of December 11, 1994 with normal Runway 5-23 operations, and no overflights of large turbojet aircraft. Mr. Bruner's report for both nights are included in Appendix 2.

The weather during the night of December 10, consisted of passing rain squalls and gusty winds, interspersed with calm conditions. On December 11, the skies were clearer and moonlight illuminated the KPWS to allow the Hawaiian Stilts and Pacific Golden-Plover (*Pluvialis fulva*) to forage.

For this Field Survey, five observers were used to observe bird behavior in KPWS on the night of December 10 and another observer was stationed in the Federal Aviation Administration (FAA), Airport Traffic Control Tower (ATCT), to verify aircraft takeoffs and departures. Of the five KPWS observers, four recorded bird behavior and one recorded aircraft noise. The observers were stationed at four locations in KPWS as shown on Figure 2, and recorded bird activity before, during and after aircraft landing and departure on Runway 5-23 and Runway 2-20. The use of multiple observers at the four locations, increased the study area when compared to the study area of one observer. The data was collected by four

[1] Mr. Philip L. Bruner, is an Assistant Professor of Biology and the Director, of the Museum of Natural History at Brigham Young University-Hawaii. Mr. Bruner is a recognized ornithologist and recognized in the field of Hawaiian wildlife, with numerous technical studies and publications on Hawaiian and the Pacific Ornithology. Mr. Bruner was recommended by the Department of Land and Natural Resources, Forestry and Wildlife Division for this survey.

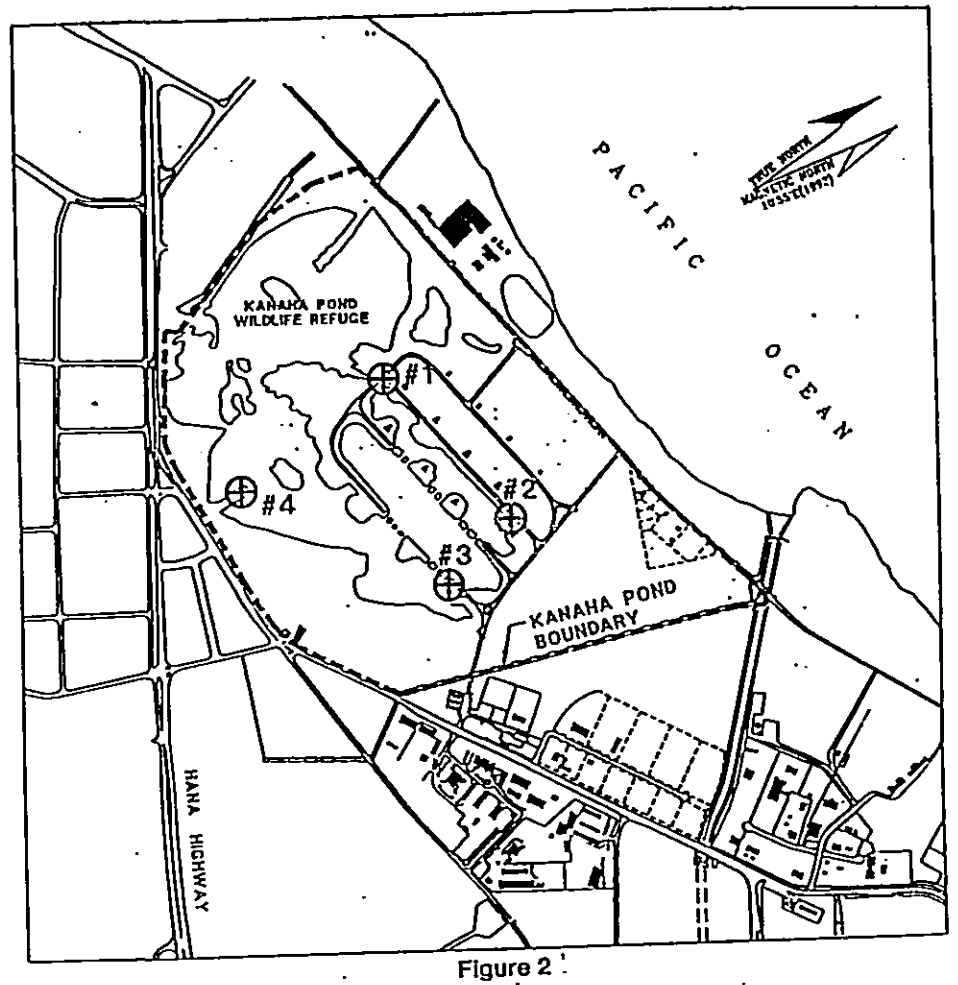


Figure 2

LOCATION OF THE FOUR OBSERVATION STATIONS FOR THE NIGHT STUDY, DECEMBER 10, 1994, AT KANAHA POND, MAUI.

observers from approximately 1730 to 2200 hours. The acoustical measurements of aircraft noise was recorded 50 yards west of Station #3 and from the 1759 to 2104 hours. The noise report is presented in Appendix 1.

5.2 ANALYSIS OF DATA

Table 1 summarizes the observed data of the four KPWS observers on December 10, 1994. The data in Table 1 are the observed bird responses before, during and after the overflight of aircraft on their approach to Runway 5-23. Five large aircraft (two DC-9's -- Hawaiian Airlines, two B-737 -- Aloha Airlines, and one ATR-42 -- Mahalo Airlines) flew directly over KPWS and landed on Runway 5-23. Assuming a three degree (3°) approach glide slope, the aircraft height above the pond would be between 290 to 450 feet, and is shown on Figure 3. In addition, two small Dash-6 aircraft (Aloha Island Air) operations approached at an angle to Runway 5-23 and was not observed at Station #1. Other aircraft operating that night utilized Runway 2-20 for operations and did not fly over the KPWS. Of the KPWS overflights, the four turbojets operations (DC-9's and 737's) were recorded by all observers, as these were the aircraft in question.

Table 2 presents the acoustical measurements of the aircraft operations as recorded by the Acoustical Engineer. The actual strip recordings for that night are presented in Appendix 1. The Single Event Levels for these significant aircraft operations was between 99.3 and 101 dBA, with Lmax measurements between 91.7 and 95.3 dBA.

A review of the field notes of each observer revealed that bird activity, at times other than during an aircraft overflight, was variable. Some stations had birds calling off and on throughout the time of observation while others station reported less activity.

On December 11, 1994, the field survey at Kanaha Pond was conducted at approximately the same time as the previous night. The census of December 11 was done to provide a rough baseline of the relative number of waterbirds and shorebirds present during this study. It is presumed that the numbers of birds present during the December 11 census would be indicative of the number of birds present during the December 10 survey. Table 3 summarizes the findings of the December 11 census. On the night of December 11, from 1700 to 2100 hours, no large aircraft used Runway 5-23. Three small propeller planes departed the Airport on Runway 5-23 in a westerly direction (from the 23 end of the runway) and did not overfly Kanaha Pond. Mr. Bruner's observed at Station #1, that bird activity included two pairs of foraging stilts and one foraging Pacific Golden-Plover. Black-Crowned Night Herons were occasionally heard calling or seen flying.

TABLE 1

Observations of waterbirds and shorebirds at Kanaha Pond Wildlife Sanctuary to aircraft using runway 5-23 at Kahului Airport, Maui.
-A = Hawaiian Air, AA = Aloha Airlines, AI = Aloha Island Air, MA = Mahalo Airlines.
-3 = Before, D = During, A = After aircraft were present over KPWS.

Observer	Airline/Approximate time of landing				
	AI 1810 (Dash6)	HA 1830 (DC-9)	HA 1900 (DC-9)	AI 1900 (Dash6)	MA 1940 (ATR42)
Station 1	*B,D,A= No activity	B,D,A= 2 stilt calling 1 Night Heron foraging	B,D,A= 1 Night Heron foraging No stilt calling	*B,D,A= No activity	B,D= No calling or activity A= 1 stilt called 2 min. after aircraft landed
Station 2	Not Present No Record for this flight	Not present No record for this flight	B,D,A= No activity	*B,D,A= No activity	B,D,A= Very little bird activity
Station 3	B,D,A= Birds Resting Night Heron flying	B= 2 Night Heron flying to E. D= Some bird noise to S, beyond pond A= Night Heron flying over pond	B= Stilt calling D= No response A= Stilt calling	B,D= No activity	B= No activity A= Some stilt calling
Station 4	*B,D,A= No Activity	B= No activity heard D= No sound heard A= Silts calling No visual activity	B= 1 or 2 stilt calling briefly D,A= No calling heard No visual activity	*B,D,A= No activity	B,D,A= Stilts calling

*Due to approach pattern, aircraft was not recorded.

Observer	AA 2000(737)	AA 2030(737)
	B= 1 stilt calling D,A= No stilt calling	B,D,A= No calling or activity
Station 1	D= Stilt calling D= No activity A= Stilt calling	B,D,A= No activity
Station 2	B= Stilt calling D= No calling A= No calling	B,D,A= No calling or activity
Station 3	B= No calling D= No calling or visual activity A= Stilt calling sporadic	
Station 4		

KAHULUI AIRPORT, MAUI									
AIRCRAFT NOISE MEASUREMENT SEL									
SEL TRIGGER LEVEL =		*60 LEQ*							
MINIMUM DURATION =		*5 sec*							
SITE	DATE	SEL	LMAX	TIME OF LMAX	DURATION	EVENT NO.	AIRCRAFT	CARRIER	RWY
VINCE	121094	71	63.8	175930	8	1	Jet		D2
VINCE	121094	87.3	76.9	180116	88	2	Jet		D2
VINCE	121094	92.1	83.5	181125	37	3	Turbo Prop		A05
VINCE	121094	88.3	75.3	182454	63	4	Jet		D2
VINCE	121094	99.8	92.4	182629	29	5	Jet DC9		A5
VINCE	121094	81.3	73.6	182709	14	5R	Reverse Thrust		
VINCE	121094	88.6	77.8	183017	85	6	Jet		D2
VINCE	121094	101	95.3	190014	55	7	DC9		A5
VINCE	121094	91.4	79.3	190313	74	8	Jet		D2
VINCE	121094	76.7	66.9	190600	16	9	Jet		D2
VINCE	121094	93.9	84.1	190720	72	10	Jet		D2
VINCE	121094	80.5	72.2	190859	17	11	Turbo Prop		A5
VINCE	121094	72.7	65.5	192332	7	12	Jet		A2
VINCE	121094	76.4	69.6	192612	10	13	Jet		A2
VINCE	121094	92.6	83	193205	90	14	Jet		D2
VINCE	121094	71.1	65.7	193615	5	15	Jet		A2
VINCE	121094	91.7	78.8	193741	66	16	Jet		D2
VINCE	121094	93.5	86.1	194022	34	17	Jet		A5
VINCE	121094	92.6	82	194306	80	18	Jet		D2
VINCE	121094	99.3	92.3	195321	28	19	737.	Aloha	A5
VINCE	121094	78.8	67.5	195401	20	19R	Reverse Thrust		
VINCE	121094	77.1	67.6	195713	22	20	Jet		A2
VINCE	121094	76.1	69.2	200252	11	21	Jet		A2
VINCE	121094	90	77.3	200437	84	22	Jet		D2
VINCE	121094	84.7	72.5	200930	48	23	Jet		D2
VINCE	121094	87.6	76.6	201214	56	24	Jet		D2
VINCE	121094	76.8	68.9	202802	11	25	Jet		A2
VINCE	121094	100.5	91.7	202907	61	26	737200	Aloha	A5
VINCE	121094	87.3	76.1	203214	60	27	Jet		D2
VINCE	121094	90.4	77.6	203327	75	28	Jet		D2
VINCE	121094	84.1	73.6	205058	54	29	Jet		D2
VINCE	121094	81.7	70.8	205323	36	30	Jet		D2
VINCE	121094	74.6	63.8	210012	18	31	Jet		A2
VINCE	121094	75.8	64.7	210220	20	32	Jet		D2
VINCE	121094	94.9	82.6	210431	146	33	Jet		D2

TABLE 2

Recorded by Vincent Mestre, P.E., of Mestre Greve Associates

TABLE 3

Number of waterbirds and shorebirds seen at Kanaha Pond wildlife Sanctuary, Maui on 11 December 1994.

COMMON NAME	SCIENTIFIC NAME	TOTAL NUMBER RECORDED
Black-necked Stilt	Himantopus mexicanus	92
Black-crowned Night Heron	Nycticorax nycticorax	21
Hawaiian Coot	Fulica alai	10
Koloa	Anas wyvilliana	7
Mallard	Anas platyrhynchos	2
Northern Shoveler	Anas clypeata	35
Sanderling	Calidris alba	7
Pacific Golden-Plover	Pluvialis fulva	40
Wanderign Tattler	Heteroscelus incanus	1

5.3 ADDITIONAL DATA

It should be noted that during the Runway 2-20 Repair Project from June through November 1992, all aircraft traffic from 2200 to 0630 used Runway 5-23. No adverse effects or reports were received from DLNR due to these overflights on Hawaiian Stilts or Coots.

A review was made of other reports on Kanaha Pond. In 1972, Dr. Andrew J. Berger, author of "Hawaiian Birdlife" and of the University of Hawaii, was commission by the Department of Land and Natural Resources to complete the Kanaha Pond Bird Study. In that report, Dr. Berger noted that during his 1972 field surveys of -- July 4-7; August 6-9, 20-22; August 31-September 4; and September 13-15 -- *"All of the bird species that inhabit Kanaha Pond ignore automobile traffic on the highway as well as airplanes that fly over the Pond."* It should be noted that Dr. Berger's field studies were undertaken during the last part of the breeding season of the Hawaiian Stilt. Dr. Berger's report, cited Gene Kridler, Manager of Bureau of U.S. Fish & Wildlife Office in 1969, from Dr. Maxwell S. Doty 1969 report, "Evaluation of Kanaha Pond, Kahului, Maui, Hawaii for recognition as a Registered National History Landmark", prepared by the Botany Department, University of Hawaii. Mr. Kridler noted that, *"Although many planes passed overhead during the course of the study, ducks paid no heed to them but continued feeding and loafing. We did not notice one instance when planes frightened ducks or any other waterbirds into flight."*

In a review of two publications, "Aircraft Overflights Effects On Wildlife Resources," National Park Services, November 1993 and "Potential Impacts of Aircraft Overflights of National Forest System Wildernesses," U.S. Forest Service, July 1992, the effects on various wildlife groups were discussed. It was noted that some animals become desensitized to sound due to frequent, predictable overflights, such as those at major airports. Additionally, some species have the ability to become tolerant of aircraft noise while others may not. Of those species which are not tolerant or become disturbed by aircraft noise, some of the waterfowl species have been completely driven off of the refuges due to frequent aircraft activity. Other species remain in their nests and subsequently their nesting success was not affected. In one study, it was noted that: *"human intrusions can cause a decline of as much as a third of waterbirds eggs laid. Nonspecific or nondirected disturbances (boats, vehicles, or aircraft) are not as clearly detrimental."*

6.0 SUMMARY AND CONCLUSIONS

The observations of December 10 at KPWS provided the first opportunity to observe and document bird responses to jet aircraft and turboprop airplanes using Runway 5-23 for nighttime operations. Mr. Bruner noted that the lights from these aircraft using Runway 5-23 illuminate the pond and the noise level at Station #1 are greater than those from aircraft using Runway 2-20. As a comparison on the night of December 11, observations were made by

Mr. Bruner when no jet aircraft were using Runway 5-23. Mr. Bruner found no correlation between bird activity and aircraft landings or departures. This finding was consistent with Mr. Bruner's earlier quarterly surveys. Mr. Bruner noted that the birds seemed to ignore aircraft activity associated with Runway 2-20 and gave no visible or auditory response to the propeller aircraft using Runway 5-23.

During the night of December 10, the data in Table 1 reveals that bird activity before, during, and just after aircraft overflew the KPWS to land on Runway 5-23 was variable. Mr. Bruner noted:

> *"In some cases birds that were calling stopped vocalizing briefly when the plane was overhead and then resume their activity. In other cases, birds remained active throughout the observation period. Still other stations reported no activity or calling before, during or after aircraft were directly over KPWS. No clear pattern of responses by waterbirds and shorebirds to noise and lights from aircraft landing on Runway 5-23 was noted."*

Mr. Bruner drew the following two conclusions from his observations.

- Under the particular weather and ambient light conditions and at this time of year, waterbirds and shorebirds of Kanaha Pond did not exhibit any clear pattern of responses to the noise and lights of jets and turboprop aircraft overflying KPWS to land on Runway 5-23.

- The time of year observed is not the breeding season for native waterbirds, perhaps, these waterbirds may be more easily disturbed by aircraft over Kanaha Pond during the breeding season, April through September.

The studies of Dr. Berger and Mr. Kridler confirm the conclusions of Mr. Bruner, from his field surveys, that the Hawaiian Stilt appears to be tolerant of aircraft overflights. Additionally, publications from the National Park Service and the U. S. Forest noted that some species have the ability to become tolerant to aircraft noise. KPWS continues to be a prime habitat for the Hawaiian Stilt even with the aircraft using Kahului Airport. Since the Hawaiian Stilt appears not to be bothered by aircraft noise as confirmed by the above studies, it must be assumed that the Hawaiian Stilt has adapted to the aircraft noise. Therefore, the impacts of the aircraft overflights of KPWS to arrive on Runway 5-23 are considered to be insignificant.

APPENDIX I

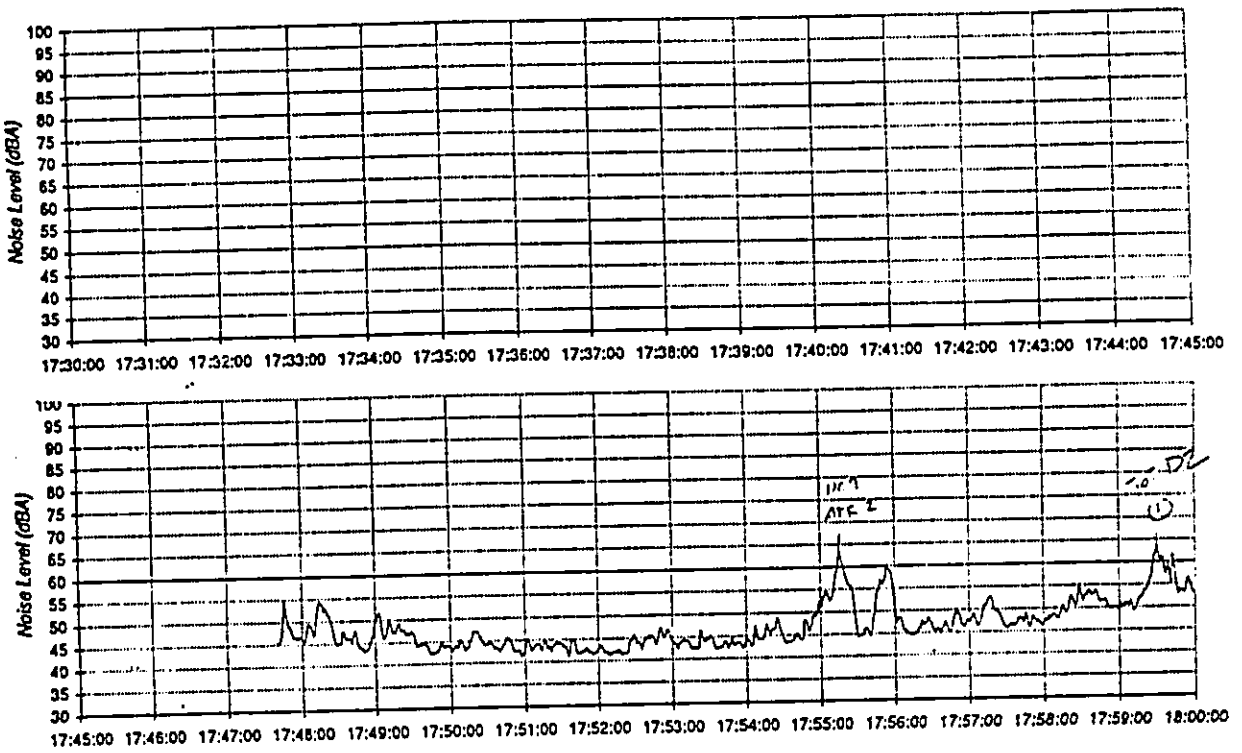
30 MINUTE STRIP CHART

Kahului Airport, Maui - Aircraft Noise Measurement Data

30 MINUTE STRIP CHART
Kahului Airport, Maui - Aircraft Noise Measurement Data
Site Vince

Date: 12/10/94

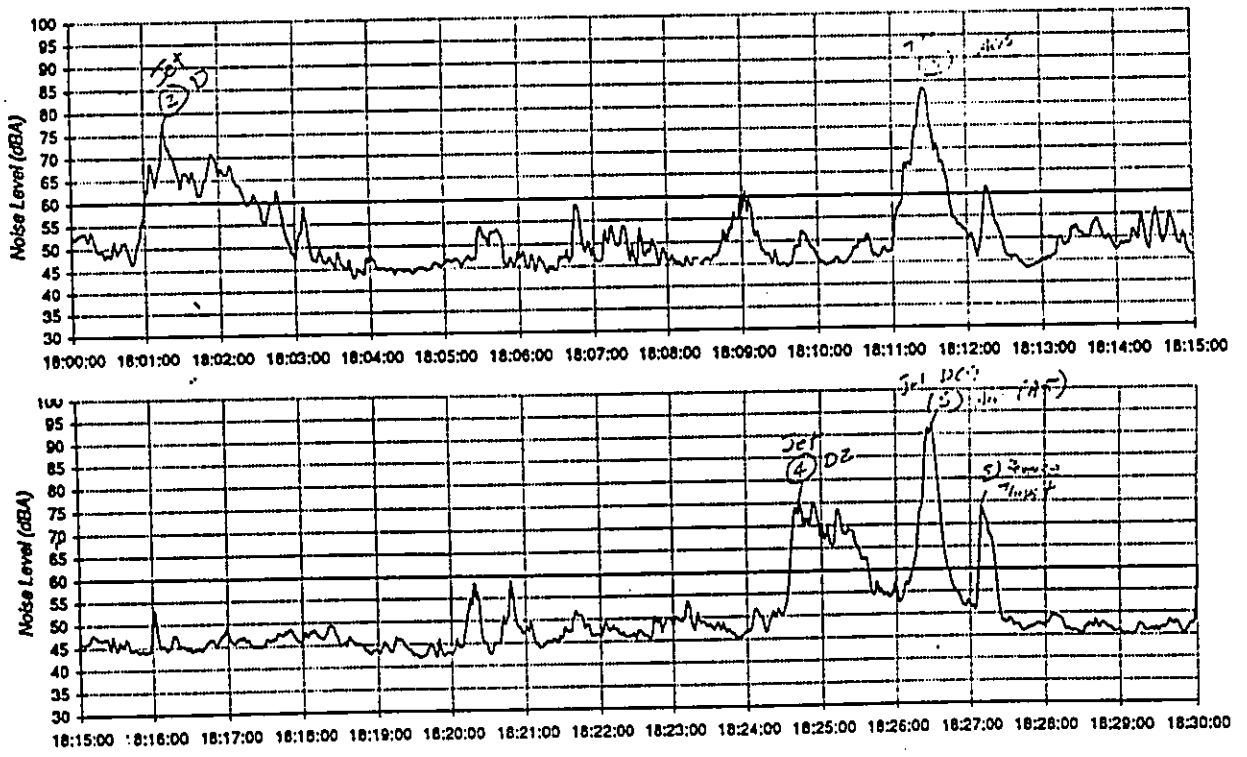
Start Time: 17:30:00



30 MINUTE STRIP CHART
Kahului Airport, Maui - Aircraft Noise Measurement Data
Site Vince

Date: 12/10/94

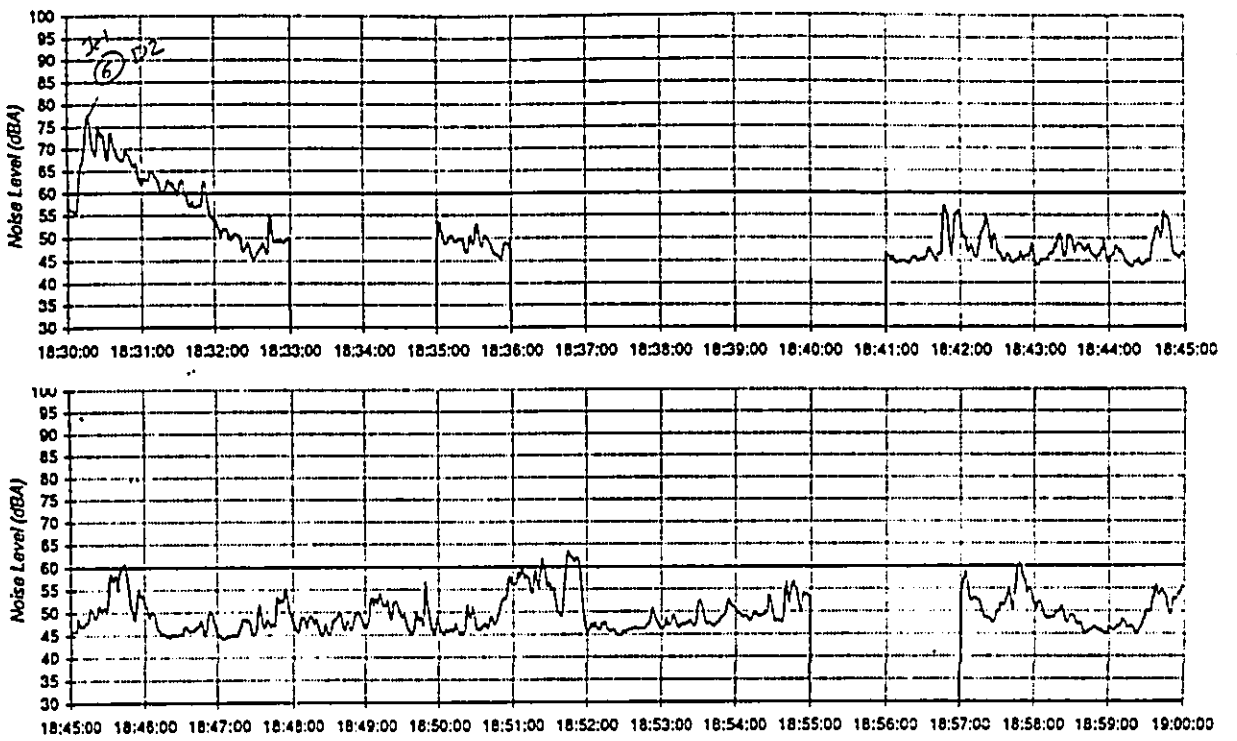
Start Time: 18:00:00



30 MINUTE STRIP CHART
Kahului Airport, Maul - Aircraft Noise Measurement Data
Site Vince

Date: 12/10/94

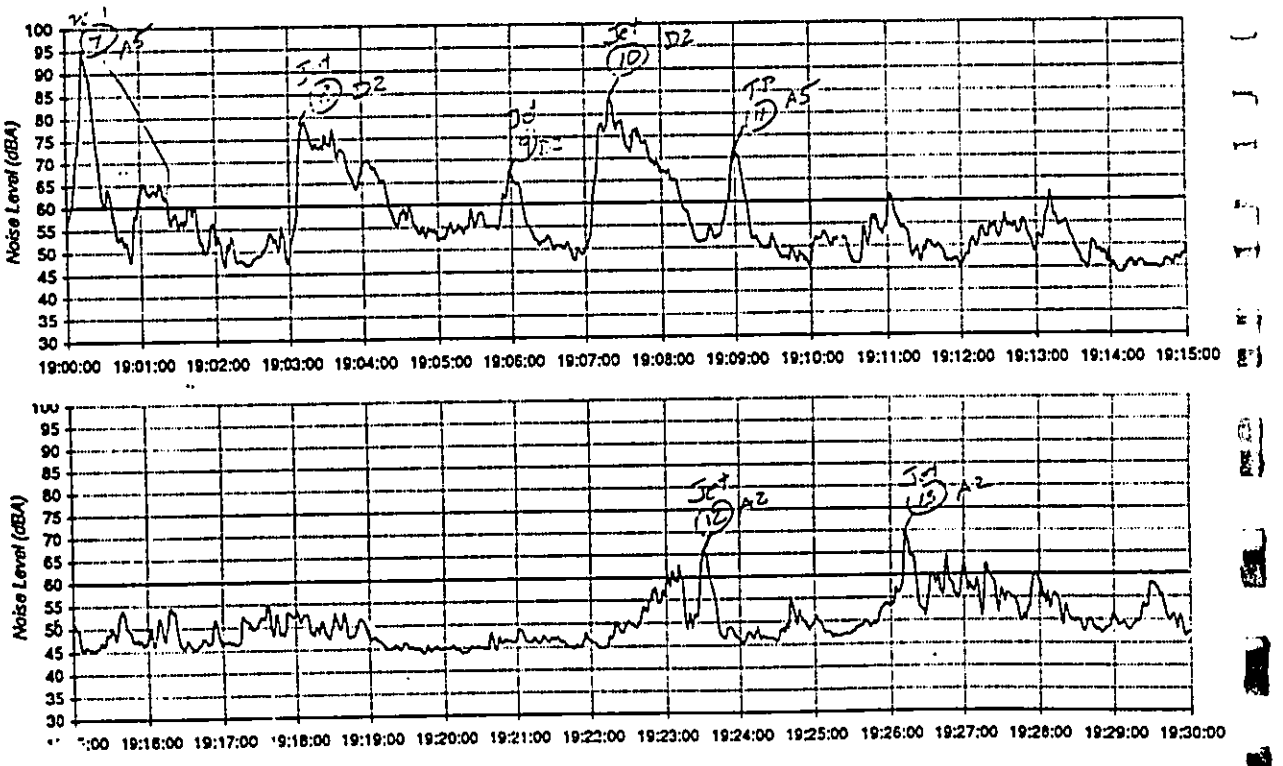
Start Time: 18:30:00



30 MINUTE STRIP CHART
Kahului Airport, Maui - Aircraft Noise Measurement Data
Site Vince

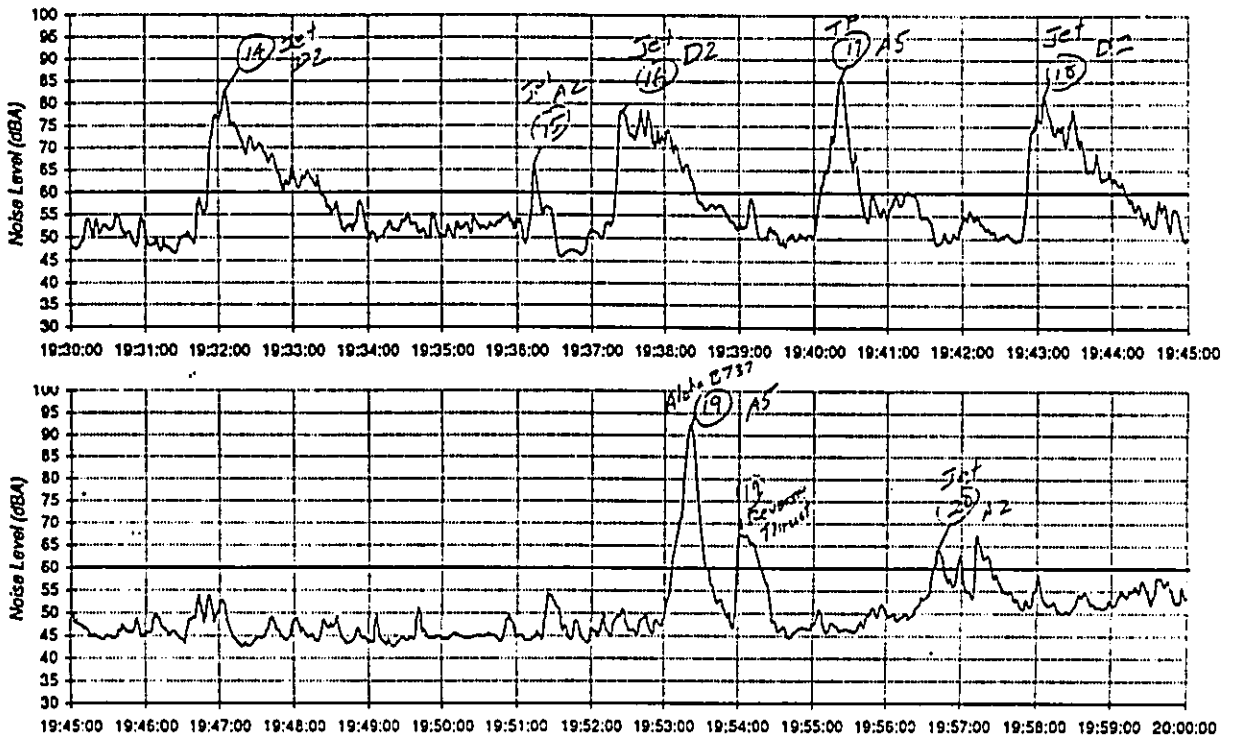
Date: 12/10/94

Start Time: 19:00:00



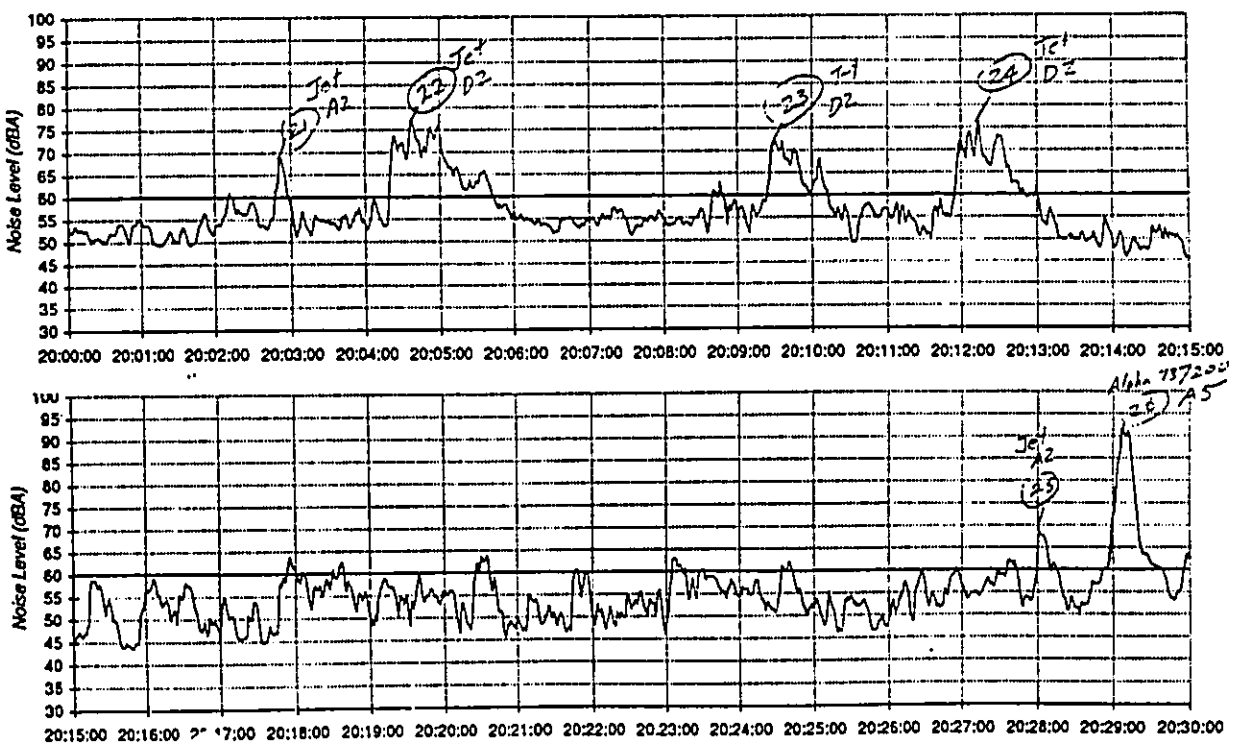
30 MINUTE STRIP CHART
Kahului Airport, Maui - Aircraft Noise Measurement Data
Site Vince

Date: 12/10/94 **Start Time: 19:30:00**

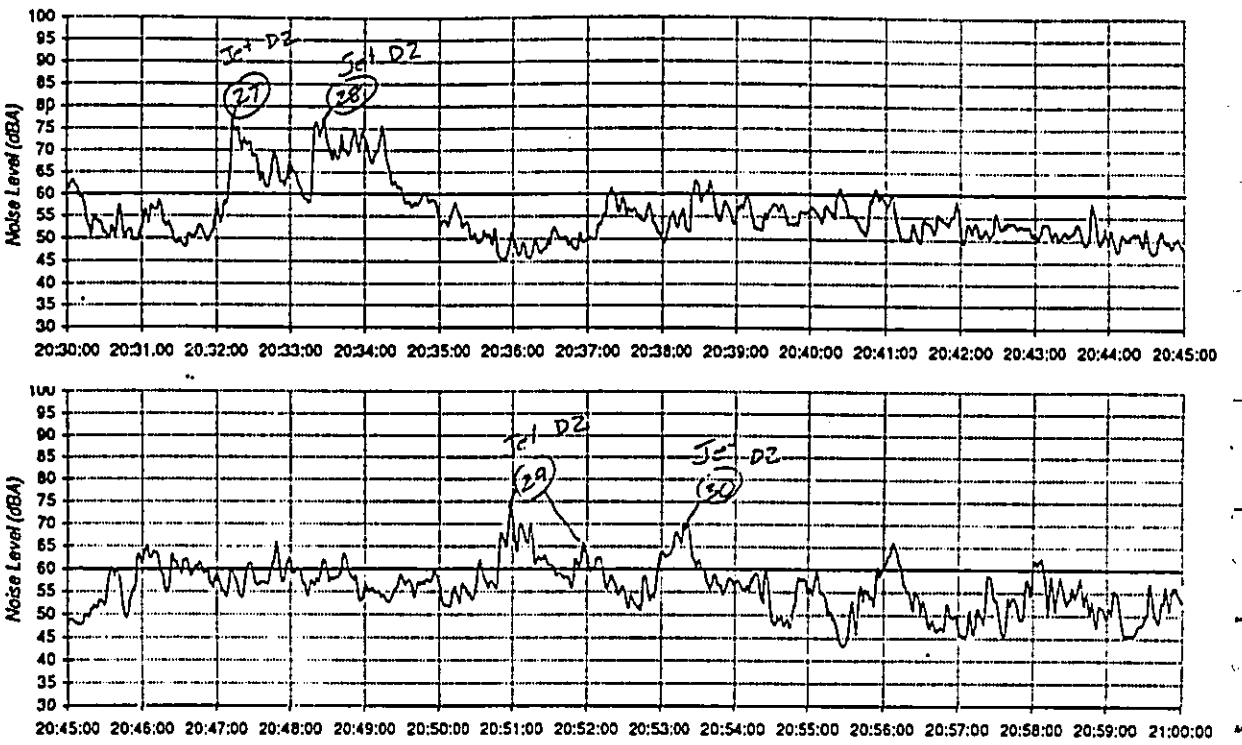


30 MINUTE STRIP CHART
Kahului Airport, Maui - Aircraft Noise Measurement Data
Site Vince

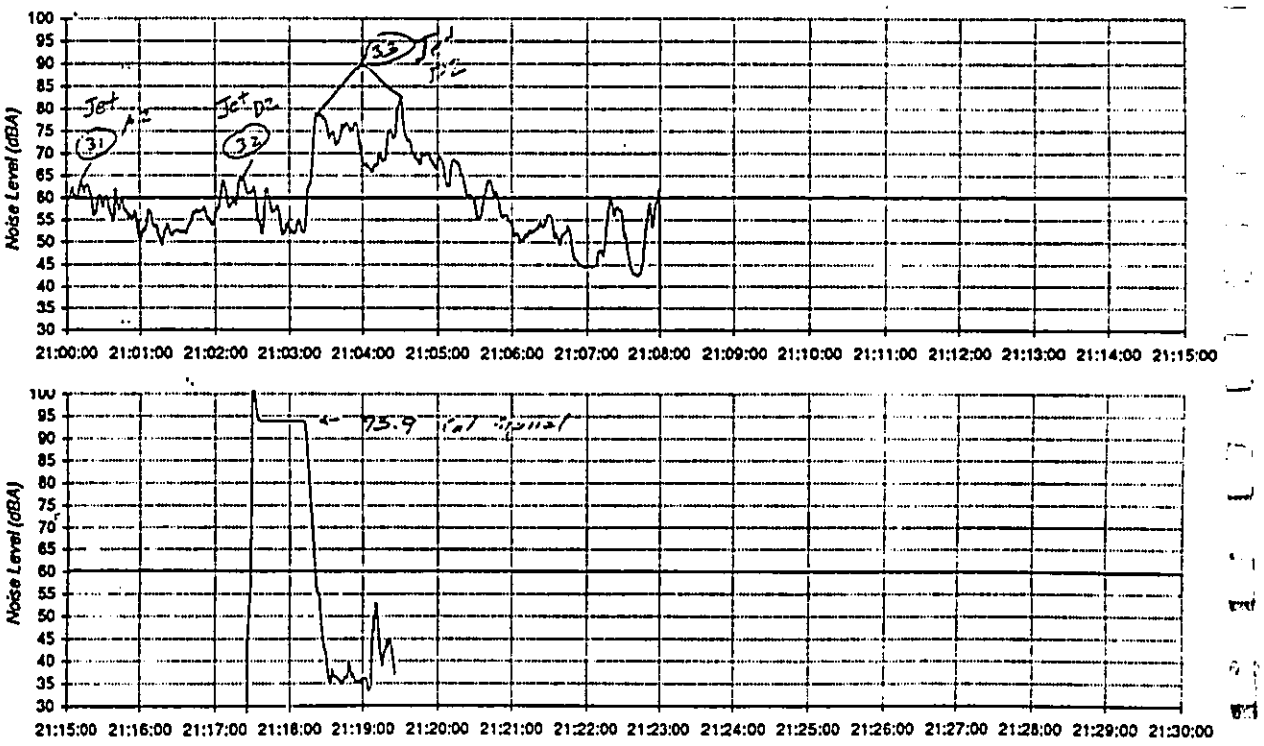
Date: 12/10/94 **Start Time: 20:00:00**



30 MINUTE STRIP CHART
Kahului Airport, Maui - Aircraft Noise Measurement Data
Date: 12/10/94 Site Vince Start Time: 20:30:00



30 MINUTE STRIP CHART
Kahului Airport, Maui - Aircraft Noise Measurement Data
Date: 12/10/94 Site Vince Start Time: 21:00:00



APPENDIX 2

REPORT OF A WATERBIRD/SHOREBIRD STUDY AT KAHANA

POND WILDLIFE SANCTUARY, MAUI

December 30, 1994

Prepared by Mr. Phillip L. Bruner

REPORT OF A WATERBIRD/SHOREBIRD STUDY AT KANAHA POND WILDLIFE SANCTUARY, MAUI

Prepared for

Edward K. Noda and Associates, Inc.

by

Phillip L. Bruner
Assistant Professor of Biology
Director, Museum of Natural History
BYU-Hawaii
Environmental Consultant - Faunal (Bird and Mammal) Surveys

30 December 1994

INTRODUCTION

This report summarizes the findings of a two day (10-11 December 1994) investigation of night responses of waterbirds and shorebirds to jet aircraft and large propeller planes using runway 5-23. The landing approach for runway 5-23 brought the aircraft directly over Kanaha Pond Wildlife Sanctuary (KPWS), Maui. Aircraft lights and noise were more pronounced when compared with aircraft using runway 2-20 with its landing approach to the west of KPWS. Data from a follow up visit on 11 December when no large aircraft were using runway 5-23 are also presented.

METHODOLOGY

Five observers stationed at four separate locations (Fig. 1) recorded bird activity at KPWS before, during and after aircraft landings and departures on the night of 10 December. Data were collected by four of these observers from 1730 to approximately 2200. One observer recorded from 1900 to 2100.

On the night of 10 December five large aircraft (two Hawaiian Air, two Aloha Airlines, one Mahalo Airlines) flew directly over KPWS on their approach to runway 5-23. Other aircraft utilized runway 2-20 and did not fly over KPWS. On 11 December no large aircraft used runway 5-23 but three small propeller planes took this route.

Weather during the study period was variable with passing showers and gusty winds interspersed with calm conditions. On 11 December skies were clearer and the moonlight illuminated KPWS sufficiently to allow Black-necked Stilts (Himantopus mexicanus) and Pacific Golden-Plover (Pluvialis fulva) to forage.

RESULTS

Table One summarizes the data of five observers for the night of 10 December at KPWS. Bird responses just before, during and right after aircraft flew over KPWS on their approach to runway 5-23 are reported. A review of the field notes of each observer revealed that bird activity, at times other than when aircraft were present over KPWS, was variable. Some stations had birds calling off and on throughout the duration of the study while other stations reported less activity.

On 11 December I conducted a brief driving census of birds at KPWS before making night observations. This census was not ment to be exhaustive but was designed to provide a rough baseline of the relative numbers of waterbirds and shorebirds present during the second day of the study. Table two summarizes the findings of this census. On the night of 11 December I recorded only Three small propeller aircraft using runway 5-23 during the observational period (1700-2100). Bird activity at my station in the SW corner of

KPWS included two pairs of foraging stilts and one foraging Pacific Golden-Plover. Black-crowned Night Heron (Nycticorax nycticorax) were occasionally heard calling or seen flying. I found no correlation between bird activity and aircraft landings or departures. This finding was in line with the results of my three earlier quarterly studies. Birds were observed calling, foraging and chasing before, during and after aircraft were present. Birds seemed to ignore aircraft activity associated with runway 2-20 and gave no visible or auditory response to the propeller aircraft which used runway 5-23.

SUMMARY CONCLUSIONS

This night observational period at KPWS on 10 December provided the first opportunity to investigate bird responses to jet aircraft and large propeller planes which used a landing approach directly over KPWS. The lights from these aircraft illuminated the pond and the noise level, to my ear, was greater than when aircraft used the approach to runway 2-20. The following night (11 December) was monitored for comparative purposes when large aircraft were not using runway 5-23. No responses to aircraft by waterbirds and shorebirds were noted.

The data in Table one reveal that bird activity before, during and just after aircraft flew over the pond was variable. In some cases birds that were calling stopped vocalizing briefly when the plane was overhead and then resumed their activity. In other cases birds remained active throughout the observation period. Still other stations reported no activity or calling before, during or after aircraft were present directly over KPWS. No clear pattern of responses by waterbirds and shorebirds to noise and lights from aircraft landing on runway 5-23 was noted.

From this exercise I would draw two general conclusions. One, that under the particular weather and ambient light conditions and at this time of year waterbirds and shorebirds did not exhibit any clear pattern of responses to the noise and lights of jets and large propeller aircraft using a landing approach over KPWS to runway 5-23. Two, this time of year is not the breeding season for native waterbirds, perhaps they may be more easily disturbed by airtraffic over KPWS during the breeding season.

RECOMMENDATIONS

1- Complete the fourth quarter faunal survey in February 1995.

2- Conduct another overflight of KPWS with jet aircraft using runway 5-23 in late April or early May during the waterbird breeding season and when shorebirds are preparing to migrate north.

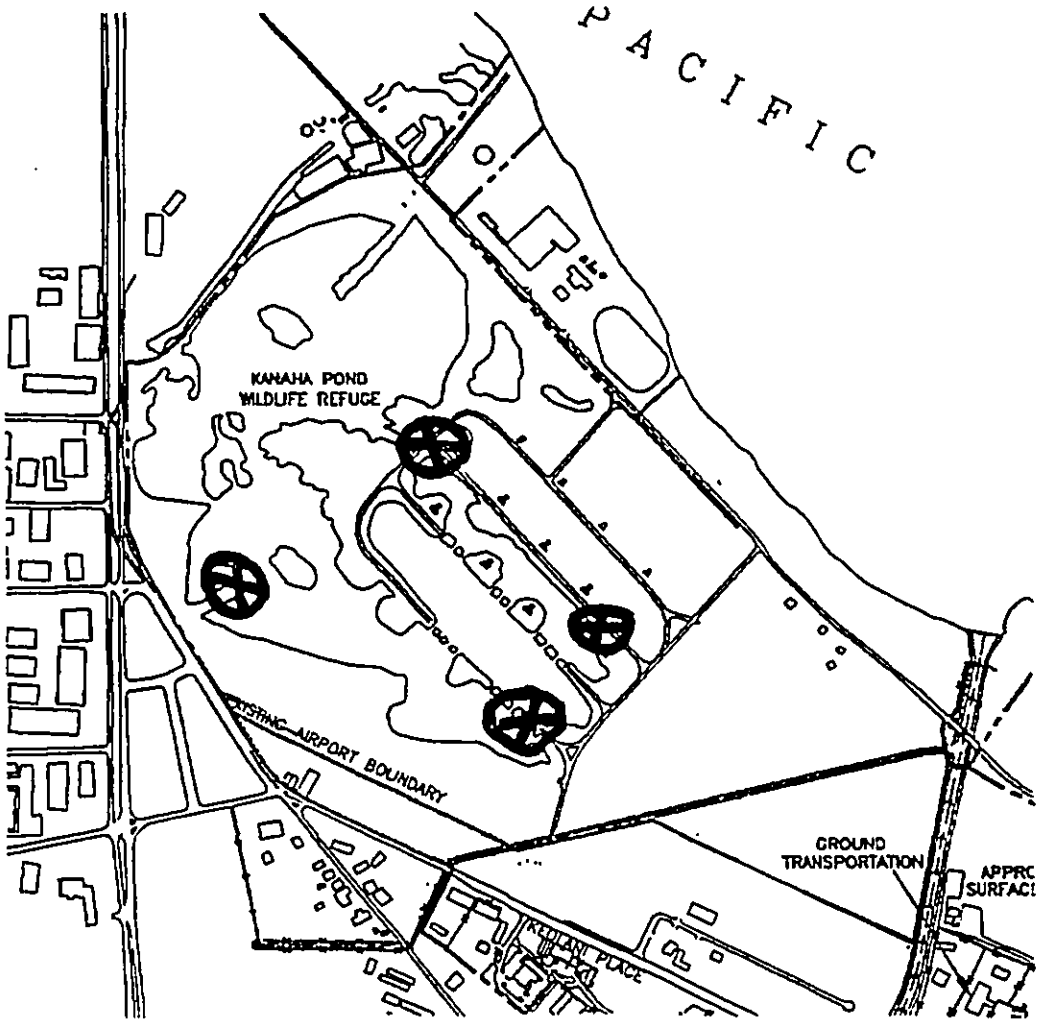


Fig. 1. Location of the four observation stations for the night study of the Kanaha Pond Wildlife Sanctuary, Maui.

TABLE I

Observations of waterbirds and shorebirds at Kanaha Pond Wildlife Sanctuary to aircraft using runway 5-23 at Kahului Airport, Maui. HA = Hawaiian Air, AA = Aloha Airlines, MA = Mahalo Airlines. B = Before, D = During, A = After aircraft were present over KPWS.

Observer	Airline/Approximate time of landing HA 1830	HA 1900	AA 2000	AA 2030	MA 1940
Bruner	B,D,A= 2 stilt calling 1 Night Heron foraging	B,D,A= 1 Night Heron foraging No stilt calling	B= 1 stilt calling D,A= No stilt calling	B,D,A= No calling or activity	B,D= No calling or activity A= 1 stilt called 2 min. after aircraft lanc
Dittmar	B= 2 Night Heron flying to E. D= Some bird noise to S. beyond pond A= Night Heron flying over pond	B= Stilt calling D= No response A= Stilt calling	B= Stilt calling D= No calling A= No calling	B,D,A= No calling or activity	B,D= No activity A= Some stilt call
Ishii	B= No activity heard D= No sound heard A= Stilts calling No visual activity	B= 1 or 2 stilt calling briefly D,A= No calling heard No visual activity	B= No calling D= No calling A= 1 stilt calling	B= Stilts calling D= No calling or visual activity A= Stilt calling sporadic	B,D,A= Stilts calling

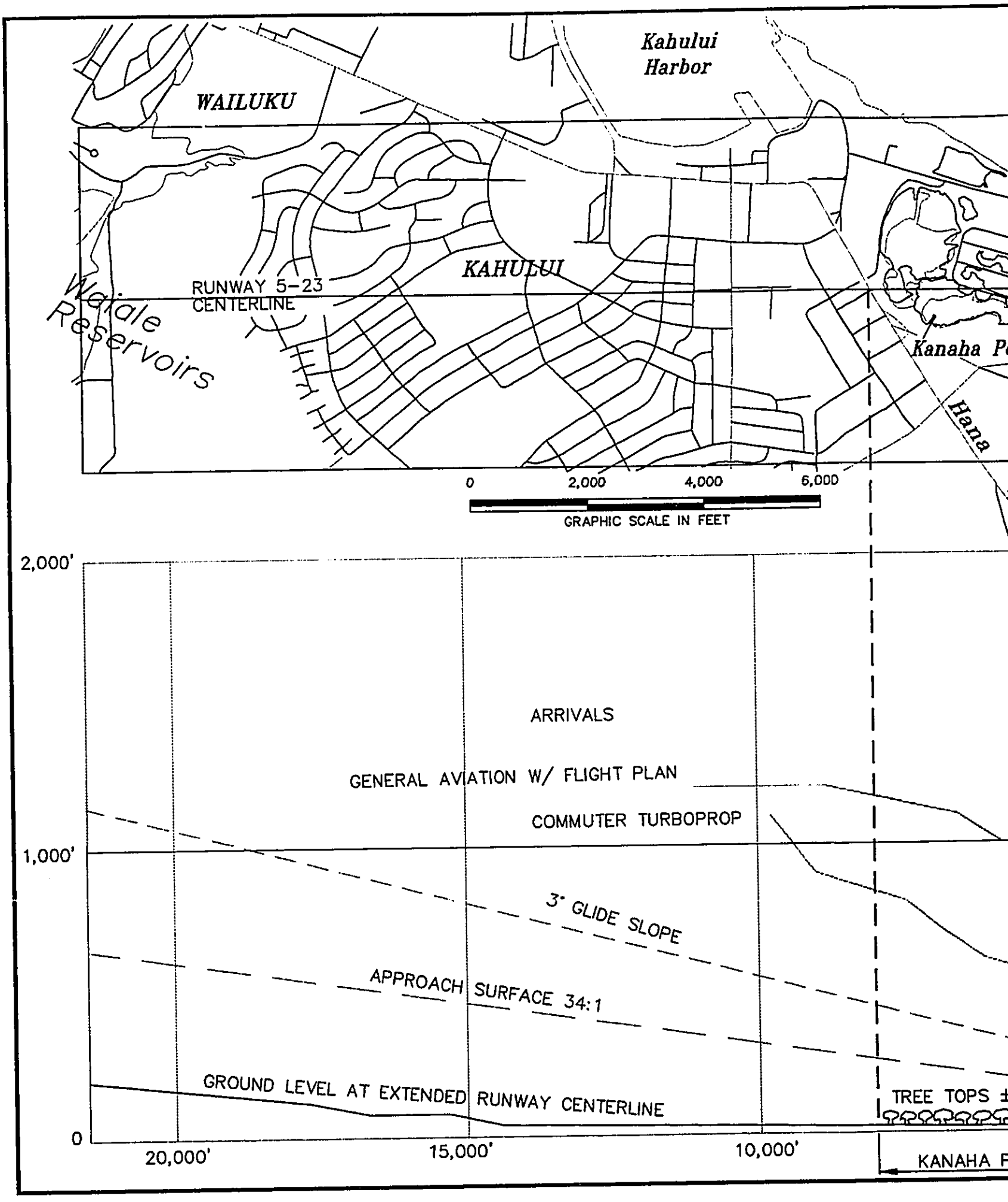
TABLE I (cont.)

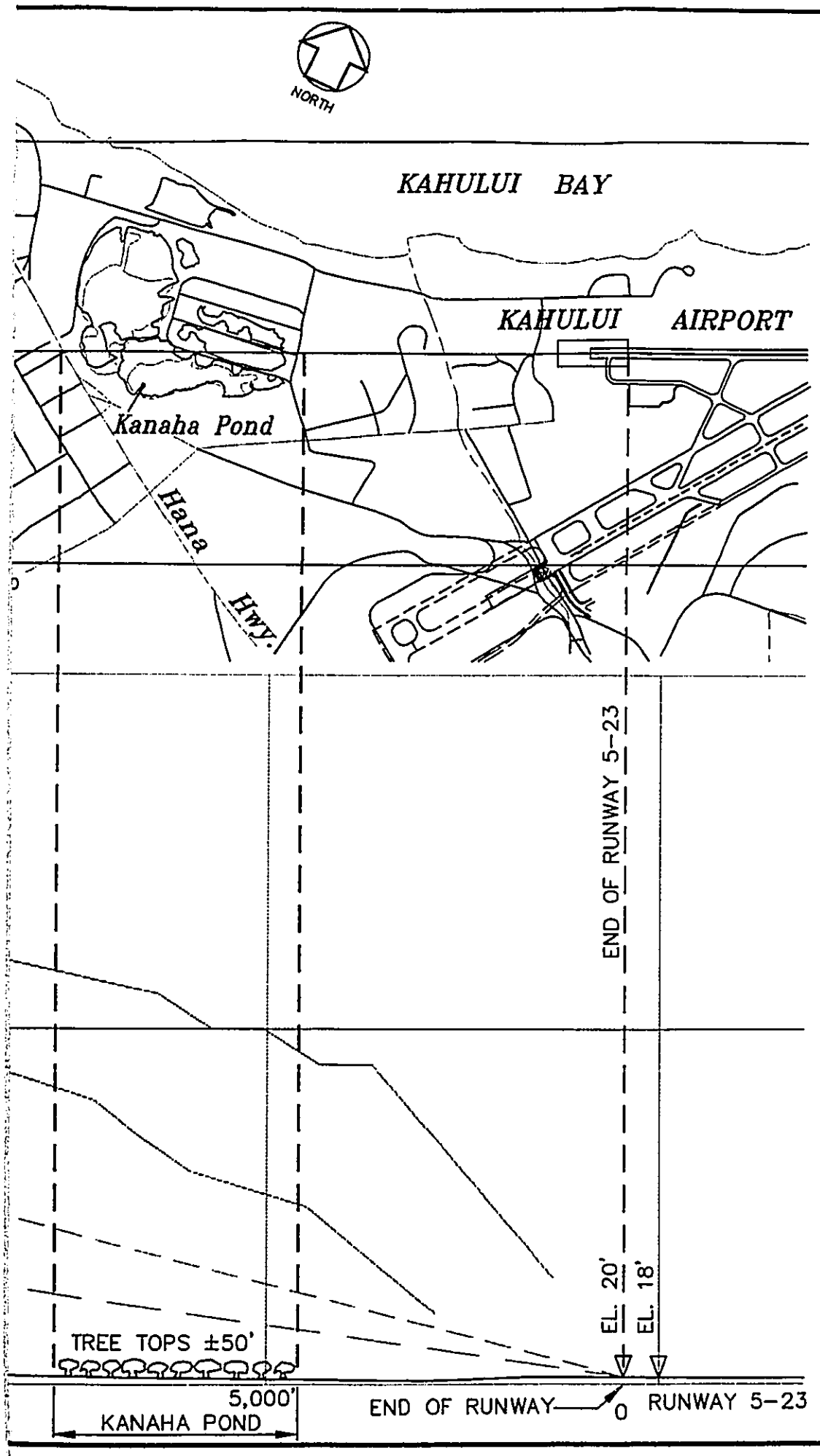
Trevor	Not present No record for this flight	B,D,A= No activity	B= Stilt calling D= No activity A= Stilt calling	B,D,A= No activity	B,D,A= No activity
Mestre (Vince)	B,D,A= No bird activity or calling	B,D,A= 1 bird calling	B,D,A= No bird activity	B,D,A= 1 bird active but not calling	B,D,A= Very little bird activity

TABLE II

Number of waterbirds and shorebirds seen at Kanaha Pond Wildlife Sanctuary, Maui on 11 December 1994.

COMMON NAME	SCIENTIFIC NAME	TOTAL NUMBER RECORDED
Black-necked Stilt	Himantopus mexicanus	92
Black-crowned Night Heron	Nycticorax nycticorax	21
Hawaiian Coot	Fulica alai	10
Koloa	Anas wyvilliana	7
Mallard	Anas platyrhynchos	2
Northern Shoveler	Anas clypeata	35
Sanderling	Calidris alba	7
Pacific Golden-Plover	Pluvialis fulva	40
Wandering Tattler	Heteroscelus incanus	1


Kahului Harbor
WAILUKU
KAHULUI
RUNWAY 5-23 CENTERLINE
Waiale Reservoirs
Kanaha Pond
Hana
0
2,000
4,000
6,000
GRAPHIC SCALE IN FEET
2,000'
1,000'
0
ARRIVALS
GENERAL AVIATION W/ FLIGHT PLAN
COMMUTER TURBOPROP
3° GLIDE SLOPE
APPROACH SURFACE 34:1
GROUND LEVEL AT EXTENDED RUNWAY CENTERLINE
TREE TOPS ±
20,000'
15,000'
10,000'
KANAHA P



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

NOTE: 3° TYPICAL GLIDE SLOPE.
PILOTS MAY VARY.

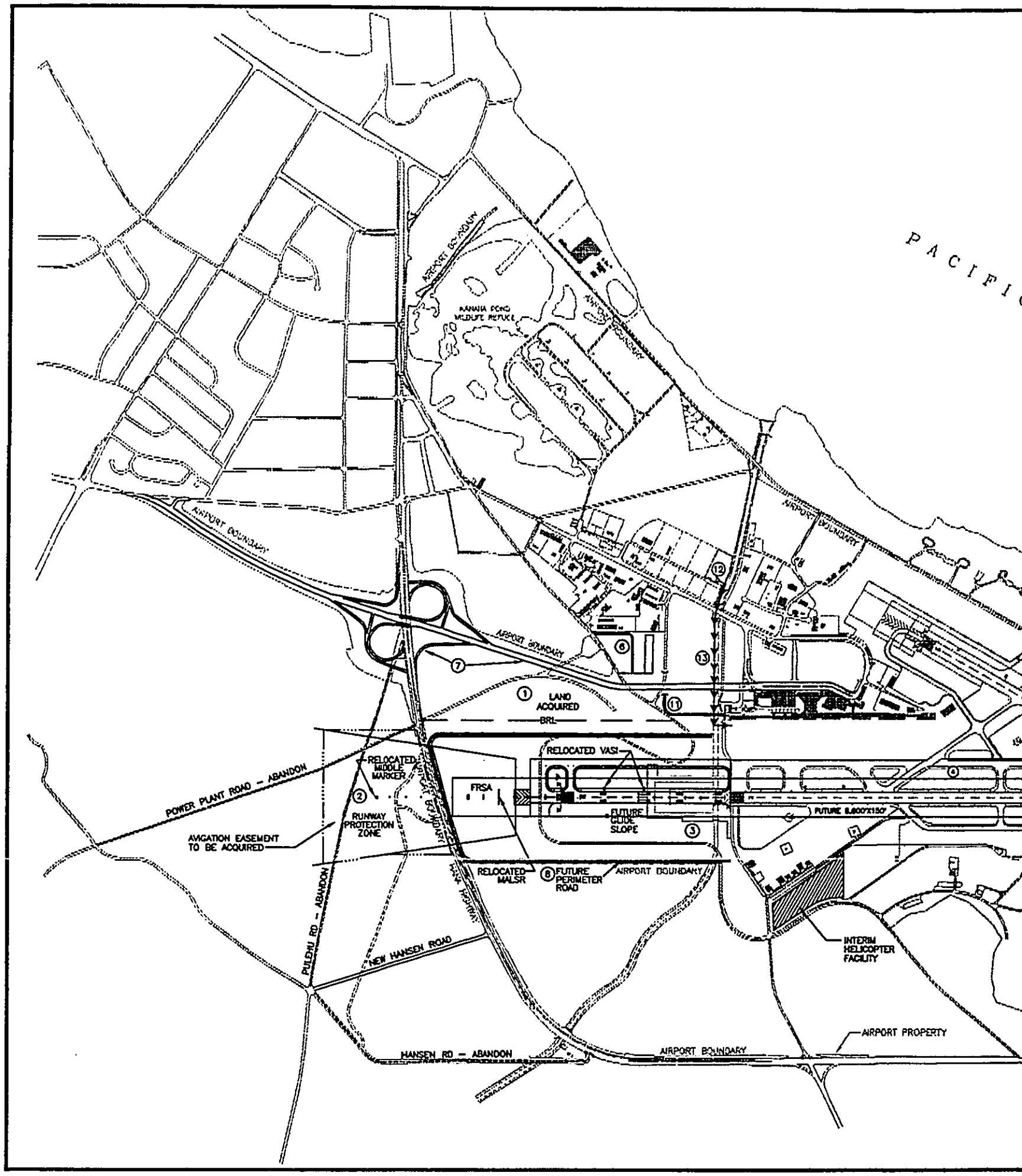
PLAN AND PROFILE SCALE:
HORIZONTAL – 1 INCH = 2000 FT
VERTICAL – 1 INCH = 400 FT

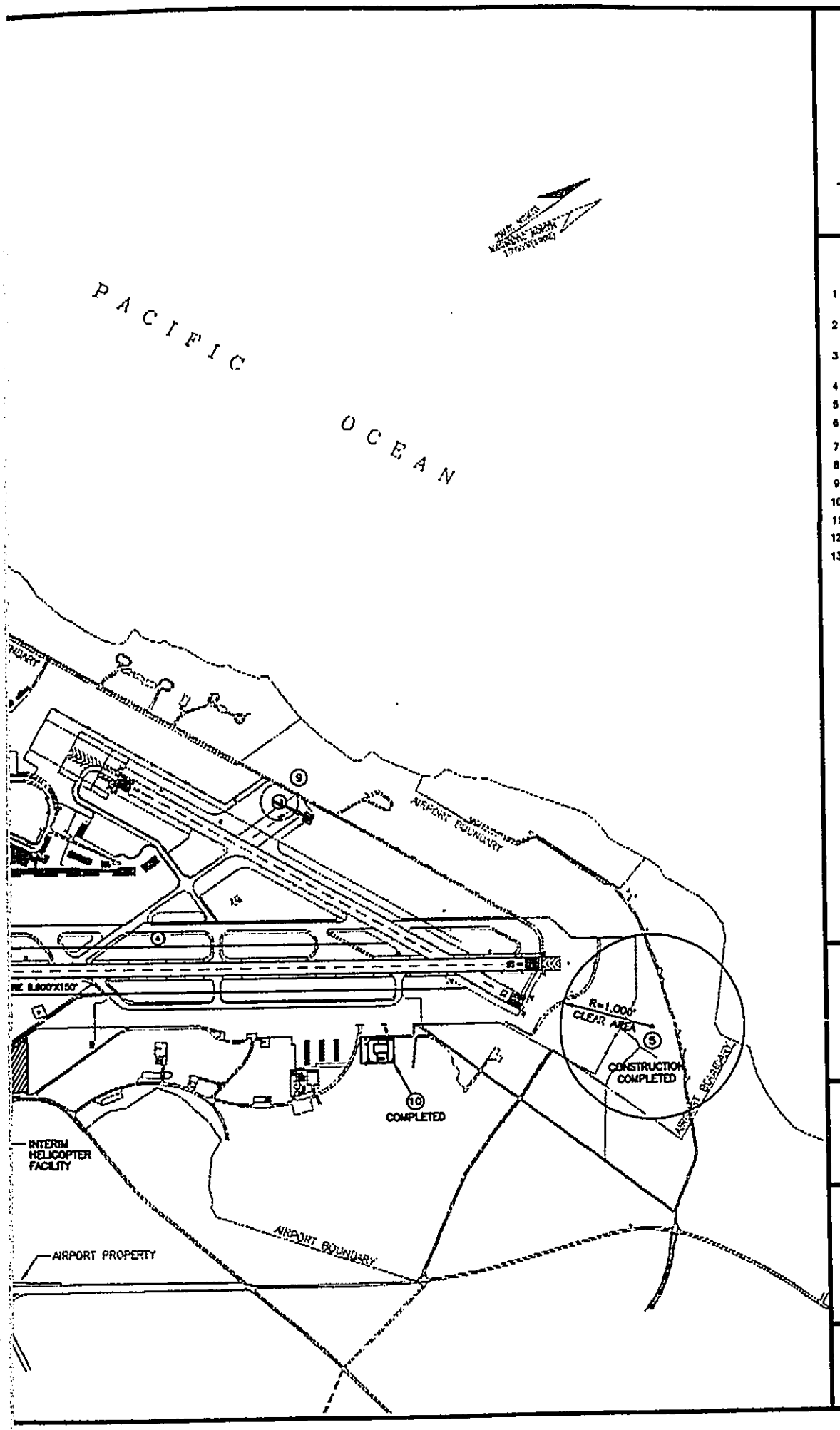
Edward K. Noda and Associates, inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

AIRCRAFT APPROACH & DEPARTURE PROFILES TO RUNWAY 5-23

DATE	FIGURE
DECEMBER, 1994	3


PACIFIC
AIRPORT BOUNDARY
KANAHA POND WILDLIFE REFUGE
AIRPORT BOUNDARY
AIRPORT BOUNDARY
AIRPORT BOUNDARY
AIRPORT BOUNDARY
1 LAND ACQUIRED
BRL
RELOCATED VASI
RELOCATED MIDDLE MARKER
2
FRSA
POWER PLANT ROAD – ABANDON
RUNWAY PROTECTION ZONE
FUTURE GLIDE SLOPE
3
FUTURE 8,800'X150'
AVIGATION EASEMENT TO BE ACQUIRED
RELOCATED MALSR
8 FUTURE PERIMETER ROAD
AIRPORT BOUNDARY
PUUENU RD – ABANDON
NEW HANSEN ROAD
INTERIM HELICOPTER FACILITY
AIRPORT PROPERTY
HANSEN RD – ABANDON
AIRPORT BOUNDARY



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

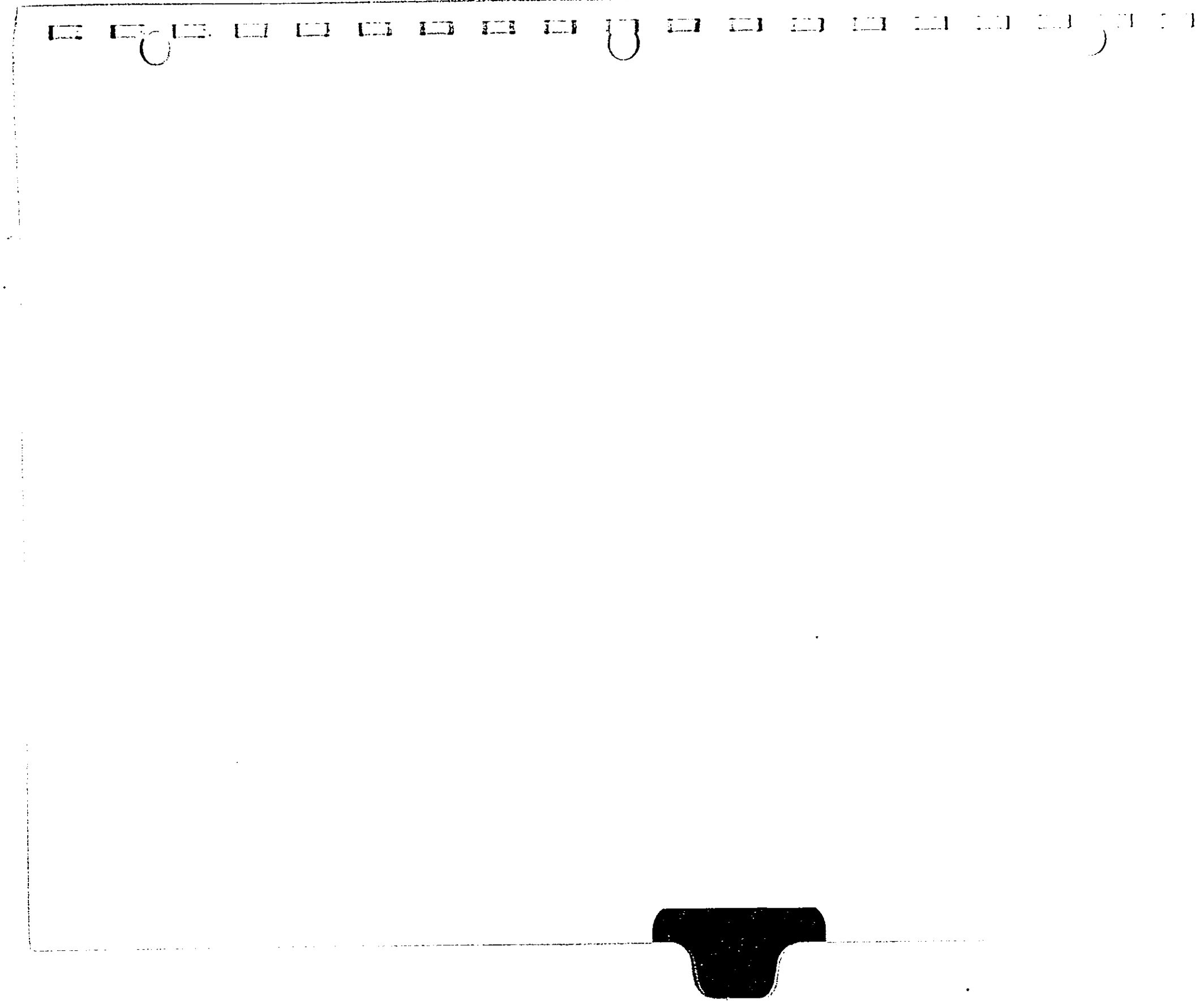
0 500 1000 1500 2000
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

KAHULUI AIRPORT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED PHASE 1 DEVELOPMENTS

DATE	FIGURE
MARCH, 1996	1



APPENDIX K

HAZARDOUS MATERIALS SURVEY

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LIMITED SURVEY
HAZARDOUS MATERIALS
KAHULUI AIRPORT
KAHULUI, MAUI, HAWAII

1.0 Introduction

The operation of an airport facility is generally industrial in nature and involves the use, generation and/or storage of environmentally sensitive materials which could be considered to be hazardous materials. These materials include, but are not limited to, petroleum fuels and lubricants, lead containing paints, asbestos containing building materials, and polychlorinated biphenyls.

The greatest portion of the use, generation and/or storage of such materials would be attributed to airport tenants, such as ground transportation providers, general aviation tenants, helicopter services and other commercial/industrial tenants.

This limited survey is intended to provide an overview of the current status of hazardous materials occurrence and usage at Kahului Airport. Information presented herein is largely based on a detailed facility audit conducted in 1992 by Ogden Environmental and Energy Services and a limited site survey conducted by Edward K. Noda and Associates, Inc. (EKNA) in 1994.

The Hawaii Department of Transportation - Airports Division (DOTA) has applied for coverage of Kahului Airport under the National Pollutant Discharge Elimination System (NPDES) general permit for storm water discharges. This application includes the development of stormwater management plans to minimize the potential of discharges of pollutants including petroleum products and other hazardous materials.

As part of the development of the stormwater management program, DOTA has requested information regarding hazardous materials usage, storage and management practices from all airport tenants. This request included a self-inspection form to facilitate tenant responses and to standardize reporting of the current tenant practices.

A review of available tenant reporting forms was used to supplement information obtained from the Ogden report and information obtained during the EKNA survey.

2.0 Site Location and Description

2.1 Site Location: The airport property is physically located to the northeast of the town of Kahului on the northern coast of the island of Maui (Figure 1).

2.2 Site Ownership: The records of ownership indicate that, presently, the fee simple ownership of the property is held by the State of Hawaii. The state (formerly the Territory of Hawaii) has held the property under Governor's Executive Orders since 1951 when the Territory of Hawaii acquired it from the U.S. Navy for operation of a civilian airport.

Prior to 1951, the property was held by the U.S. Navy who annexed the property in 1942 from Hawaiian Commercial and Sugar Company for the construction of

Naval Air Station Kahului. Hawaiian Commercial and Sugar Company had acquired the land by grant in 1882.

2.3 Site Description and Characterization: The Kahului Airport complex is an area that is roughly triangular in shape circumscribed by the ocean to the west and Hana Highway from the southern end of Kanaha Pond to Spreckiesville. The airport property is zoned for industrial use and covers an area of about 1,450 acres. The site is bordered by mixed industrial development to the southwest, agricultural lands to the south and east and the Pacific Ocean to the north and west (Figure 1).

The ground surface elevations in the airport property range from sea level to about 80 feet above mean sea level. The topography slopes gently down towards the ocean in a northwesterly direction at a minimal slope.

2.4 Regional and Site Specific Geology: The island of Maui is composed largely of the weathered remnants of two extinct shield volcanoes: West Maui and East Maui (Haleakala). A broad isthmus joins the two mountains and forms the central portion of the island.

The property is situated on the northerly side of the isthmus over a sequence of intercalated volcanics, marine sediments and terrestrial sediments laid on the northwestern flank of Haleakala. The shallow subsurface conditions along the seaward part of the site consist 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 base of the stratigraphic section in this area is Honomanu Volcanic Series basalts of Haleakala. These rocks are primitive tholeiitic lavas with the porous and layered structure typical of Hawaiian basalts.

The surface soils in the area consist of soils of the following associations (Figure 1):

Jaucas — The surface soils in the area of Kanaha Pond have been classified in a soil survey by the U.S. Department of Agriculture (USDA) as Jaucas Sand, saline (JcC). These soils are formed on old sand dunes and beaches where the water table is shallow and salts have accumulated in the soils. Jaucas soils are generally well-drained and permeability is rapid.

Dune Land — In the vicinity of the Ground Transportation area and Runway 5-23, the surface soils have been classified by the USDA as Dune Land

(DL). These soils occur as hills and ridges of wind-blown sand with no distinct soil horizons. These sand soils are well-drained with very rapid permeability.

Molokai — Most of the remaining areas of Kahului Airport are underlain by soils of the Molokai Series (MuA and MuB). These silty clay and clayey silt soils are developed by the in-situ weathering of volcanic rock. These soils have low to moderate permeability with slow runoff. Also included are small areas of Pulehu silt soils (PpA) and Ewa silty clay soils (EaA) which have similar characteristics to the Molokai soils.

2.5 Surficial Hydrology: Approximately 50 percent of the land area at Kahului Airport, including the proposed land acquisitions is either paved or covered with structure. The majority of surface runoff generated from these areas is intercepted and directed to Kallalinui Gulch which drains to the ocean approximately 5,000 feet west of the main terminal building.

Kanaha Pond is a perennial body of surface water located in the southwest portion of the airport property. Runoff from Kanaha Pond also drains to the ocean.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, the existing airport property and proposed land acquisitions include lands assigned the following flood risk designations (Figure 2):

Zone A — Areas subject to inundation during a 100-year flood. Base flood elevations and flood hazard factors have not been determined.

Zone A4 — Areas subject to inundation during a 100-year flood. Base flood elevations and flood hazard factors have been determined.

Zone B — Areas between the limits of the 100-year and 500-year floods.

Zone C — Areas of minimal flooding.

Zone V23 — Areas subject to inundation during a 100-year coastal flood. Base flood elevations and flood hazard factors have been determined.

2.6 Ground Water Hydrology: The site overlies sediments of the Maui Isthmus and Kula Basalts which form a "caprock" or confining layer over the underlying basal aquifer in Honomanu Basalts. This confinement results in artesian conditions in the aquifer. Generally, Kanaha Pond is an expression of these artesian conditions resulting from leakage through the caprock.

The aquifer in Honomanu Basalt contains fresh water and is utilized in some locales by the Maui Department of Water Supply as a drinking water resource. In the region of the site, the basal aquifer is located at a depth of about 100 feet below the ground surface. At this depth, the potential of contamination from

surface activities is low.

There are no public drinking water wells within several miles of the airport property. The nearest wells are situated at locations which are either across gradient of or in distinctly separate geohydrologic formations from the property and are hydrologically isolated by the caprock which underlies the airport.

The airport and adjacent properties are situated makai (downgradient) of the Underground Injection Control Line in this area of Maui. Based on available Hawaii State Department of Health records, there are two (2) known injection well facilities within a radius of approximately one (1) mile from the Kanaha Pond portion of the site. These wells are used for the disposal of municipal wastewater and storm runoff into the caprock formation. The wells are situated across or downgradient of the assessed property.

3.0 Prior and Current Property Use

Up until World War II, the project area was used for agricultural purposes, primarily the cultivation of sugar cane and the pasturage of cattle. Cane was grown in the area to the south and east of the present location of Runway 2-20 and cattle grazed in the area to the north and west of the runway.

In 1942, the U.S. Government annexed the project area for the development and construction of Naval Air Station Kahului (NASKA). The original development included the construction of Runways 2-20 and 17-35, aircraft ramps, hangars, barracks-style housing, support facilities, ammunition storage and fuel storage tanks.

In 1951, NASKA was turned over to the Territorial government for civilian airport operations. A third runway (5-23) was added in about 1954. Expansion and improvement of the airport facilities has continued through the present.

The following is a brief description of each of the areas specifically surveyed in conjunction with preparation of this report:

- **Runway 2-20 southern end Runway End Indicator Lighting (REIL) System and Middle Marker**

  The REIL system is located on the pavement at the southern end of Runway 2-20. This location is part of the original area developed in the 1940's for NASKA and has been used for aircraft operations on a continuous basis. Aircraft operations at this location are limited to airborne approaches and departures (Figure 3).

- **Runway 2-20 southern approach Visual Approach Slope Indicator (VASI) lighting fixtures**

  The VASI fixtures are located between Runway 2-20 and Taxiway A in an open grass

area between Taxiways D and E (Figure 4). This location is also part of the aircraft operational area developed for NASKA. There are no active aircraft ground operations in this location.

- **Proposed Runway 2-20 extension**

  The proposed extension of Runway 2-20 will be constructed to the south of the existing runway. Formerly, this area was a low area along the sides of Kalialinui Gulch. The northern bank of the Gulch was occupied by the former alignment of Haleakala Highway. The southern bank was developed as support facilities for NASKA operations and later used for combined commercial and industrial operations such as air cargo facilities and construction baseyards.

  In recent years, Haleakala Highway was rerouted to its current location and a culvert constructed along Kalialinui Gulch. The low area was filled to bring the proposed runway extension area to the same grade as the existing runway.

  This location is currently an open grass area occupied by the Medium-Intensity Approach Lighting System with Runway alignment Indicator lights (MALSR). The Middle Marker is located across Haleakala Highway in a fallow cane field.

- **Glide Slope Indicator Building**

  This facility is located to the east of Runway 2-20 in an asphaltic concrete paved area that was formerly part of Runway 17-35, one of the original NASKA runways (Figure 5). The site was formerly used for aircraft parking/maintenance and as a runway/taxiway. The asphaltic concrete pavement is weathered and cracked with some vegetation growing through the cracks.

  At present, the site is occupied by the Glide Slope Indicator building (GSI), a small hut containing a transformer for electrical service to the GSI and a rack-mounted automated weather information system. Features at the site also include antennae for the GSI and the automated weather information system.

- **Land acquisition areas**

  These areas, which include the land for the Airport Access Roadway, Runway 2-20 navigational aids, and Phase 2 land acquisition, are situated to the south of the airport terminal complex and to the south of Hana Highway at the southern end of Runway 2-20. The areas have been historically used for cultivation of sugar cane.

  At the time of the field survey, these areas had been recently harvested and the surface soils were exposed. The surface soils generally consist of brownish red clayey silts with some sand. Stockpiles of boulders derived from tilling operations were noted in isolated locations.

  Previous geotechnical exploration in this general area indicates that the surface soils are relatively thin and underlain by competent volcanic rock at relatively shallow depths.

The airport is situated in an area which is zoned for agricultural and industrial purposes. Businesses and industrial operations in the vicinity include:

- Cultivation of sugar cane;
- Car rental and maintenance;
- Aircraft operation and maintenance;
- Construction baseyards; and,
- Government baseyards.

4.0 Field Observations

In October 1994, Edward K. Noda and Associates, Inc. performed an on-site survey/inspection of portions of Kahului Airport and surrounding area. The results are discussed below.

4.1 Sanitary wastes generated at Kahului Airport are disposed of through the municipal sewer system.

4.2 There were no pits, trenches, landfills, open dumps currently being used for disposal of solid waste at Kahului Airport.

4.3 The site survey verified the presence, based on a previous report by others, of asbestos containing materials in the Glide Slope Building. These materials were as follows:

- Sealant material at pipe and cable penetrations of building exterior.
- Corrugated transite skirting around base of building.
- Transite panelling forming roof and walls of transformer housing.

The remaining existing NAVAIDS are free standing light fixtures with no related structures containing asbestos-containing materials. However, sealants on exposed penetrations most likely contain asbestos.

4.4 The site survey indicated the presence of an old electrical transformer for the Glide Slope Building. Information provided by a representative of the Federal Aviation Administration indicates that this transformer does not contain polychlorinated biphenyls (PCB).

Standby power for this facility is provided by backup batteries. There is no standby generator or fuel storage at this location.

4.5 Limited sampling and testing was conducted on the FAA NAVAIDS to determine the lead content of paints on the structures and fixtures. The following summarize the results of that 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

5.0 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 by Ogden Environmental and Energy Services (Ogden) indicates 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.

The Ogden report indicates that, of the 23 underground storage tank facilities reviewed in their survey, 14 of the facilities are constructed in compliance with the applicable federal and state requirements. As of 1992, only 14 of the facilities were in compliance with State Department of Health tank registration requirements and only two (2) had registered with the Maui County Fire Protection Bureau. Other regulatory deficiencies cited in the Ogden report include spill/overflow prevention/containment, tank integrity testing and record-keeping.

The proposed improvements to Kahului Airport will directly impact upon several ground transportation tenants with the relocation of the facilities situated within the Runway 5-20 runway protection zone. The majority of these tenants have underground fuel storage tanks associated with their operations.

The 1994 field survey by EKNA 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 (Figure 6). 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.

The following airport tenants were identified in a July 1993 search of the Hawaii Department of Health Leaking Underground Storage Tank list conducted by Vista Environmental Information, Inc.:

- Alamo Rent A Car
  40 South Hana Highway
  DOH Id. #9-502454
- Hertz Rent A Car
  Kahului Airport
  DOH Id. #9-501591
- National Car Rental
  142 Mokuea Place
  DOH Id. #9-501619
- Budget Rent-A-Car Systems, Inc.
  865 West Mokuea Street
  DOH Id. #9-502466
- Avis Rent A Car System
  884 West Mokuea Place
  DOH Id. #9-501890
- Papillon Hawaii Helicopters
  P.O. Box 1478 Kahului
  DOH Id. #9-502002

One of the aboveground storage facilities, 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. However, this facility has had a previous history of spills. The owners of the facility are currently bring 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 recent field reconnaissance conducted by EKNA indicates the potential for subsurface hydrocarbon contamination in the area of 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 show that the asphaltic concrete pavement within the burn pit area has eroded and 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.

6.0 Hazardous Wastes

The Ogden report identified 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 as the generated wastes are limited to recyclable hazardous wastes exempted under 40 CFR 261. The Ogden report cites numerous cases of non-compliance including failure to obtain identification numbers from U.S. EPA, excessive accumulation times, improper record-keeping, failure to submit required reports, improper disposal and non-compliance with used oil regulations.

During the 1994 field survey conducted by EKNA, it was noted that the sites of the two (2) abandoned car rental facilities, Trans-Maui and Thrifty, contained numerous articles of potentially hazardous waste (Figure 6). These items include but are not limited to used lead-acid batteries, lubricants and cleaning solvents. Both sites had several unlabelled drums believed to contain used oil. Gross staining and accumulations of petroleum sludges were noted in the former Trans-Maui vehicle maintenance area.

7.0 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 Ogden report cites the presence of two (2) drums labelled as containing "PCB Wastes" at the Federal Aviation Administration approach radar site. The report indicates that these drums are corroded and appear to be full.

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.

8.0 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, there is a potential that the impacted structures may have asbestos containing building materials 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 by Research Management Consultants, Inc. identified the presence of asbestos containing materials in the Glide Slope indicator and Middle Marker buildings.

During the course of the 1994 field survey by EKNA, samples of suspect asbestos containing materials were collected from the existing structures at the two (2) abandoned car rental facilities, Trans-Maui and Thrifty (Figure 6). A concentration of 3% chrysotile asbestos was found in the floor tiles from both facilities. It should be noted that the structures at both of these facilities were believed to have been constructed in the mid-1980's.

9.0 Lead Containing Paints

It is suspected that paints on and in many of the structures which will be impacted by the proposed airport improvements may contain lead. During the course of a field survey by EKNA,

samples of paints were collected from selected Federal Aviation Administration navigational aids for lead analyses. 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

These data indicate that the paints on the older structures at Kahului Airport are most likely lead containing paints.

10.0 Historical Concerns

Up until World War II, the project area was used for agricultural purposes, primarily the cultivation of sugar cane and the pasturage of cattle. Cane was grown in the area to the south and east of the present location of Runway 2-20 and cattle grazed in the area to the north and west of the runway.

In 1942, the U.S. Government annexed the project area for the development and construction of Naval Air Station Kahului (NASKA). The original development included the construction of Runways 2-20 and 17-35, aircraft ramps, hangars, barracks-style housing, support facilities, ammunition storage and fuel storage tanks.

Aircraft ground operations at NASKA occurred primarily in the area currently occupied by the helicopter and general aviation facilities and in the area currently occupied by the airport terminal complex. The area to the west of the current terminal area was used for industrial operations such as ground vehicle maintenance. The area to the south of Kaialinui Gulch was used primarily for support activities such as administration and living quarters.

In 1951, NASKA was turned over to the Territorial government for civilian airport operations. A third runway (5-23) was added in about 1954. Expansion and improvement of the airport facilities

has continued through the present.

The proposed extension of Runway 2-20 will be constructed to the south of the existing runway. Formerly, this area was a low area along the sides of Kaliallnui Gulch. The northern bank of the Gulch was occupied by the former alignment of Haleakala Highway. The southern bank was developed as support facilities for NASKA operations and later used for combined commercial and industrial operations such as air cargo facilities and construction baseyards.

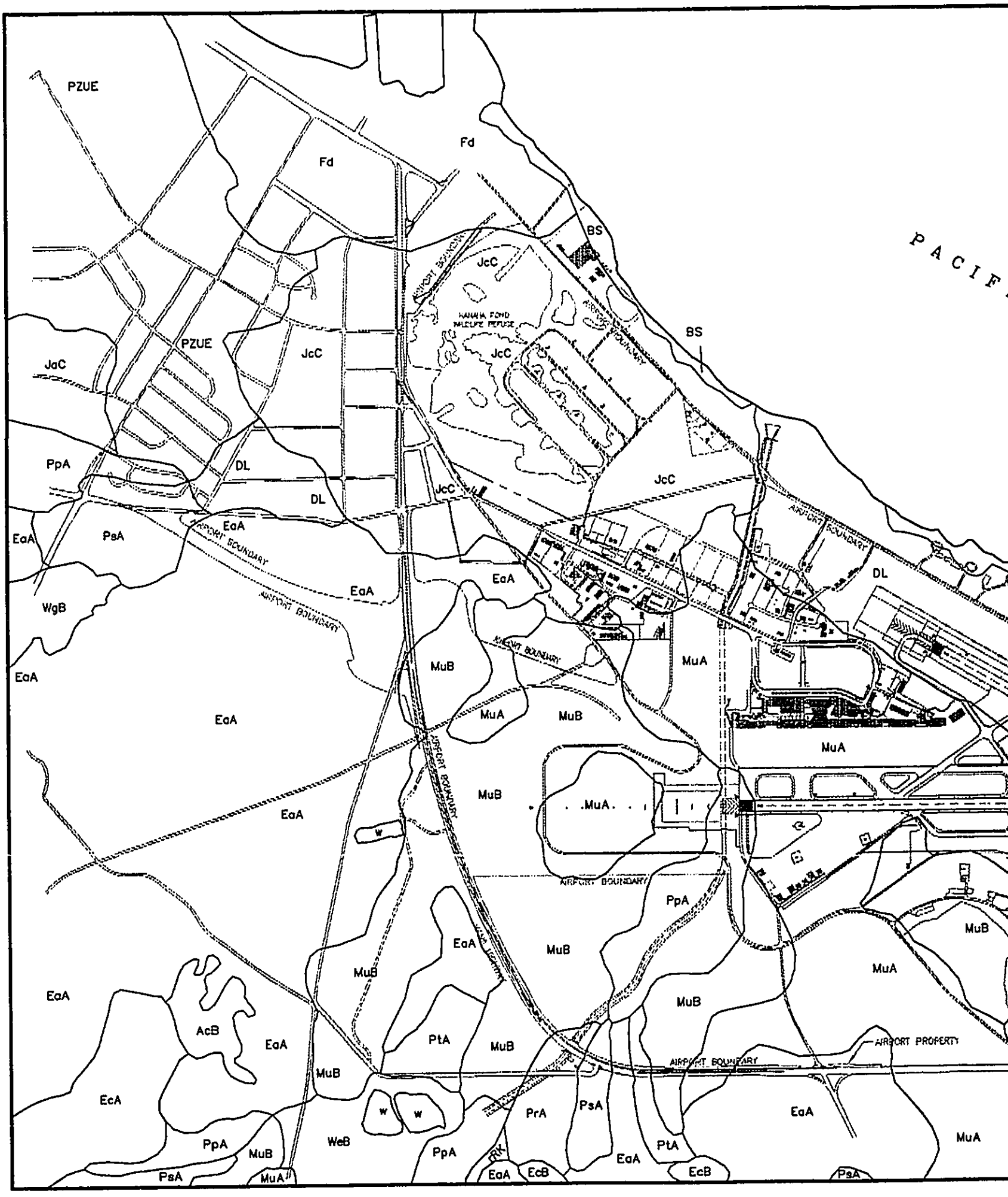
A large portion of the area to the west of the current terminal has been used for construction baseyards and ground transportation services. Seaward of these facilities in the vicinity of Kanaha Beach Park, the land was allowed to lay fallow and, until recently, access to this area was generally unrestricted.

Kahului Airport has a history of approximately 50 years of aviation and industrial operations. Aircraft, construction equipment and vehicle maintenance involves the use of hazardous materials including fuels, solvents, hydraulic fluid and lubricants. The operations may also include metal plating and etching. During the early portion of the history of the site, management of hazardous materials was not practiced at the same level as current standards. On-site disposal of spent solvents and oils was generally a common practice.

Previously, the area in the area in the vicinity of Kanaha Beach Park was used for unauthorized waste disposal. Generally, the wastes consisted of domestic refuse and construction debris. However, observations during a recent field reconnaissance indicated the presence of empty drums in material plied to make berms along Amalu Road.

There is some potential that the past history of approximately 50 years of aviation and industrial activities at Kahului Airport may have resulted in contamination of the soil/ground water underlying portions of the site. It is believed that the potential of subsurface contamination is generally low. However, the potential is higher is those areas that have been used for maintenance and industrial operations. There is also a relatively significant potential of subsurface contamination in the areas where unauthorized waste disposal occurred.

Most of the old NASKA structures have been demolished. There is a very high potential that remaining NASKA structures would have lead-containing paints and may have asbestos containing materials. Similarly, older industrial structures may contain lead and asbestos.


PZUE
Fd
Fd
BS
JcC
AIRPORT BOUNDARY
KAHWA POND
WILDLIFE REFUGE
BS
PZUE
JcC
JcC
JaC
JcC
PpA
DL
DL
JcC
JcC
EaA
EaA
PsA
AIRPORT BOUNDARY
EaA
EaA
DL
WgB
AIRPORT BOUNDARY
MuB
MuA
EaA
EaA
MuA
MuB
MuA
AIRPORT BOUNDARY
MuB
.MuA.
EaA
W
AIRPORT BOUNDARY
PpA
EaA
MuB
MuB
MuB
MuA
EaA
MuB
AcB
EaA
PtA
MuB
AIRPORT PROPERTY
MuB
AIRPORT BOUNDARY
EcA
W
W
PrA
PsA
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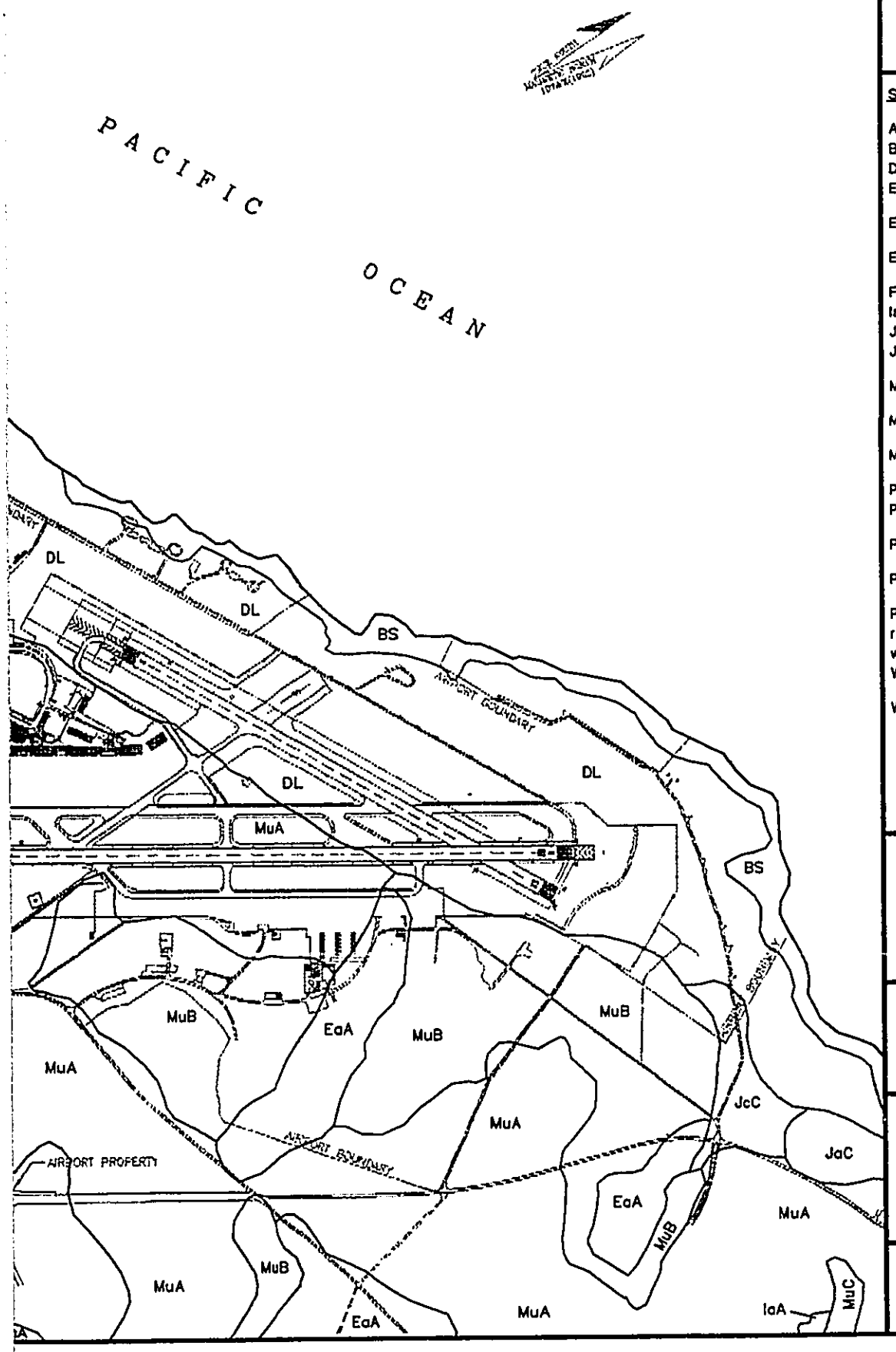
PsA



Airports Division

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

SOIL TYPE LEGEND

AcB	ALAE SANDY LOAM, 3-7% SLOPES
BS	BEACHES
DL	DUNE LAND
EaA	EWA SILTY CLAY LOAM, 3-7% SLOPES
EcA	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

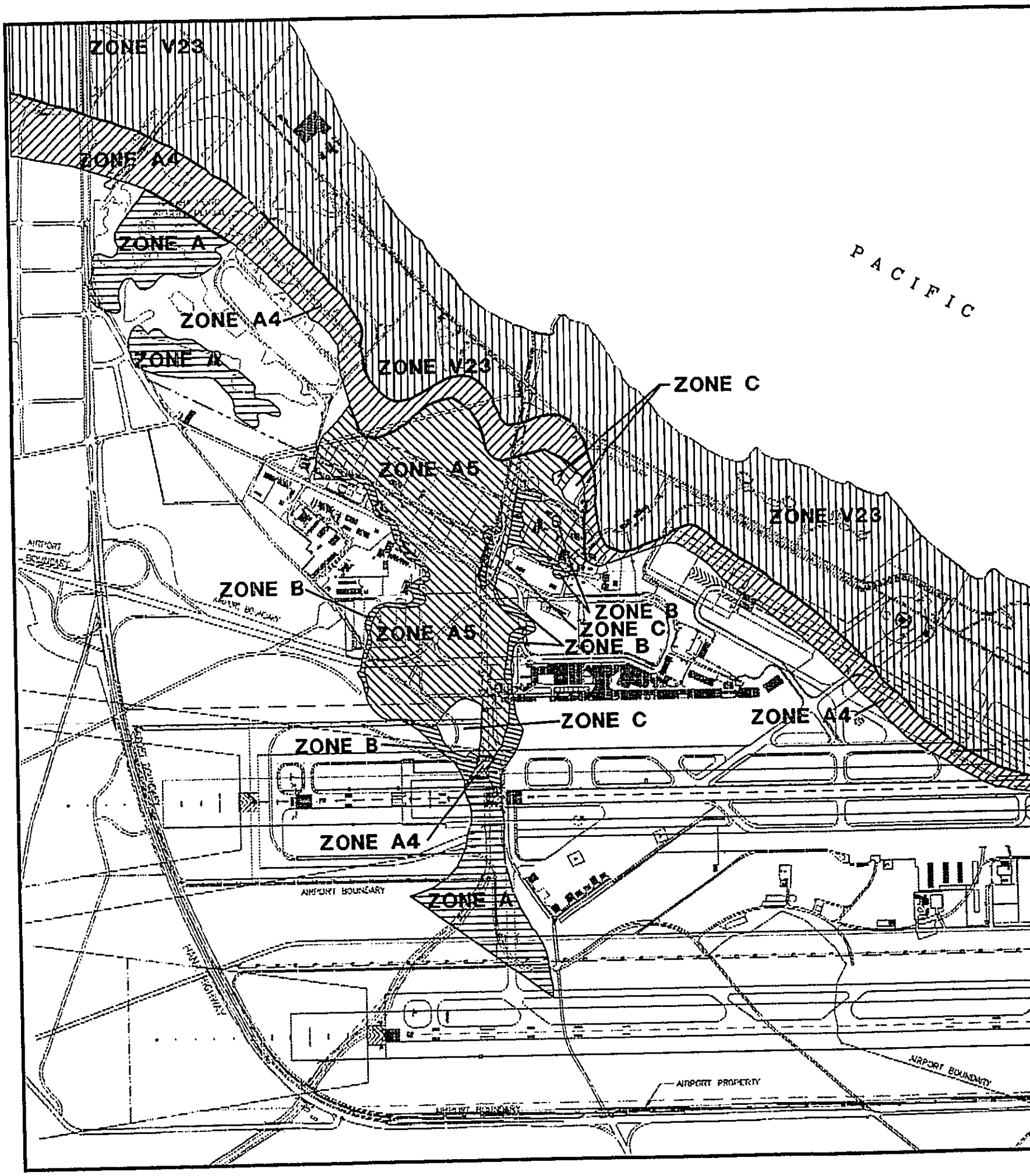
Edward K. Noda and Associates, Inc.

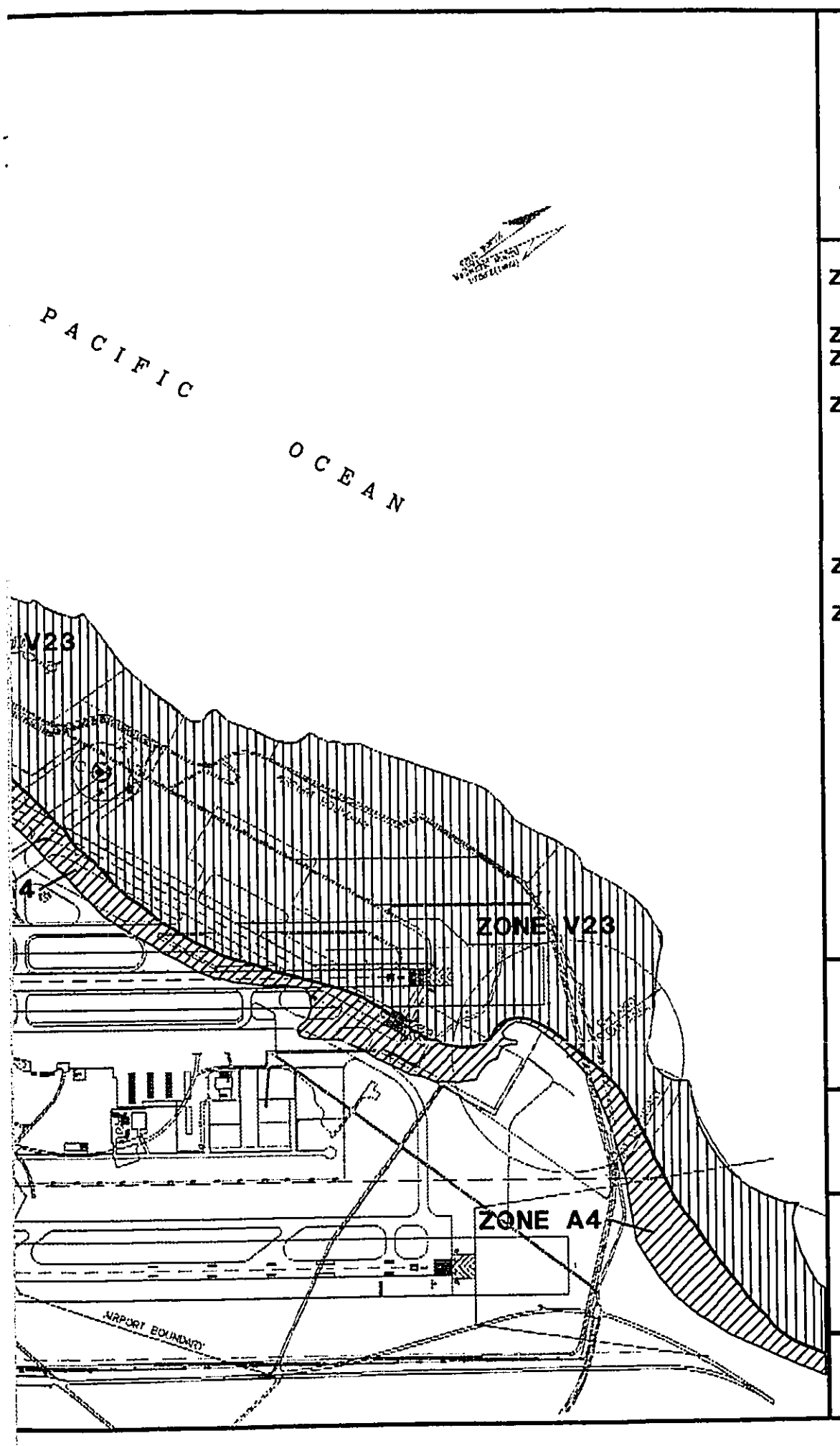
LIMITED SURVEY
HAZARDOUS MATERIALS
KAHULUI AIRPORT
KAHULUI, MAUI, HAWAII

SOILS MAP

MAY, 1995

FIGURE 1


ZONE V23
ZONE A4
ZONE A
ZONE A4
ZONE A
ZONE V23
ZONE C
PACIFIC
ZONE A5
ZONE V23
ZONE B
ZONE B
ZONE C
ZONE B
ZONE C
ZONE A4
ZONE B
ZONE A4
AIRPORT BOUNDARY
ZONE A
AIRPORT BOUNDARY
AIRPORT PROPERTY
AIRPORT BOUNDARY



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.

0 500 1000 1500
GRAPHIC SCALE IN FEET

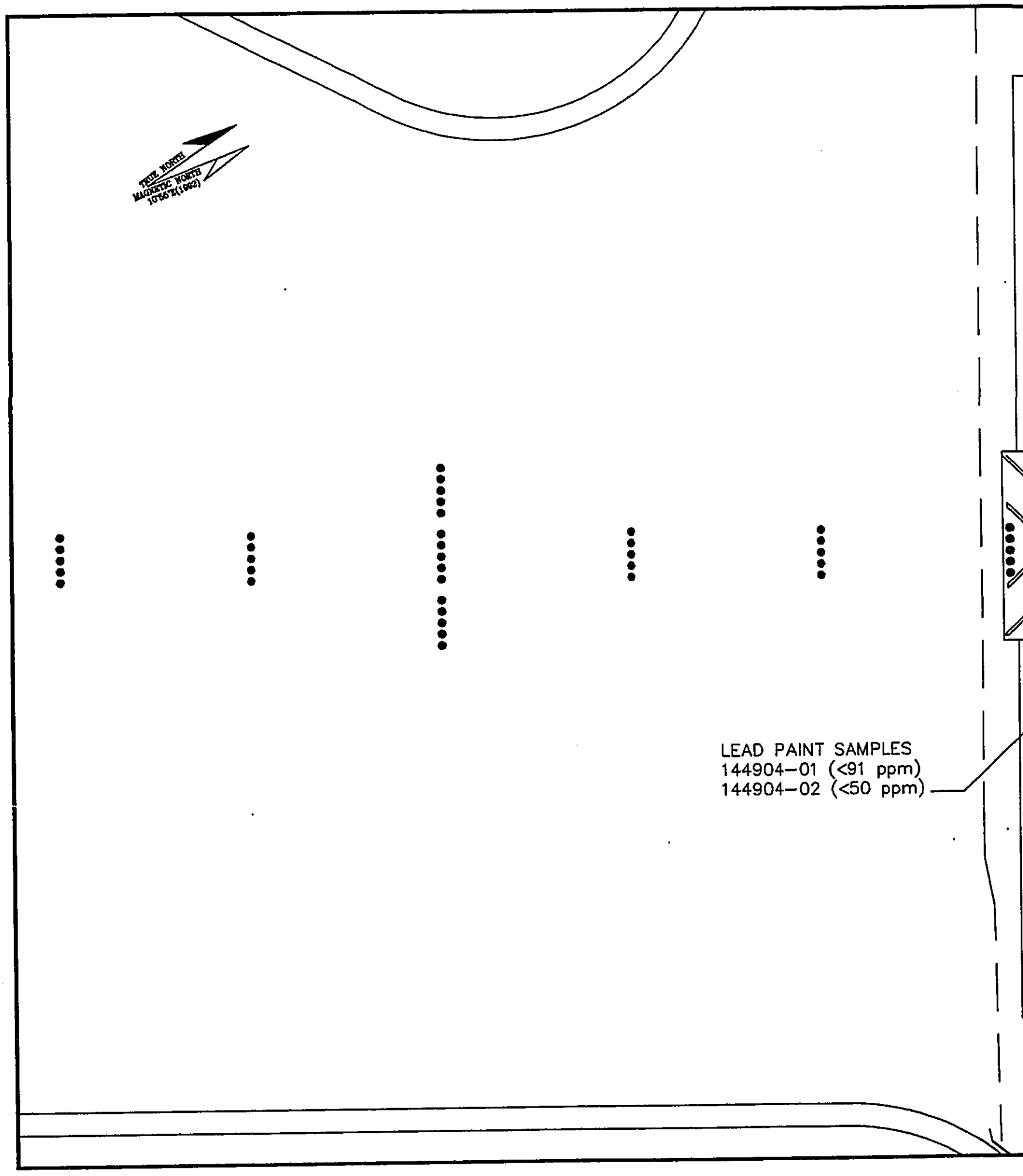
SOURCE:
NATIONAL FLOOD INSURANCE PROGRAM

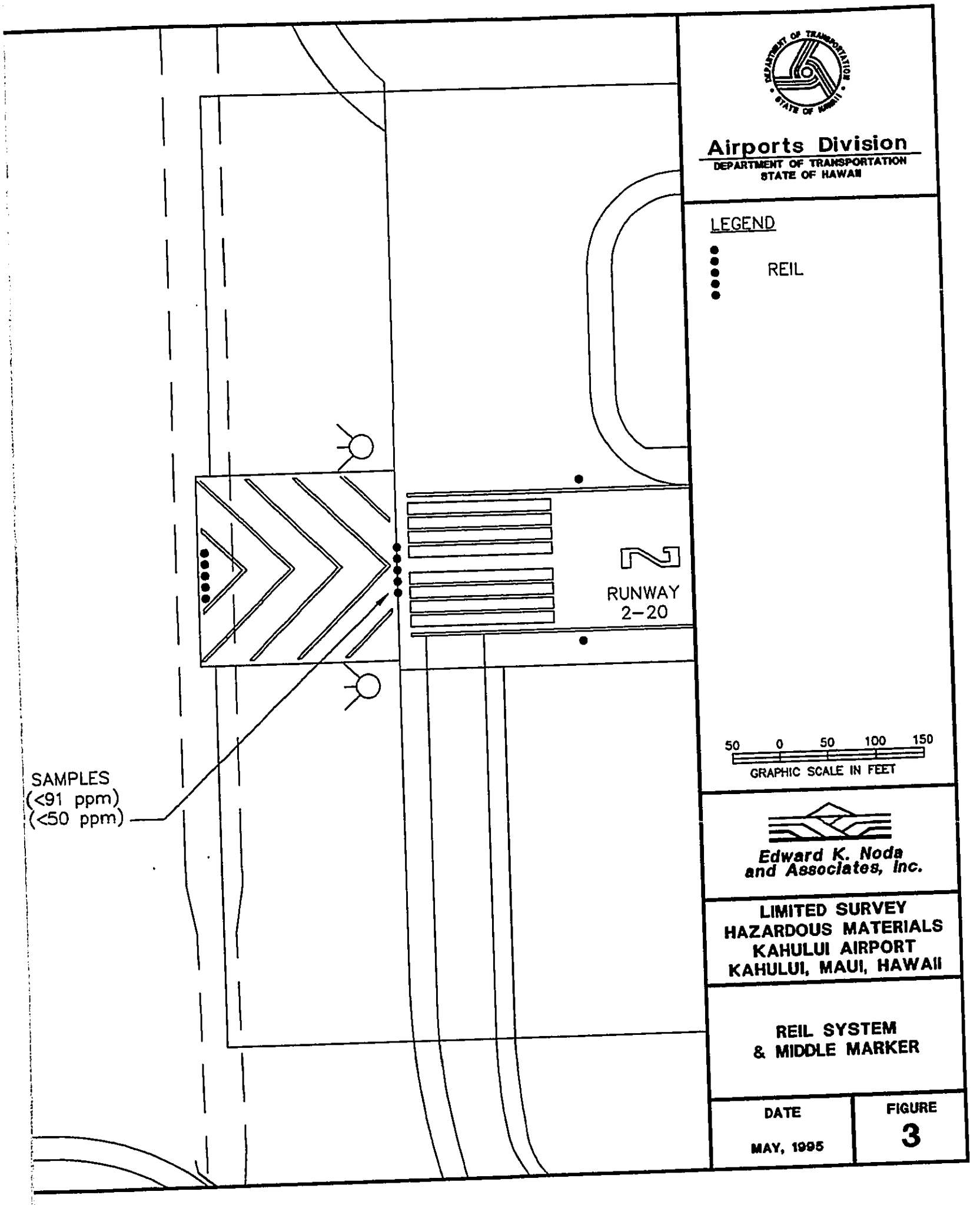
Edward K. Noda and Associates, Inc.

LIMITED SURVEY
HAZARDOUS MATERIALS
KAHULUI AIRPORT
KAHULUI, MAUI, HAWAII

FLOOD MAP

DATE	FIGURE
MAY, 1995	2


TRUE NORTH
MAGNETIC NORTH
10°56'E(1982)
LEAD PAINT SAMPLES
144904-01 (<91 ppm)
144904-02 (<50 ppm)



Airports Division
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STATE OF HAWAII

LEGEND

REIL

50 0 50 100 150
GRAPHIC SCALE IN FEET

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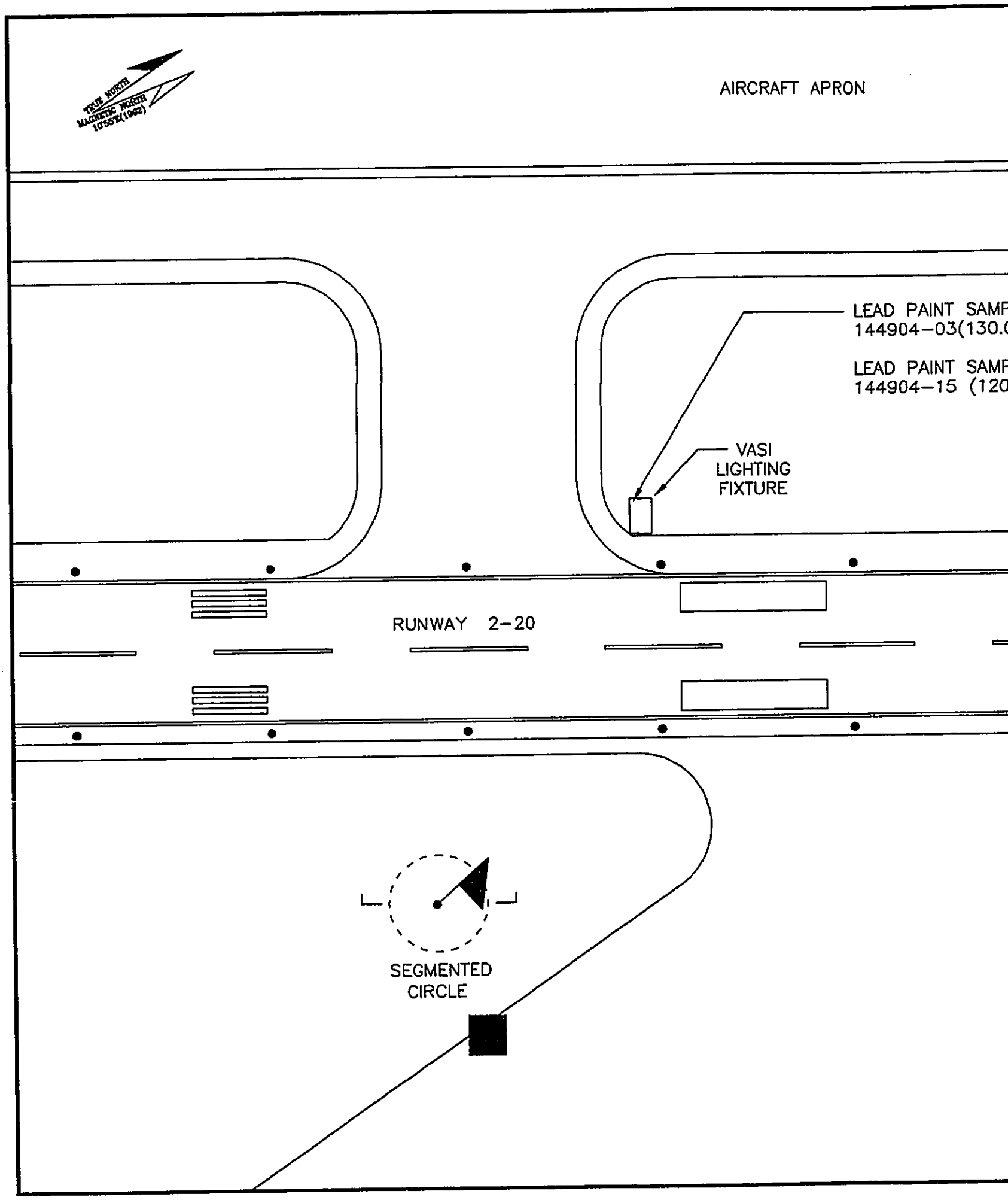
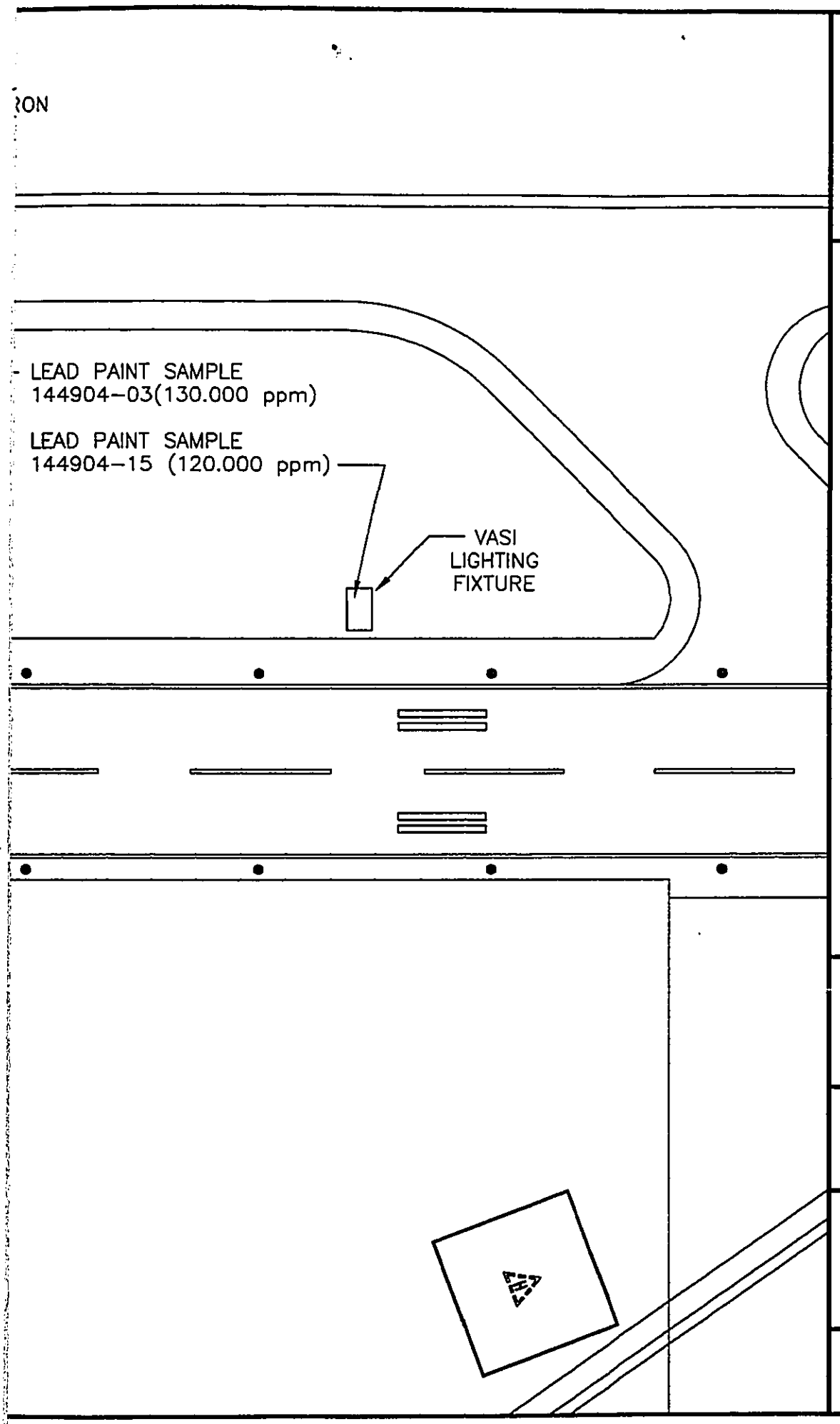
LIMITED SURVEY
HAZARDOUS MATERIALS
KAHULUI AIRPORT
KAHULUI, MAUI, HAWAII

REIL SYSTEM
& MIDDLE MARKER

DATE	FIGURE
MAY, 1995	3


TRUE NORTH
MAGNETIC NORTH
10°55'E(1992)
AIRCRAFT APRON
LEAD PAINT SAMP
144904-03(130.
LEAD PAINT SAMP
144904-15 (120
VASI
LIGHTING
FIXTURE
RUNWAY 2-20
SEGMENTED
CIRCLE



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

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GRAPHIC SCALE IN FEET

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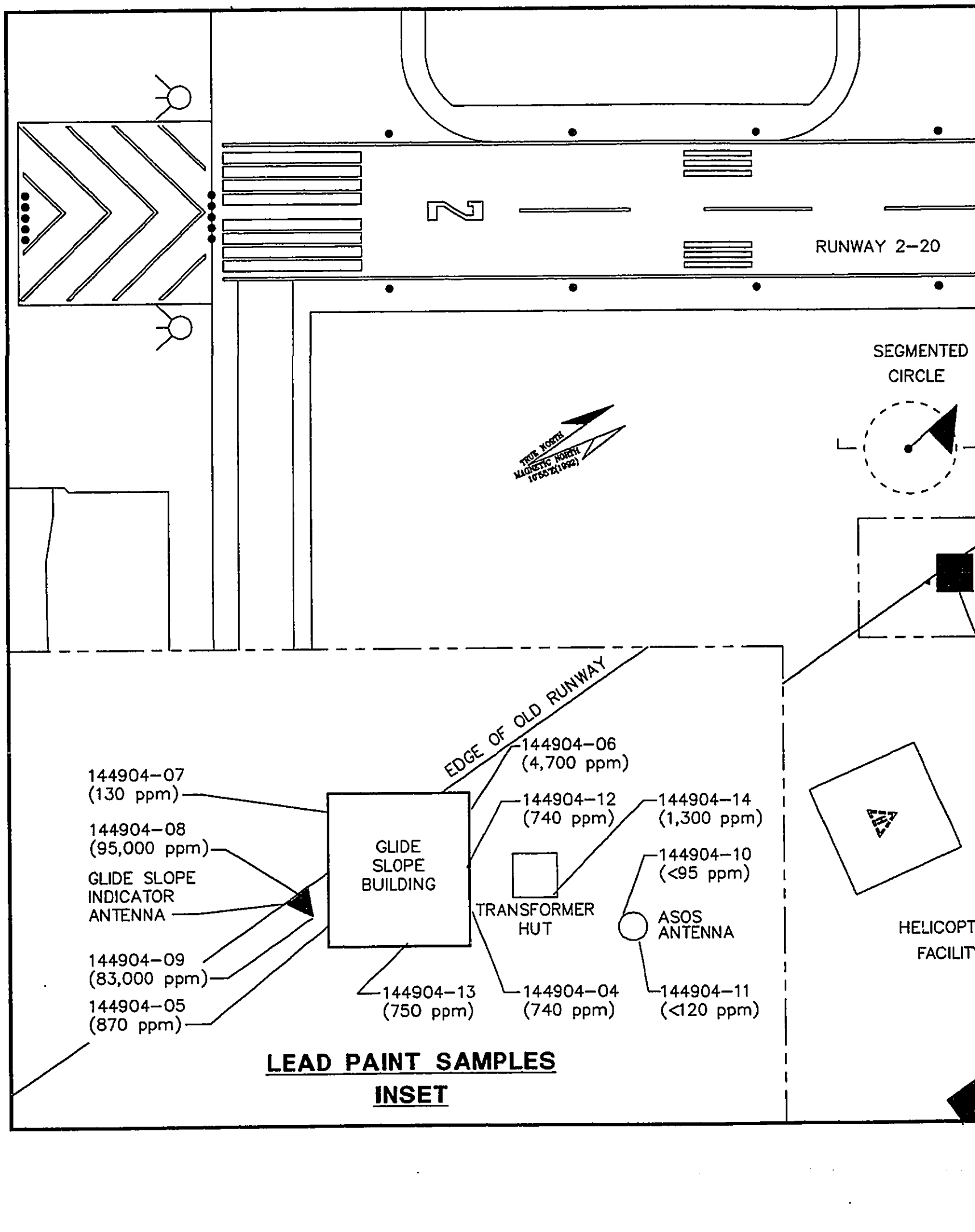
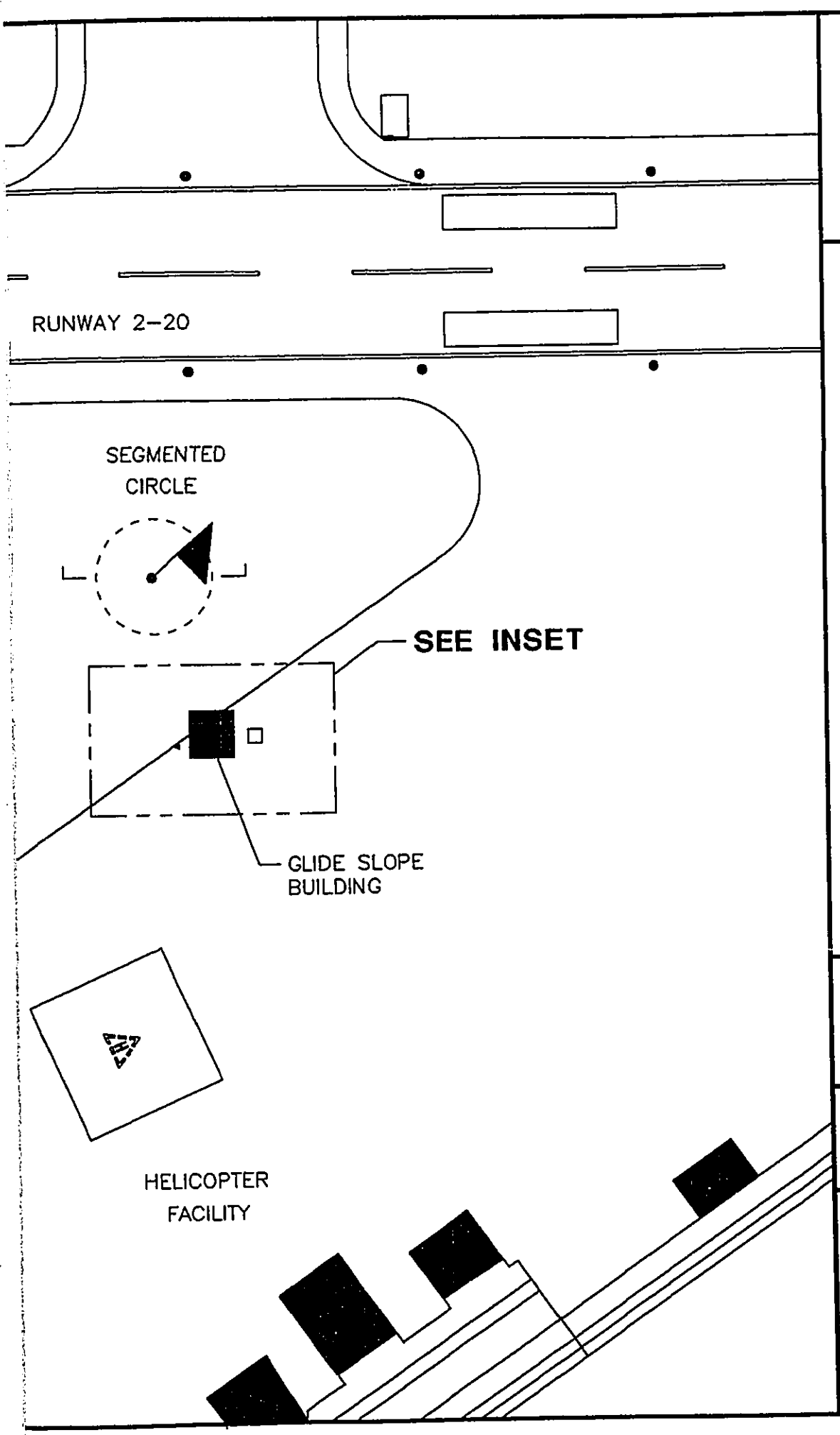
LIMITED SURVEY
HAZARDOUS MATERIALS
KAHULUI AIRPORT
KAHULUI, MAUI, HAWAII

VASI LIGHTING FIXTURES

DATE	FIGURE
MAY, 1995	4


RUNWAY 2–20
SEGMENTED
CIRCLE
TRUE NORTH
MAGNETIC NORTH
EDGE OF OLD RUNWAY
144904–06
(4,700 ppm)
144904–07
(130 ppm)
144904–12
(740 ppm)
144904–14
(1,300 ppm)
144904–08
(95,000 ppm)
GLIDE
SLOPE
BUILDING
144904–10
(<95 ppm)
GLIDE SLOPE
INDICATOR
ANTENNA
TRANSFORMER
HUT
ASOS
ANTENNA
144904–09
(83,000 ppm)
144904–05
(870 ppm)
144904–13
(750 ppm)
144904–04
(740 ppm)
144904–11
(<120 ppm)
LEAD PAINT SAMPLES
INSET



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

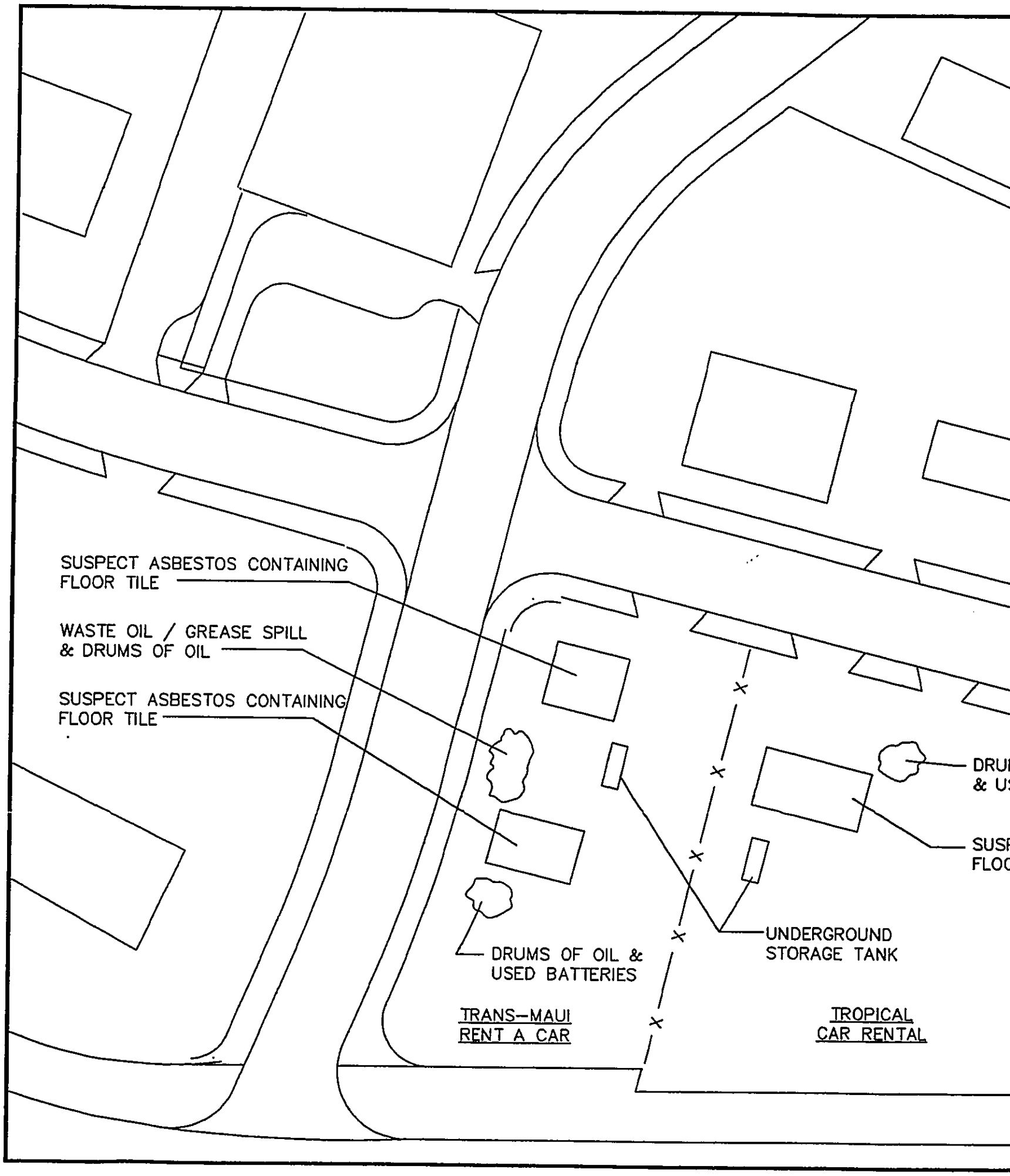
50 0 50 100 150
GRAPHIC SCALE IN FEET

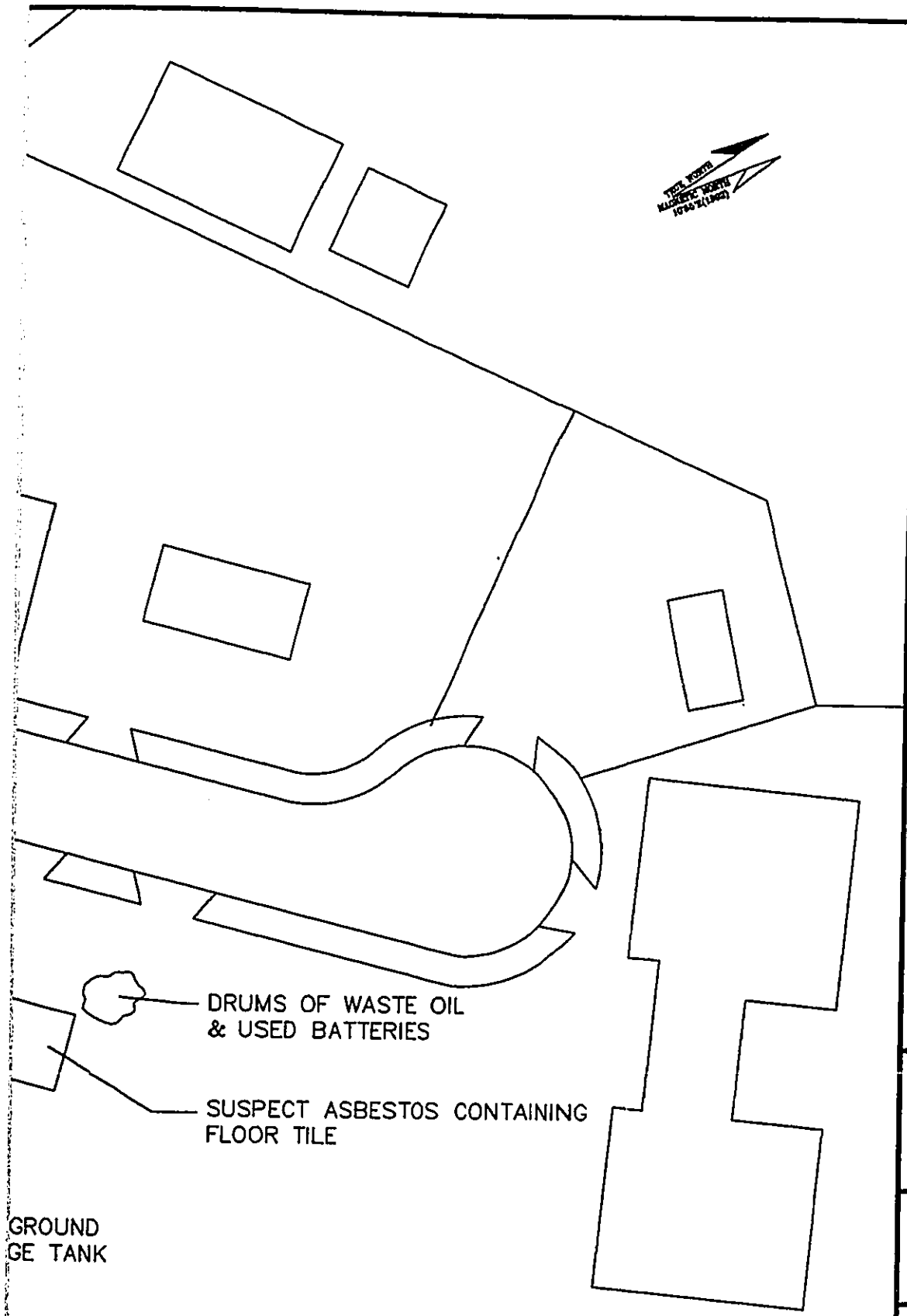
Edward K. Noda and Associates, Inc.

LIMITED SURVEY
HAZARDOUS MATERIALS
KAHULUI AIRPORT
KAHULUI, MAUI, HAWAII

GLIDE SLOPE INDICATOR BUILDING

DATE	FIGURE
MAY, 1995	5


SUSPECT ASBESTOS CONTAINING FLOOR TILE
WASTE OIL / GREASE SPILL & DRUMS OF OIL
SUSPECT ASBESTOS CONTAINING FLOOR TILE
DRUMS OF OIL & USED BATTERIES
UNDERGROUND STORAGE TANK
TRANS-MAUI RENT A CAR
TROPICAL CAR RENTAL



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

20 0 20 40
GRAPHIC SCALE IN FEET

Edward K. Noda and Associates, Inc.

LIMITED SURVEY
HAZARDOUS MATERIALS
KAHULUI AIRPORT
KAHULUI, MAUI, HAWAII

GROUND TRANSPORTATION AREA

DATE	FIGURE
MAY, 1995	6

APPENDIX A

GUIDE SPECIFICATIONS

The following is a guide specification for the removal of underground storage tanks.

1.05 SCOPE OF WORK

A. The Contractor shall furnish all, labor, equipment, materials, services, safety supplies, and employee training to undertake the activities associated with the permanent closure and removal of the UST systems. The scope of work shall include:

1. Develop job/site specific Safety and Health Plan (SHP) to be enforced during execution of work detailed in this Section.

2. Demolition, excavation, removal and disposal of the USTs, all associated dispensing and piping systems and any remaining contents. Tank bottoms (including any residual fuel, sludge, and rinsate) from USTs shall be properly contained and disposed of in accordance with the appropriate regulations.

3. Backfill, compact and restore excavations, trenches, holes and pits in accordance with Contract Specifications.

1.06 REGULATORY, SAFETY AND OTHER RELATED DOCUMENTS

A. All work shall be done in accordance with all applicable federal, state, local, and professional codes, regulations, ordinances, and standards, including:

1. American National Standards Institute, Inc. (ANSI): ANSI A10.6, 1983. Demolition Operations - Safety Requirements.

2. American Petroleum Institute (API):

API Recommended Practice 1604. Removal and Disposal of Used Underground Storage Tanks.

API Publication 1628. Underground Spill Cleanup Manual.

API Publication 2003. Protection Against Ignition Arising Out of Static, Lightning and Stray Currents.

API Publication 2015. Cleaning Petroleum Storage Tanks.

API Publication 2015A. Guide for Controlling Lead Hazard Associated with Tank Entry and Cleaning.

API Publication 2202. Guidelines for Protecting Against Lead Hazard when Dismantling and Disposing of Steel from Tanks that Have Contained Leaded Gasoline.

API Publication 2217A. Guidelines for Work in Inert Confined Spaces in the Petroleum Industry.

3. Environmental Protection Agency (EPA):

40 CFR 261. Identification and Listing of Hazardous Wastes.

40 CFR 280. Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks.

4. Hawaii State Department of Health (DOH)

HAR Title 10. Chapter 128D. Environmental Response Law.

Technical Guidance Manual for UST Closure and Release Response, August 1992.

5. Occupational Safety and Health (OSSA):

29 CFR 1910. Occupational Safety and Health Standards.

6. Hawaii Department of Labor and Industrial Relations:

HAR Title 12, Subtitle 8 Chapters 64, 99, 133 and 203. Occupational Safety and Health Standards.

7. National, State, and Local Fire Codes

1.07 SUBMITTALS

A. The Contractor shall submit a Work Plan (WP) for approval by the Engineer. The WP shall take into consideration Federal, State, Local and Industry recommendations for UST closure activities. The WP shall be submitted at least 45 working days before the work is scheduled to start and, as a minimum, shall include:

1. Demolition/Excavation Plan and Schedule including dates and locations field operations are scheduled to begin.

2. Job/Site Specific Safety and Health Plan.

3. Job/Site Specific Emergency Response Plan.

4. Name, title, and telephone number of person with primary responsibility for overall coordination of closure activity and date closure activities are scheduled to begin.

5. Designation of an on-site Safety Officer.

6. Procedures for monitoring/screening the Work Area for flammable/combustible gases.

7. Procedures for removing sludge, cutting, capping and disposing of dispensing systems and fuel/vent lines.

8. Procedures for emptying, venting, cleaning, removing and disposing of USTs.

9. Plan for handling and transporting any contaminated excavated soils/materials, residual product, sludge, and groundwater.

10. Proof of qualification and experience of Contractor in work involving UST closure and removal operations.

11. Proof of worker training.

12. Listing and description of methods and equipment to be used for each operation, and the sequence of such operations.

B. After disposal of the tanks, dispensing systems and waste (residual fuel, sludge and/or rinsate), the Contractor shall submit to the Engineer.

1. Certificate of disposal of the tank system(s), and

2. Fully completed and signed EPA manifest(s) for waste disposal.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. The Contractor shall provide calibrated monitoring equipment/devices to measure for toxic or flammable vapors/gases at a Work Area.

B. All equipment/devices shall be in good working condition, suitable for the intended use, and in compliance with applicable standards. Field monitoring equipment may include photoionization detectors (PID), flame ionization detectors (FID), and combustible gas indicators (CGI), or other pre-approved device(s).

C. Only non-sparking and explosion proof air pumps/equipment shall be used. Cutting of pipes and USTs shall be done using cold cutting techniques. All equipment shall meet industry standards and be in good/safe working conditions.

PART 3 - EXECUTION

The Contractor shall execute the work detailed in this Section in accordance with the pre-approved Work Plan and the August 1992 DOH Technical Guidance Manual for UST Closure and Release Response.

3.01 PREPARATION

A. The Contractor shall:

1. Review all relevant plans and conduct work sites surveys to verify existing conditions.

2. Establish Work Areas and provide, erect and maintain temporary barriers, security devices, and appropriate warning signs.

3. Protect existing structure which are not to be demolished.

4. Prevent movement or settlement of adjacent structures, including buildings and adjacent sidewalks. Provide bracing and shoring.

5. Review available information on product leaks or subsurface contamination, fire records, and locations of ground water, nearby monitoring wells, utilities, storm drains, etc.

6. Identify and remove from the Work Areas all ignition sources.

7. Identify/mark exact locations of pipes to be removed, and locations of nearby utilities.

8. Make available non-sparking and explosion proof equipment for use in executing the work detailed in this Section.

9. Provide hazardous materials emergency response

supplies and personal protective equipment for workers.

10. Provide for periodic monitoring for combustible gases at the Work Areas before and during demolition, excavation, emptying, cleaning and cutting of USTs and associated dispensing systems and piping. If readings of 20% LEL or greater are measured at the Work Area boundaries, all operation shall be suspended and the combustible gases purged.

3.02 DEMOLITION, EXCAVATION AND REMOVAL OF UST SYSTEMS

Before work begins, the Contractor shall cover any storm drains located within the Work Areas to prevent possible entry of product spills, UST rinsate, and/or construction debris. Upon completion of the work, the storm drain shall be uncovered and cleaned of all obstructions.

The Contractor shall safeguard the structural integrity of any structures located at the Airport that may be impacted by UST demolition, excavation, and removal activities. Repairs to any damages of structures will be at the expense of the Contractor.

During UST removal activities, the Work Areas shall be monitored for flammable/combustible gases, hazardous materials and subsurface contamination in accordance with the pre-approved SHP, and WPs, respectively.

A. Demolition: Demolition shall be done in accordance with the pre-approved WP and Contract Specifications. The Contractor shall:

1. Disconnect (at source) and remove all electrical connections to the UST systems and other electrical fixtures in the demolition area.

2. Remove and dispose of any weed overgrowth covering the demolition area.

3. Tone and mark locations of utilities and UST systems.

4. Demolish any concrete areas covering the USTs (the concrete dispenser islands shall be demolished only after removal of the dispensing systems).

5. Remove any protective bollards surrounding the product dispenser islands.

B. Excavation: Excavation shall be done in accordance with the pre-approved WP and Contract Specifications. The Contractor shall:

1. Excavate to expose both ends of the USTs, and fuel and vent pipes.

2. Locate fittings, pipes, and connection points.

3. Check exposed portions of USTs, fittings and pipes for structural integrity, holes, leaks and improper connections.

4. Empty USTs, dispensing and piping systems of residual products and purge flammable gases (as per Par 3.02 D).

5. Disconnect and remove dispensing systems, all fuel and vent piping and demolish concrete islands.

6. Complete excavation to fully expose the USTs, and during excavation monitor for flammable gases.

7. Remove each UST separately and remove sludge, clean (as per Par 3.03 D), place on truck and transport to demolition site for disposal.

8. Protect excavation pits and trenches from water runoff and rain.

9. At the direction of the Engineer, or an authorized representative, the excavated soils/materials shall be stockpiled and bermed in an area designated by the Airport Manager. The soils/materials shall be encased in 12 mil black plastic sheeting to protect from rain, and to minimize containment run-off and percolation potential.

10. If determined by the Engineer, or an authorized representative, that no subsurface contamination is detected at a given UST location, the excavation pit shall be backfilled at the direction of the Engineer or his representative, in accordance with Contract Specifications.

11. If subsurface soil/ground water contamination is detected at a given UST location, the Contractor shall at the direction of the Engineer, or an authorized representative, follow instructions detailed in Par 3.06 of this Section.

C. Removal and Disposal of UST Piping and Dispensing Systems
The Contractor shall:

1. Drain residual fuel from all piping and dispensers into the USTs.

2. Purge piping and dispensers from flammable/ combustible gases.

3. Disconnect (at a point nearest to the UST) and remove fuel and vent lines.

4. Disconnect/remove pumps and dispensing systems, and demolish concrete island.

5. Cap disconnected pipes to prevent contamination from residual product leakage.

6. Inspect connections, pipes and dispensing systems for structural integrity, holes, rust, etc.

7. The Contractor shall provide for the Engineer, or an authorized representative to inspect locations from which pipes and dispensing systems had been removed to inspect for soil discoloration and contamination.

8. Dispose of piping and dispensing systems at an appropriate facility.

D. Removal and Cleaning of USTs: Cleaning and removing of USTs shall be in accordance with all applicable federal, state, local and industry requirements and standards. Personnel involved in removal/cleaning of the USTs shall use appropriate personal protective equipment. The Contractor shall:

1. Check each UST for flammable/combustible gases using a CGI or similar pre-approved device.

2. If LEL readings are greater than 10%, purge flammable/combustible gases from each UST using one of the following methods:

   a. Add dry ice (solid carbon dioxide) at the rate of 1.5 to 2.0 lbs. per 100 gallons capacity, or

   b. ventilate UST from one end while discharging at the other end.

3. Recheck USTs for flammable/combustible gases with gas detectors. If LEL readings are still greater than 10%, repeat (Par 3.02 D) above. If readings are less than 10%, plug all holes but leave one hole open for pressure venting.

4. When LEL readings are stabilized at less than 10%, remove each UST from the excavation pit and place on plastic sheeting near the Work Area. The plastic sheeting shall be placed in such a manner to prevent site contamination from run-off or spills.

5. Inspect each UST for structural integrity, corrosion, capacity, construction, manufacturer, etc.

6. Recheck each UST for combustible/flammable gases and purge again if necessary.

7. If necessary, cut a man-way in each UST for cleaning using non-sparking equipment.

8. Provide Confined Space Entry Permit.

9. Remove sludge, complete cleaning of USTs, recheck for gases, load onto trucks, and transport to disposal site.

USTs shall only be entered and cleaned by trained personnel using proper respiratory protective equipment.

10. At the UST demolition site, the USTs shall be rechecked for gas free condition before continuing with decontamination, cutting and disposal.

11. A copy of the UST System Disposal Certification shall be submitted to the Engineer or his authorized representative.

3.03 MONITORING/SCREENING FOR SUBSURFACE CONTAMINATION

A. The State will provide an Independent Consultant to monitor, analyze and report the USTs and piping demolition. The Contractor shall conduct his demolition activities so that the Consultant's representative has access to the storage tanks and surrounding soil at all times. The Contractor shall allow the representative access for sampling activities as required under 40 CFR Part 280. The Contractor shall assist in the collection of samples.

B. During demolition, excavation and UST removal operations, the Contractor shall provide access to the work site to the Engineer or his authorized representative to also:

1. Screen excavation backfill and native soil for stains, discoloration or petroleum odors.

2. Monitor for free product or sheen on top of soil and water (if present).

C. When subsurface soil/ground water contamination or organic vapors are detected in the Work Areas, the Contractor, at the direction of the Engineer, or an authorized representative, shall put into effect provisions detailed in Par 3.06 of this Section.

D. The excavation pit shall be secured and left open until laboratory testing results have been received and approved by the Engineer.

3.04 RESIDUAL SLUDGE AND RINSATE

A. All residual sludges and rinsate removed from the USTs shall be properly contained and disposed of in accordance with all applicable federal and state requirements.

B. Copies of waste manifests, transportation documents and disposal certification shall be presented to the Engineer, or an authorized representative, after job completion.

3.05 SAMPLING/TESTING/HANDLING SOIL AND GROUND WATER

A. The Contractor shall provide access to the work site for the Engineer, or an authorized representative, to collect soil and water samples from the UST excavation pits.

B. If laboratory testing indicates the absence of subsurface contamination, and at the direction of the Engineer, or an authorized representative, the excavated soils and materials may be used to backfill the excavation pit.

3.06 RESPONSE TO CONTAMINATED SOILS AND GROUND WATER

When soil contamination is detected, the Contractor shall, at the direction of the Engineer, or an authorized representative, proceed to overexcavate in accordance with the applicable section on "EXCAVATION OF CONTAMINATED SOIL."