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April 14, 2003

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

TO: GENEVIEVE SALMONSON, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: RODNEY K. HARAGA *Rodney Haraga*
DIRECTOR OF TRANSPORTATION

SUBJECT: FINAL ENVIRONMENTAL ASSESSMENT
HILO INTERNATIONAL AIRPORT MASTER PLAN & NCP UPDATE
STATE PROJECT NO. AH1011-03

The State Department of Transportation, Airports Division has reviewed the comments received during the 30-day public comment period which began on November 8, 2002. The agency has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the May 8, 2003 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the Final EA. If you need further information, please contact Ms. Lynn Becones, Planner, at 838-8811.

Enclosures: OEQC Publication form
Final EA (4)

c: Wilson Okamoto & Associates, Inc. (R. Funakoshi)

TABLE 1
SUMMARY OF STATE OF HAWAII AND FEDERAL
AMBIENT AIR QUALITY STANDARDS

POLLUTANT	SAMPLING PERIOD	AAQS PRIMARY	AAQS SECONDARY	STATE STANDARDS
PM ₁₀	Annual	50	50	50
	24-hr	150	150	150
PM _{2.5}	Annual	15	15	n/a
	24-hr	65	65	n/a
SO ₂	Annual	80	---	80
	24-hr	365	---	365
	3-hr	---	1,300	1,300
NO ₂	Annual	100	---	70
	8-hr 1-hr	10,000 40,000	---	5,000 10,000
O ₃	8-hr 1-hr	160 235	---	n/a 100
	1-hr	---	---	35
Pb	Calendar Quarter	1.5	---	1.5

KEY: PM₁₀ - particulate matter ≤ 10 microns
 PM_{2.5} - particulate matter ≤ 2.5 microns
 SO₂ - sulfur dioxide
 NO₂ - nitrogen dioxide
 CO - carbon monoxide
 O₃ - ozone
 H₂S - hydrogen sulfide
 Pb - lead

All concentrations in micrograms per cubic meter (ug/m³).

Finally, the State of Hawaii also has fugitive dust regulations for particulate matter (PM) emanating from construction activities.²² Visible fugitive dust cannot cross the property line of the property on which it originated.

2.3 Conformity with the State Implementation Plan (SIP) Pursuant to CAA §110, each state has an implementation plan to assure its compliance with the primary NAAQS. Through CAA §176, Congress directed the EPA to promulgate criteria and procedures for determining conformity of federal transportation plans, programs and projects with state implementation plans (SIP). EPA did so and made it clear in the applicability section of the rules that conformity determinations need only be made in areas designated nonattainment or having a maintenance plan for transportation-related criteria pollutants.²³ Since the entire State of Hawaii Air Quality Control Region (AQCR) is in compliance with all NAAQS, no conformity determination is required.

3. EXISTING AIR QUALITY

3.1 Department of Health Monitoring The state Department of Health (DOH) maintains a network of 17 air monitoring stations around the state to gather data on the following regulated pollutants:

- particulate matter ≤ 10 microns (PM₁₀)
- sulfur dioxide (SO₂)
- nitrogen dioxide (NO₂)
- carbon monoxide (CO)
- ozone (O₃)
- hydrogen sulfide (H₂S)

In the case of PM₁₀, the DOH employs both continuous and manual methods to collect data. Measurements are made on a 24-hour basis to correspond with the averaging periods specified in state and federal standards. Manual samplers are operated once every six days in accordance with U.S. Environmental Protection Agency (EPA) guidelines. Carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone and hydrogen sulfide are all measured with continuous instruments thereby allowing determination of concentrations corresponding to the averaging times applicable to each pollutant's standard.

The DOH operates one manual PM₁₀ instrument in Hilo. A summary of recent data from that site and other sites on Oahu are presented in Table 2. While most of the data are not from the Hilo area, they do demonstrate compliance with state and federal ambient air quality standards even on the significantly more urbanized island of Oahu. It seems reasonable to infer from this that the Hilo area is also in compliance with those same standards.

3.2 Onsite Carbon Monoxide Sampling In conjunction with this project, air sampling was conducted in August 2001 at a site across from the passenger terminal at the airport. A continuous carbon monoxide (CO) instrument was set up and operated during peak traffic hours. An anemometer and

TABLE 2
AIR QUALITY DATA
DEPARTMENT OF HEALTH MONITORING SITES
2000

Pollutant	Concentration ($\mu\text{g}/\text{m}^3$)
Particulate matter ≤ 10 microns (PM ₁₀) 24-hr (max) Annual	18 11
Sulfur dioxide (SO ₂) 3-hr (max) 24-hr (max) Annual	438 94 4
Carbon monoxide (CO) 1-hr (max) 8-hr (max) Annual	1,596 1,012 197
Nitrogen dioxide (NO ₂) Annual	7
Ozone (O ₃) 1-hr (max) Annual	98 32

Notes: 1. PM₁₀ and SO₂ data are from the Hilo site.
2. CO and NO₂ are from the West Beach, Oahu site.
3. O₃ data are from the Sand Island, Oahu site.

Source: Department of Health (Reference 24)

vane were installed to record onsite surface winds during the air sampling. Simultaneous manual traffic counts were also performed.

During the morning peak hour sampling on Friday, 24 August 2001, weather conditions were characterized by partly cloudy (50%) skies and light, variable winds averaging about 1.0 mph. CO concentrations measured were low, averaging less than 1.0 mg/m³. See Figure 2.

During the afternoon peak hour, skies were cloudy (80%) and the winds were predominantly southeasterly averaging 2.2 mph. The CO level remained low averaging less than 1.0 mg/m³. See Figure 3.

4. CLIMATE AND SURFACE WINDS

4.1 Climate. Climatic normals, means and extremes for Hilo are presented in Table 3 along with Honolulu for comparison.²⁵ While temperatures may be similar, other parameters are quite different due to the windward location of Hilo International Airport versus the leeward location of the Honolulu International Airport. Typical of the windward side of Hawaiian islands with central mountain masses, the resultant orographic effects cause Hilo to have more cloud cover, higher humidity, more rain and lighter winds. Analysis of the monthly temperature and rainfall data in accordance with Thornthwaite's scheme for climatic classification, yields a precipitation/evaporation (P/E) index of 192 which classifies the area as "wet" and "rainforest".²⁶

4.2 Surface Winds. The predominance of northeast trade winds is well known in the central Pacific due to the semi-permanent high pressure cell north of the Hawaiian islands that generates them. However, as with precipitation noted above, the effect of terrain can also have a significant effect on local surface winds as is evident from the wind data from Hilo International Airport in Table 4 and Figure 4. While about 24% of the winds come from the northeast quadrant, over 40% come from the southwest quadrant due in large part to the presence of the 13,000-foot volcanic mountain mass southwest of Hilo.

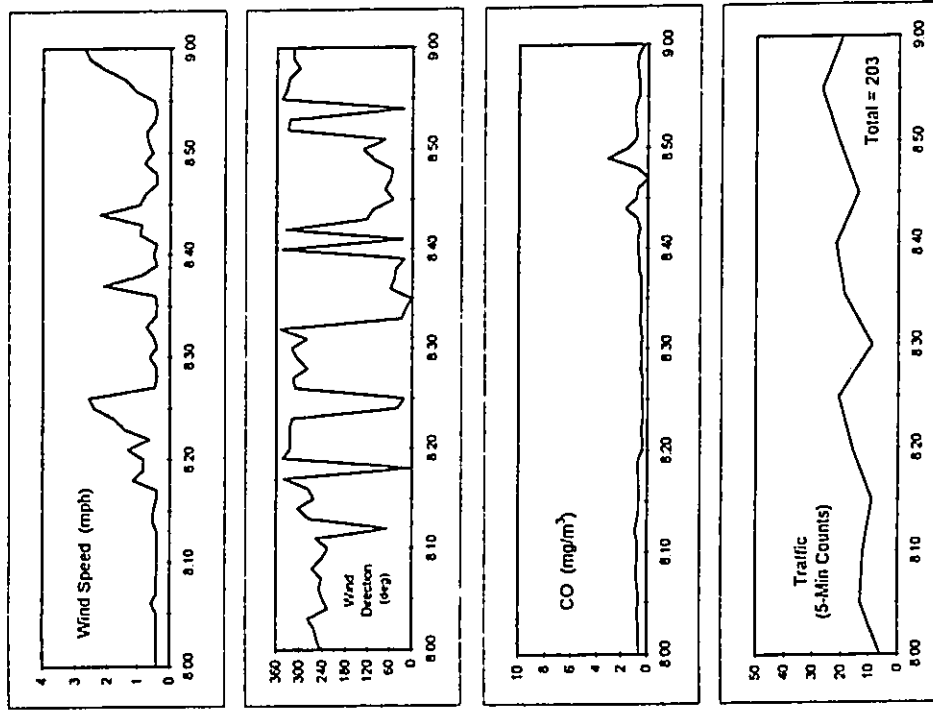
5. SHORT-TERM IMPACTS

5.1 Onsite Impacts. The principal source of short-term air quality impact will be construction activity. Construction vehicle activity may increase automotive pollutant concentrations along the existing roadways, e.g., Kekuanaoa Street, as well as in the immediate vicinity of each project site itself. The presence of large trucks at times may cause temporary reductions in and lower average travel speeds.

Site preparation and earth moving have the greatest potential for generating fugitive dust. Construction activities performed on unpaved on-site roads will also generate particulate emissions. EPA studies on fugitive dust emissions from construction sites indicate that about 1.2 tons/acre per month of activity may be expected under conditions of medium activity, moderate soil silt content (30%), and a precipitation/evaporation (P/E) index of 50.^{28, 27}

FIGURE 2

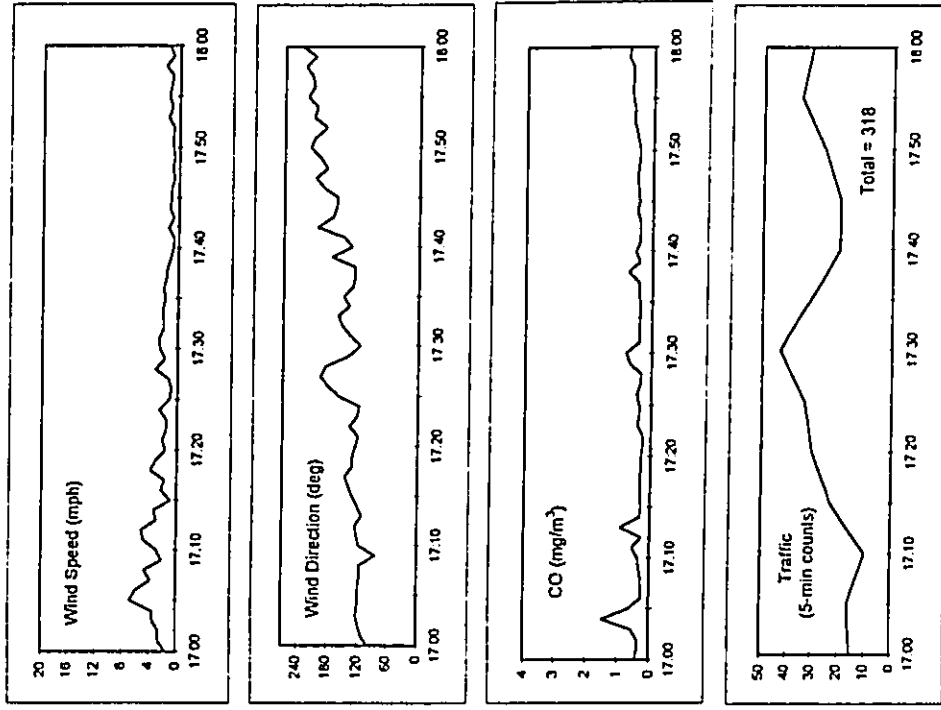
A.M. PEAK HOUR CONDITIONS
AIRPORT ACCESS ROAD AT THE PASSENGER TERMINAL
24 AUGUST 2001



J. W. MORROW

FIGURE 3

P.M. PEAK HOUR CONDITIONS
AIRPORT ACCESS ROAD AT THE PASSENGER TERMINAL
24 AUGUST 2001



Time of Day

J. W. MORROW

TABLE 3

CLIMATIC NORMALS, MEANS AND EXTREMES
HILO, HAWAII AND HONOLULU, OAHU

Parameter	Descriptor	Hilo	Honolulu
Temperature (deg F)	Daily maximum	81.5	84.4
	Daily minimum	66.4	70.0
	Annual mean	74	77.2
Precipitation (inches)	Maximum monthly	50.8	20.91
	Minimum monthly	0.28	trace
	Annual mean	129.2	22.02
Humidity (%)	Normal	79	68
Wind Speed (mph)	Mean	7.4	11.4
Sunshine	Percent of possible	40	71
Sky cover (mean # days)	Clear	36	90
	Partly cloudy	130	180
	Cloudy	196	92

Source: National Climatic Data Center (Reference 26)

TABLE 4

ANNUAL JOINT FREQUENCY DISTRIBUTION
OF WIND SPEED AND DIRECTION
HILO INTERNATIONAL AIRPORT

Dir (deg)	Wind Speed (mph)						
	< 7	< 10	< 13	< 16	< 19	>= 19	All
10	0.0076	0.0081	0.0138	0.0061	0.0023	0.0002	0.0381
20	0.0079	0.0075	0.0122	0.0039	0.0019	0.0002	0.0336
30	0.0061	0.0052	0.0080	0.0027	0.0008	0.0000	0.0229
40	0.0071	0.0078	0.0087	0.0027	0.0014	0.0001	0.0278
50	0.0060	0.0059	0.0106	0.0042	0.0008	0.0000	0.0273
60	0.0079	0.0113	0.0092	0.0024	0.0008	0.0000	0.0315
70	0.0044	0.0077	0.0058	0.0011	0.0000	0.0000	0.0191
80	0.0071	0.0051	0.0084	0.0026	0.0007	0.0000	0.0239
90	0.0043	0.0038	0.0065	0.0028	0.0008	0.0000	0.0182
100	0.0077	0.0071	0.0067	0.0017	0.0003	0.0000	0.0236
110	0.0076	0.0028	0.0046	0.0015	0.0002	0.0000	0.0167
120	0.0117	0.0044	0.0055	0.0010	0.0000	0.0000	0.0227
130	0.0089	0.0032	0.0015	0.0005	0.0001	0.0000	0.0141
140	0.0113	0.0036	0.0018	0.0003	0.0005	0.0001	0.0176
150	0.0088	0.0008	0.0008	0.0000	0.0003	0.0000	0.0108
160	0.0163	0.0019	0.0011	0.0000	0.0001	0.0000	0.0195
170	0.0117	0.0011	0.0002	0.0001	0.0001	0.0000	0.0133
180	0.0313	0.0017	0.0003	0.0001	0.0001	0.0000	0.0336
190	0.0238	0.0010	0.0003	0.0000	0.0000	0.0000	0.0252
200	0.0655	0.0048	0.0005	0.0001	0.0000	0.0000	0.0708
210	0.0573	0.0059	0.0000	0.0000	0.0000	0.0000	0.0632
220	0.0661	0.0071	0.0005	0.0002	0.0000	0.0000	0.0739
230	0.0470	0.0092	0.0013	0.0001	0.0000	0.0000	0.0576
240	0.0469	0.0164	0.0023	0.0003	0.0000	0.0000	0.0659
250	0.0178	0.0074	0.0027	0.0000	0.0000	0.0000	0.0279
260	0.0091	0.0044	0.0010	0.0001	0.0000	0.0000	0.0147
270	0.0069	0.0046	0.0009	0.0003	0.0001	0.0000	0.0129
280	0.0063	0.0028	0.0008	0.0001	0.0000	0.0000	0.0100
290	0.0055	0.0023	0.0006	0.0000	0.0000	0.0000	0.0083
300	0.0075	0.0043	0.0007	0.0000	0.0000	0.0000	0.0125
310	0.0043	0.0036	0.0016	0.0001	0.0000	0.0000	0.0101
320	0.0063	0.0049	0.0038	0.0005	0.0003	0.0001	0.0158
330	0.0047	0.0038	0.0028	0.0005	0.0005	0.0002	0.0124
340	0.0056	0.0067	0.0051	0.0028	0.0013	0.0002	0.0217
350	0.0060	0.0059	0.0066	0.0030	0.0016	0.0002	0.0233
360	0.0054	0.0072	0.0075	0.0044	0.0022	0.0006	0.0272
All	0.5656	0.1916	0.1449	0.0466	0.0170	0.0023	0.9679
						Calms:	0.0321

SOURCE: National Weather Service, 1992

5.2 Offsite Impacts. In addition to the onsite impacts attributable to construction activity, there will also be offsite impacts due to the operation of concrete and asphalt batching plants needed for construction. Such plants routinely emit particulate matter and other gaseous pollutants. It is too early, however, to identify the specific facilities that will be providing these materials and thus the discussion of air quality impacts is necessarily generic. The batch plants which will be producing the concrete for runways, taxiways, etc. and the asphalt for roadways must be permitted by the Department of Health Clean Air Branch pursuant to state regulations.²³ In order to obtain these permits they must demonstrate their ability to continuously comply with both emission and ambient air quality standards. Under the recently promulgated federal Title V operating permit requirements, now incorporated in Hawaii's rules,²⁴ air pollution sources must regularly attest to their compliance with all applicable requirements.

6. AIR QUALITY IMPACT ANALYSIS

6.1 Emissions and Dispersion Modeling System (EDMS)

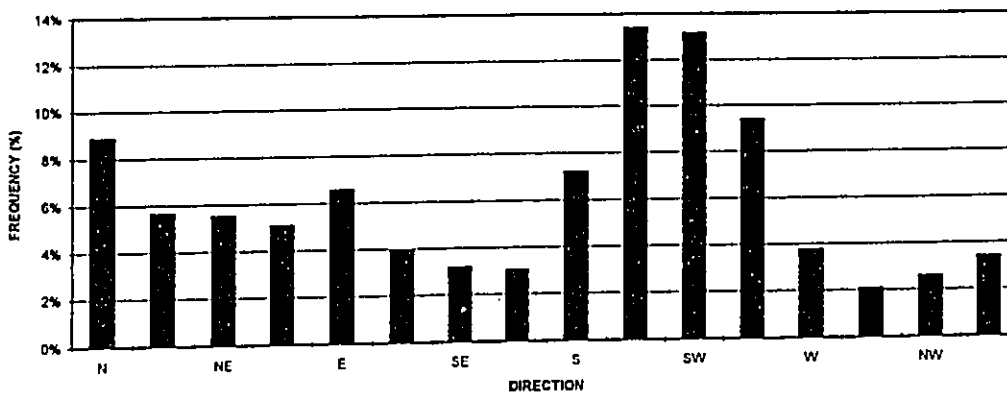
Pursuant to FAA guidance,²⁵ the EDMS model (Version 3.231)²⁶⁻²⁸ was employed to assess the air quality impacts of the various emission sources (described below) associated with the Hilo International Airport.

6.1.1 Aircraft Activity. Current aircraft activity was determined by a review of recent historical (CY 2000) Air Traffic Control Tower (ATCT) data for the airport, while forecasts of future operations were obtained from the DOT's master plan document.¹ A summary of these data is presented in Table 5. It should be noted that the term "operations" as used herein includes each aircraft landing, takeoff, and "touch-and-go" movement. In order to generate the appropriate input data for EDMS, the "touch-and-go" operations (TGO) had to be separated out first and then the remaining operations divided by two in order to derive the "landing-takeoff operations" (LTO) necessary for model input. TGO accounted for 53.6% of the general aviation operations and 61.1% of the military operations at Hilo in 2000.

The model also required input of "operational profiles" for hourly, daily and monthly periods. To generate these profiles a value of 1.0 was assigned to the period of interest with the highest number of operations, i.e., the period of maximum activity. All other periods were then computed as a fraction of that maximum value. These profiles were derived from the 2000 ATCT data and are presented in Tables 6, 7, and 8.

6.1.2 Motor Vehicle Activity. Peak hour motor vehicle activity was obtained from the traffic impact analysis prepared for this project.²⁹ State DOT 24-hour traffic count data from nearby intersections were also reviewed and used to generate hourly activity profiles (see Table 9) for the principal road segments used in the EDMS analysis. Annual and daily vehicle activity at the existing parking lot was obtained from the DOT's contractor, Ampeco System Parking.³⁷

FIGURE 4
ANNUAL FREQUENCY DISTRIBUTION
OF WIND DIRECTION
HILO INTERNATIONAL AIRPORT (1992)



6.1.3 **Stationary Source Activity.** A survey of the airport area revealed that fuel storage tanks were the only significant stationary sources. Annual tank throughput data for Jet-A and aviation gasoline were obtained from the suppliers, i.e., Bradley Pacific Aviation³⁸ and Murray Air, Ltd.³⁹ Future annual throughput volumes were estimated based on the master plan estimated increases in activity by the principal consumers of those fuels, i.e., air carriers, helicopters, and general aviation aircraft.

6.1.4 **Receptor Locations.** For the purposes of assessing impacts on ambient air quality and compliance with standards, one hundred thirty seven (137) receptor locations were placed around the airport area perimeter (see Figure 9). The dispersion module within EDMS computes pollutant concentrations at each location for averaging times corresponding to the state and federal ambient air quality standards.

6.1.5 **Meteorological Data.** Because of the EDMS model's ability to import meteorological data, a recent (1995) set of surface and upper air data from the National Weather Service site at Hilo International Airport was obtained from the National Climatic Data Center⁴⁰ and prepared for modeling use with EPA's meteorological preprocessor program.⁴¹ The output from the preprocessor was further converted into the appropriate format for use with EDMS.

6.1.6 **EDMS Results**

6.1.6.1 **Airport Emissions.** The emissions output from EDMS for the base year 2001 and Phase II planning year 2010, with and without the proposed airport improvements, are presented in Table 10. For comparison purposes and to provide some perspective on the magnitude of the emissions, the EDMS results have also been expressed as a percentage of the Year 2000 emissions inventory for Hawaii County.⁴² While CO, NOx, and SO₂ indicate increases of 8.3%, 43%, and 49%, respectively, they represent only a small portion (<0.01 - 2.66%) of the total county inventory of those pollutants. In the case of PM₁₀, it should be noted that the lack of such emissions from aircraft is due to the minimal number of PM₁₀ emission factors for aircraft in the EDMS model. This in turn is due to the dearth of available PM data for aircraft engines. While the general trend in PM emissions as indicated by reduced visible emissions due to regulatory requirements for new and in-use gas turbine engines has been downward, we are unable to quantify them at this time.

Another measure of the significance of the emissions increases would be a comparison with the "significant" levels established in the state rules.⁴³ While these levels are applicable to stationary point sources and not indirect sources such as airports, they nevertheless offer some indication of what increases are considered "significant". For example, the significant levels for CO and NOx are 100 and 40 tons per year (TPY), respectively. Applying these values to Table 10 suggests that the net increase in CO by the year 2010 would be "insignificant" (62 TPY increase) while the increase in NOx would be "significant" (96 TPY) when compared to the base year 2001. The increases in the other pollutants are below their respective "significant" thresholds.

Note also that the increase in aircraft CO emissions is more than offset by the decrease in automotive emissions despite a projected increase in traffic volumes. This is due to the effects of EPA's motor vehicle emissions control program which over time replaces older, higher-emitting vehicles with newer, lower emitting vehicles.

TABLE 5

CURRENT AND FORECAST AIRCRAFT OPERATIONS
HILO INTERNATIONAL AIRPORT
2000-2010

Class	Operations Per Year			
	2000	2005	2010	2020
Air Carrier	22,226	26,100	26,700	27,500
Commuter/Air Taxi	48,680	64,600	69,300	78,500
General Aviation	32,908	37,000	40,400	48,200
Military	11,692	12,700	12,700	12,700

References: Airport Traffic Record (FAA Form 7230-1), CY 2000
Hilo International Airport Master Plan (Ref. 28)

TABLE 6

AIRCRAFT HOURLY OPERATIONAL PROFILE
HILO INTERNATIONAL AIRPORT

Hour	Air Carrier	Air Taxi & Helicopters	General Aviation	Military	Default
01	0.00	0.00	0.00	0.00	0.00
02	0.00	0.00	0.00	0.00	0.00
03	0.00	0.00	0.00	0.00	0.00
04	0.00	0.00	0.00	0.00	0.00
05	0.00	0.00	0.00	0.00	0.00
07	0.73	0.00	0.17	0.00	1.00
08	0.39	0.15	0.30	0.08	1.00
09	0.67	0.83	0.53	0.54	1.00
10	0.84	0.72	0.57	0.23	1.00
11	0.39	0.80	0.73	0.54	1.00
12	0.33	1.00	1.00	1.00	1.00
13	0.20	0.68	0.77	0.54	1.00
14	0.33	0.90	0.63	0.23	1.00
15	0.33	0.90	0.77	0.31	1.00
16	0.49	0.97	0.77	0.77	1.00
17	0.47	0.75	0.67	0.54	1.00
18	0.69	0.43	0.47	0.00	1.00
19	1.00	0.01	0.23	0.00	1.00
20	0.63	0.00	0.03	0.38	1.00
21	0.33	0.00	0.00	0.31	1.00
22	0.20	0.00	0.00	0.15	0.00
23	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00

TABLE 7

AIRCRAFT DAILY OPERATIONAL PROFILE
HILO INTERNATIONAL AIRPORT

Day of Week	Air Carrier	Helicopters	Air Taxi	General Aviation	Military
Mon	0.99	0.87	0.87	0.89	1.00
Tue	0.99	0.94	0.94	0.90	0.93
Wed	1.00	1.00	1.00	1.00	0.92
Thu	1.00	0.94	0.93	0.92	0.46
Fri	0.94	0.69	0.71	0.66	0.34
Sat	1.00	0.67	0.67	0.61	0.28
Sun	0.99	0.73	0.74	0.79	0.46

TABLE 8

AIRCRAFT MONTHLY OPERATIONAL PROFILE
HILO INTERNATIONAL AIRPORT

Month	Air Carrier	Helicopters	Air Taxi	General Aviation	Military
Jan	0.99	0.75	0.78	0.72	0.81
Feb	0.94	0.90	0.90	1.00	1.00
Mar	1.00	0.97	0.98	0.88	0.80
Apr	0.96	0.89	0.88	0.92	0.70
May	0.99	0.99	0.99	0.99	0.99
Jun	0.95	0.98	0.98	0.98	0.98
Jul	1.00	1.00	1.00	1.00	1.00
Aug	0.99	0.90	0.90	0.90	0.90
Sep	0.93	0.76	0.77	0.76	0.77
Oct	0.97	0.85	0.86	0.85	0.86
Nov	0.94	0.69	0.71	0.69	0.71
Dec	0.97	0.77	0.79	0.77	0.79

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TABLE 9

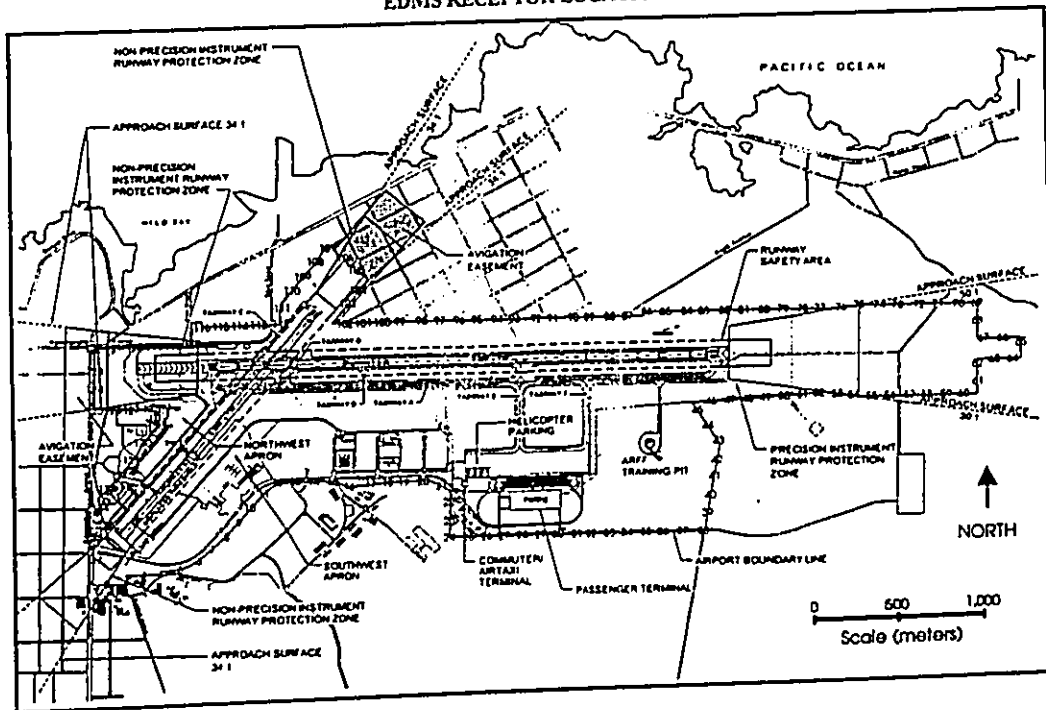
MOTOR VEHICLE HOURLY OPERATIONAL PROFILE
HILO INTERNATIONAL AIRPORT

Hour	Kanoelohua Avenue
01	0.036
02	0.026
03	0.019
04	0.028
05	0.065
06	0.197
07	0.433
08	0.818
09	0.703
10	0.712
11	0.738
12	0.766
13	0.857
14	0.762
15	0.832
16	0.926
17	1.000
18	0.788
19	0.525
20	0.349
21	0.286
22	0.179
23	0.117
24	0.064

TABLE 10
ANNUAL EMISSIONS ESTIMATES
HILO INTERNATIONAL AIRPORT
2001 - 2010

	Emissions (T/yr)				
	CO	VOC	NOx	SO ₂	PM ₁₀
Year: 2001					
Aircraft	132	4.5	114	5.7	0.0
GSE/AGE/APU	71	8.5	17	0.32	0.76
Roadways	520	70	72	3.4	3.3
Parking Lot	2.8	0.35	0.10	0.004	0.004
Fuel Storage	0.0	0.23	0.0	0.0	0.0
Training Fires	18	0.54	0.14	0.0	0.54
Total	744	84	223	9.4	4.6
% of Hawaii Inventory	2.45%	0.49%	1.63%	0.00%	0.01%
Year: 2010 w/o proj					
Aircraft	227	9.0	232	9.7	0.0
GSE/AGE/APU	168	21	25	0.45	1.2
Roadways	358	46	57	3.1	2.5
Parking Lot	2.6	0.30	0.10	0.005	0.003
Fuel Storage	0.0	0.57	0.0	0.0	0.0
Training Fires	18	0.54	0.14	0.0	0.54
Total	774	77	314	13	4.2
% of Hawaii Inventory	2.55%	0.49%	1.63%	0.00%	0.01%
Year: 2010 w/project					
Aircraft	227	9.0	232	9.7	0.0
GSE/AGE/APU	168	21	25	0.45	1.2
Roadways	390	50	62	3.4	2.7
Parking Lot	3.0	0.33	0.11	0.005	0.005
Fuel Storage	0.0	0.57	0.0	0.0	0.0
Training Fires	18	0.54	0.14	0.0	0.54
Total	806	81	319	14	4.5
% of Hawaii Inventory	2.66%	0.49%	1.63%	0.00%	0.01%
2000 Hawaii Inventory:	30,309	17,090	13,693	520,749	34,894

FIGURE 5
EDMS RECEPTOR LOCATIONS



6.1.6.2 Airport Dispersion Modeling. While emissions are an important component of any air quality impact analysis and do provide some insight into the significance of impacts, it is the ambient concentrations that are of primary interest because adverse effects are the direct result of high concentrations and duration of exposure. In the simplest terms, it is the emissions affected by meteorological conditions that result in the ambient concentrations. The dispersion module within EDMS uses built-in emission factors for each source type and the input meteorological data to generate ambient concentrations estimates at each of the selected receptor location. The results of that process for Hilo are presented in Table 11 along with the corresponding state standards. Compliance with those standards and therefore also with the less stringent federal standards is clearly demonstrated.

6.2 Highway Intersections

Since ground traffic in the vicinity of an airport is often found to be the primary source of high pollutant concentrations, particularly carbon monoxide, a more detailed microscale analysis was performed for the intersection of Kanoelehua Avenue with the airport access road, Kekuanaoa Street.

6.2.1 Motor Vehicle Activity. The traffic impact analysis³⁴ prepared for the proposed project served as the basis for this motor vehicle analysis. Existing peak-hour traffic volumes and projections for 2010 were provided for the aforementioned intersection serving the airport area.

6.2.2 Emission Factors. Automotive emission factors for carbon monoxide (CO) were generated for calendar years 2001 and 2010 using the Mobile Source Emissions Model (MOBILE-5B)³⁵. To localize the emission factors as much as possible, an age distribution for registered vehicles in the City & County of Honolulu³⁶ was used in lieu of national statistics. That same age distribution was the basis for the distribution of vehicle miles traveled as well.

6.2.3 Modeling Methodology. Due to the current state-of-the-art in air quality modeling, analyses such as this generally focus on estimating concentrations of non-reactive pollutants. For projects involving mobile sources as the principal source, carbon monoxide is normally selected for modeling because it has a relatively long half-life in the atmosphere (≈ 1 month)⁴⁷ and it comprises the largest fraction of automotive emissions.

Using the traffic data provided, modeling was performed for the aforementioned intersections for 2001 and 2010 (with and without the project) with peak hours meteorological data culled from the 1995 data set described in Section 6.1.5.

The EPA guideline model CAL3QHC^{44, 49} as modified to accept preprocessed meteorological data,⁵⁰ was employed to estimate near-intersection carbon monoxide concentrations. An array of 76 receptor sites at a distance of 10 meters from the road edge were entered in the model. A background CO concentration of 1.6 milligrams per cubic meter (mg/m³) (extracted from CY 2000 DOH monitoring data) was assumed.

TABLE 11

EDMS DISPERSION MODELING RESULTS HILO INTERNATIONAL AIRPORT 2001 - 2010

Pollutant	Averaging Period	Maximum Concentration (ug/m ³)		
		2001	2010 w/o project	2010 with project
CO	1-hr	3,737	7,569	6,510
	8-hr	1,538	2,402	2,543
NO ₂	Annual	19.3	22.4	22.6
	70			
SO ₂	3-hr	446	449	449
	24-hr	95.8	96.4	96.4
	Annual	4.4	4.5	4.5
PM ₁₀	24-hr	18.8	19.7	20.1
	Annual	11.3	11.3	11.2
				150

Note: All concentrations include DOH measurements as background (see Table 2)

6.2.4 Results: 1-Hour Concentrations The results of this modeling are presented in Figure 101. The figure depicts the locations of the 76 receptor sites around the intersections. Maximum estimated concentrations in milligrams per cubic meter (mg/m³) for each of the evaluated scenarios are also presented along with the particular receptor location at which they were predicted.

The results suggest that, under actual peak hour conditions of meteorology and traffic, both the federal and state 1-hour CO standards would be met at all receptors at distances of 10 meters and beyond from the highway.

6.2.5 Results: 8-Hour Concentrations The 8-hour concentrations shown in Figure 10 also demonstrate compliance with state and federal standards. They are conservative estimates because they were derived from the peak hour data set used for identifying the "worst-case" 1-hour CO concentration. In other words, they were based only on the hours with the highest traffic volumes during the day rather than the normal mix of the high and low hours (as indicated by the operational profiles in Table 9).

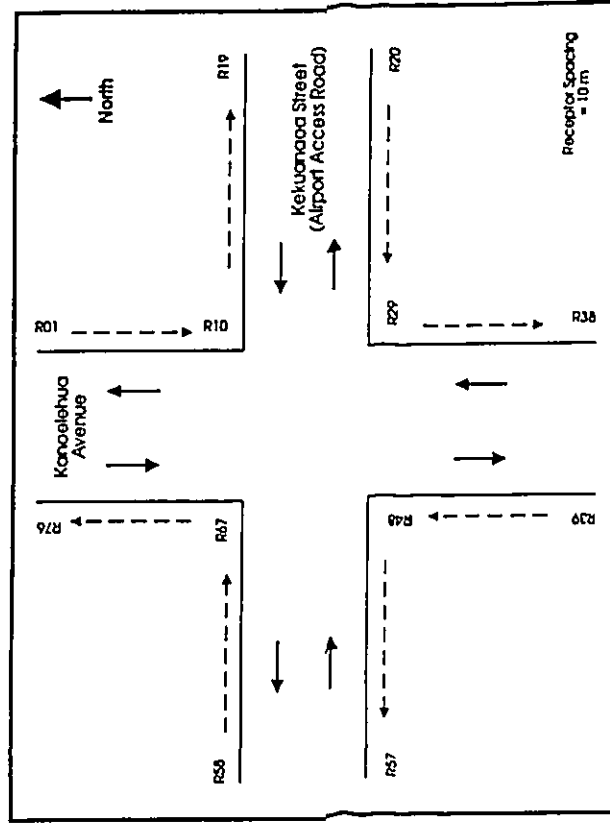
7. RECOMMENDATIONS AND CONCLUSIONS

7.1 Short-Term Impacts The "wet" climate as represented by the Thornwaite P/E index of 192 is well above the EPA value of 50 cited in Section 5.1; thus, there appears to be a reduced potential for fugitive dust generation during construction. Nevertheless, it will still be important to employ adequate dust control measures during construction periods, especially during the somewhat drier summer months. Dust control can be accomplished through frequent watering of unpaved roadways and areas of exposed soil. The EPA estimates that twice daily watering can reduce fugitive dust emissions by as much as 50%.²⁷ The soonest possible paving or landscaping of exposed areas will also help.

7.2 Long-Term Impacts As clearly indicated by the EDMS and CAL3QHC modeling results, ambient concentrations of carbon monoxide, the principal indicator of mobile source pollution, demonstrated compliance with both federal and state standards on the airport perimeter as well as in close proximity to the major intersection serving the airport area. EDMS estimates of SO₂, NO_x, and PM₁₀ concentrations in the airport area also indicated compliance with state and federal standards.

FIGURE 6

ESTIMATES OF MAXIMUM 1- AND 8-HOUR CARBON MONOXIDE CONCENTRATIONS Kannelehuu Avenue @ Kekuanaoa Street Peak Traffic Hours 2001 - 2010



Estimated Maximum Concentrations (ug/m³)

Period	2001	2010 w/o project	2010 w/project	Receptors
A.M.	4.7	5.0	5.0	R10, R07, R67
P.M.	6.3	6.3	6.0	R10
8-Hr	3.9	3.8	4.8	n/a

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J. W. MORROW

27

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J. W. MORROW

28

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J. W. MORROW

29

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J. W. MORROW

30

APPENDIX D
ACOUSTIC STUDY

**ACOUSTIC STUDY FOR THE
PROPOSED NEW TOUR HELICOPTER
FACILITIES AT HILO INTERNATIONAL
AIRPORT, HILO, HAWAII**

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SEPTEMBER 2001

TABLE OF CONTENTS

<u>CHAPTER</u>	<u>CHAPTER TITLE</u>	<u>PAGE NO.</u>
	List of Figures	ii
	List of Tables	v
I.	SUMMARY	1
II.	PURPOSE	2
III.	NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY	3
IV.	GENERAL STUDY METHODOLOGY	11
V.	EXISTING BACKGROUND AMBIENT NOISE LEVELS	16
VI.	HELICOPTER NOISE LEVELS	41
VII.	POSSIBLE NOISE IMPACTS AND COMPLAINT RISKS ASSOCIATED WITH THE PROPOSED TOUR HELICOPTER FACILITY	45
VIII.	CONSTRUCTION NOISE IMPACTS	51
APPENDICES:		
A	REFERENCES	54
B	EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE	55

LIST OF FIGURES

<u>NUMBER</u>	<u>FIGURE TITLE</u>	<u>PAGE NO.</u>
1	LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVEL AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED	6
2	PROPOSED TOUR HELICOPTER SITE AND HELICOPTER INGRESS AND EGRESS ROUTES	12
3	EXISTING TOUR HELICOPTER FACILITY LOCATION AND HELICOPTER INGRESS AND EGRESS ROUTES	13
4	NOISE MONITORING LOCATIONS OF AUGUST 2001	17
5	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-7 (0900 TO 1100 HOURS; 8/24/01)	18
6	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-7 (1100 TO 1300 HOURS; 8/24/01)	19
7	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-7 (1255 TO 1345 HOURS; 8/24/01)	20
8	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-1 (0810 TO 1005 HOURS; 8/26/01)	21
9	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-9 (1010 TO 1045 HOURS; 8/24/01)	22
10	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-9 (1045 TO 1117 HOURS; 8/24/01)	23
11	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-9 (1207 TO 1236 HOURS; 8/24/01)	24
12	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-9 (1236 TO 1305 HOURS; 8/24/01)	25
13	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-9 (1306 TO 1335 HOURS; 8/24/01)	26

<u>NUMBER</u>	<u>FIGURE TITLE</u>	<u>PAGE NO.</u>
14	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-10 (1030 TO 1100 HOURS; 8/24/01)	27
15	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-10 (1100 TO 1124 HOURS; 8/24/01)	28
16	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-10 (1213 TO 1245 HOURS; 8/24/01)	29
17	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-10 (1245 TO 1315 HOURS; 8/24/01)	30
18	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-10 (1307 TO 1336 HOURS; 8/24/01)	31
19	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION A (0744 TO 0815 HOURS; 8/25/01)	32
20	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION A (0815 TO 0845 HOURS; 8/25/01)	33
21	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION A (0845 TO 0915 HOURS; 8/25/01)	34
22	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION A (0918 TO 0950 HOURS; 8/25/01)	35
23	DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION A (0944 TO 1013 HOURS; 8/25/01)	36
24	EXISTING (YEAR 2000) AIRPORT NOISE CONTOURS HILO INTERNATIONAL AIRPORT	38
25	YEAR 2005 TOUR HELICOPTER NOISE CONTOURS FOR OPERATIONS AT THE PROPOSED FACILITY	42
26	YEAR 2020 TOUR HELICOPTER NOISE CONTOURS FOR OPERATIONS AT THE PROPOSED FACILITY	43

1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
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 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100

LIST OF FIGURES (CONTINUED)

<u>NUMBER</u>	<u>FIGURE TITLE</u>	<u>PAGE NO.</u>
27	YEAR 2005 AIRPORT NOISE CONTOURS FOR THE NO ACTION (EXISTING FACILITY) ALTERNATIVE	46
28	YEAR 2005 AIRPORT NOISE CONTOURS FOR THE ACTION (PROPOSED HELIPORT) ALTERNATIVE	47
29	YEAR 2020 AIRPORT NOISE CONTOURS FOR THE NO ACTION (EXISTING FACILITY) ALTERNATIVE	48
30	YEAR 2020 AIRPORT NOISE CONTOURS FOR THE ACTION (PROPOSED HELIPORT) ALTERNATIVE	49
31	ANTICIPATED RANGE OF CONSTRUCTION NOISE LEVELS VS. DISTANCE	52
32	AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE	53

LIST OF TABLES

<u>NUMBER</u>	<u>TABLE TITLE</u>	<u>PAGE NO.</u>
1	EXTERIOR NOISE EXPOSURE CLASSIFICATION (RESIDENTIAL LAND USE)	4
2	EFFECTS OF NOISE ON PEOPLE (RESIDENTIAL LAND USES ONLY)	5
3	HAWAII STATE DEPARTMENT OF TRANSPORTATION RECOMMENDATIONS FOR LOCAL LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS (DNL)	8
4	SUMMARY OF AVERAGE (Leq) NOISE LEVELS AT MEASUREMENT LOCATIONS	37
5	COMPARISONS OF FAA INM VERSION 6.0 PREDICTIONS AT VARIOUS COMMUNITY LOCATIONS IN WAIKAEA, HAWAII	40

CHAPTER I. SUMMARY

The findings from the sound measurements which were performed and the helicopter noise contours which were developed indicate that there will be minimal risk of deteriorating the current land use compatibility situation at Hilo International Airport as a result of operations at the proposed heliport. The reasons for this are that the existing buffer distances from the residential community in Waiakea are sufficient, and the helicopter ingress and egress routes to and from the facility can be located away from the existing residences. For these reasons, the helicopter noise contours can be located east of the quieter residential areas in Waiakea.

Some residences in the Waiakea community will continue to be located within the 60 DNL noise contour of Hilo International Airport, with or without the proposed heliport. Fixed wing jet aircraft using Runways 8/26 and fixed and rotary wing aircraft using Runways 3/21 are the primary contributors to the airport noise contours at Hilo International Airport. Incremental increases in the forecast airport noise levels due to the proposed heliport should not exceed 1.5 DNL at those residences who are located within the 60 DNL airport contour, and the increases in noise levels attributable to the proposed heliport should not be significant.

The primary noise mitigation measures recommended during operations at the proposed tour helicopter facility are those operational procedures which minimize complaint risks from surrounding noise sensitive properties and which are possible within the operating constraints at the facility. One of the primary mitigation measures for reducing risks of complaints from noise sensitive properties is to avoid overflights of these properties, particularly at low altitudes of less than 1,000 FT above ground level. The proposed siting of the heliport does allow for the avoidance of low level overflights during all portions of the ingress and egress routes associated with the proposed heliport. The special ingress and egress procedures developed for the facility should be adhered to by all future users of the heliport, whenever weather and safety conditions allow.

CHAPTER II. PURPOSE

The objectives of this study were to describe the existing and future noise environment in the environs of the proposed new heliport facility at Hilo International Airport on the island of Hawaii. The heliport is proposed to be located east of the southwest end of the Runway 3 on airport property. It is approximately 1,400 feet away from the closest residences which are located across Runway 3 toward Kanoelehua Avenue. The future noise environment and potential noise impacts were examined for conditions with and without the new facility using airport activity forecasts for the Years 2005 and 2020. Assessments of possible impacts from noise resulting from rotary wing aircraft operations at Hilo International Airport, and particularly those aircraft noise impacts associated with the proposed relocation of the tour helicopter operations to the new facility, were included in the study objectives. Recommendations for minimizing these noise impacts were also to be provided as required.

CHAPTER III. NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY

The noise descriptor currently used by federal agencies to assess environmental noise is the Day-Night Average Sound Level (DNL). This descriptor incorporates a 24-hour average of instantaneous A-Weighted Sound Levels as read on a standard Sound Level Meter. The maximum A-Weighted sound level occurring while an aircraft is flying past a listener (i.e., the maximum sound level from a "single event") is referred to as the "Lmax value". The mathematical product (or integral) of the instantaneous sound level times the duration of the event is known as the "Sound Exposure Level", or Lse, which is analogous to the energy of the time-varying sound levels associated with a single event.

The DNL contours represent the average noise during a typical day of the year. DNL exposure levels of 55 or less are typical of quiet rural or suburban areas. DNL exposure levels of 55 to 65 are typical of urbanized areas with medium to high levels of activity and street traffic. DNL exposure levels above 65 are representative of densely developed urban areas and areas fronting high volume roadways.

By definition, the minimum averaging period for the DNL descriptor is 24 hours. Additionally, sound levels which occur during the nighttime hours of 10:00 PM to 7:00 AM are increased by 10 decibels (dB) prior to computing the 24-hour average by the DNL descriptor. Because of the averaging used, DNL values in urbanized areas typically range between 50 and 75 DNL. In comparison, the typical range of intermittent noise events may have maximum Sound Level Meter readings between 75 and 105 dBA. A more complete list of noise descriptors is provided in Appendix B to this report. In Appendix B, the Dnl descriptor symbol is used in place of the DNL descriptor symbol.

TABLE 1, extracted from Reference 1, categorizes the various DNL levels of outdoor noise exposure with severity classifications. TABLE 2, also extracted from Reference 1, presents the general effects of noise on people in residential use situations. FIGURE 1, extracted from Reference 2, presents suggested land use compatibility guidelines for residential and nonresidential land uses. A general consensus among federal agencies has developed whereby residential housing development is considered acceptable in areas where exterior noise does not exceed 65 DNL. This value of 65 DNL is used as a federal regulatory threshold for determining the necessity for special noise abatement measures when applications for federal funding assistance are made.

As a general rule, noise levels of 55 DNL or less occur in rural areas, or in areas which are removed from high volume roadways. In urbanized areas which are shielded from high volume streets, DNL levels generally range from 55 to 65 DNL, and are usually controlled by motor vehicle traffic noise. Residences which front major roadways are generally exposed to levels of 65 DNL, and as high as 75 DNL when the

TABLE 1
EXTERIOR NOISE EXPOSURE CLASSIFICATION
(RESIDENTIAL LAND USE)

NOISE EXPOSURE CLASS	DAY-NIGHT SOUND LEVEL	EQUIVALENT SOUND LEVEL	FEDERAL (1) STANDARD
Minimal Exposure	Not Exceeding 55 DNL	Not Exceeding 55 Leq	Unconditionally Acceptable
Moderate Exposure	Above 55 DNL But Not Above 65 DNL	Above 55 Leq But Not Above 65 Leq	Acceptable(2)
Significant Exposure	Above 65 DNL But Not Above 75 DNL	Above 65 Leq But Not Above 75 Leq	Normally Unacceptable
Severe Exposure	Above 75 DNL	Above 75 Leq	Unacceptable

Notes: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the Leq instead of the Ldn descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours. The noise mitigation threshold used by FHWA for residences is 67 Leq.

TABLE 2
EFFECTS OF NOISE ON PEOPLE
(Residential Land Uses Only)

EFFECTS ¹ DAY-NIGHT AVERAGE SOUND LEVEL IN DECIBELS	Hearing Loss	Speech Interference		Annoyance ² % of Population Highly Annoyed ³	Average Community Reaction	General Community Attitude Towards Area
		Indoor	Outdoor			
	Qualitative Description	% Sentence Intelligibility	Distance in Meters for 95% Sentence Intelligibility			
75 and above	May Begin to Occur	98%	0.5	37%	Very Severe	Noise is likely to be the most important of all adverse aspects of the community environment.
70	Will Not Likely Occur	99%	0.9	25%	Severe	Noise is one of the most important adverse aspects of the community environment.
65	Will Not Occur	100%	1.5	15%	Significant	Noise is one of the important adverse aspects of the community environment.
60	Will Not Occur	100%	2.0	9%	Moderate	Noise may be considered an adverse aspect of the community environment.
55 and below	Will Not Occur	100%	3.5	4%	Slight	Noise considered no more important than various other environmental factors.

- "Speech Interference" data are drawn from the following tables in EPA's "Levels Document": Table 3, Fig. D-1, Fig. D-2, Fig. D-3. All other data from National Academy of Science 1977 report "Guidelines for Preparing Environmental Impact Statements on Noise, Report of Working Group 69 on Evaluation of Environmental Impact of Noise."
- Depends on attitudes and other factors.
- The percentages of people reporting annoyance to lesser extents are higher in each case. An unknown small percentage of people will report being "highly annoyed" even in the

quietest surroundings. One reason is the difficulty all people have in integrating annoyance over a very long time.

- Attitudes or other non-acoustic factors can modify this. Noise at low levels can still be an important problem, particularly when it intrudes into a quiet environment.

NOTE: Research implicates noise as a factor producing stress-related health effects such as heart disease, high-blood pressure and stroke, ulcers and other digestive disorders. The relationships between noise and these effects, however, have not as yet been quantified.

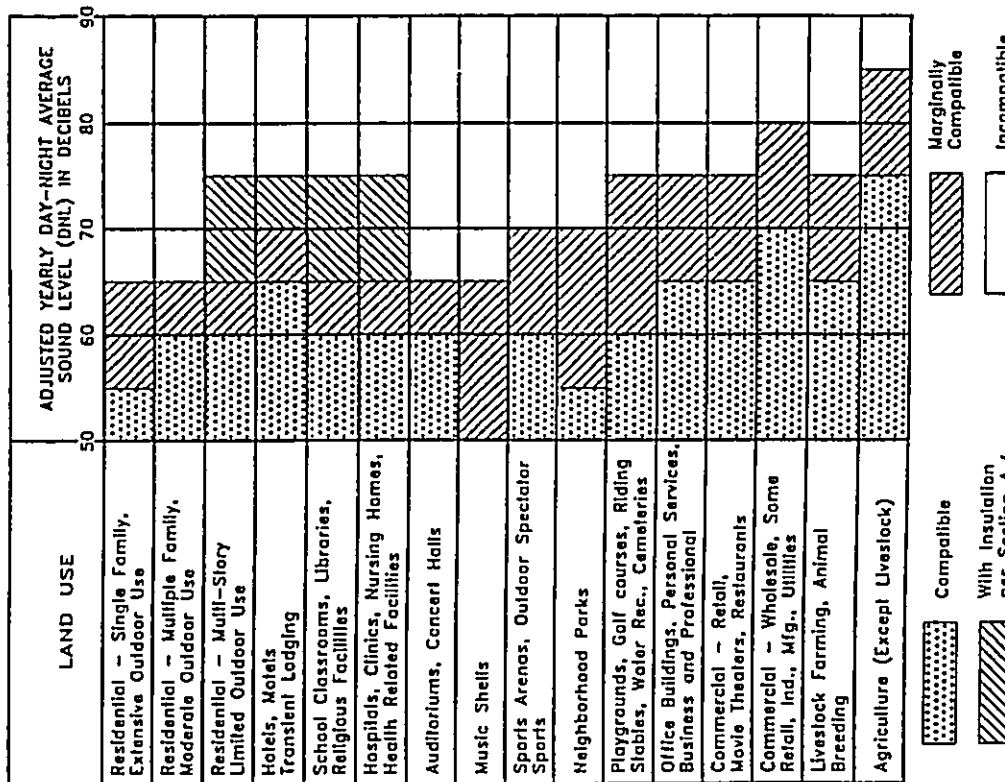


FIGURE 1
LAND USE COMPATIBILITY WITH YEARLY AVERAGE DAY-NIGHT AVERAGE SOUND LEVEL (DNL) AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED.
(Source: American National Standards Institute S12.9-1998/Part 5)

roadway is a high speed freeway. Due to noise shielding effects from intervening structures, interior lots are usually exposed to 3 to 10 DNL lower noise levels than the front lots which are not shielded from the traffic noise.

For the purposes of determining noise acceptability for funding assistance from federal agencies, an exterior noise level of 65 DNL or lower is considered acceptable. These federal agencies include the Federal Aviation Administration (FAA), Department of Defense (DOD), Federal Housing Administration, Housing and Urban Development (FHA/HUD), and Veterans Administration (VA). This standard is applied nationally (see Reference 3), including Hawaii.

Because of our open-living conditions, the predominant use of naturally ventilated dwellings, and the relatively low exterior-to-interior sound attenuation afforded by these naturally ventilated structures, an exterior noise level of 65 DNL does not eliminate all risks of noise impacts. Because of these factors, a lower level of 55 DNL is considered as the "Unconditionally Acceptable" (or "Near-Zero Risk") level of exterior noise (see Reference 4). For typical, naturally ventilated structures in Hawaii, an exterior noise level of 55 DNL results in an interior level of approximately 45 DNL, which is considered to be the "Unconditionally Acceptable" (or "Near-Zero Risk") level of interior noise. However, after considering the cost and feasibility of applying the lower level of 55 DNL, government agencies such as FHA/HUD and VA have selected 65 DNL as a more appropriate regulatory standard.

For aircraft noise, the State Department of Transportation, Airports Division (DOTA), has recommended that 60 DNL be used as the common level for determining land use compatibility in respect to noise sensitive uses near its airports. TABLE 3 summarizes the recommendations for compatible land uses at various levels of aircraft noise. For those noise sensitive land uses which are exposed to aircraft noise greater than 55 DNL, the division recommends that disclosure of the aircraft noise levels be provided prior to any real property transactions. Reference 5 requires that such disclosure be provided prior to real property transactions concerning properties located within Air Installation Compatibility Use Zones (AICUZ) or located within airport noise maps developed under Federal Aviation Regulation Part 150 - Airport Noise Compatibility Planning (14 CFR Part 150).

For commercial, industrial, and other non-noise sensitive land uses, exterior noise levels as high as 75 DNL are generally considered acceptable. Exceptions to this occur when naturally ventilated office and other commercial establishments are exposed to exterior levels which exceed 65 DNL.

In the State of Hawaii, the State Department of Health (DOH) regulates noise from on-site activities. State DOH noise regulations are expressed in maximum allowable property line noise limits rather than DNL (see Reference 6). The noise limits apply at all of the outer islands, including the island of Hawaii. Although they are not

TABLE 3

HAWAII STATE DEPARTMENT OF TRANSPORTATION
RECOMMENDATIONS FOR LOCAL LAND USE COMPATIBILITY WITH
YEARLY DAY-NIGHT AVERAGE SOUND LEVELS (DNL)

TYPE OF LAND USE	Yearly Day-Night Average Sound Level				
	< 60	60-65	65-70	70-75	75-80
RESIDENTIAL					
Low density residential, resorts, and hotels (outdoor facil.)	Y	M	M	M	M
High density apartment with moderate outdoor use	Y	M	M	M	M
Transient lodgings with limited outdoor use	Y	M	M	M	M
PUBLIC USE					
Schools, day-care centers, libraries, and churches	Y	M	M	M	M
Hospitals, nursing homes, clinics, and health facilities	Y	M	M	M	M
Indoor auditoriums and concert halls	Y	M	M	M	M
Government services and office buildings serving the general public	Y	M	M	M	M
Transportation and parking	Y	M	M	M	M
COMMERCIAL AND GOVERNMENT USE					
Offices - government, business, and professional	Y	M	M	M	M
Wholesale and retail - building materials, hardware and heavy equipment	Y	M	M	M	M
Airport businesses - car rental, tours, fuel stands, ticket offices, etc.	Y	M	M	M	M
Retail, restaurants, shopping centers, financial institutions, etc.	Y	M	M	M	M
Power plants, sewage treatment plants, and base yards	Y	M	M	M	M
Studios without outdoor sets, broadcasting, production facilities, etc.	Y	M	M	M	M
MANUFACTURING, RECONSTRUCTION AND STORAGE					
Manufacturing, general	Y	M	M	M	M
Photographic and optical	Y	M	M	M	M
Agriculture (except livestock) and forestry	Y	M	M	M	M
Livestock farming and breeding	Y	M	M	M	M
Mining and fishing, resource production and extraction	Y	M	M	M	M
RECREATIONAL					
Outdoor sports arenas and spectator sports	Y	M	M	M	M
Outdoor music shells, amphitheaters	Y	M	M	M	M
Nature exhibits and zoos, neighborhood parks	Y	M	M	M	M
Amusements, beach parks, active playgrounds, etc.	Y	M	M	M	M
Public golf courses, riding stables, equestrian, etc.	Y	M	M	M	M
Professional/resort sport facilities, locations of media events, etc.	Y	M	M	M	M
Extensive natural wildlife and recreation areas	Y	M	M	M	M

Numbers in parentheses refer to notes.

SEE TABLE 2.

Y(M) = Land Use and related structures compatible without restrictions.
M(N) = Land Use and related structures are not compatible and should be prohibited.

TABLE 3 (CONTINUED)

HAWAII STATE DEPARTMENT OF TRANSPORTATION
RECOMMENDATIONS FOR LOCAL LAND USE COMPATIBILITY WITH
YEARLY DAY--NIGHT AVERAGE SOUND LEVELS (DNL)

NOTES FOR TABLE 3:

- (a) A noise level of 60 DNL does not eliminate all risks of adverse noise impacts from aircraft noise. However, the 60 DNL planning level has been selected by the State Airports Division as an appropriate compromise between the minimal risk level of 55 DNL and the significant risk level of 65 DNL.
- (b) Where the community determines that these uses must be allowed, Noise Level Reduction (NLR) measures to achieve interior levels of 45 dBA or less should be incorporated into building codes and be considered in individual approvals. Formal local construction employing natural ventilation can be expected to provide an average NLR of approximately 9 dB. Total closure plus air conditioning may be required to provide additional outdoor to indoor NLR, and will not eliminate outdoor noise problems.
- (c) Because the DNL 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 DNL exposure level.
- (d) Measures to achieve required NLR must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
- (e) Residential buildings require NLR. Residential buildings should not be located where noise is greater than 65 DNL.
- (f) Impact of amplitude, duration, frequency, and tonal content of aircraft noise events should be evaluated.

directly comparable to noise criteria expressed in DNL. State DOH noise limits for preservation/residential, apartment/commercial, and agricultural/industrial lands equate to approximately 55, 60, and 76 DNL, respectively. Because the proposed heliport is located on lands designated for industrial uses, DOH noise limits for industrial lands would be applicable along the project boundary lines for any stationary sources, or equipment related to industrial or construction activities. These property line limits are 70 dBA for both the daytime and nighttime periods. For multifamily use, the State DOH limits are 60 dBA and 50 dBA during the daytime and nighttime periods respectively. For single family residential use, the State DOH limits are 55 dBA and 45 dBA during the daytime and nighttime periods, respectively. These noise limits cannot be exceeded for more than 2 minutes in any 20-minute time period under the State DOH noise regulations. The State DOH noise regulations do not apply to aircraft.

CHAPTER IV. GENERAL STUDY METHODOLOGY

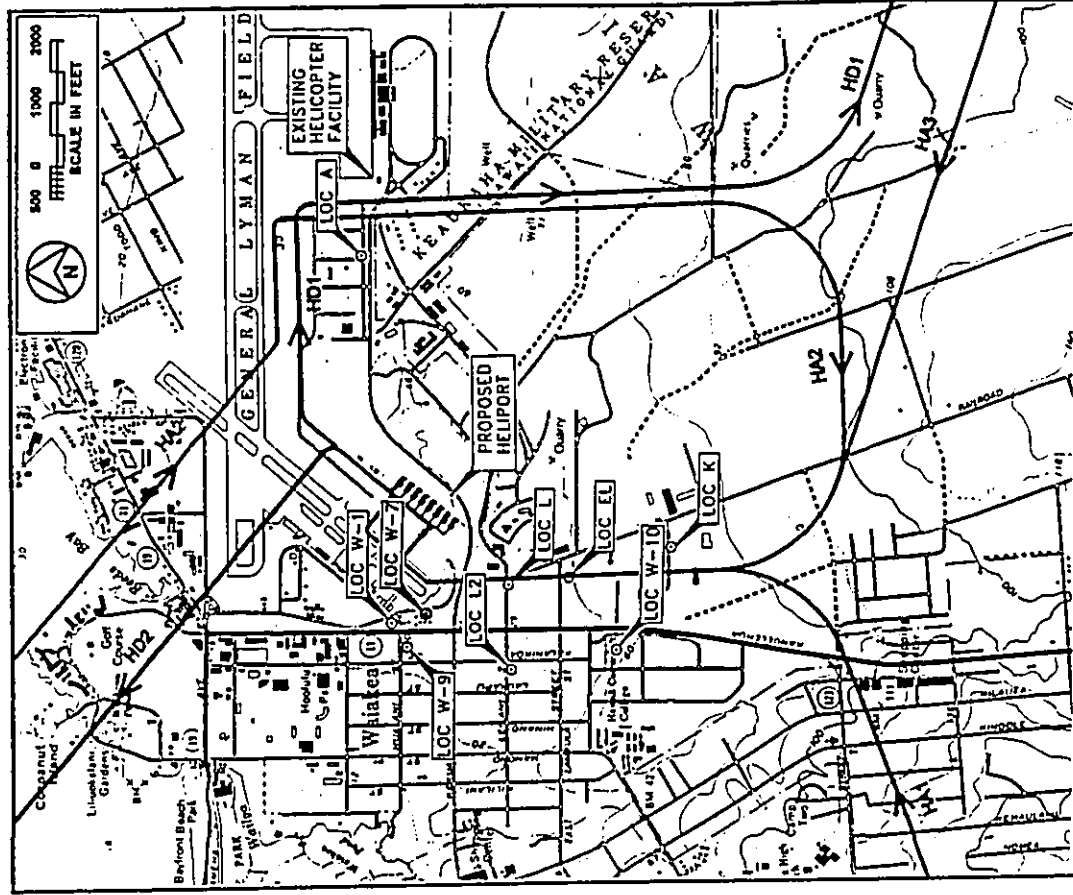
The noise analysis procedures delineated in References 7 through 9 were used in this study. Helicopter noise contours for 2005 and 2020 were developed. A user generated data base of helicopter noise curves and flight profiles were included with the Federal Aviation Administration (FAA) Helicopter Noise Model, Version 2.2 (HNM), to reflect the noise monitoring data and operating conditions at the proposed facility. In addition, simulated helicopter flights to the proposed heliport site from the Waiakea area were conducted on August 24, 2001. Sound level measurements of these simulated operations were obtained at three locations to determine if the HNM noise predictions were reasonably accurate.

The Day-Night Sound Level (DNL) noise descriptor was used to describe both the existing background ambient noise and future helicopter noise in the environs of the heliport facility. Background ambient noise measurements were obtained at eight locations in the residential and industrial areas of Waiakea which are closest to the proposed heliport. Helicopter noise contours were developed to compare the helicopter noise exposure levels with noise impact criteria and the measured background ambient noise levels.

Because the background noise levels surrounding Hilo International Airport are influenced by the noise from other aircraft operating at the airport, noise contours were also developed using the FAA Integrated Noise Model (INM) Version 6.0. The INM does not have a data base for rotary wing aircraft, but user supplied data was incorporated into the model to depict helicopter operations at both the existing and proposed heliport facilities. FIGURE 2 depicts the location of the proposed heliport and the helicopter flight tracks to and from the facility in relation to existing noise sensitive land uses in the surrounding area. Helicopter ingress and egress routes to and from the proposed heliport were adjusted to avoid low level overflights of existing residential areas in Waiakea, and are expected to be flown as indicated in FIGURE 2.

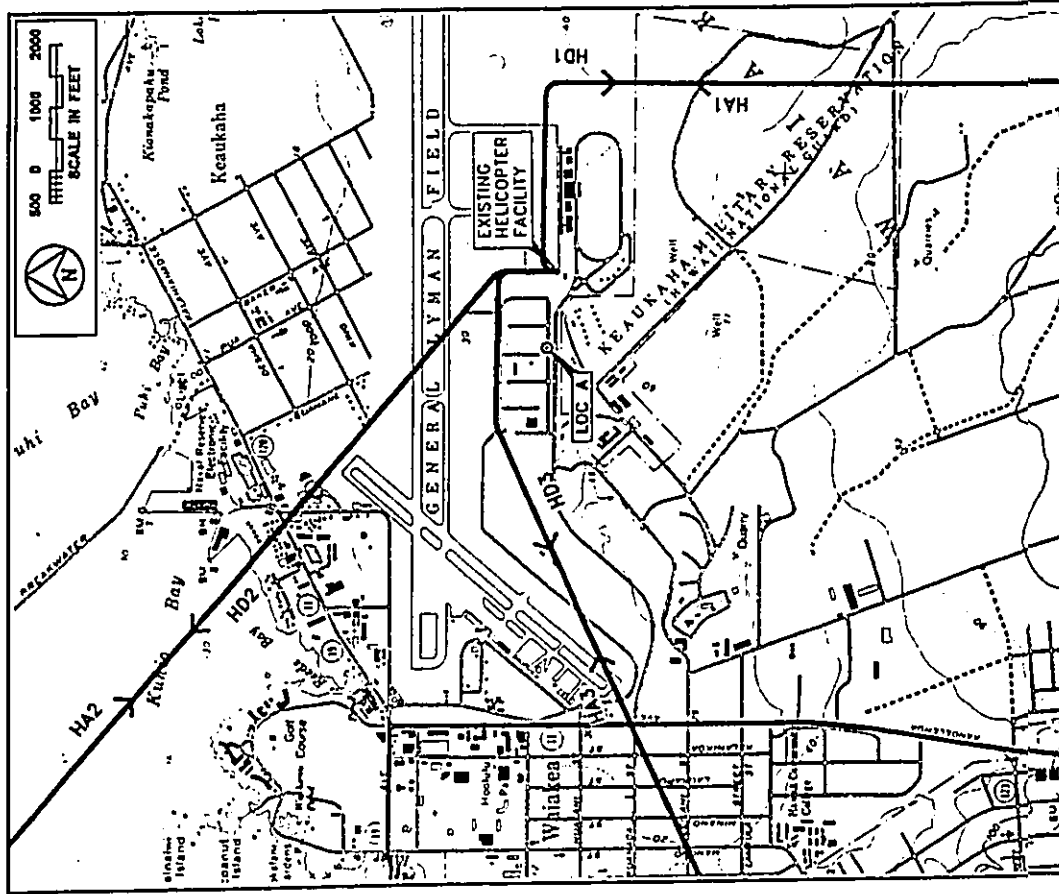
Documentation of the helicopter flight tracks, operations, and noise contours associated with operations at the existing tour helicopter facility at Hilo International Airport were obtained from References 10 and 11. FIGURE 3 depicts the generalized ingress and egress routes to and from the existing tour helicopter facility. All tour helicopter operations will be relocated to the proposed heliport from the existing facility, with ingress and egress routes modified as shown in FIGURE 2. An average of 41 helicopter round trip flights (or 82 operations) per day were assumed at the proposed heliport facility in 2005, increasing to 100 helicopter operations per day in 2020. The hours of operation are expected to range from sunrise to sunset, seven days per week, with ASTAR 350 and TWINSTAR 355 helicopters being the primary rotary wing aircraft used.

The final approach flight track to the proposed facility was adjusted to avoid low level overflights of the Waiakea residential community southwest of the airport and proposed heliport facility. Final heading of the tour helicopters prior to landing at the



PROPOSED TOUR HELICOPTER SITE AND HELICOPTER INGRESS AND EGRESS ROUTES

FIGURE 2



EXISTING TOUR HELICOPTER FACILITY LOCATION AND HELICOPTER INGRESS AND EGRESS ROUTES

FIGURE 3

heliport was adjusted to be parallel to Kaneohe Avenue for altitudes less than 1,000 feet above ground level, and the associated landing flight tracks are depicted in FIGURE 2 as flight tracks HA1, HA2, and HA3. The helicopter flight tracks shown in FIGURE 2 were developed after consultation with four helicopter operators, FAA Tower, and State Airports Division personnel. The straight-in landing track to Runway 3 will continue to be used by all fixed wing and military rotary wing aircraft.

The following average daily number of operations were used in developing the helicopter noise contours for the proposed heliport in CY 2005 for the Action Alternative:

- a. Northwest Arrivals (Track HA2): 20.5 daily operations.
- b. Southwest Arrivals (Track HA1): 20.5 daily operations.
- c. Southeast Arrivals (Track HA3): 41 daily operations.
- d. Southeast Departures (Track HD1): 55 daily operations.
- e. Northwest Departures (Track HD2): 27 daily operations.

The following average daily number of operations were used in developing the helicopter noise contours for the proposed heliport in CY 2020 for the Action Alternative:

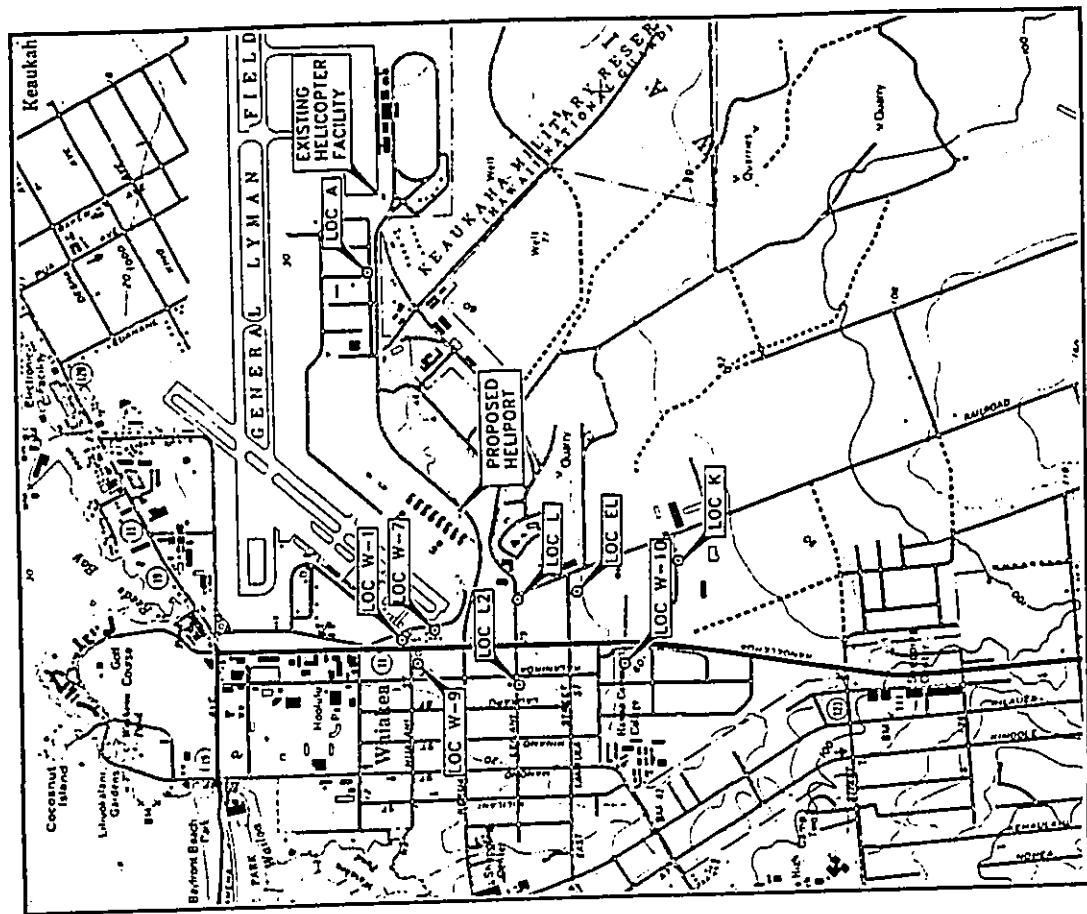
- a. Northwest Arrivals (Track HA2): 25 daily operations.
- b. Southwest Arrivals (Track HA1): 25 daily operations.
- c. Southeast Arrivals (Track HA3): 50 daily operations.
- d. Southeast Departures (Track HD1): 67 daily operations.
- e. Northwest Departures (Track HD2): 33 daily operations.

The following were also assumed for each tour helicopter flight at the proposed heliport: 10 minutes (600 seconds) of ground idle at the passenger loading pads; 3 seconds of flight idle at the passenger loading pads; and 7 seconds of hover (in ground effect) at the passenger loading pads. These values are considered to be very long, but were used to model worst case conditions at the proposed heliport. Only the HNM Version 2.2 model incorporates the helicopter noise during heliport idle and ground movements to develop DNL contours around the proposed heliport. The FAA INM Version 6.0 does not incorporate these noise contributions during the static and taxi operations in modeling helicopter noise, so the DNL contours in the immediate vicinity of the proposed heliport are typically underestimated by the FAA INM. For this reason, helicopter and total aircraft noise levels were calculated using both the FAA INM Version 6.0 and HNM Version 2.2 at noise sensitive receptor locations near the proposed heliport facility.

For the No Action Alternative, four helicopter operations were assumed to continue at the existing facility. Total helicopter operations in 2005 and 2020 for the No Action Alternative were identical to those assumed under the Action Alternative, with the ingress and egress routes of FIGURE 3 used for the No Action Alternative.

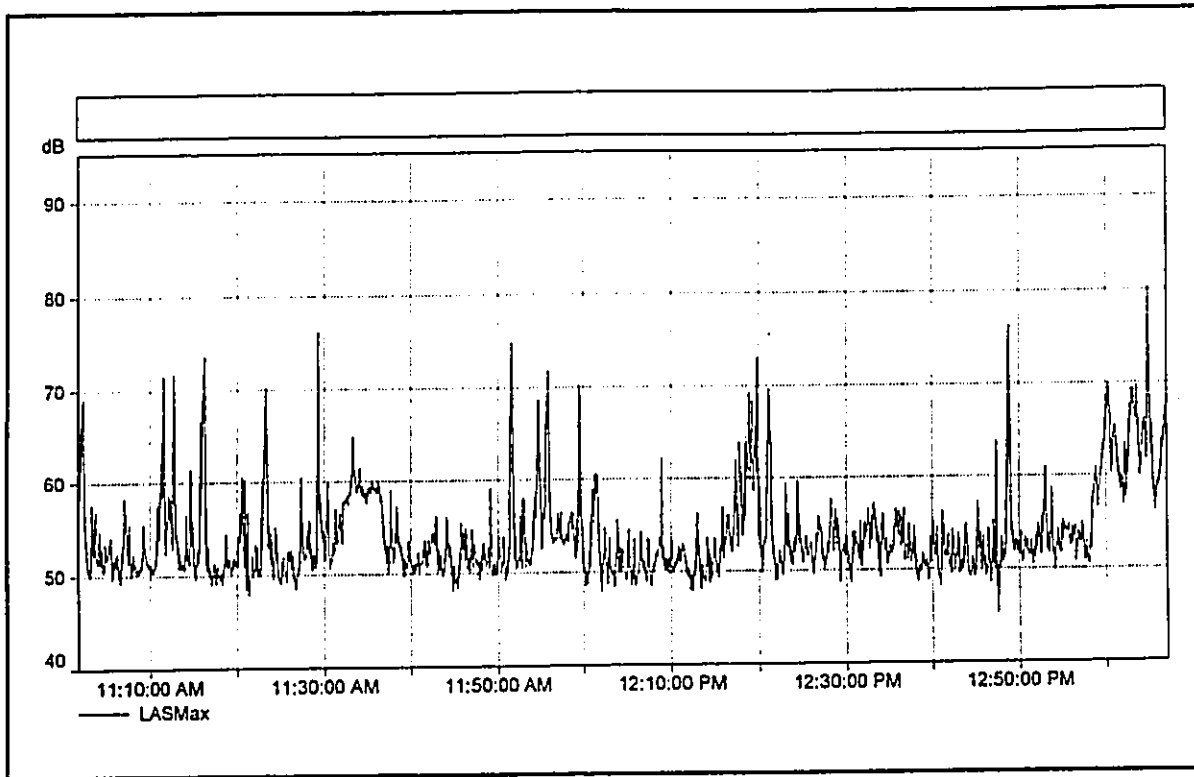
Helicopter DNL contours for 65, 60, and 55 DNL were developed using the HNM Version 2.2 for the proposed heliport facility. The helicopter DNL contours developed with the HNM Version 2.2 were compared with the Action and No Action noise contours developed with the FAA INM Version 6.0. Although FAA (Reference 7) does not require the development of noise contours below the 65 DNL level, the development of the lower level contours was considered prudent to identify the areas of possible complaints and helicopter noise impact zones associated with the proposed facility. Additionally, References 1, 8, and 9 recommend that more conservative noise criteria (rather than 65 DNL) be used in evaluating the noise compatibility of new helicopter facilities.

The helicopter noise contours developed by the HNM and INM models were compared to existing land use compatibility criteria and background ambient noise levels to evaluate the potential noise impacts and complaint risks associated with the expected level of helicopter operations at heliport facility. Using the DNL noise contour results and the results of the background ambient noise measurements, evaluations were made of potential noise impacts in the health and welfare category, and of potential annoyance responses from nearby residences. Based on the above evaluations, recommendations for mitigation measures which would minimize risks of health and welfare impacts and risks of annoyance responses from nearby residences were provided. Recommendations associated with the conduct and regulation of flight operations at the facility were also provided to minimize impacts and complaint risks at outlying areas.



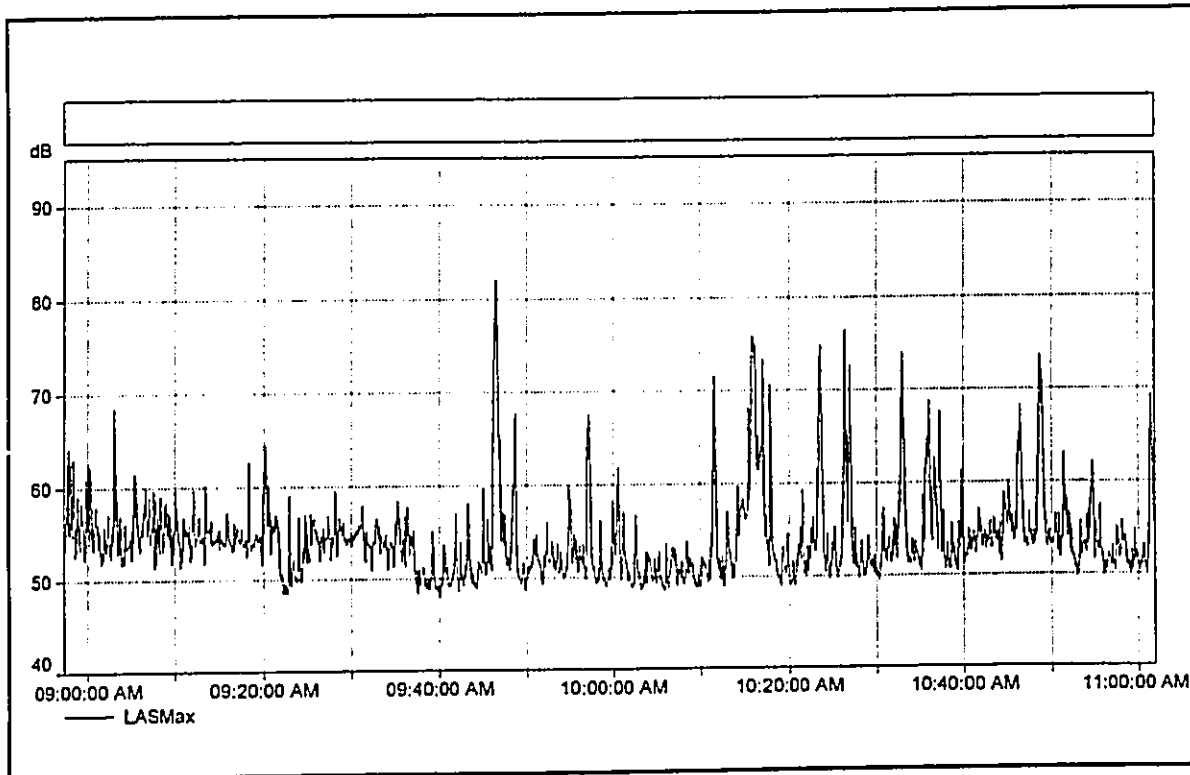
NOISE MONITORING LOCATIONS OF AUGUST 2001

FIGURE 4



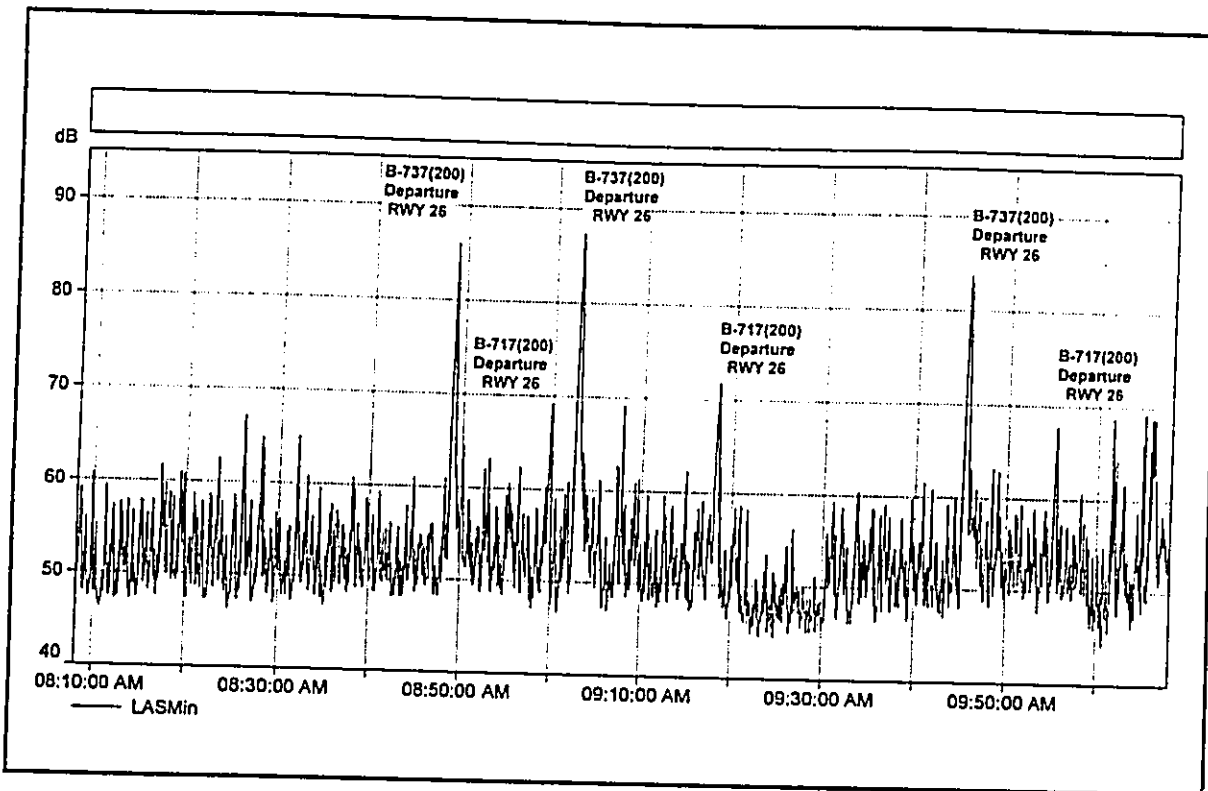
**DBA VS. TIME HISTORY OF SOUND LEVELS AT
LOCATION W-7 (1100 TO 1300 HOURS; 8/24/01)**

**FIGURE
6**



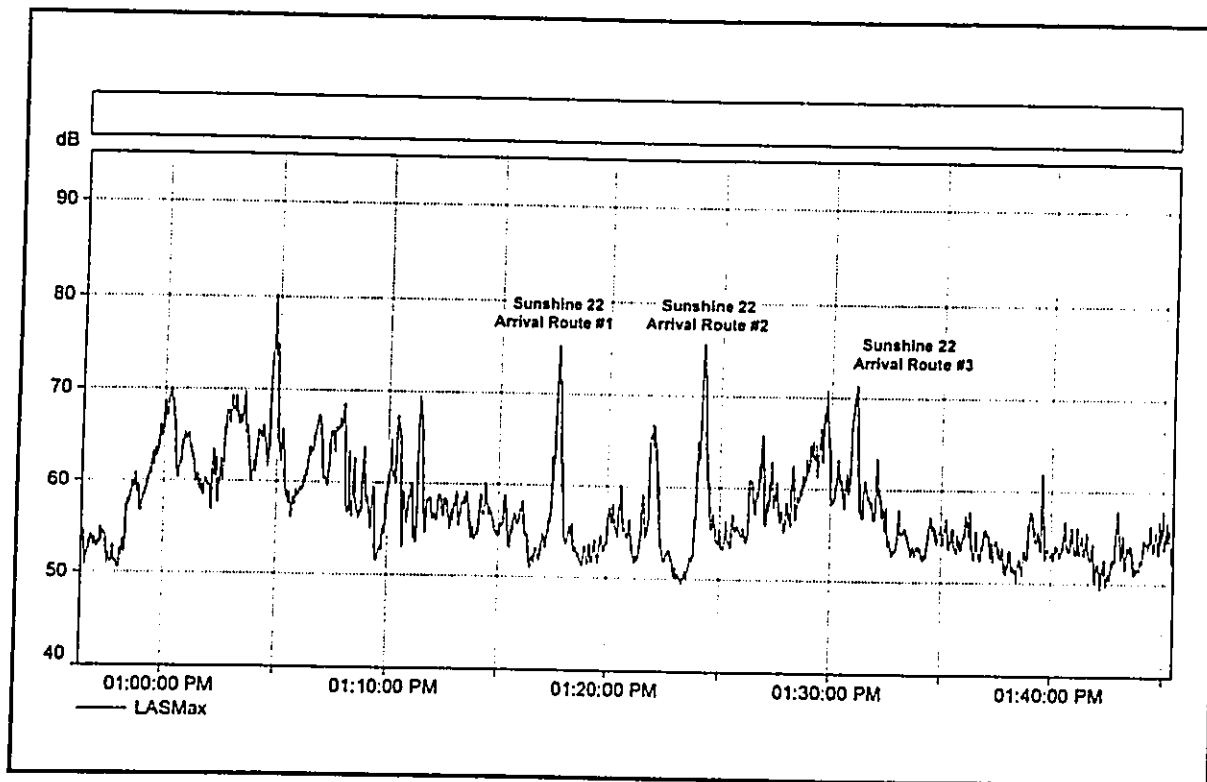
**DBA VS. TIME HISTORY OF SOUND LEVELS AT
LOCATION W-7 (0900 TO 1100 HOURS; 8/24/01)**

**FIGURE
5**



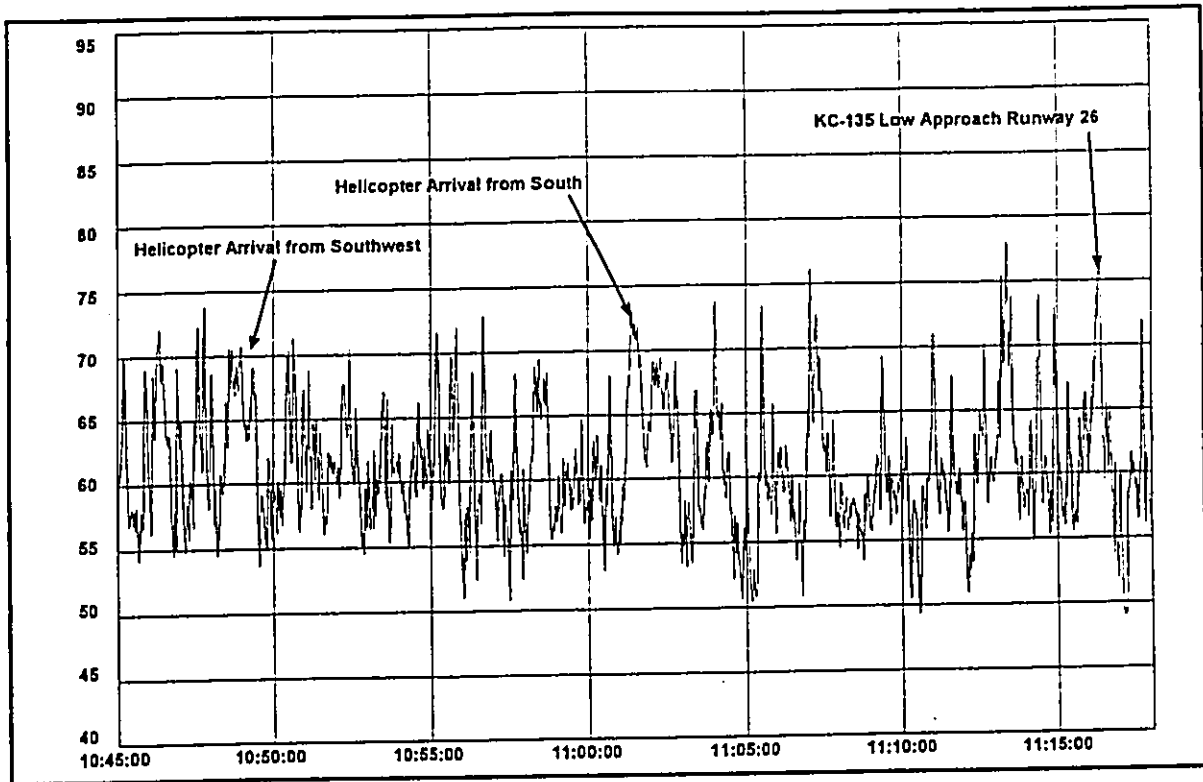
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-1 (0810 TO 1005 HOURS; 8/26/01)

FIGURE 8



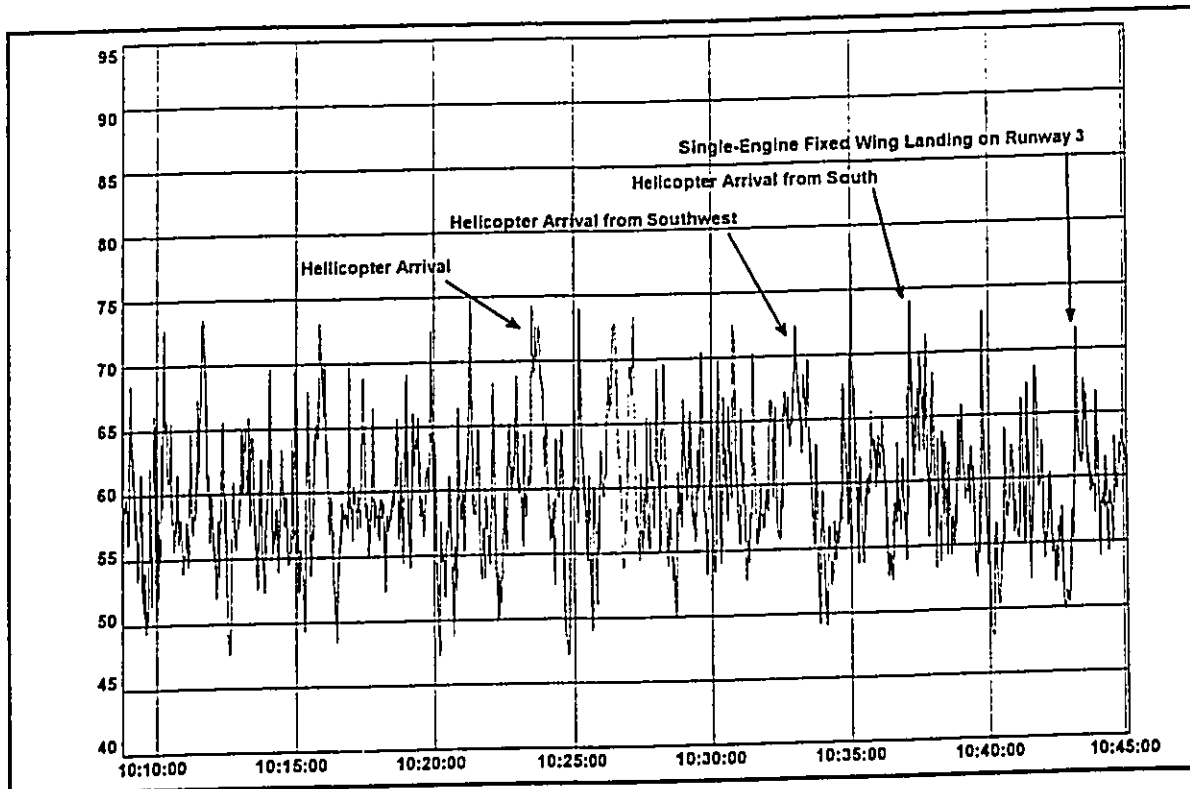
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-7 (1255 TO 1345 HOURS; 8/24/01)

FIGURE 7



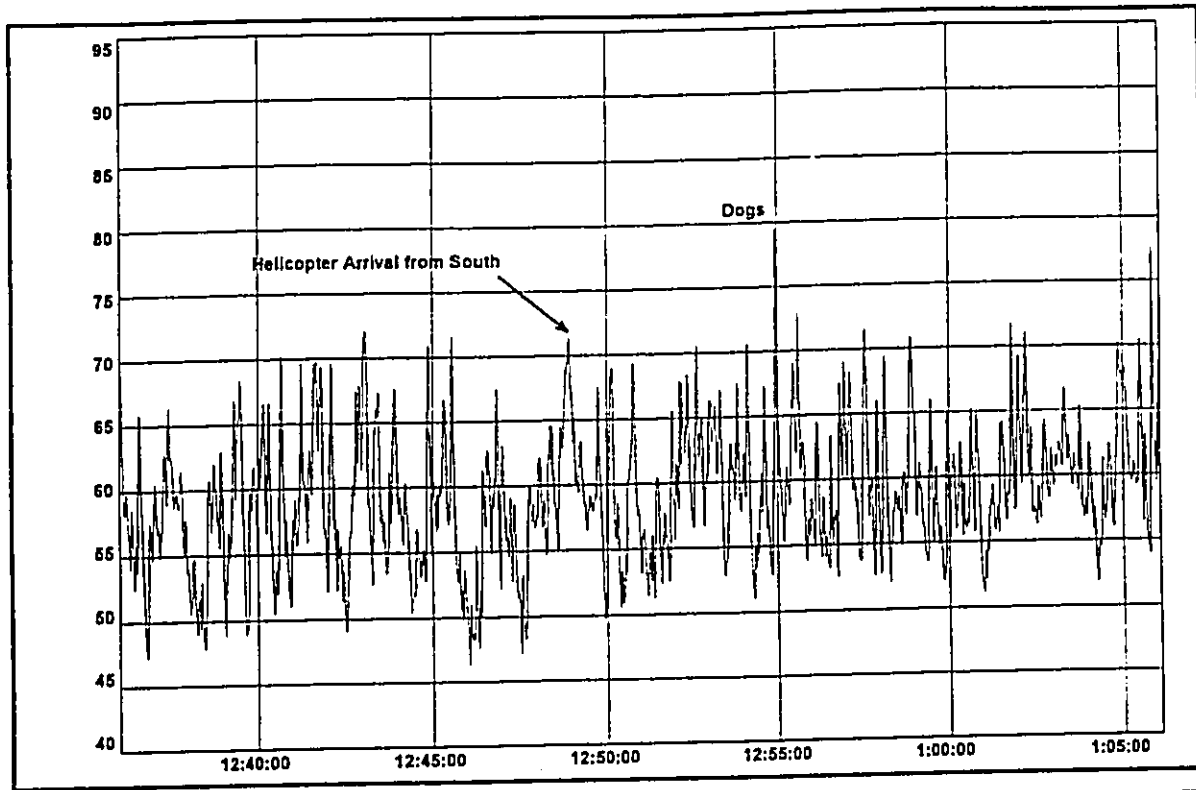
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-9 (1045 TO 1117 HOURS; 8/24/01)

FIGURE 10



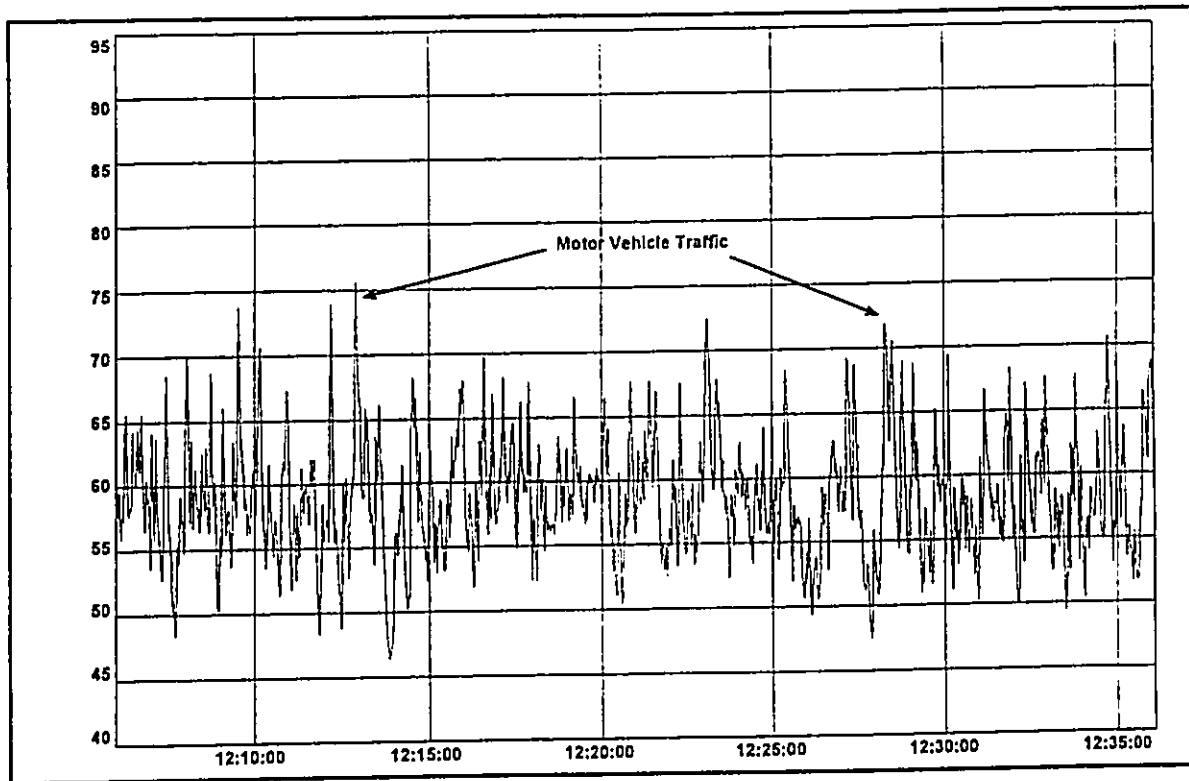
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-9 (1010 TO 1045 HOURS; 8/24/01)

FIGURE 9



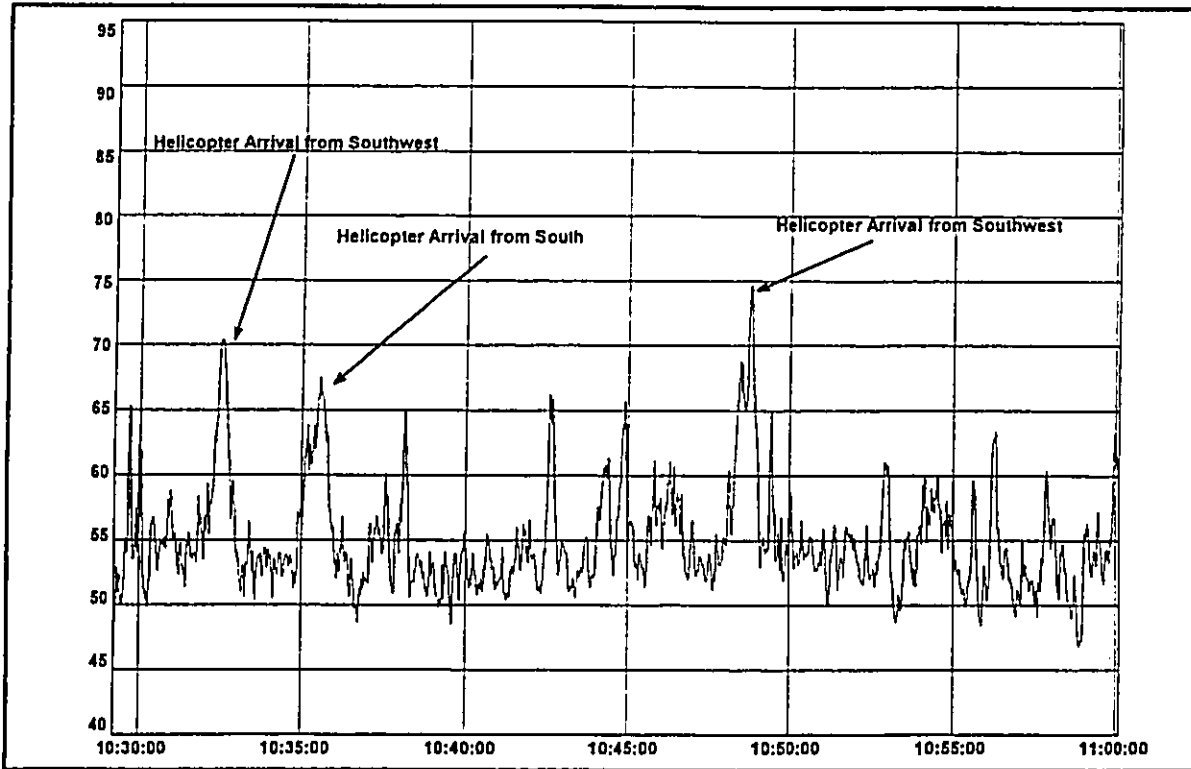
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-9 (1236 TO 1305 HOURS; 8/24/01)

FIGURE 12



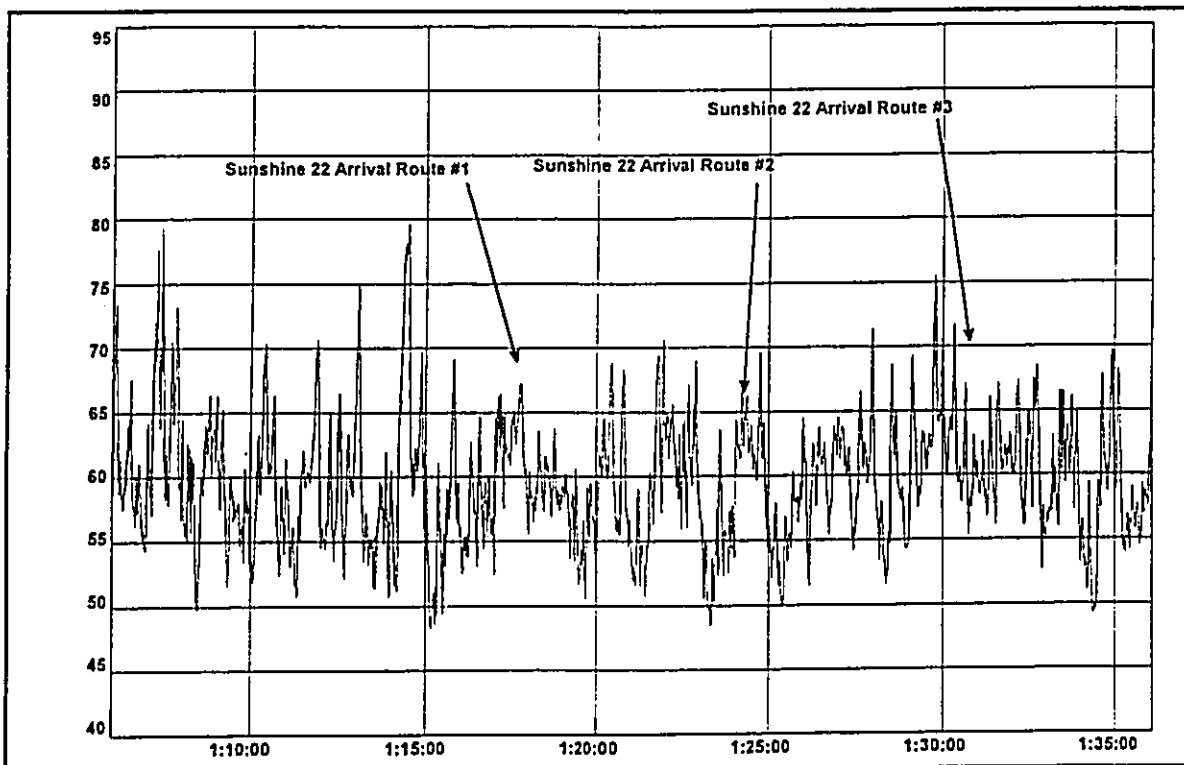
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-9 (1207 TO 1236 HOURS; 8/24/01)

FIGURE 11



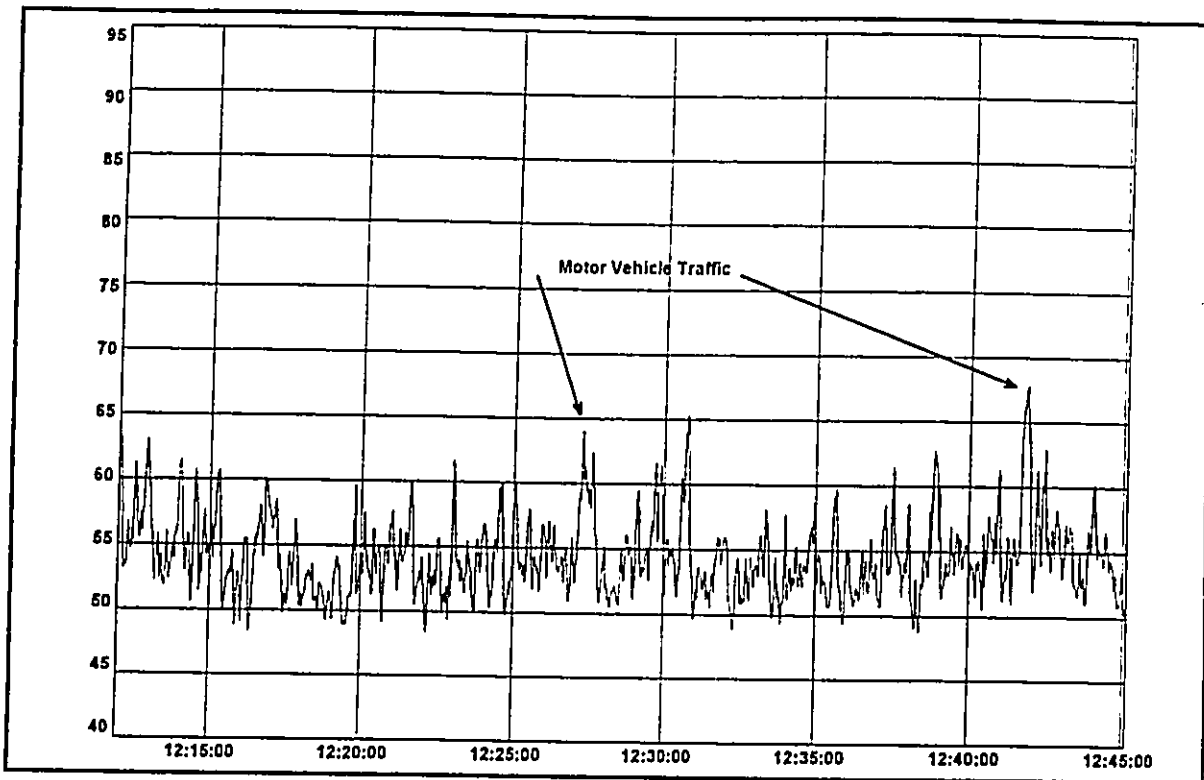
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-10 (1030 TO 1100 HOURS; 8/24/01)

FIGURE 14



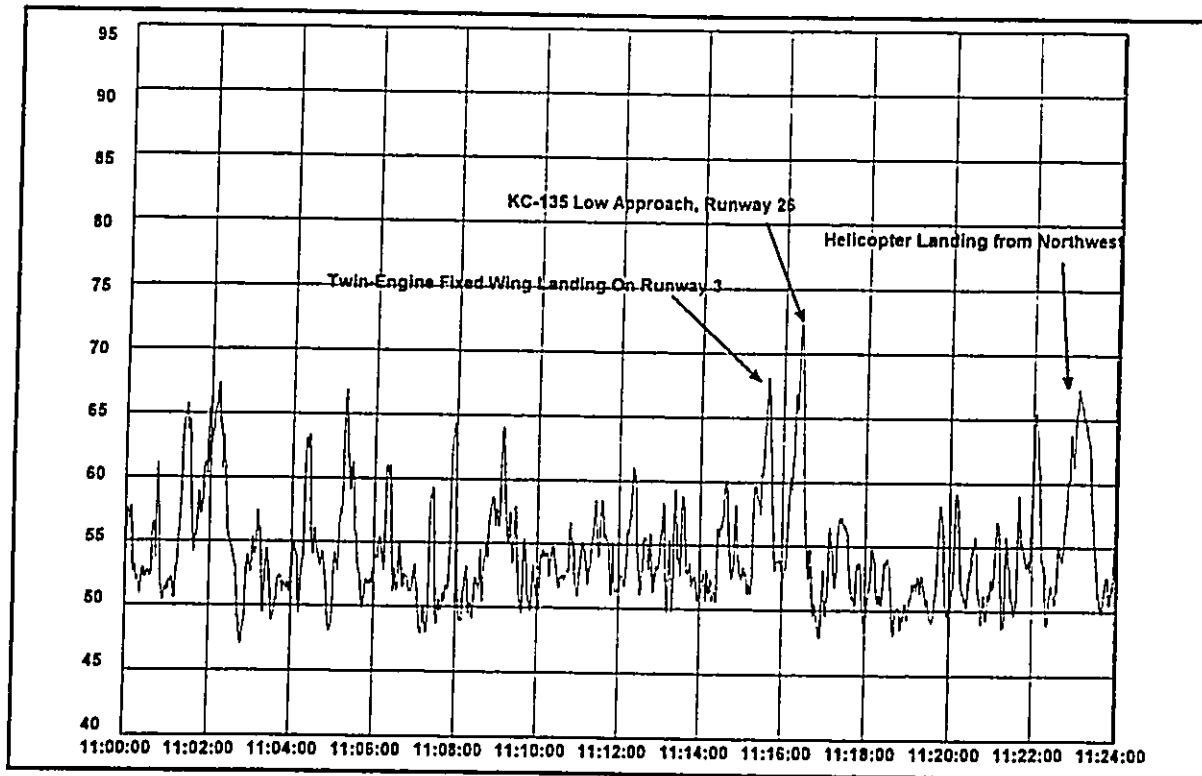
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-9 (1306 TO 1335 HOURS; 8/24/01)

FIGURE 13



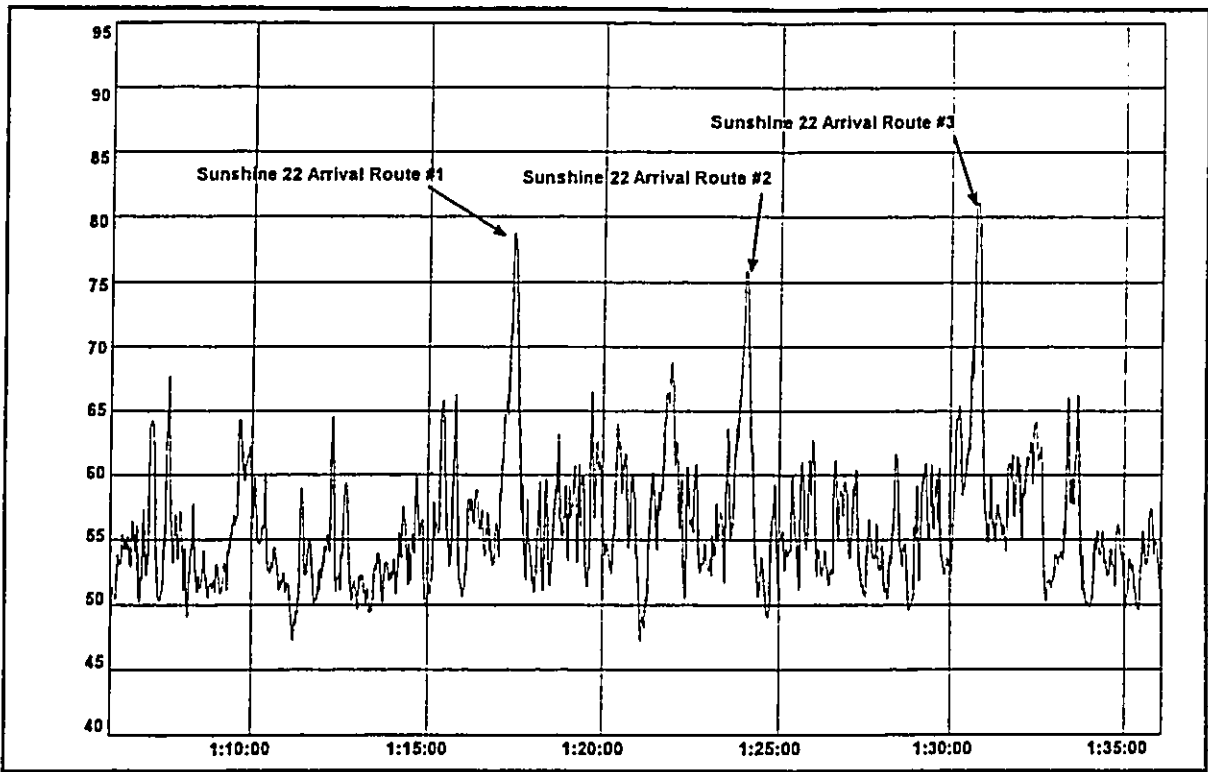
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-10 (1213 TO 1245 HOURS; 8/24/01)

FIGURE 16



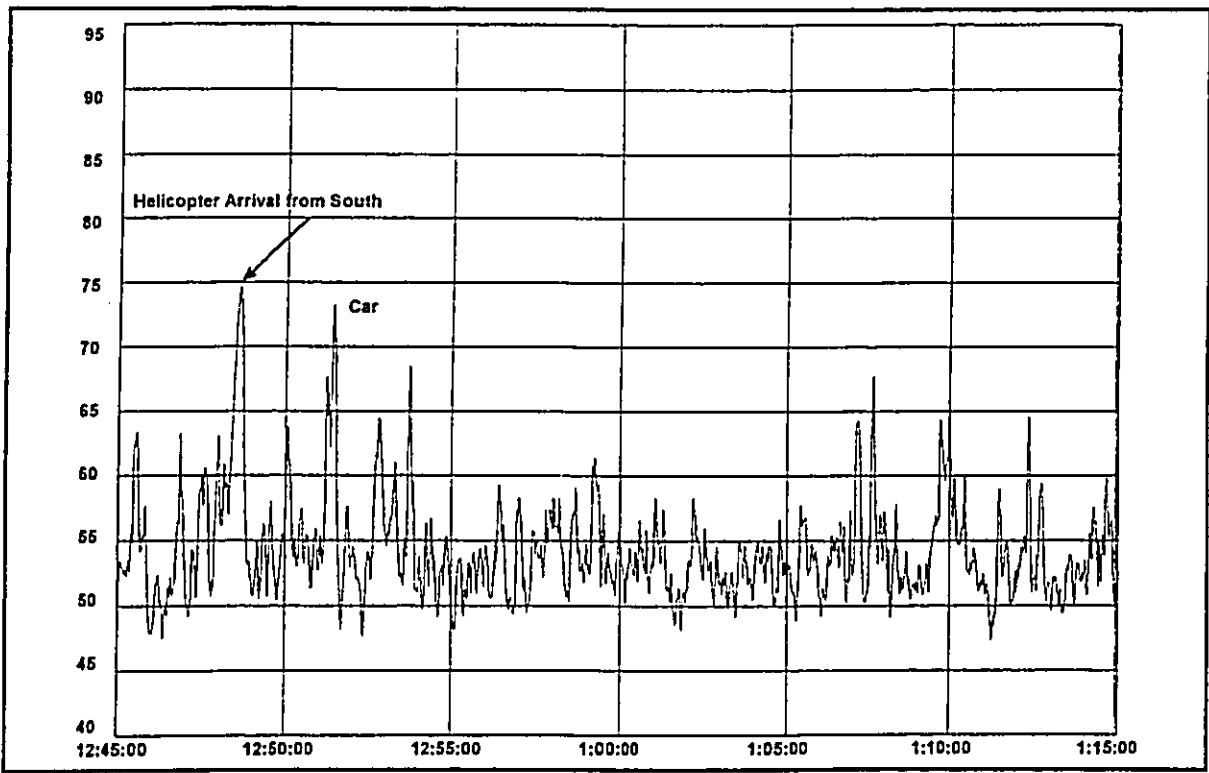
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-10 (1100 TO 1124 HOURS; 8/24/01)

FIGURE 15



DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-10 (1307 TO 1336 HOURS; 8/24/01)

FIGURE 18



DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION W-10 (1245 TO 1315 HOURS; 8/24/01)

FIGURE 17

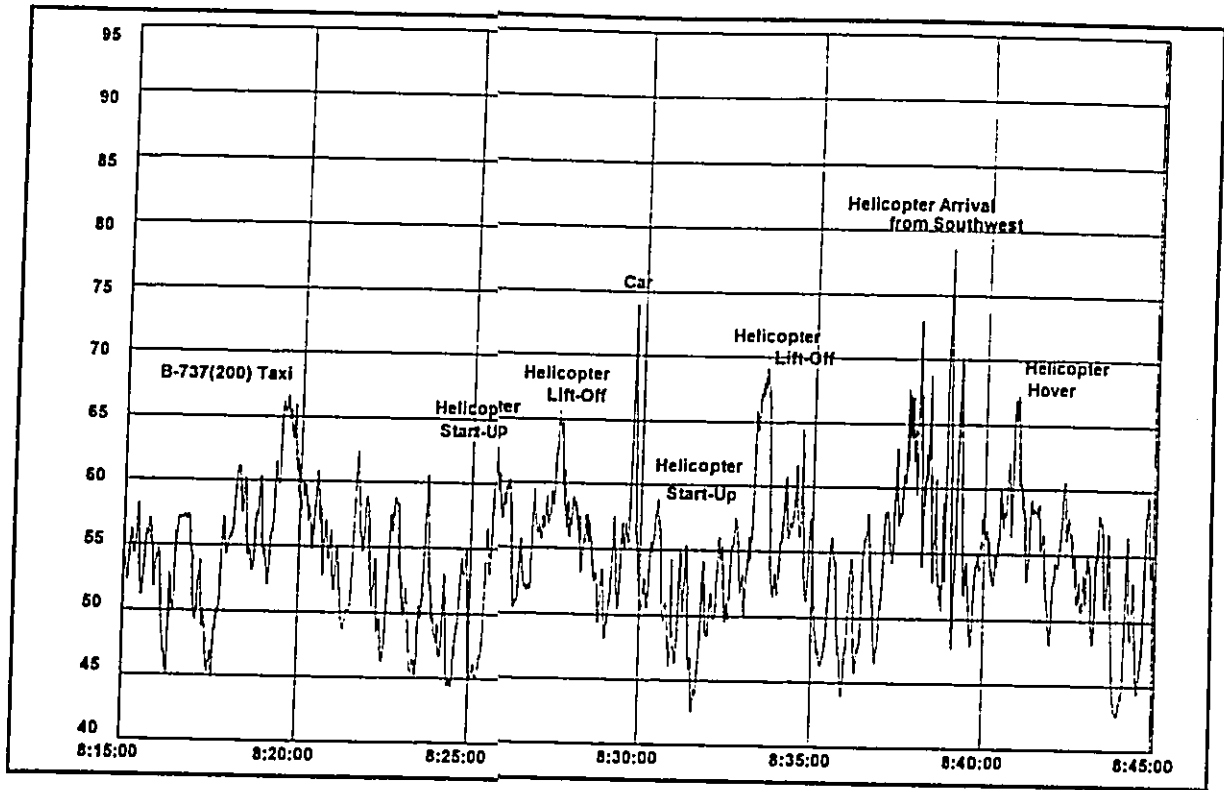


FIGURE 20

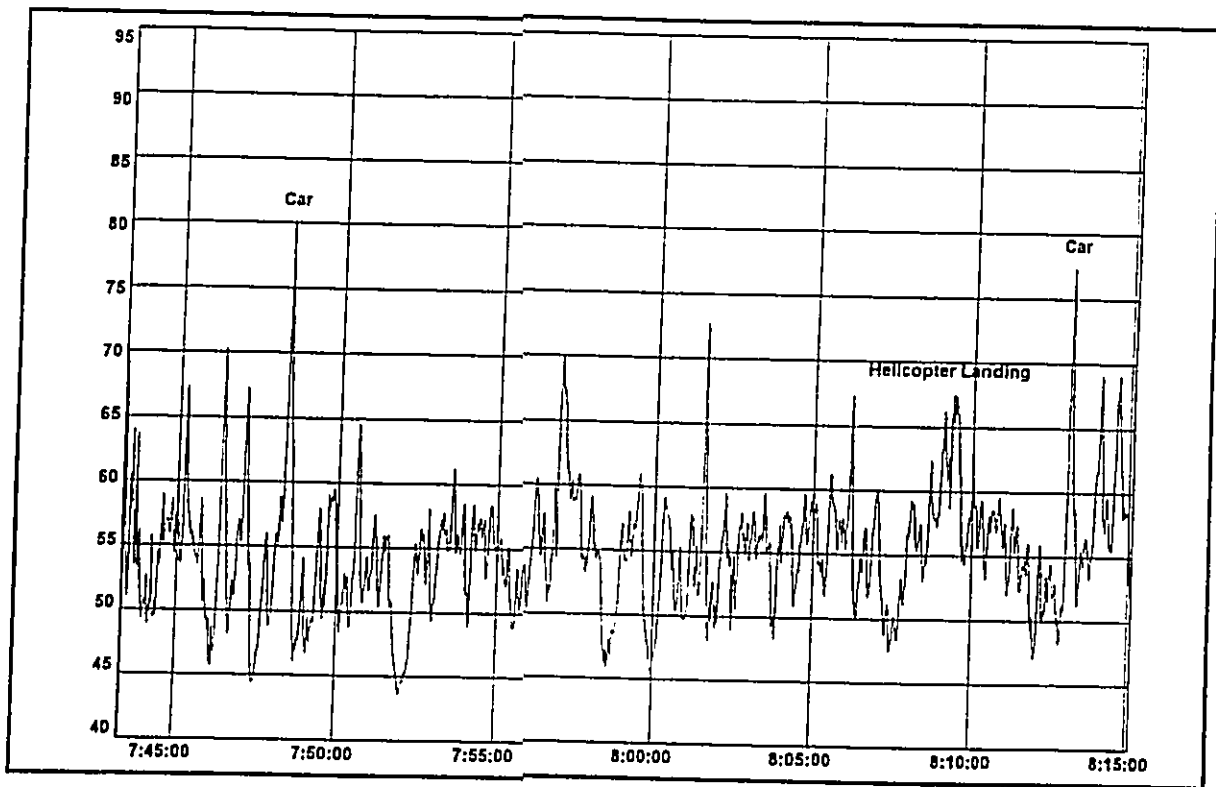
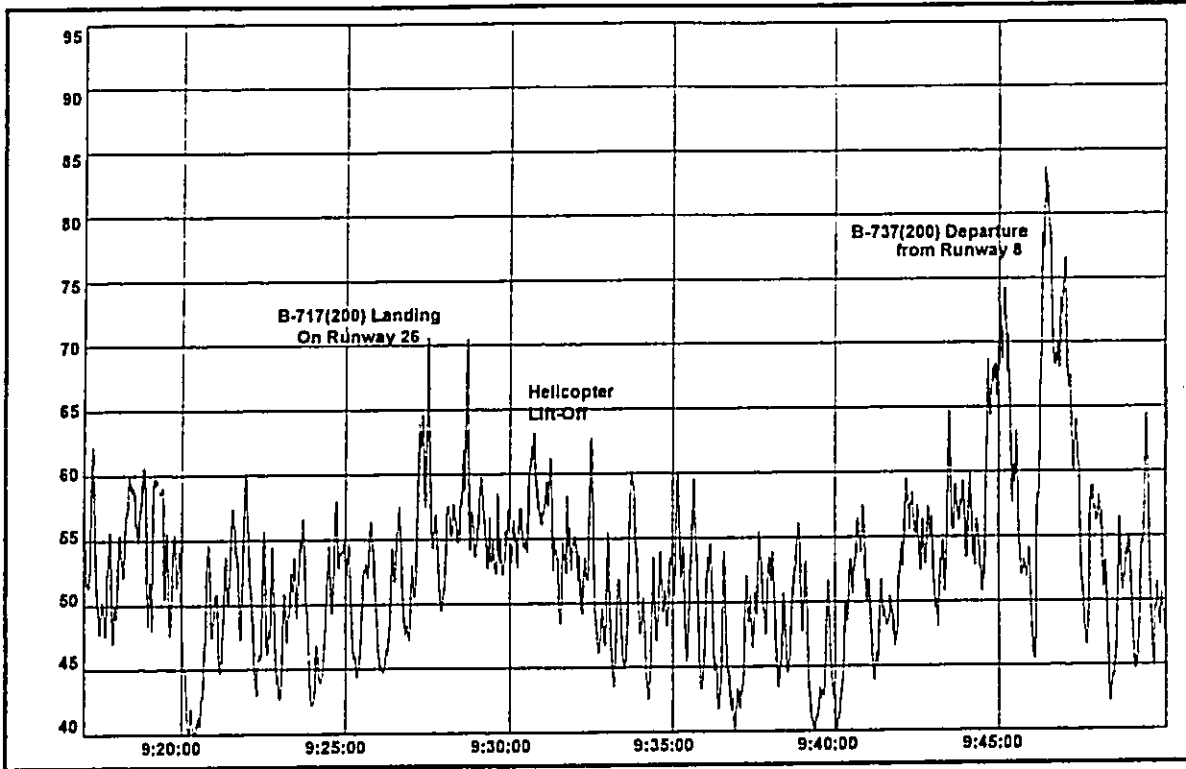
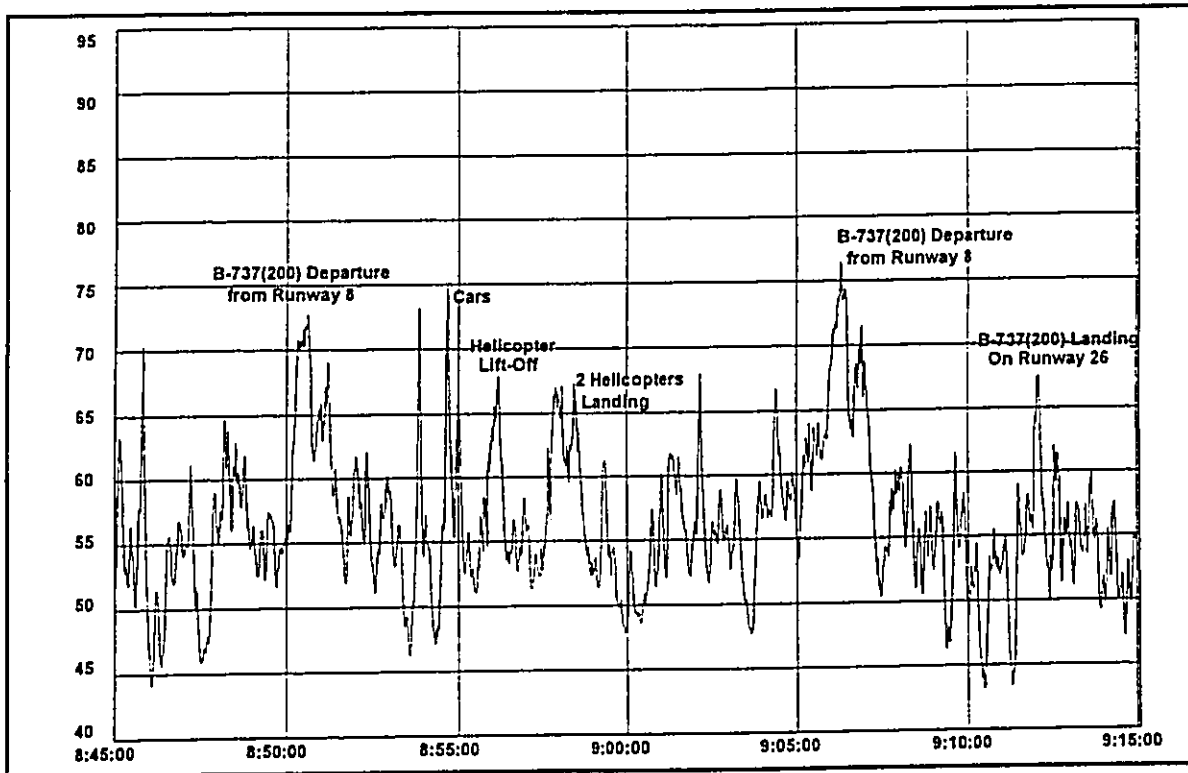


FIGURE 19



DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION A (0918 TO 0950 HOURS; 8/25/01)

FIGURE 22



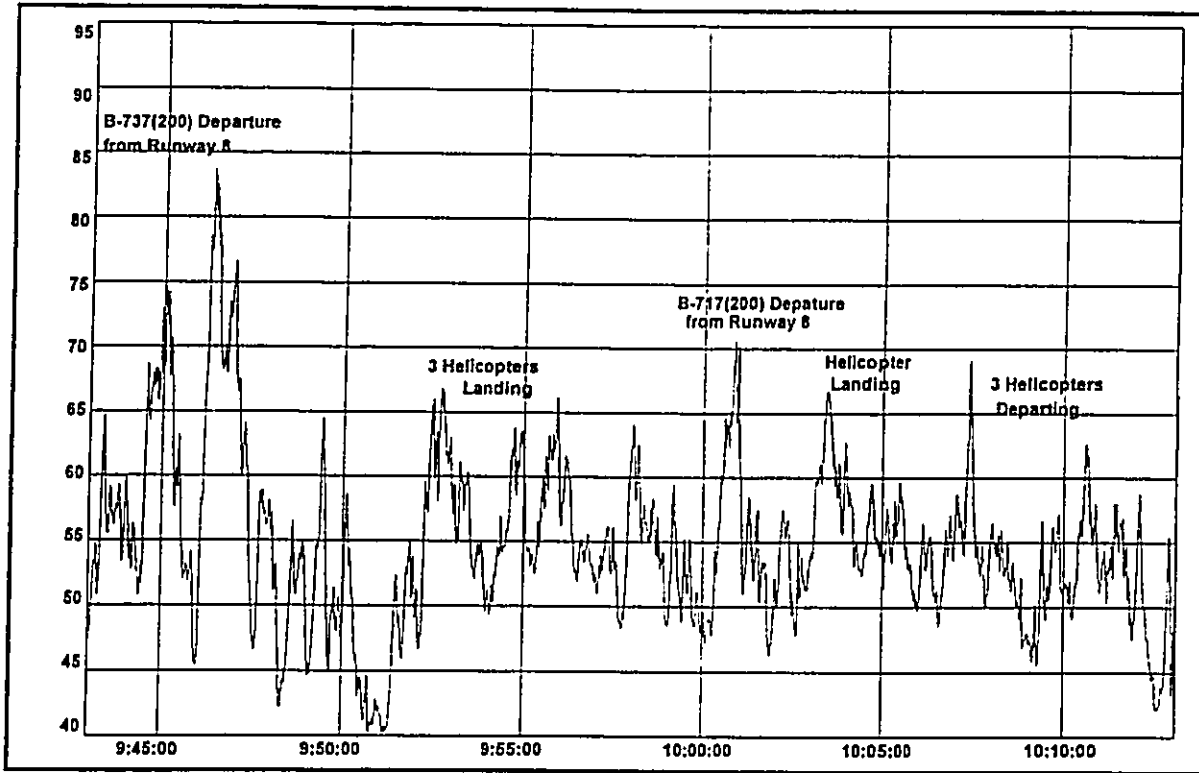
DBA VS. TIME HISTORY OF SOUND LEVELS AT LOCATION A (0845 TO 0915 HOURS; 8/25/01)

FIGURE 21

U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL AVIATION ADMINISTRATION
 OFFICE OF AIR QUALITY
 AIRCRAFT NOISE
 REPORT NO. DOT/FAA/ENR/01/011

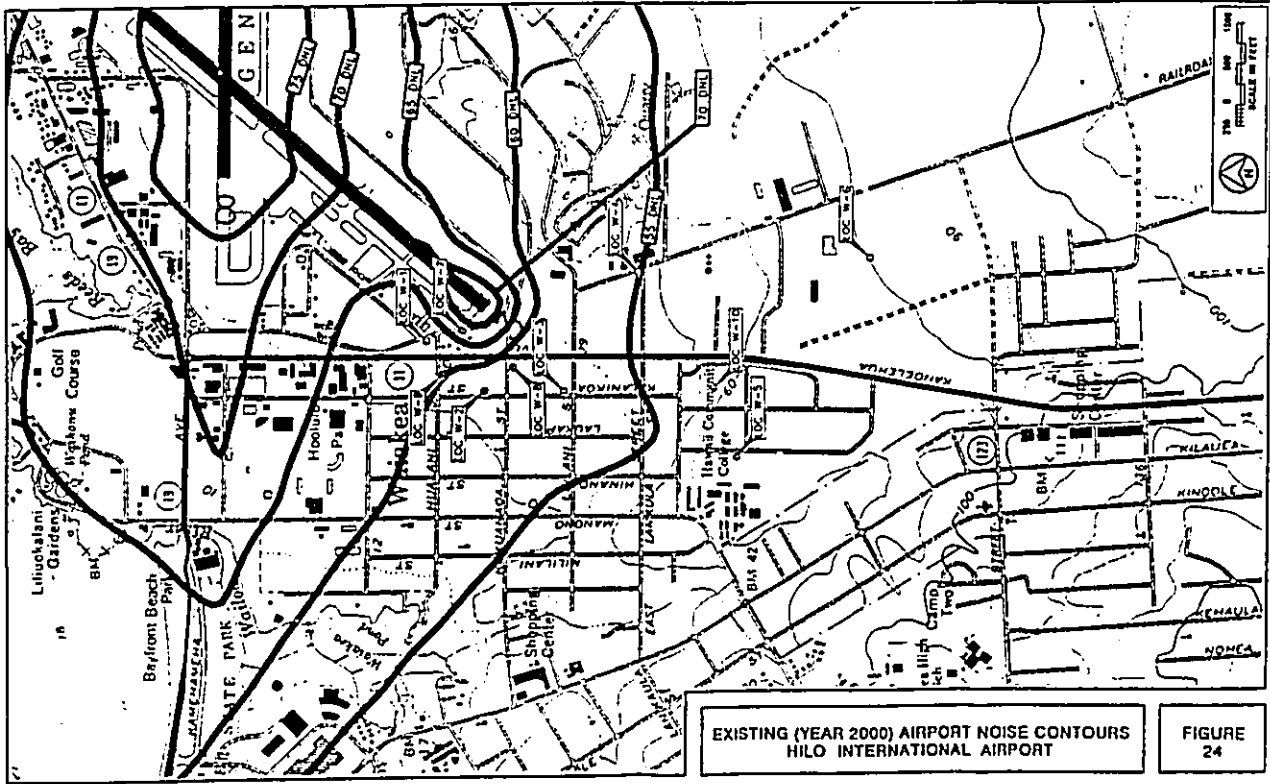
TABLE 4
SUMMARY OF AVERAGE (Leq) NOISE
LEVELS AT MEASUREMENT LOCATIONS

<u>LOCATION</u>	<u>TIME PERIOD</u>	<u>DATE</u>	<u>Leq (dBA)</u>
W-7	0900 to 1300 Hours	8/24/01	58.0
W-7	1300 to 1422 Hours	8/24/01	61.6
W-1	0808 to 1008 Hours	8/26/01	63.0
W-9	1008 to 1127 Hours	8/24/01	63.2
W-9	1008 to 1127 Hours	8/24/01	63.2
W-10	1029 to 1124 Hours	8/24/01	57.1
W-10	1210 to 1336 Hours	8/24/01	58.7
L	1226 to 1258 Hours	8/25/01	66.5
EL	1305 to 1330 Hours	8/25/01	60.6
K	1336 to 1352 Hours	8/25/01	62.1
L2	1404 to 1439 Hours	8/25/01	59.3



DBA VS. TIME HISTORY OF SOUND LEVELS AT
LOCATION A (0944 TO 1013 HOURS; 8/25/01)

FIGURE
23



EXISTING (YEAR 2000) AIRPORT NOISE CONTOURS
HILO INTERNATIONAL AIRPORT

FIGURE
24

It should be noted that the noise contours of FIGURE 24 were developed using the earlier Version 5.2A of the FAA INM, while the airport noise contours developed during this helicopter facility study used the latest Version 6.0 of the FAA INM. TABLE 5 presents the calculated DNL values at Locations W-1 through W-10 in the Waikeia area. These locations are shown in FIGURE 24. All of the calculated values shown in TABLE 5 were obtained using the latest Version 6.0 of the FAA INM or the helicopter model FAA HNM Version 2.2. The existing noise levels of all aircraft (fixed wing plus rotary wing) operating at Hilo International Airport exceed 60 DNL at Locations W-1, W-7, and W-9, which are closest to the southwest end of Runway 3.

CHAPTER VI. HELICOPTER NOISE LEVELS

Helicopter noise contours associated with the operations at the proposed heliport were developed using the FAA HNM, Version 2.2 for 2005 and 2020. In addition, sound level measurements at three locations near the proposed heliport site (Locations W-7, W-9, and W-10) were obtained during three simulated landings to the heliport site by an ASTAR helicopter (Sunshine 22). The simulated landings were performed during the midday period on August 24, 2001. During the three simulated landings to the proposed heliport facility, the second approach (Route #2) followed the "HAI" arrival flight track (see FIGURE 2). The third approach's (Route #3) flight track was west of "HAI", and overflew measurement Location W-10. The first approach's (Route #1) flight track was between Route #2 and Route #3.

FIGURE 18 identifies the noise events associated with the three simulated landings to the proposed heliport facility as measured at Location W-10. It should be noted that arrival Route #2 resulted in the lowest sound level of 76 dBA at Location W-10. FIGURE 13 also identifies the noise events associated with the three simulated landings as measured at Location W-9. Note that the measured helicopter noise levels at Location W-9 were very low (less than 70 dBA) at this location due to the low altitude of the helicopter when it passed Location W-9. FIGURE 7 identifies the noise events associated with the three simulated landings as measured at Location W-7.

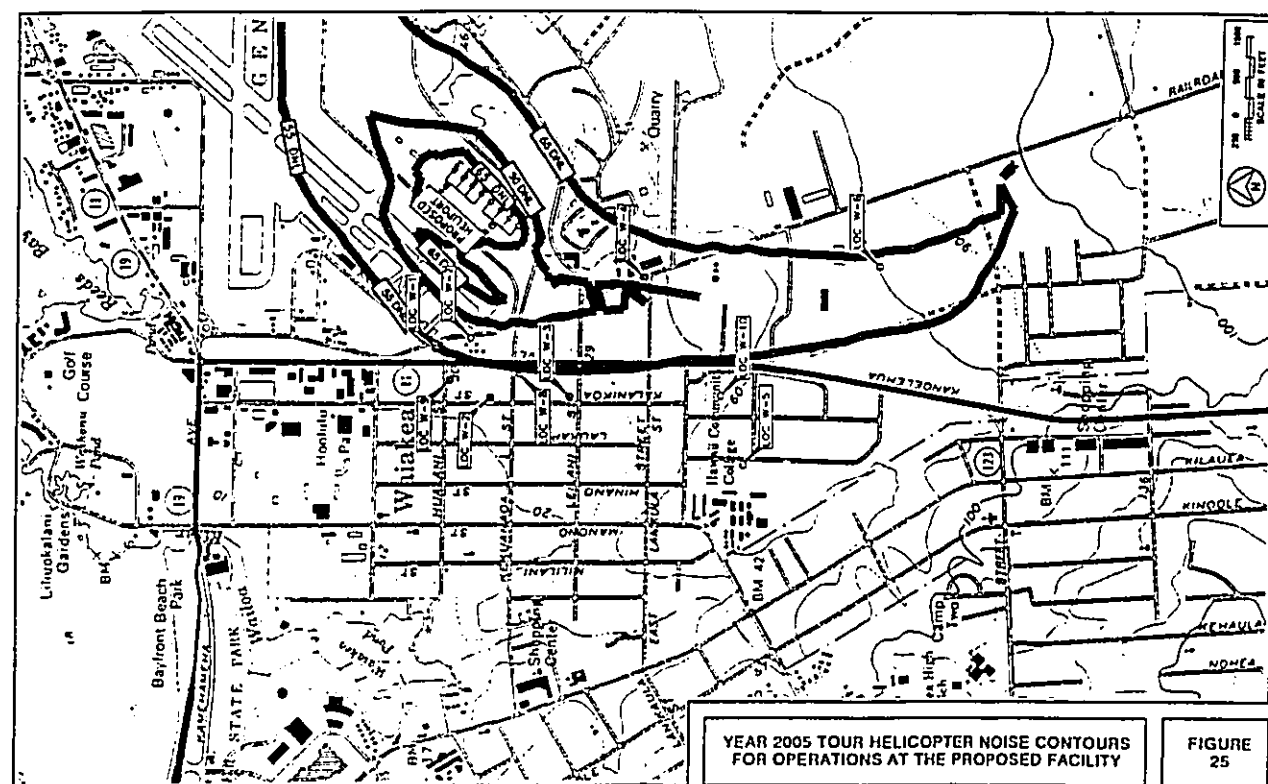
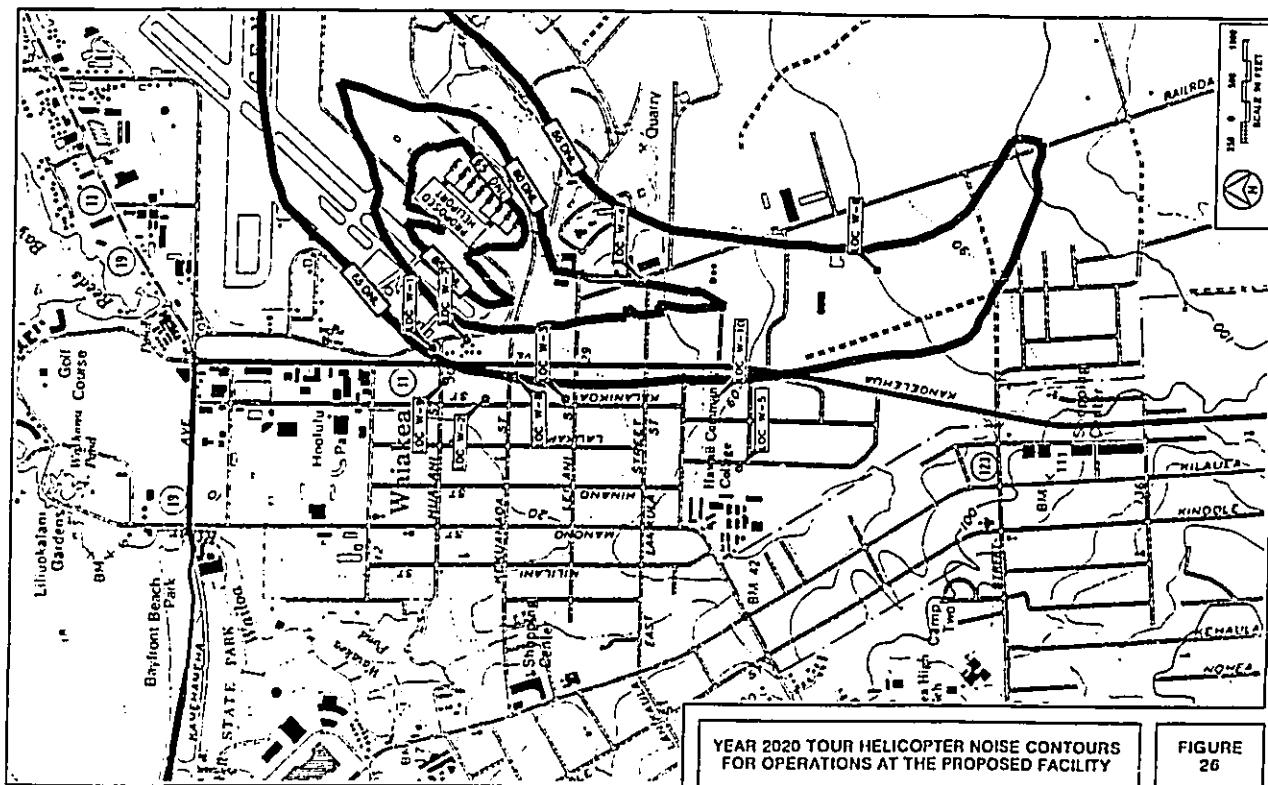
FIGURES 25 and 26 depict the noise contours associated with the four helicopter operations at the proposed facility during 2005 and 2020. TABLE 5 tabulates the resulting DNL levels at Locations W-1 through W-10 for both forecast years. The noise contours represent the helicopter noise exposure levels of 55 DNL through 65 DNL at 5 DNL increments, with ground idle and flight idle conditions included in the contour modeling process. As indicated in FIGURES 25 and 26, existing residential or other noise sensitive areas are not expected to be exposed to helicopter noise above 60 DNL, and as such, the proposed helicopter facility should not significantly change the existing land use compatibility conditions within the project environs.

EPA's most stringent recommendation of 55 DNL for residential land uses should be met at the majority of existing noise sensitive receptor locations in the environs of the proposed heliport, except for those residences within the first block west of Kanoelehua Avenue and those residences east of Kanoelehua Avenue which are located near the southwest end of Runway 3. It should be noted that these areas are currently exposed to similar or higher levels of noise from motor vehicle traffic or fixed wing aircraft. Risks of adverse health and welfare effects from helicopter noise should also be low since the 55 DNL contour does not extend into the quieter areas of Waiakea which are removed from Kanoelehua Avenue.

Because the DNL noise descriptor represents a highly averaged measure of time-varying sound levels, the maximum A-Weighted sound level (L_{max}) during an aircraft flyby event will generally be greater than the DNL contour values shown. The

TABLE 5
COMPARISONS OF FAA INM VERSION 6.0 PREDICTIONS
AT VARIOUS COMMUNITY LOCATIONS IN WAIAKEA, HAWAII

YEAR AND SCENARIO	DNL AT VARIOUS LOCATIONS									
	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W-10
<u>CY 2000 - Existing Conditions:</u>	61.7	58.8	58.3	55.0	52.0	49.3	61.2	58.8	60.5	52.2
<u>CY 2005 - No Action:</u>	62.0	59.2	59.3	55.3	53.1	49.6	61.7	59.3	60.8	52.8
<u>CY 2005 - With New Heliport:</u>	62.3	59.3	59.5	57.5	53.3	53.4	62.6	59.9	60.9	53.9
<u>CY 2005 - Change in DNL:</u>	0.3	0.1	0.2	2.2	0.2	3.8	0.9	0.6	0.1	1.1
<u>CY 2020 - No Action:</u>	62.1	59.3	59.5	55.3	53.3	49.6	61.9	59.5	60.9	52.9
<u>CY 2020 - With New Heliport:</u>	62.5	59.5	59.8	58.0	53.6	54.0	63.1	60.2	61.1	54.3
<u>CY 2020 - Change in DNL:</u>	0.4	0.2	0.3	2.7	0.3	4.4	1.2	0.7	0.2	1.4
<u>CY 2005 - HNM Model of Helo Onl</u>	54.8	51.6	53.0	57.8	49.4	56.0	57.5	54.7	52.7	53.2
<u>CY 2020 - HNM Model of Helo Onl</u>	55.7	52.5	53.9	58.7	50.3	56.9	58.6	55.6	53.6	54.1



proposed helicopter egress and ingress routes have been selected to avoid low level overflights of residential areas within Waiakea. The tour helicopter operators, FAA Tower, and State DOT personnel have mutually agreed to adhere to the ingress and egress routes shown in FIGURE 2 following construction of the new facility. Minimum helicopter altitudes of 1,000 feet above ground level will be maintained while crossing Kanoelehua Avenue and Kamehameha Avenue while transiting to and from the heliport site. Helicopter single event noise levels should be similar to current single event levels (between 70 to 75 dBA, Lmax) as long as the the 1,000 foot minimum altitude and ingress and egress routes of FIGURE 2 are adhered to.

Single event noise levels during touchdown, liftoff, taxi, hover, and idle operations near the heliport site should typically be less than 70 dBA as shown in FIGURES 20 through 23. Noise measurement Location A was selected to be approximately the same distance from the existing helicopter parking area as Location W-7 will be from the future helicopter parking pads.

CHAPTER VII. POSSIBLE NOISE IMPACTS AND COMPLAINT RISKS ASSOCIATED WITH THE PROPOSED TOUR HELICOPTER FACILITY

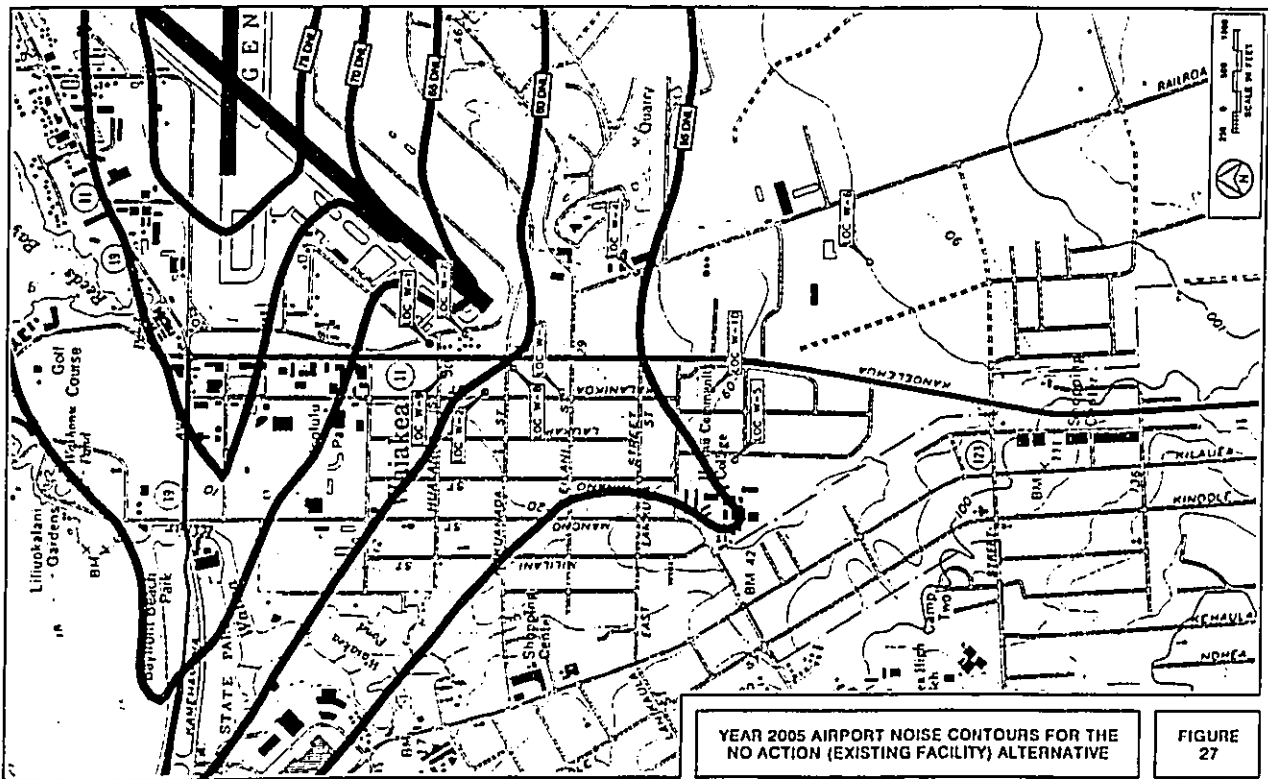
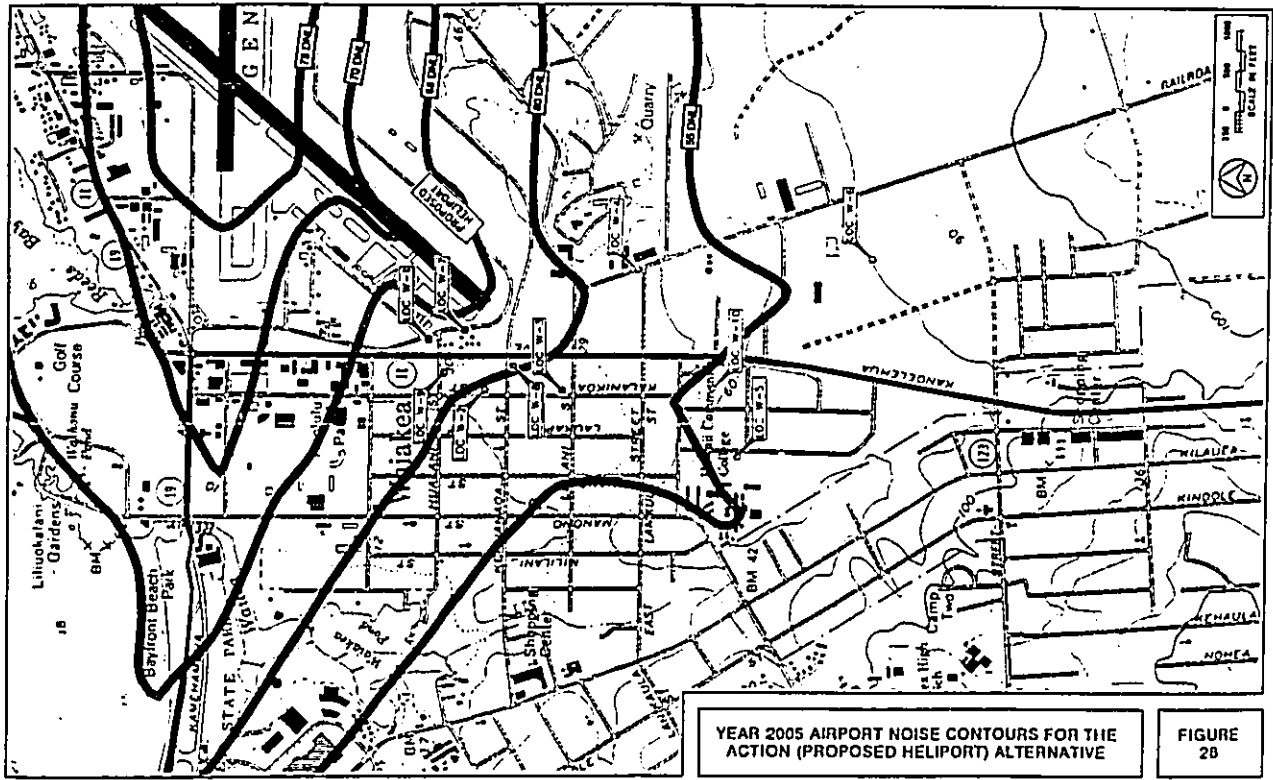
Noise contours developed with the FAA INM Version 6.0 were used to compare resulting DNL levels and potential noise impacts within the Waiakea area for the No Action and Action Alternatives. For both 2005 and 2020, 55 to 75 DNL contours were developed for four helicopter operations from the existing facility (No Action Alternative), and from the proposed heliport facility (Action Alternative). These noise contours are shown in FIGURES 27 through 30. TABLE 5 provides the computed DNL values at Locations W-1 through W-10 for the Action and No Action Alternatives for both forecast years, and also indicates the predicted increases in DNL values from the No Action to the Action Alternatives.

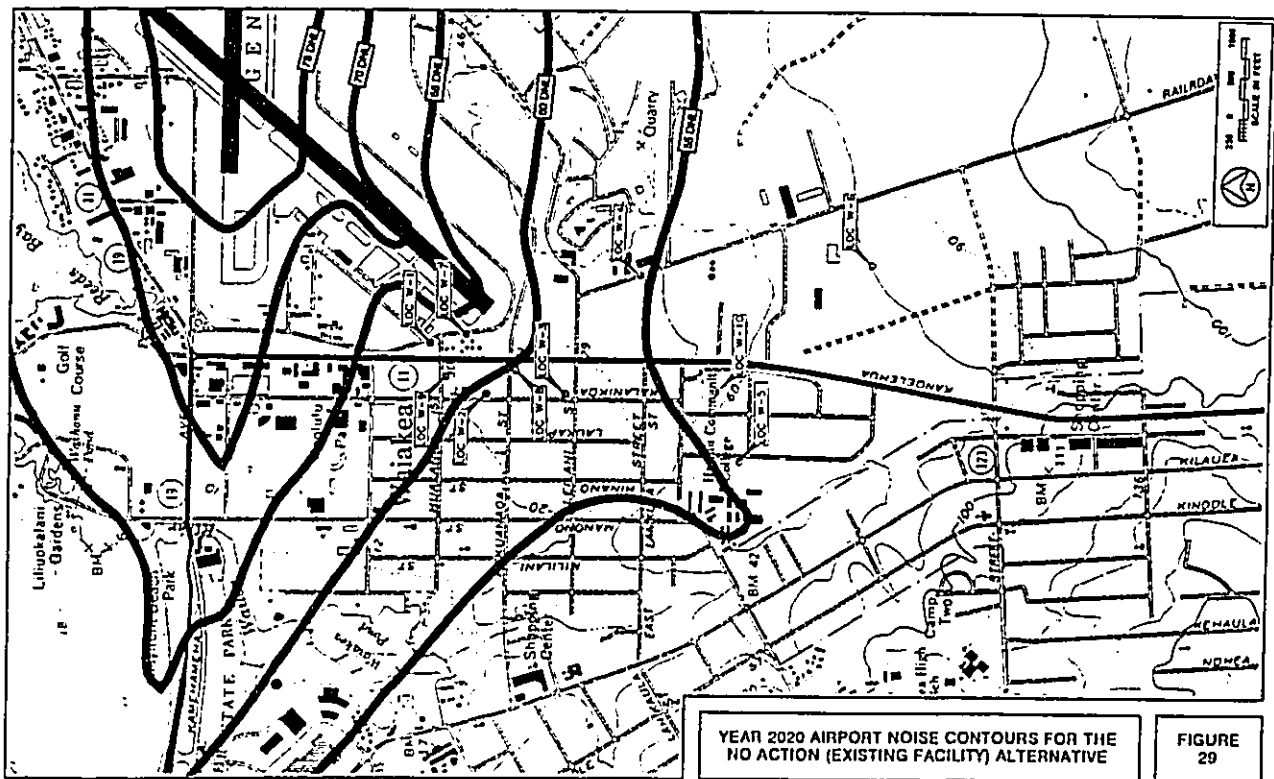
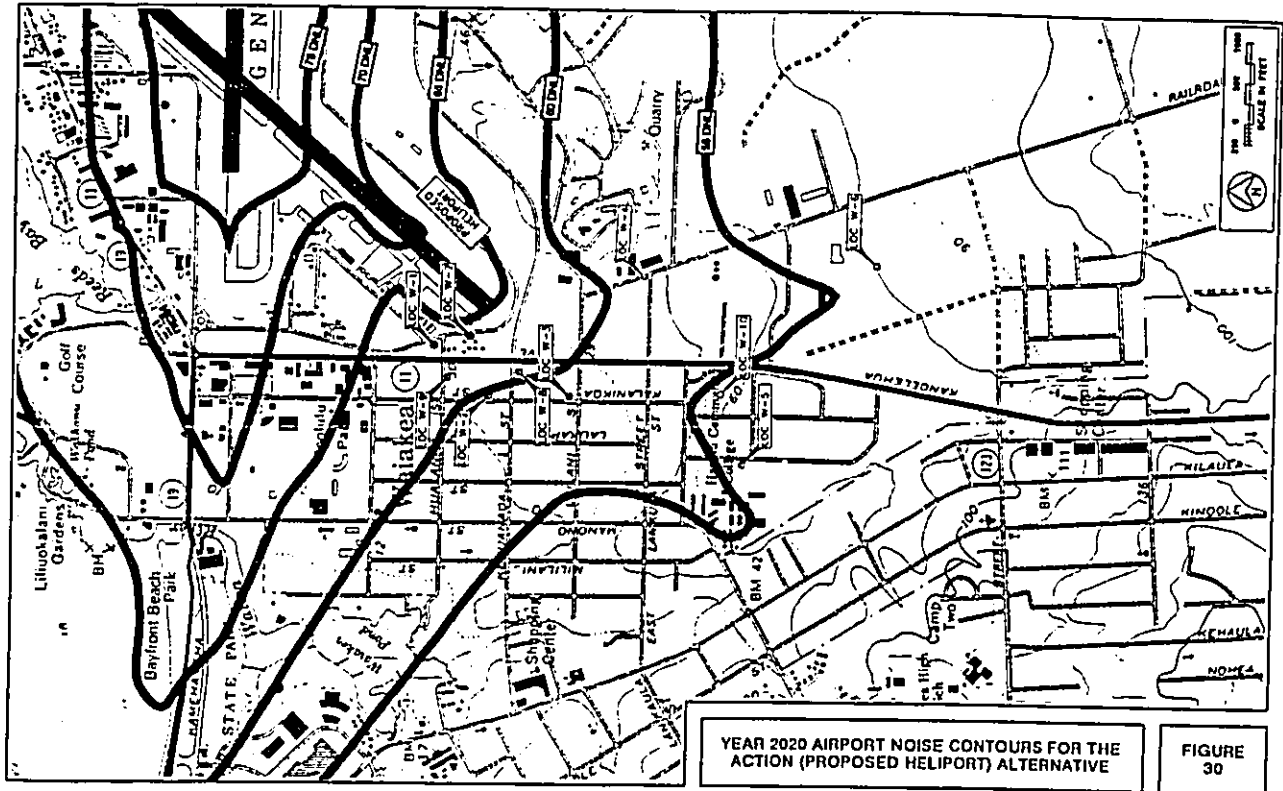
Forecasted increases in noise levels associated with the proposed tour heliport should not exceed the FAA criteria value of 1.5 DNL for a significant increase at all residential areas in Waiakea area. Stated in another way, the proposed tour heliport facility should not cause a significant increase in aircraft (fixed and rotary wing) noise levels in the residential areas of Waiakea. Although some residences will continue to experience aircraft noise exposure levels between 60 to 65 DNL, this condition is primarily attributable to aircraft noise sources other than the four helicopters operating at Hilo International Airport.

Based on the forecast tour helicopter and overall airport noise contours which were developed for the Action and No Action Alternatives, it was concluded that significant noise impacts from four helicopter operations at the proposed new facility need not occur in the Hilo International Airport environs. The primary reason for this is that adequate buffer distances between the noise sensitive receptors in Waiakea and the tour helicopters can be maintained at the proposed new facility location. In addition, the use of a modified approach for four helicopters which avoids low level overflights of the Waiakea area will help to keep the helicopter 60 DNL contour east of the Waiakea residential area, and will reduce risks of noise complaints from residents.

Significant increases in land use incompatibilities as defined by the locations of the 60 DNL contours over the Waiakea community should not occur as a result of the proposed heliport facility. For residential areas currently located inside the 60 DNL contour, such as at Locations W-7 and W-9, forecast increases in noise levels resulting from the proposed action range from 0.1 to 1.2 DNL, which do not exceed the current FAA criteria level of 1.5 DNL for significant increase.

Additional noise mitigation measures, other than those incorporated into the ingress and egress routes shown in FIGURE 2 and the requirement to maintain minimum 1,000 foot altitude above ground level when crossing Kanoelehua and Kamehameha Avenues, should not be required. By utilizing the more open and industrial lands south of the proposed heliport facility as a tour helicopter ingress/egress corridor, risks of complaints from the residential areas in Waiakea and areas west of Kanoelehua Avenue should be minimized.





CHAPTER VIII. CONSTRUCTION NOISE IMPACTS

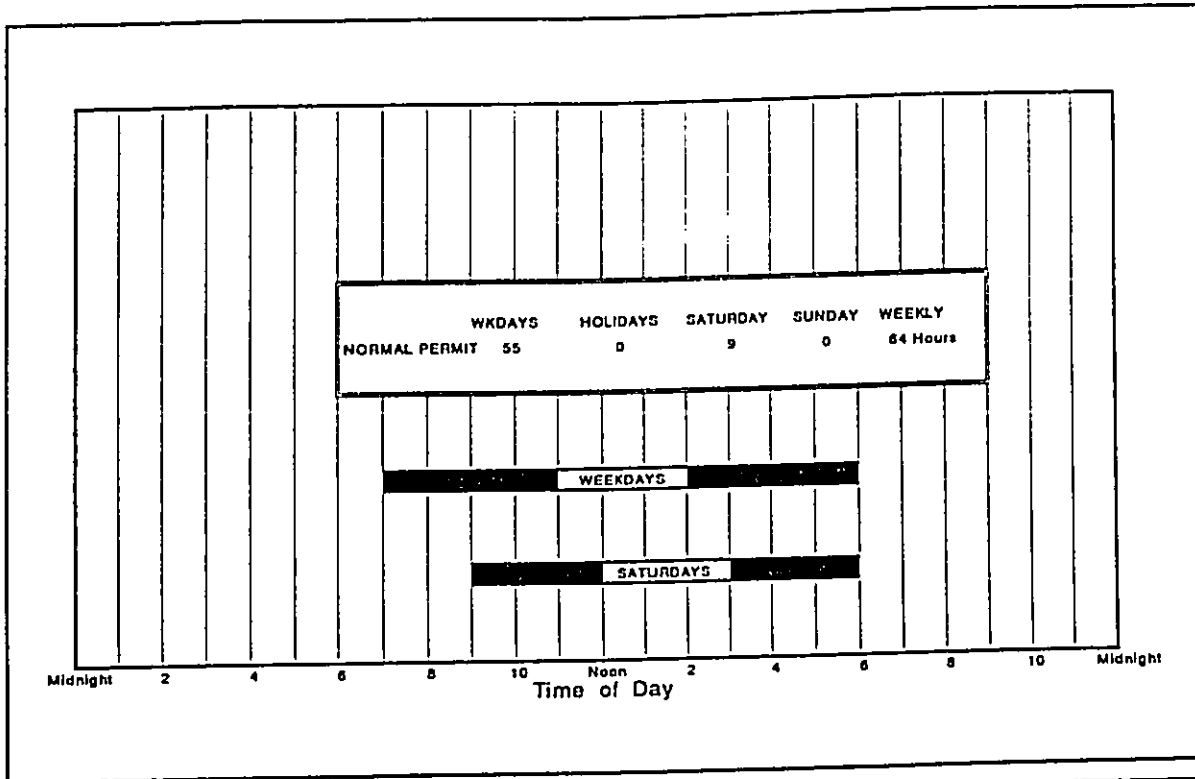
The past history of community complaints and annoyance responses regarding helicopter noise suggest that the "no reaction" response threshold for helicopter noise can be less than the 55 DNL threshold, which is associated with the protection of the public health and welfare. Based on information reported in Reference 4, the average "no reaction" response threshold for aircraft noise is approximately 5 DNL units less than the DNL associated with other background ambient noise, as long as the exposed population does not have attitudinal biases regarding the source of the noise. Variations in this "no reaction" response threshold are possible due to attitudinal biases (favorable and unfavorable) of the exposed population. For a background ambient noise level of 55 DNL, which is believed to be characteristic of the quietest areas in the project environs, the "no reaction" response threshold is estimated to be approximately 50 DNL for unbiased receptors. Stated in a different way--if the annually averaged DNL from the noise of helicopters operating at the proposed facility exceeds 50 DNL at the quietest noise sensitive receptor locations, the noise from the helicopter operations may cause annoyance reactions from that particular residential area. At the noisier receptor locations near roadways, where the non-helicopter ambient noise components exceed 60 DNL, helicopter noise levels below 55 DNL are not expected to cause annoyance reactions from unbiased residents.

The proposed ingress and egress routes to and from the proposed heliport were mutually developed by four helicopter operators, FAA Tower, and State Airports Division personnel so as to not pass over existing residential areas at low altitudes. Risks of complaints from area residents which are associated with low level helicopter overflights should be low. In addition, the helicopter noise contours developed during this study (FIGURES 25 and 26) indicate that the 55 DNL contour should not extend into the quieter residentially zoned properties which are west of Kalanikoa Street. The few existing homes which are located between the southwest end of Runway 3 and Kanoelehua Avenue will be located between the 55 DNL and 60 DNL helicopter noise contours (see FIGURES 25 and 26), and between the 60 DNL to 65 DNL airport noise contours (see FIGURES 28 and 30). It should be noted that these existing residences currently qualify for sound attenuation treatment due to existing airport noise in their area, and additional noise mitigation measures should not be required as a result of the development of the proposed heliport facility.

The primary noise mitigation measures recommended during operations at the proposed four helicopter facility are those operational procedures which minimize complaint risks from surrounding noise sensitive properties and which are possible within the operating constraints at the facility. One of the primary mitigation measures for reducing risks of complaints from noise sensitive properties is to avoid overflights of these properties, particularly at low altitudes of less than 1,000 FT above ground level. The proposed siting of the heliport does allow for the avoidance of low level overflights along all portions of the ingress and egress routes associated with the proposed heliport. The special ingress and egress procedures developed for the facility should be adhered to by all future users of the heliport, whenever weather and safety conditions allow.

Audible construction noise will probably be unavoidable during the entire heliport construction period. The total time period for construction is unknown, but it is anticipated that the actual work will be moving from one location on the heliport site to another during that period. Actual length of exposure to construction noise at any receptor location will probably be less than the total construction period for the entire project. Typical levels of noise from construction activity (excluding pile driving activity) are shown in FIGURE 31. The noise sensitive properties which are predicted to experience the highest noise levels during construction activities on the heliport site are the existing residences closest to the southeast end of Runway 3, which are located approximately 1,400 feet from the construction area. Adverse impacts from construction noise are not expected at these residences due to the very large buffer distances between the construction area and the closest residences.

Mitigation of construction noise to inaudible levels may not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50 FT distance), and due to the exterior nature of the work (grading and earth moving, trenching, concrete pouring, hammering, etc.). The use of properly muffled construction equipment should be required on the job sites. The incorporation of State Department of Health (DOH) construction noise limits and curfew times, which are applicable on the Island of Hawaii (Reference 6), is another noise mitigation measure which can be applied to this project. FIGURE 32 depicts the allowed hours of construction which exceed the noise DOH limits of Reference 6. Noisy construction activities are not allowed on Sundays or holidays under the DOH permit procedures.



AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE

FIGURE 32

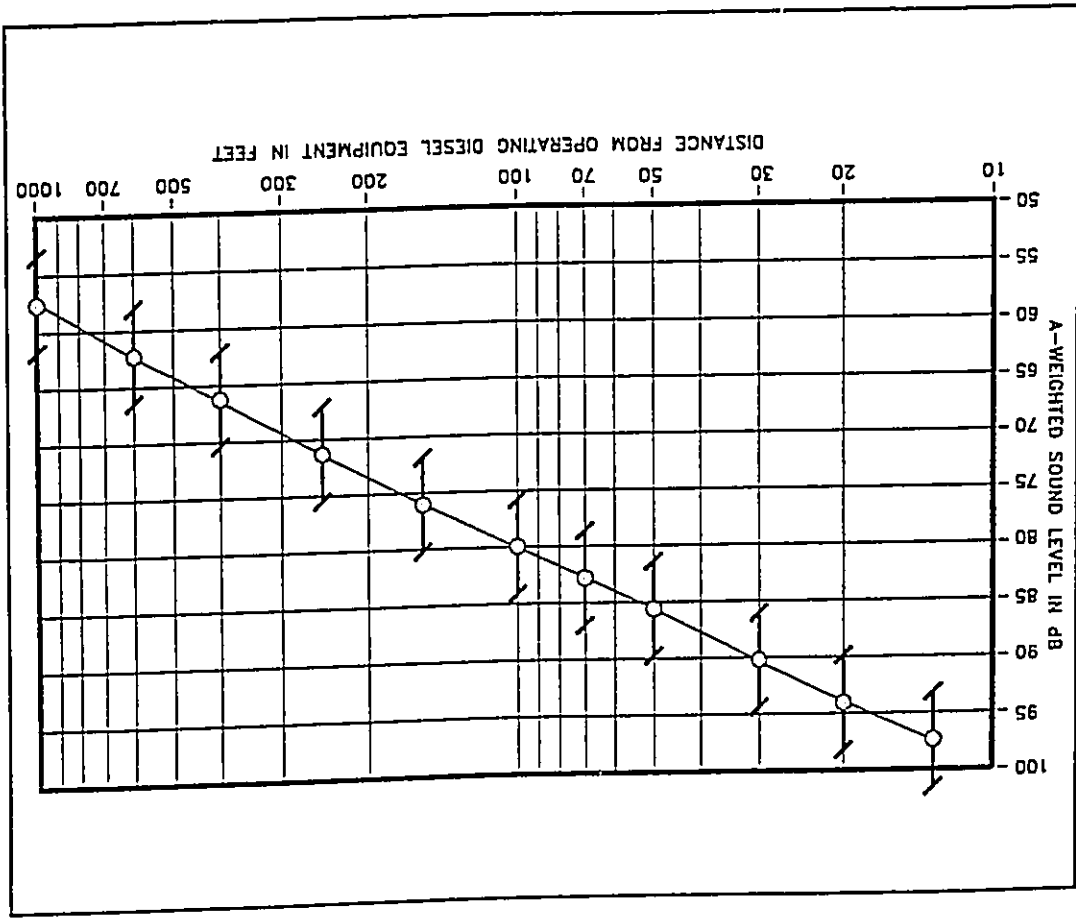


FIGURE 31

ANTICIPATED RANGE OF CONSTRUCTION NOISE LEVELS VS. DISTANCE

APPENDIX B

EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table 1. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbol usage guidance is contained in Table 1.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table 1 was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio); the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E, ...). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which the descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the L_{CP} with the L_{CPA}.

Although not included in the tables, it is also recommended that "L_{CPN}" and "L_{CPH}" be used as symbols for perceived noise levels and effective perceived noise levels, respectively.

It is recommended that, in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (LA) was measured before and after the installation of acoustical treatment. The measured LA values were 85 and 75 dB respectively.

Distribution Nomenclature

With regard to energy averaging over time, the term "average" should be discouraged in favor of the term "ambient". Since "eq" is designated the equivalent sound level, for L_d, L_n, and L_{dn}, "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labelled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristics of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, dBA, dBA₁, and dBA₂ are not to be used. Examples of this preferred usage are: the Perceived Noise Level (PNL) was found to be 75 dB. L_{CPN} = 75 dB. This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of dB except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighted Loss of Hearing" (PLH) shall be used consistent with CH2A Working Group 69 Report Guidelines for Preparing Environmental Impact Statements (1977).

APPENDIX A. REFERENCES

- (1) "Guidelines for Considering Noise in Land Use Planning and Control;" Federal Interagency Committee on Urban Noise; June 1980.
- (2) American National Standard, "Sound Level Descriptors for Determination of Compatible Land Use," ANSI S12.9-1998/ Part 5; Acoustical Society of America.
- (3) "Environmental Criteria and Standards, Noise Abatement and Control, 24 CFR, Part 51, Subpart B;" U.S. Department of Housing and Urban Development; July 12, 1979.
- (4) "Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety;" U.S. Environmental Protection Agency; EPA 550/9-74-004; March 1974.
- (5) "Mandatory Seller Disclosures in Real Estate Transactions;" Chapter 508D, Hawaii Revised Statutes; July 1, 1996.
- (6) "Title 11, Administrative Rules, Chapter 46, Community Noise Control;" Hawaii State Department of Health; September 23, 1996.
- (7) "FAA Order No. 1050.1D - Policies and Procedures for Considering Environmental Impacts;" Federal Aviation Administration; June 14, 1999 (Change 4).
- (8) "Noise Assessment Guidelines for New Heliports;" FAA AC 150/5020-2; Federal Aviation Administration; December 9, 1983.
- (9) "Hawaii State Helicopter System Plan--Final Technical Report;" Department of Transportation, Airports Division; March 1989.
- (10) "Hilo International Airport Noise Exposure Map Report (Volume I);" Department of Transportation, Airports Division; June 2000.
- (11) "Hilo International Airport Master Plan;" Department of Transportation, Airports Division; June 2001.

APPENDIX B (CONTINUED)

TABLE I
A-WEIGHTED RECOMMENDED DESCRIPTOR LIST

TERM	SYMBOL
1. A-Weighted Sound Level	L_A
2. A-Weighted Sound Power Level	L_{WA}
3. Maximum A-Weighted Sound Level	L_{max}
4. Peak A-Weighted Sound Level	L_{Apk}
5. Level Exceeded x% of the Time	L_x
6. Equivalent Sound Level	L_{eq}
7. Equivalent Sound Level over Time (T) (1)	$L_{eq(T)}$
8. Day Sound Level	L_d
9. Night Sound Level	L_n
10. Day-Night Sound Level	L_{dn}
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$
12. Sound Exposure Level	L_{SE}

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is $L_{eq(t)}$). Time may be specified in non-quantitative terms (e.g., could be specified as $L_{eq(WASH)}$ to mean the washing cycle noise for a washing machine).

SOURCE: EPA ACOUSTIC TERMINOLOGY GUIDE, BIA 8-14-78.

APPENDIX B (CONTINUED)

TABLE II
RECOMMENDED DESCRIPTOR LIST

TERM	A-WEIGHTING	ALTERNATIVE(1)	OTHER(2)	UNWEIGHTED
		A-WEIGHTING	WEIGHTING	
1. Sound (Pressure) ⁽³⁾ Level	L_A	L_{PA}	L_{PB}	L_p
2. Sound Power Level	L_{WA}		L_{WB}	L_w
3. Max. Sound Level	L_{max}	L_{Amax}	L_{Bmax}	L_{pmax}
4. Peak Sound (Pressure) Level	L_{Apk}		L_{Bpk}	L_{pk}
5. Level Exceeded x% of the Time	L_x	L_{Ax}	L_{Bx}	L_{px}
6. Equivalent Sound Level	L_{eq}	L_{Aeq}	L_{Beq}	L_{peq}
7. Equivalent Sound Level (4) Over Time(T)	$L_{eq(T)}$	$L_{Aeq(T)}$	$L_{Beq(T)}$	$L_{peq(T)}$
8. Day Sound Level	L_d	L_{Ad}	L_{Bd}	L_{pd}
9. Night Sound Level	L_n	L_{An}	L_{Bn}	L_{pn}
10. Day-Night Sound Level	L_{dn}	L_{Adn}	L_{Bdn}	L_{pdn}
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$	$L_{Adn(Y)}$	$L_{Bdn(Y)}$	$L_{pdn(Y)}$
12. Sound Exposure Level	L_S	L_{SA}	L_{SB}	L_{Sp}
13. Energy Average Value Over (Non-Time Domain) Set of Observations	$L_{eq(e)}$	$L_{Aeq(e)}$	$L_{Beq(e)}$	$L_{peq(e)}$
14. Level Exceeded x% of the Total Set of (Non-Time Domain) Observations	$L_x(e)$	$L_{Ax(e)}$	$L_{Bx(e)}$	$L_{px(e)}$
15. Average L_x Value	L_x	L_{Ax}	L_{Bx}	L_{px}

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C, D, E, ... weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is $L_{eq(t)}$). Time may be specified in non-quantitative terms (e.g., could be specified as $L_{eq(WASH)}$) to mean the washing cycle noise for a washing machine.

Report 015-082201

**ARCHAEOLOGICAL INVENTORY SURVEY
HILO INTERNATIONAL AIRPORT IMPROVEMENTS
LAND OF WAIAKEA, SOUTH HILO DISTRICT
ISLAND OF HAWAI'I (TMK: 2-1-12: POR. 9)**

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August 2001

**ARCHAEOLOGICAL INVENTORY SURVEY
HILO INTERNATIONAL AIRPORT IMPROVEMENTS
LAND OF WAIAKEA, SOUTH HILO DISTRICT
ISLAND OF HAWAI'I (TMK: 2-1-012: POR. 9)**

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SUMMARY

At the request of Wilson Okamoto & Associates, Inc., Haun & Associates conducted an archaeological inventory survey of four parcels of undeveloped land at the Hilo International Airport, Land of Waialea, South Hilo District, Island of Hawaii (TMK: 2-1-12; Per. 9). The objective of the survey was to satisfy historic preservation regulatory requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, State Historic Preservation Rules. The work was done in support of an Environmental Assessment.

The survey identified four sites consisting of five features. The sites consist of a complex of two late concrete slabs, a complex comprised of a terraced depression and wall, and a ranch wall. A fourth site, previously recorded as the Puna Trail, formerly extended through one survey area, however no evidence of the trail remains. The site and features conform to the traditional Hawaiian site/feature types expected based on previous archaeological work and historic documentary research. As expected, traditional Hawaiian agricultural features were identified and a primary transportation route formerly traversed the area. The terraced depression and associated wall document traditional Hawaiian agricultural activity in area that was transitional between McEldowny's (1979) Coastal Settlement Zone and the Upland Agricultural Zone.

Also as expected, historic remains consisted of a ranch wall and an airport-related facility. The ranch wall probably dates to between the mid-1800s and early 1900s. The radio transmitter repeater (RTR) site probably dates to between the 1930s and 1960s, prior to the airport's upgrading to accommodate jet aircraft.

Three sites are assessed as solely significant under Criterion "d". The sites have yielded information important for understanding prehistoric and historic land use in project area. Site 21273, the Puna Trail, is assessed as not significant because it has been destroyed. The mapping, written descriptions, photography, and test excavations at the sites adequately documents them and no further work or preservation is recommended. No further work or preservation is recommended for the portion of the Puna Trail alignment in the project area. Well-preserved examples of the trail are present outside of the project area.

CONTENTS

Introduction	1
Scope of Work	1
Project Area Description	1
Field Methods	3
Archaeological and Historical Background	6
Historical Documentary Research	6
Previous Archaeological Work	11
Project Expectations	14
Findings	15
Conclusion	24
Discussion	24
Significance Assessments	24
Recommended Treatments	25
References	26
ILLUSTRATIONS	
Figure 1. Portion of USGS Hilo Quadrangle Showing Survey Areas	2
Figure 2. Survey Area 1 Vegetation	4
Figure 3. Survey Area 2 Vegetation	4
Figure 4. Survey Area 3 Vegetation	5
Figure 5. Survey Area 4 Vegetation	5
Figure 6. Portion of 1891 Map of Hilo (from Kelly et al. 1981)	9
Figure 7. Previous Archaeological Work	12
Figure 8. Map of Hilo International Airport showing Survey Areas and Site Locations	16
Figure 9. Site 23001 Plan Map	17
Figure 10. Site 23001, Feature A Concrete Slab	18
Figure 11. Site 23001, Feature B Concrete Slab	18
Figure 12. Site 23002 Plan Map	20
Figure 13. Site 23002, Feature A Terrace	21
Figure 14. Site 23002, Feature A, TU-1, East Face Profile	21
Figure 15. Site 23002, Feature B Wall	22

ILLUSTRATIONS (cont.)

Figure 16. Site 23003 Wall . 22

TABLES

Table 1. Land Commission Award Claims . 7

Table 2. Summary of Previous Archaeological Work . 13

INTRODUCTION

At the request of Wilson Okamoto & Associates, Inc., Haun & Associates conducted an archaeological inventory survey of four parcels of undeveloped land at the Hilo International Airport, Land of Waikua, South Hilo District, Island of Hawaii (TMK: 2-1-12; par. 9; Figure 1). The objective of the survey was to satisfy historic preservation regulatory review inventory requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, State Historic Preservation Rules. The work was done in support of an Environmental Assessment.

The survey fieldwork was conducted August 8 and 27, 2001, under the direction of Dr. Alan Haun. Described in this final report are the project scope of work, field methods, background information, survey findings, and significance assessments of the sites with recommended further treatments.

Scope Of Work

Based on DLNR-SHPD rules for inventory surveys, the following specific tasks were determined to constitute an appropriate scope of work for the project:

1. Conduct background review and research of existing archaeological and historical documentary literature relating to the project area and its immediate vicinity—including examination of Land Commission Awards, *ahupua'a* records, historic maps, archival materials, archaeological reports, and other historical sources;
2. Conduct a high intensity, 100% pedestrian survey coverage of the project area;
3. Conduct detailed recording of all potentially significant sites including scaled plan drawings, written descriptions, and photographs, as appropriate;
4. Conduct limited subsurface testing (manual excavation) at selected sites (a) to determine the presence or absence of potentially significant buried cultural deposits or features, and (b) to obtain suitable samples for radiocarbon age determination analyses;
5. Analyze background research and field data; and
6. Prepare and submit Final Report.

Project Area Description

The project area consists of four undeveloped parcels at the Hilo International Airport. The four parcels total c. 65.9 acres in area and are designated Survey Areas 1 through 4. The elevation of the areas ranges from approximately 35 ft to 45 ft. There are two soil types present within the area. Survey Areas 1, 2 and 4 are situated within an area of Papai extremely stony muck, on 3-25 % slopes (Sato et al. (1973:46). This soil is typified by a thin, very brown, well-drained, very stony organic soil over fragmented a'a lava. It has a rapid permeability, a slow runoff and a slight erosional hazard. Sato et al. indicate that this soil is most commonly used for woodland.

Survey Area 3 is located within an area of Ka'uakaha extremely rocky muck on 6-20 % slopes. This soil series is similar to the Papai soil, except that the underlying substrate is comprised of pahoehoe rather than a'a lava (Sato et al. 1973:27). Rocky outcrops cover c. 25 % of the soil series. This soil is suitable for woodland, pasture and home sites.

All four survey areas evidence varying degrees of disturbance, which likely occurred during World War II U.S. military use of the area and subsequent construction activities associated with the airport.

This disturbance is evidenced by numerous bulldozed piles of earth and stone and secondary growth vegetation.

Survey Area 1 is an L-shaped parcel of land located to the east of the airport terminal and the southernmost taxiway. The parcel measures c. 9.7 m in area and is surrounded by a wire fence. A man-made drainage channel extends along the southern boundary of the parcel. The ground surface in this area is very uneven, and consists of a surface soil deposit, with scattered outcrops. Vegetation in this area consists of pandanus (*Pandanus odoratissimus* L. f.), guava (*Psidium cattleianum* Sabine), *hou* (*Hibiscus macrophyllus* Roxb.), and dense ferns and vines (Figure 2).

Survey Area 2 consists of a roughly rectangular, 6.34-acre parcel located to the south of the existing parking lot for the airport, and north of Kekuanana Street. The ground surface in this portion of the project area is similar to that noted in Survey Area 1. Vegetation in this area is comprised of pandanus, dense guava, papaya (*Carica papaya* L.), and thick ferns and vines (Figure 3).

Survey Area 3 is a c. 31.9-acre parcel that is bounded by Kekuanana Street to the south, to the east by Akahana Street, to the north by a chain-link fence bordering the runway, and to the west by undeveloped land. This parcel appears to be the most disturbed. The ground surface in this area is very level and appears to have been bulldozed. Several paved and dirt roads bisect the parcel, and there are areas of crushed gravel on the surface along the southern portion. The vegetation in this area consists of predominately of tall grass and *koa hooie* (*Leucaena leucocephala* [Lam.] de Wit) with areas of dense *hou* and pandanus (Figure 4).

Survey Area 4 is a c. 18-acre parcel located to the north and northwest of Kekuanana Street, with developed areas situated to the north and the northeast. The ground surface in this portion of the project area consists predominately of very uneven, weathered lavas, with very little soil. Large piles of bulldozed soil and stones are situated around the perimeter of this parcel. Vegetation consists of thick stands of guava, pandanus, ferns and vines with large scattered *ohia* trees (*Alseodendron collina* [Forst.] Gray) and breadfruit (*Artocarpus communis* Forst.; Figure 5).

Field Methods

The project area was subjected to a 100% surface examination with surveyors spaced at 5-10 m intervals. Transects at each of the four parcels were oriented parallel to the long axis of the parcel. The identified sites and features were flagged with pink and blue flagging tape and their locations plotted on a scaled project area map using compass and a 100 meter tape. The sites identified during the survey were subjected to detailed recording consisting of the preparation of scaled plan maps, the completion of standardized site/feature forms, and photographic documentation. A metal site tag was placed at each site and the tag's location was plotted on the scaled plan maps.

Subsurface testing during the survey consisted of the excavation of one test unit at one site (Site 23002, Feature A). The excavation unit was dug in arbitrary levels within stratigraphic layers and was terminated on bedrock. Standardized excavation records were prepared after the completion of each stratigraphic layer. No soil was present within the unit and no cultural remains were recovered. Following the excavation of the test unit, a section drawing depicting the stratigraphy was prepared, post-excavation photographs were taken, and the unit was backfilled.

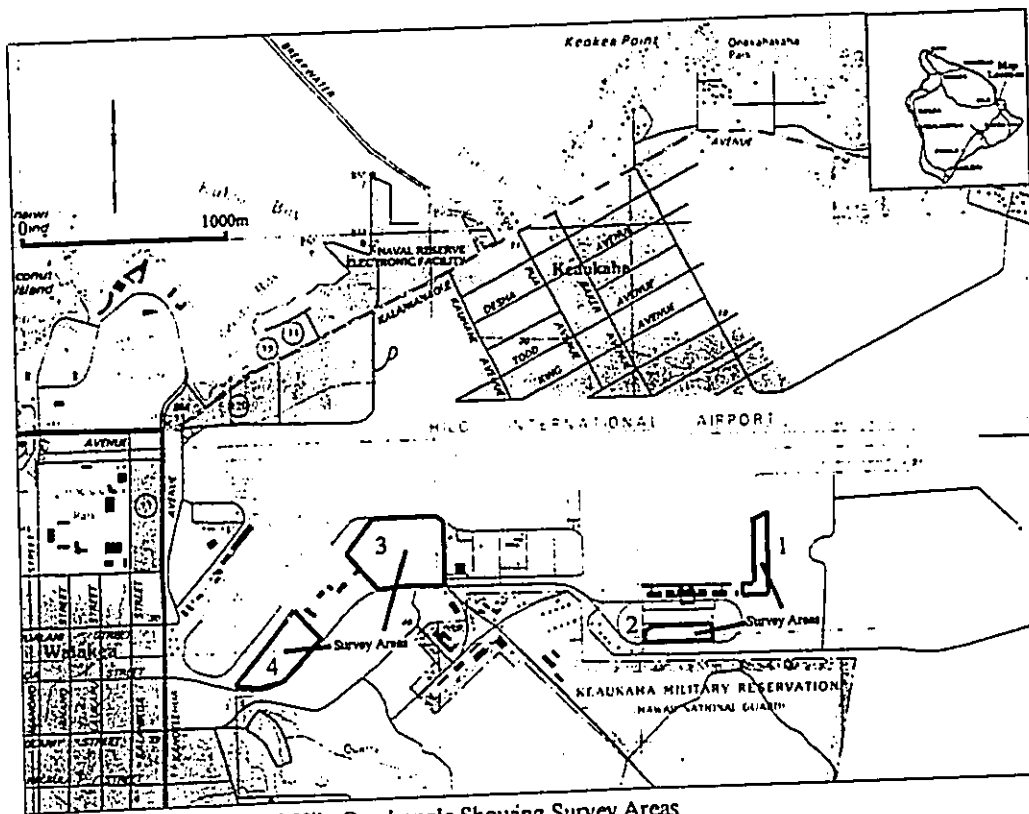


Figure 1. Portion of USGS Hilo Quadrangle Showing Survey Areas



Figure 2. Survey Area 1 Vegetation, view to east

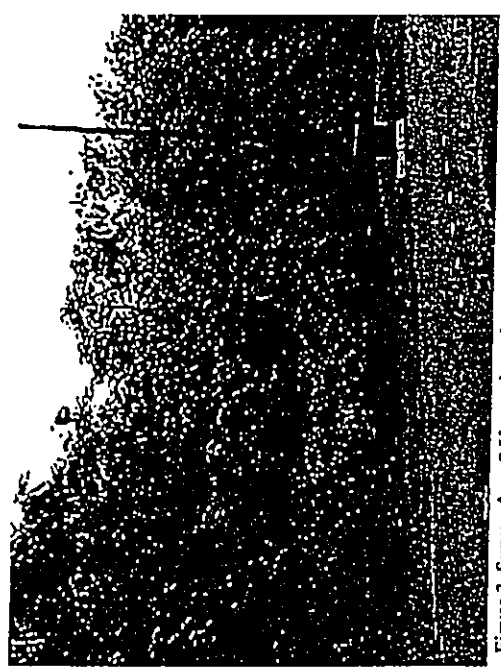


Figure 3. Survey Area 2 Vegetation, view to northeast



Figure 4. Survey Area 3 Vegetation, view to north

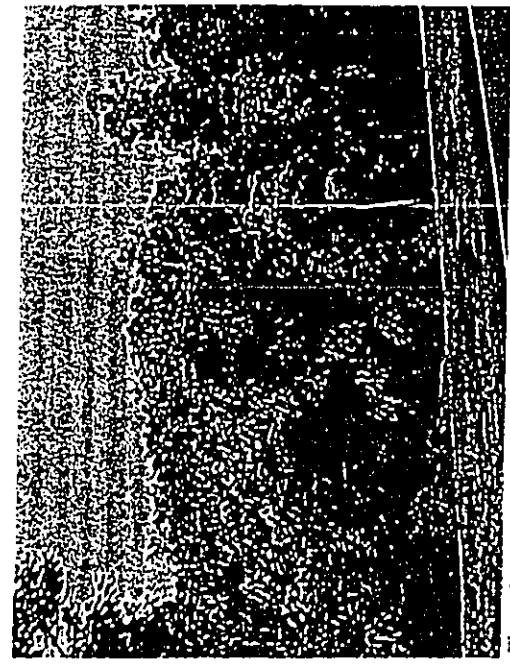


Figure 5. Survey Area 4 Vegetation, view to northeast

Table 1. Land Commission Award Claims

LCA	Claimant	Area claimed	Area reserved	in	Land Use	Boundary North	Boundary East	Boundary South	Boundary West	Deed Rec'd	Given	Acres	Comments	
1E	Mahoe	1	1		Keawe Kapu	cultivated	Konohiki's waste land	Makanihi	Kahe		Konohiki Fee	4.46		
1F	Kapu	1	1		ND	cultivated, partly fenced	Kamie	Kamookaha's waste land	Kahua		Parcels	1.6		
1199	Kahele	1	0		ND	ND	ND	ND	ND	ND	ND	ND		
125B	Kahawai	1	0		Alencho	house lot	ND	ND	ND	ND	ND	ND		
1166	Hua (John Taylor)	1	0		Kahe	cultivated	ND	ND	ND	ND	ND	ND		
1279	S. Kefaua (Hua)	1	1		Kahe	planting plot	Konohiki	Keane	Kahele's house	1847	Konohiki	0.6		
1317	Kohole	1	1		Alencho	cultivated field	Waiwai	Kahele	Kahele	1845	Kahele	2.73		
1313	Kahawai	1	0		Alencho	cultivated field	Kahele	Maka	Kahele's house	1841	Kahele	0		
1738	I. Kahakaha	1	1		Kamookaha	cultivated with 8 houses	Di Obelo	Poohe's field	Makanihi	road bridge river	1843	Konohiki Fee	2.98	
2274	Kapuaikua	1	0		Panaloa	house lot with 7 houses, grove	waste land	road in Volcano	waste land	waste land	1847	Konohiki	0	
2281	John R. Kane	1	1		Alencho	house lot	Kahe	new road	waste land	waste land	1847	Konohiki	10.75	
2122	Barnaba	1	1		Kahele	partly enclosed with 7 houses	Di Alencho	Di Kahe	Di Kahe	stone wall, gov't land	1841	Fee	12.23	Claimant was District school superintendent
2138	Samuel	1	0		Kahele	breadfruit trees, sweet potatoes, an fiber	Kahele	Di Kotea	Di Kahe	Di Alencho	1847	Konohiki	0	
2402	Kahele	1	1		ND	2 Kihapai, hole grove	Kahele	Konohiki	Kahele	Konohiki	1844	Kahele	3	
2603	Napaka	1	1		Kahele	house lot with 4 houses, breadfruit and Lulu trees	Konohiki	Di Kahele	Konohiki	Di Kahele 2	Kahele's house	parcels	1.3	
2643	Kahele	1	1		ND	ND	Kahele	Konohiki	Konohiki	Konohiki	1844	Kahele	2.73	
1872	Pika	1	0		Alencho	2 cultivated fields	Alo	Kahele	Konohiki	road road	ND	ND	0	
3996	Hua (John Taylor)	1	0		ND	uncultivated	Konohiki	Konohiki	Konohiki	Konohiki	1847	Kahele	0	
4004	Hua	1	1		Hanahele or Mahua survey 3	4 houses, two houses	Konohiki	Di Hanahele	Konohiki	Di Kahele Kahele's	Kahele's house	parcels	4.23	
4144	Kahele	3	1		Kahele	house lot with 3 houses	Barnaba	Barnaba	Sarvela	Kahele	Kahele's house	parcels	1.22	includes which section
				2		cultivated field	Barnaba	Sarvela	Di Kahele	Kahele				
				3		uncultivated field	Di Kahele	Pahua	Konohiki	Kahele				
4177B	Wahua	1	1		Kahele	cultivated with 6 houses	gov't land	Kahele	Konohiki	Kahele	Kahele's house	parcels	1.01	
4177	Kahele	1	1		Kahele	3 field & 1 house	Kahele	Alencho	Kahele	Konohiki	1839	Kahele	1.01	
4743	Naka	1	1		Kahele	3 wet taro plots & 7 houses	Di Kahele	Konohiki	Di Kahele	1834	Kahele	1.03		
3018	Kahele	1	1		Puaha	2 cultivated fields	Konohiki	Di Kahele	Naka	Di Hanahele	1841	Konohiki Fee	0.24	

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Historical Documentary Research

The project area is situated in the *ahupua'a* of Waiakea in South Hilo District. The *ahupua'a* is one of the largest in the district covering over 95,000 acres. The *ahupua'a* extends along the coast from the west side of Hilo Bay to the Puna District boundary and inland to approximately 6,000 ft elevation. Much of the following is summarized from *Hilo Bay: A Chronological History* (Kelly et al. 1981), an extensive and thorough compendium of historical information about Hilo including Waiakea.

Hawaiian traditional and legendary accounts attest to the longstanding importance of Waiakea. The chief of the Hilo region, Kulu'ulu'u, who resided in Waiakea, was the first conqueror of Umi-a-Liloa in his campaign to unify the districts of Hawaii Island. Hilo with its large bay, fishponds, wet taro fields, and abundant freshwater was a population center for commoners and royalty. Kamahameha I and his court resided in Hilo in the 1850s. In preparation for his planned invasion of Kauai in 1802, Kamahameha built a canoe fleet at Hilo, reportedly consisting of 800 vessels. Kamahameha gave his favorite wife, Ka'ahumanu, the *hii kapono* of Pi'opi'o in Waiakea.

Early historic accounts also document the importance of Hilo. In 1823, Ellis estimated the population to be 2,000 people in 400 houses. Ellis described the extensive use of *laukalo* thatch in house construction in Hilo. Laukalo was gathered from eastern Waiakea beyond the Waiakea River. He described the land as intensively cultivated with plantains, bananas, sugar cane, taro, potatoes, melons, coconuts, and breadfruit. Wet taro was grown in moorlands (*hii*) in marshlands. Hilo was a center for trade between the people of Ka'u, Hamakua, and Hilo. Between the 1790s and 1820s, sandalwood was cut and brought to Hilo for export. *Pulu* and *pio* (arrowroot) were also exported. Ellis also describes coastal fishing.

In 1824, a missionary station was established in Waiakea. Soon after, churches and schools were established. Whalers began stopping at Hilo in the mid-1820s. In the 1830s, a sawmill was built, and two stores were opened. By the end of the decade, a sugar cane plantation and mill were established on Puna-Hawai lands. In 1840, the Wilkes Expedition arrived in Hilo and constructed an observatory on Waiakea Point on the east side of Hilo Bay.

The Waiakea Aina database (2000) lists 51 parcels claimed by 37 claimants within Waiakea in the mid-1800s (Table 1). All claims are for parcels situated to the northwest and west of the project area along the coast and immediately inland along the lower reaches of the Waiakea River less than 0.5 mi inland (Figure 6). Twenty-six parcels were awarded to 24 claimants. Chiefless Kamamulu was awarded the entire *hii* of Pi'opi'o under Land Commission Award (LCA) No. 7713. The remaining claims are for *kahele* parcels ranging from 0.24 to 13.14 acres in area with an average of 3.6 acres. All, except five claims, were for single parcels. The testimonies for several awarded *kahele* include claims for parcels that were not awarded.

The claim testimonies refer to 18 *hii* land divisions. Five *hii*, Kalonoho, Alencho, Kotea, Pi'opi'o and Paeahu; are mentioned two or more times and apparently were linear strips of land extending inland from the coast. *hii* Kalonoho was situated next to the western *ahupua'a* boundary with Kukuau. Alencho was the next *hii* to the east followed by Kotea, Pi'opi'o and Paeahu. The latter two *hii* bordered the west bank of Waiakea River and Fishpond. Six *hii* for LCAs on the east side of the river, from the river mouth inland, consist of Kamakaha, Keawe Kapu, Kialoa, Hinauauwai, Puhua, and Kamahana. Kialoha was situated inland between Alencho and Kotea. The geographic location of the remaining *hii* cannot be determined because they are mentioned in testimony for claims that were not awarded.

Land use described in the LCA claim testimony included agriculture, pasture, burial, and residence. Thirty-four houses are mentioned and LCA 2274 also describes the presence of a grave. Most of the claim testimony mentions cultivated fields. Crops include wet taro, sweet potatoes, breadfruit, coffee, and *kahele*. A *hala* (*Pandanus* spp.) grove and fishponds are also mentioned.

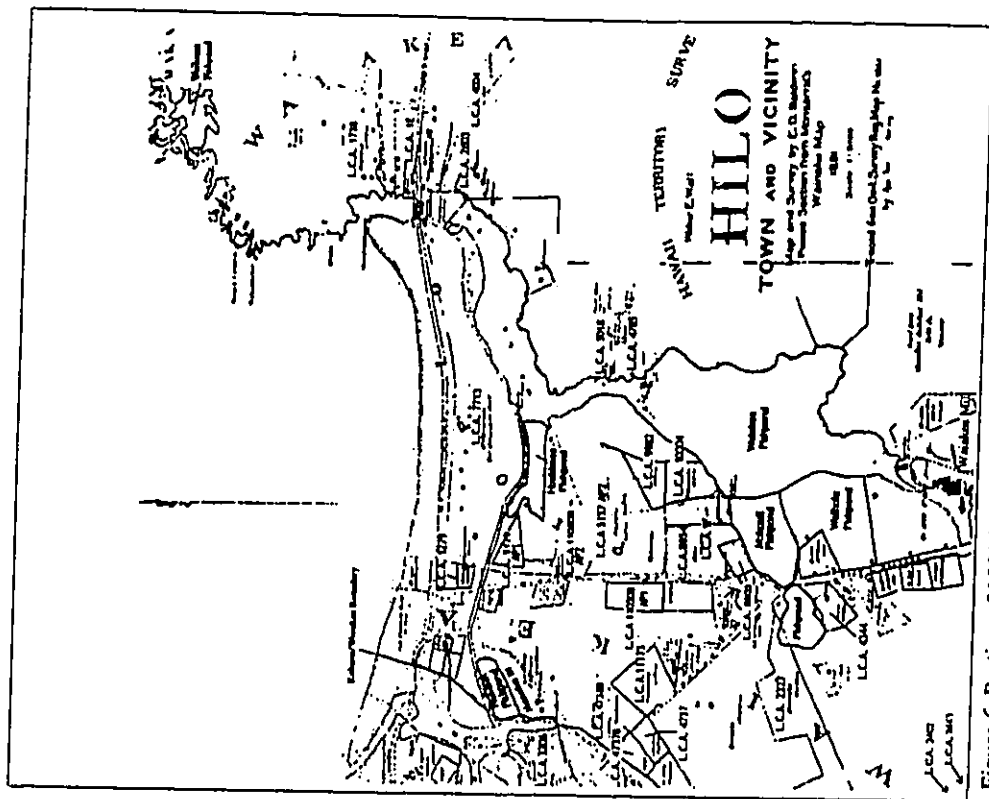


Figure 6. Portion of 1891 Map of Hilo (Modified from Kelly et al. 1981)

Table 1. Land Commission Award Claims (cont.)

LCA	Claimant	Apaao claimed	Apaao awarded	Servee awarded	District	Land Use	Boundary North	Boundary East	Boundary South	Boundary West	Date Rec'd	Given	Acreage	Comments
2157	Kahehu	6	2	1	Puapua	4 cultivated kikape & 2 houses	Kaka	Kahemai	Nuhane	Kahae			12.14	Awarded 2 apas
				2		1 cultivated kikape	Kahemai's garden	Kahemai	Kahae	Kahemai				
				3		1 kikape taro pound	Nuhane	Kahae	N/D	N/D				
				4		6 taro ponds	Kahae	Kahemai	Kahae	Kahemai				
				2		uncultivated idle land	Kahemai	Kahemai	Kahemai	Kahemai				
				6		2 cultivated kikape	Kahemai	Kahemai	Kahemai	Kahemai				
7713	Kamamaka	1	1		Puapua	2 cultivated kikape	N/D	N/D	N/D	N/D				
8081	Hewahewa	1	0		Kalahou	2 cultivated kikape, road through lot	Kahemai	Kahemai	Kahemai	Kahemai	N/D	Kahemai	0	Awarded 1 parcel as Kahemai
8402	Kahae	1	0		Ohualolo	pasture, cultivated plot, 7 houses	Kahemai	Kahemai	Kahemai	Kahemai	1841	Kahemai	0	
8803	Kamamaka	1	1		Puapua	3 kikape	Kahemai	Kahemai	Kahemai	Kahemai	1841	Kahemai	1.07	
8811	Kahae	1	0		Puapua	cultivated	Kahemai	Kahemai	Kahemai	Kahemai	1846	Kahemai	0	
8834	Kahae	4	1		Puapua	house lot	Kahemai	Kahemai	Kahemai	Kahemai	1846	Kahemai	3.2	
				2		cultivated	Kahemai	Kahemai	Kahemai	Kahemai				
				1		3 cultivated kikape	Kahemai	Kahemai	Kahemai	Kahemai				
				4		1 cultivated kikape	Kahemai	Kahemai	Kahemai	Kahemai				
8848	Kamamaka	1	0		Puapua	uncultivated idle land	Kahemai	Kahemai	Kahemai	Kahemai				
9982	Lava	4	1		Puapua I & 2	uncultivated	Kahemai	Kahemai	Kahemai	Kahemai	N/D	Kahemai	0	1 parcel which parcel awarded
				1		partly cultivated	Kahemai	Kahemai	Kahemai	Kahemai				
				3		partly cultivated	Kahemai	Kahemai	Kahemai	Kahemai				
				4		uncultivated	Kahemai	Kahemai	Kahemai	Kahemai				
10004	Lahoulo	1	1		Puapua	3 kikape & house	Kahemai	Kahemai	Kahemai	Kahemai				
110101	Kahemai	2	2		Kalahou	house	Kahemai	Kahemai	Kahemai	Kahemai	1843	Kahemai	5.16	Awarded 2 apas
				2		1 cultivated kikape & 1 house	Kahemai	Kahemai	Kahemai	Kahemai				
11173	Wahemai	1	1		Alaheo	N/D	Kahemai	Kahemai	Kahemai	Kahemai	1834	Kahemai	2.3	
11174	Kahemai	1	1		Alaheo	N/D	Kahemai	Kahemai	Kahemai	Kahemai	1834	Kahemai	1	

who served as the chief engineer for the U.S. Army Corps of Engineers Hawaiian Department. He died two days after President Roosevelt nominated him for promotion general.

In 1943 the Hilo Naval Air Station was authorized and facilities construction began beside the existing Hilo Army Air Base. The Naval Air Station facilities were completed in 1945. The station was placed on caretaker status shortly after World War II ended. The 7th Army Air Force was assigned to General Lyman Field in 1946 to support Air Force bases on Oahu. In 1947, the Hawaii National Guard was reactivated and obtained use of KMR facilities.

The airport was returned to civilian control in 1952. A new, \$600,000.00 airport facility was dedicated in 1958 and 92 additional acres of Hawaiian Homes Commission land were set aside for airport expansion. In 1963, another 193 acres of Commission land was acquired through a land exchange. In the late 1960s, funds were allocated to expand the airport to accommodate jet planes. A new terminal and expanded airfield were dedicated in May 1976. By 1980, the Hilo Airport Division of the Hawaii Department of Transportation controlled 1,339 acres.

In summary, historical documentary research indicates that the coastal portion of Waiakea fronting Hilo Bay was intensively settled and cultivated. The area was an important political and economic center. The coast to the east of the bay was used for fishing and gathering *ʻāwāwā* for kapa. At least seven fishponds were present surrounded by residences, wet taro plots, and gardens cultivated with plantains, bananas, sugar cane, dryland taro, sweet potatoes, arrowroot, coconuts, and breadfruit.

In the early 1800s, missionaries established a mission station at Hilo because of its large population, abundant freshwater, and cultivation potential. Soon churches and schools were established. Whalers stopped at Hilo because of the protected anchorage and availability of freshwater and provisions. Sugar cane cultivation, cattle ranching, and trade in *ʻāwāwā*, arrowroot, and sandalwood rapidly changed the traditional subsistence economy during the early to mid-1800s.

By the late 1800s, vast areas were in sugar cane production and large scale timber harvesting was underway. Transportation infrastructure including a railroad system and wharf facilities were established. The area underwent a dramatic increase in population as people came to the area to work for the plantations and other commercial developments. Between 1925 and 1976, the airport facilities, which surround the present survey areas, were developed.

Previous Archaeological Research

A search of the DLNR-SIPD archaeological report database and other sources identified 17 archaeological projects in Waiakea. Figure 7 shows the project locations and Table 2 summarizes the projects. Not included in the figure or table are the studies by Stokes (Stokes and Dye 1991), which focused on major sites, primarily *heiau* throughout Hawaii Island, a survey of east Hawaii by Hudson (1932), the fishpond study of Kikuchi (1973), and the general, primarily archival, studies of McEldowney (1979) and Moniz (n.d.). None of the previous studies included the current project area. Stokes (Stokes and Dye 1991), relying in part on the earlier observations of Thurum, listed six *heiau* for the Hilo area; however, all were destroyed at the time of Stokes fieldwork in 1996. Ohele Heiau, a *haukiki* temple, was reported for Waiakea.

The surveys in Table 2 cover over 1,400 acres of Waiakea between sea level and 1,500 ft elevation. The only traditional Hawaiian sites identified in the vicinity of the project area are an agricultural pit, the Puna Trail, and five *āhu* reported by Hammatt and Bush (2000). The trail passed through Survey Area 3. Hammatt and Bush attribute the absence of traditional sites to the massive ground disturbance of sugar cane cultivation and commercial and residential development of the Hilo area. Historic remains identified by the surveys consist of thirty-three sites with over 340 features. Nearly all of the identified features are the result of stone clearing for sugar cane cultivation.

By 1857, there were three sugar cane mills in the Hilo area. Large tracts of land were put in the cane cultivation and sugar cane was also grown by individuals around their houses. In 1861, a stone wharf was constructed at Waiakea landing on the west side of Waiakea Point. A sugar mill was established in Waiakea at the inland end of Waiakea Fishpond in the late 1870s. A railroad transport system was constructed for the Waiakea Mill between 1879 and 1880. By 1880, 1,400 acres of sugar cane were in cultivation and by the end of the decade over 5,600 acres were cultivated. In 1877, a 16 ft high tsunami struck the coast of Waiakea destroying all houses within 100 yards of the shore along with a wharf, storehouse, a quarantine hospital on Coconut Island, and a bridge.

Between the 1860s and 1880s there were two wharf facilities on the west side of Waiakea Point, one on the Waihoa River, and on the west side of the bay at the foot of Waihoanue Street. By the 1890s, the need for improved wharf facilities was recognized and the development of government harbor facilities began on the west side of Waiakea Point. A ship wharf was completed in 1899.

Between 1900 and the 1930s, the population of Hilo grew dramatically with the expansion of sugar cane cultivation, pineapple production, the timber industry, and other commercial developments. In the 1910s, the Hilo Railroad Company expanded the rail system to Puna and Hilo Town. A railroad wharf was built north of the mouth of the Waihoa River. Between 1909 and 1913, the railroad was extended to North Hilo and Hamakua Districts.

The pending opening of the Panama Canal and anticipated increase in trans-Pacific shipping led to serious efforts to build a breakwater to protect shipping in Hilo Bay. Construction of the breakwater began in 1908. The breakwater was initially planned for a location just east of Coconut Island, but the plan was modified and the selected site was approximately 6,000 ft east of the island. The initial plans called for a 10,000 ft long breakwater along Blonde Reef. Stone for the structure was brought by railroad from quarries in Puna and Waiakea. The breakwater was completed in 1929.

By the 1910s, the existing railroad and government wharf facilities were inadequate to support shipping. In 1912, the Territorial Government contracted the construction of a new wharf approximately one mile east of Coconut Island and the dredging of the adjacent portion of the bay. The new wharf, designated Kuhio Wharf, was completed in 1916. From the beginning, the wharf was congested and plans for a second wharf were made. Construction of the wharf began in 1921 and it was completed in 1923. A third wharf was completed in 1927.

The following discussion of the development of the Hilo airport is summarized from Kelly et al. (1981) and Hammatt and Bush (2000). In 1925, 100 acres were designated as the site for the Hilo Airport and \$10,000.00 was appropriated for its construction using prison labor. A 33-acre portion of the land came from an adjacent 216-acre parcel that was dedicated in 1914 for a National Guard of Hawaii rifle range. Progress on the facility was slow because the appropriation did not include funds for equipment. This was resolved in 1927 when an additional \$25,000.00 was appropriated. Much of the area had to be filled and Hawaiian Dredging Co. was contracted to transport over 3000 cubic yards of excess material dredged from Hilo Bay during construction of the new port facility. In 1928, the airport lands were increased by 41.45 ac to accommodate modification of the runway orientation relative to the prevailing trade winds. The airport was dedicated in February 1928. An additional 86 acres was added to the facility in 1929 to accommodate further expansion. In October 1929, Inter-Island Airways, Ltd. began regular scheduled service between Hilo and Honolulu with three trips per week.

The airport was further expanded in the 1930s including the construction of a cross-wind runway, hangar, and a terminal building. Additional runways and taxiways were also completed. The expansion included portions of the adjacent Kauakaha Hawaiian Home Commission settlement where 30 homes were either demolished or relocated. In 1938, the National Guard facility, Kauakaha Military Reservation (KMR), provided additional lands for a temporary camp to house prison laborers working on the airport facilities. Following the outbreak of World War II control of the airport and the Hawaii Army National Guard facilities was transferred to the U.S. Army, and further airport expansion occurred. The Hilo Airport was renamed General Lyman Field in 1943 in memory of General Albert Lyman. Lyman was a Hilo native.

Table 2. Summary of Previous Archaeological Research

Author	Date	Study Type*	Elevation	Acres ^a	Historic Use	No of sites	No of Feas	Traditional Features	Historic Features
Kam	1983	AR	0-5	<1	None	1	1	heiau	
Borthwick, Collins, Folk and Hammatt	1993	IN	140-330	163	Sugar cane	4	47		47
Borthwick and Hammatt	1993	IN	120-140	11	Sugar cane	-	4		4
Maly, Walker and Rosendahl	1994	IN	70-80	4.5	Sugar cane	4	51		51
Spear	1995	DR							
Walker and Rosendahl	1996	FI	0-460	129.8	sugar cane/developed	5	?		1
Rosendahl	1994	FI	250-290	11	?	1	1		
Kennedy and Ireland	1994	RN	70-80	8	?	0			
Hunt and McDermott	1993	IN	200-1500	106	Sugar cane	11	88		88
Robins and Spear	1996	IN	200-1500	264	Sugar cane	3	18		18
Winleski, Borthwick and Hammatt	1996	IN	450-500	5.23	?	0			
Devereux, Borthwick, Hammatt and Orr, and Hammatt and Bush	1997/2000	RN/IN	40-80	503.6	Military	4	8	pit, 5 <i>ahu</i> , and Puna Trail	3
Rechtman and Henry	1998	IN	120-205	40	Sugar cane	1	117		117
Carson	1999	IN		176	?	0			
McGerly and Spear	1999	IN	70	2.5	Sugar cane	1	13		13
Hahn and Henry	2000	IN	0-15	20	Port	1	4		4

* AR=Archival Research, RN=Reconnaissance Survey, IN=Inventory Survey, DR=Data Recovery

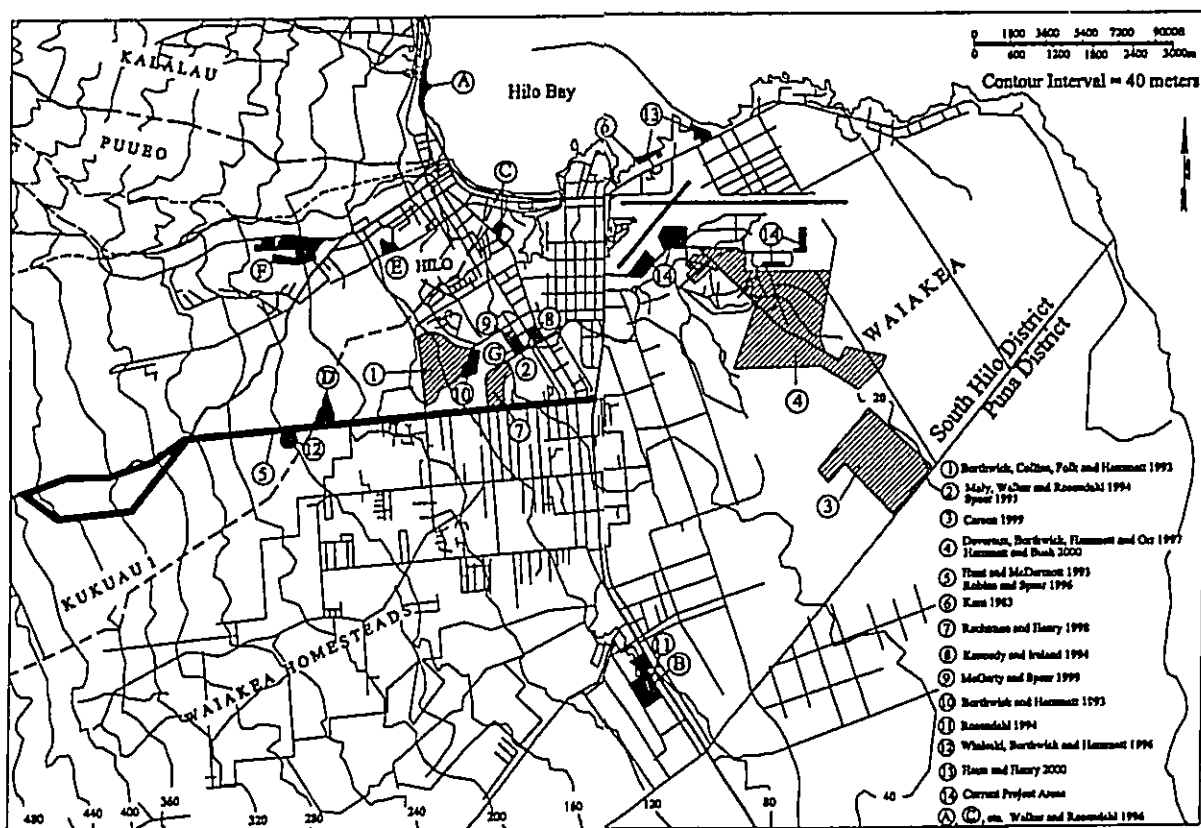


Figure 7. Previous Archaeological Work

McEldowney (1979) lists 53 traditional Hawaiian sites for Waiakea and 31 historic sites, primarily buildings. Most of the traditional sites were located by Hudson (1932) and Kikuchi (1973). The remaining six were identified during the Statewide Inventory. Nearly all were situated along the coast. The sites include 17 fishponds, seven burials, six platforms, five enclosures, three *heiau* including one previously identified by Stokes, three house foundations, three trail segments, two shrines, several miscellaneous features, and two complexes of platforms, enclosures, and terraces.

McEldowney used the limited site inventory and historic documentary evidence to develop a land use and settlement pattern model for the Hilo area. The model consists of five elevationally-defined zones: Coastal Settlement, Upland Agricultural, Lower Forest, Rainforest, and Sub-Alpine or Montane. The Coastal Settlement Zone extended approximately 0.5 miles inland from the shoreline between sea level and 50 ft elevation. The zone was the most densely populated with both permanent and temporary habitations, high status chiefly residences, and *heiau*. Settlements were concentrated at Hilo Bay and sheltered bays and coves. Also present were fishponds and gardens where breadfruit, coconut, *kukui*, banana, *wauke*, sugar cane, sweet potato, and wet and dryland taro were cultivated. The ocean provided fish and other marine resources.

The Upland Agricultural Zone was situated between approximately 50 ft and 1,500 ft elevation. Settlement in the zone consisted of scattered residences among economically beneficial trees and agricultural plots of dryland taro and bananas. Lava tubes were utilized for shelter. A pattern of shifting cultivation is believed to have converted the original forest cover to parkland of grass and scattered groves of trees. Wetland cultivation of taro occurred along streams.

The Lower Forest Zone ranged from 1,500 ft to 2,500 ft elevation. Timber and other forest resources such as medicinal plants, *olona*, and birds were gathered from the zone. Site types consisted of temporary habitations, trails, shrines, and minor agricultural features in forest clearings and along streams. Sites in the Rainforest Zone (2,500-5,000 ft elevation) and Subalpine or Montane Zone (5,000-9,000 ft) were limited to trails and associated temporary habitations. These zones were used for intra-island travel and gathering of valued resources including hardwoods, birds, and stone for tool making.

PROJECT EXPECTATIONS

Prehistoric to early historic use of the project area was probably limited because the focus of settlement was along the coast and the lower reaches of the Waioana River. The only evidence of Traditional Hawaiian use reported for the project area vicinity consists of an agricultural depression and several mounds of stone (*ahu*) marking the Puna Trail, which extended through Survey Area 3. The area is intermediate between McEldowney's (1979) Coastal Settlement Zone and her Upland Agricultural Zone because it is greater than 0.5 miles inland and less than 50 ft in elevation. The very rocky nature of the terrain probably limited traditional use to gathering floral and faunal resources, transit through the area, and limited agricultural activity. Historic use was probably limited to cattle grazing because the terrain is too rocky for sugar cane cultivation. Airport-related construction activity in the 1900s resulted in extensive modification and development in the area. Historic sites dating to the 1900s would consist of airport-related infrastructure including roads and potentially foundations for building and other structures.

FINDINGS

The archaeological survey identified three sites with five features (Figure 8). The sites consist of a complex of two late historic/modern concrete slabs (Site 23001), a complex comprised of a terrace and wall (Site 23002), and a cattle wall (Site 23003). A fourth site, previously recorded as the Puna Trail (Site 21273), extended through Survey Area 3; however no evidence of the trail was encountered during the survey. The results of the examination of each of the four survey parcels sites are described below. Subsurface testing was undertaken at one feature during the study (Site 23002, Feature A). The results of this excavation is incorporated into the following site description of this feature.

Survey Area 1 and 2

Survey Areas 1 and 2 are situated in the eastern portion of the project area. Survey Area 1 is located south of an existing parking area, and Survey Area 2 is situated east of the airport terminal and a taxiway. These areas have been disturbed by mechanical ground altering activity evidenced by numerous bulldozer push piles and secondary growth vegetation. No archaeological sites are present in Survey Areas 1 or 2.

Survey Area 3

Survey Area 3 is located north of Kukuaoa Street, west of Akahana Street and the Post Office, and south of the main airport runway. This area has also been extensively disturbed and appears to have been completely bulldozed. Portions of paved and dirt roads are present in the central and eastern portion of the area. The survey identified one site in this area consisting of a complex of two concrete slabs (Site 23001). Previous work (Hammett and Bush 2000) in the vicinity of this survey area identified a portion of the Puna Trail (Site 21273).

Site 21273

Site 21273 consists of the Puna Trail, which extended from Hilo to Puna, and potentially to Kau. This trail has been described by several researchers, including McEldowney (1979) who designated it as Site 18869; Lass (1997), who designated it as Site 21273; and Hammett and Bush (2000). Although no evidence of the trail was found within Survey Area 3, Hammett and Bush (2000) indicate that it once extended through the parcel in a northwest by southeast direction.

Portions of the trail has been significantly impacted during modern times. Hammett and Bush indicate that the portion of the trail that extends through the Keaukaha Military Reservation has been modified and currently functions as the primary road through the facility (2000:27). The northwestern portion of this section of trail is paved and the southeastern portion is a dirt road.

Initially this trail consisted of a four foot wide, curb-lined horse path that corresponded to Apple's type C trail typology (1965:65). The portion of the trail that passes through the Keaukaha Military Reservation was subsequently modified for vehicular traffic.

Site 23001

Site 23001 is a complex of two concrete slabs located in the southeastern corner of Survey Area 3, south of Kukuaoa Street and west of Akahana Street (Figure 9). Both slabs are rectangular in shape and are oriented in a north-northeast by south-southeast direction. The slabs are situated on a relatively level, crushed gravel area. The Feature A slab is 17.25 m long, 6.7 m wide, and from 0.05 to 0.4 m in height above the surrounding ground surface (Figure 10). There is a 0.2 m wide raised curb extending along the western side of the slab, and along the northern half of the eastern side. The curb is comprised of mortared concrete cinder blocks.

There is a rectangular raised slab located along the eastern side of the Feature A slab, measuring 2.2 m long (west-northwest by east-southeast), 1.5m wide and 0.05 m in height above the surface of the main slab. A circular toilet flange with the broken remnants of a ceramic toilet is situated adjacent to this

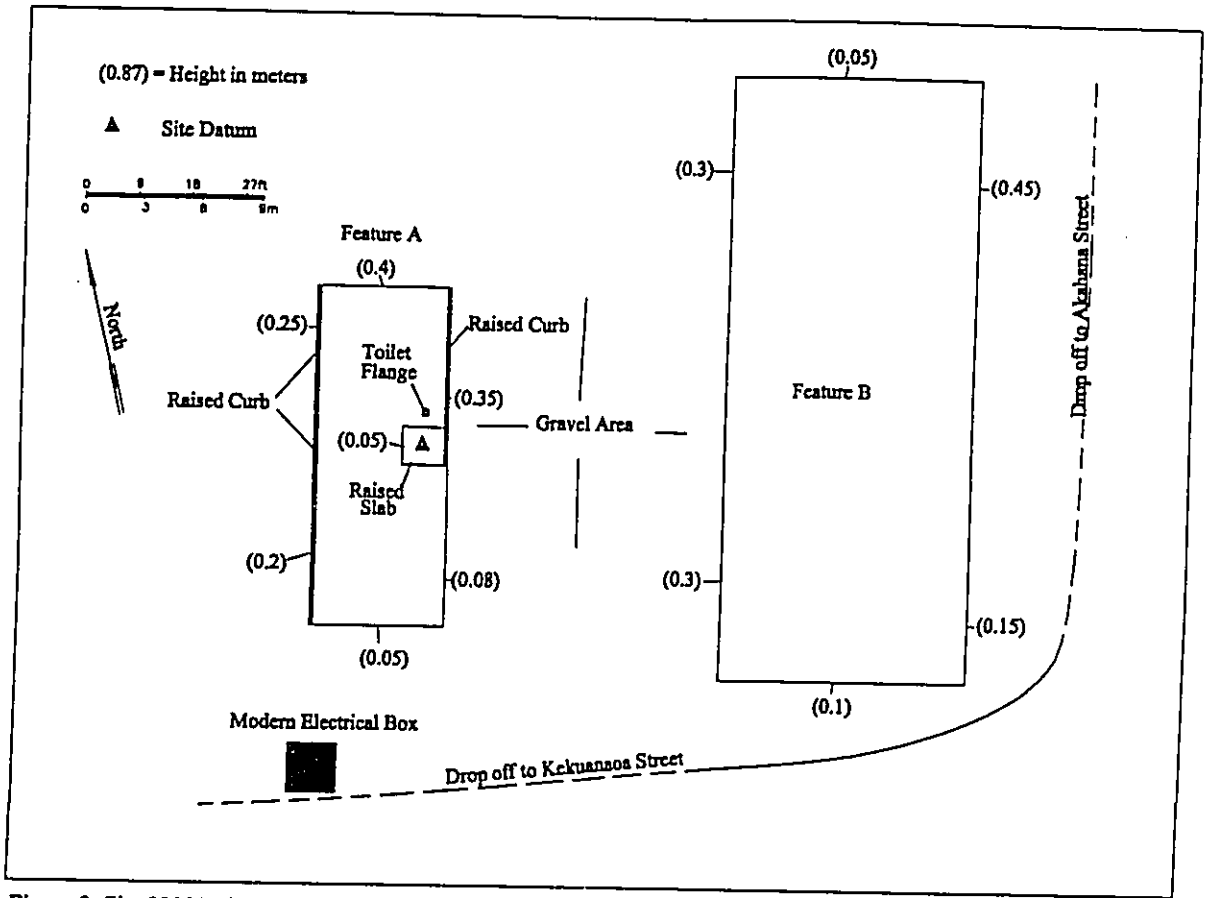


Figure 9. Site 23001 Plan Map

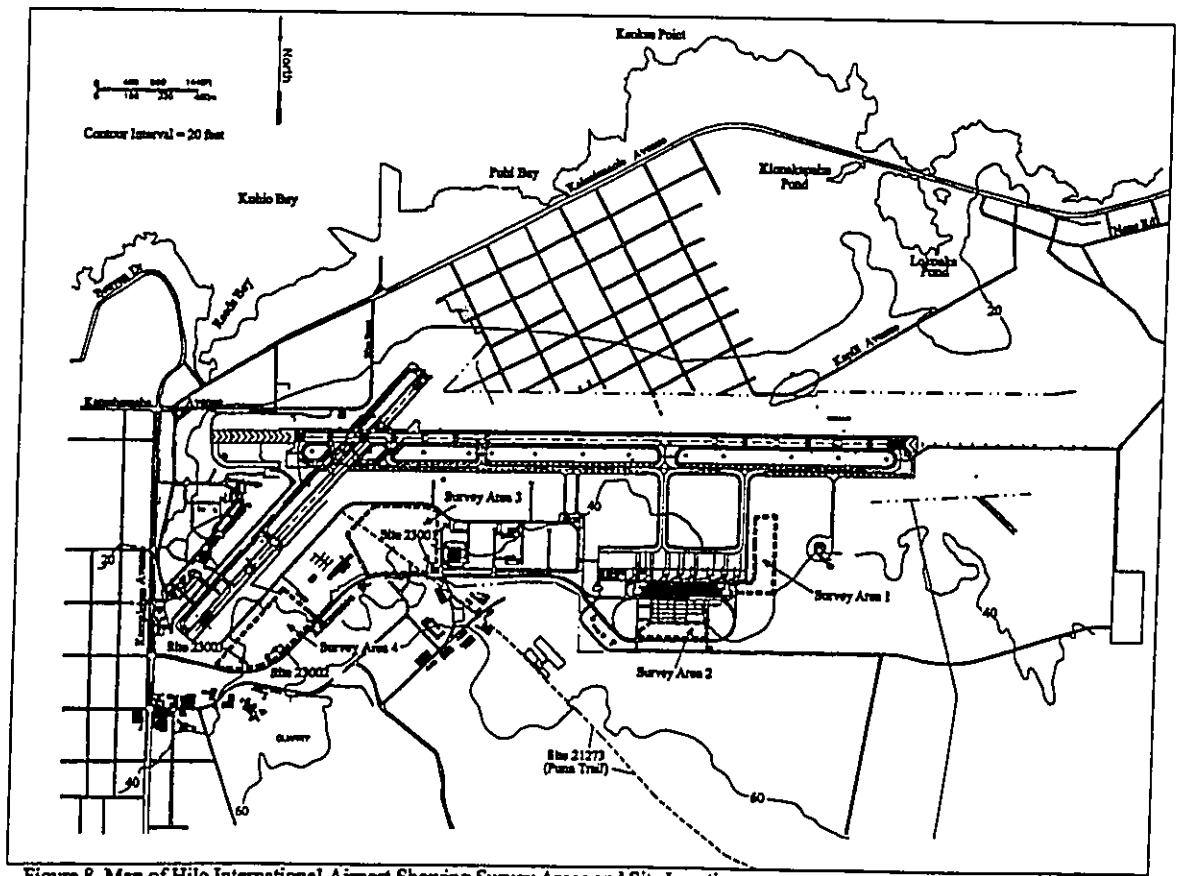


Figure 8. Map of Hilo International Airport Showing Survey Areas and Site Locations

raised slab to the north. A modern electrical box is located to the south of Feature A, just above the dropoff to Kekuanooa Street. No cultural remains were noted at Feature A.

The Feature B slab is situated 14.25 m east of Feature A. This slab is 30.6 m in length, 12.75 m wide, and from 0.05 to 0.45 m in height above the surrounding ground surface (Figure 11). No cultural remains were present at Feature B.

Site 23001 corresponds to the location of an abandoned radio transmitter repeater (RTR) site based on the airport facilities map. According to Mr. Larry Balbarino, Assistant Airport Manager for the Hilo International Airport, this facility was relocated at least 30 years ago to the vicinity of the current Naval Air Station swimming pool.

Survey Area 4

Survey Area 4 is located adjacent to Kekuanooa Street to the north and south of an airport runway. This portion of the project area evidences varying degrees of disturbance. Numerous bulldozed push piles were noted in the area, although small, undisturbed areas were also identified. Two archaeological sites were identified in Survey Area 4. These sites consist of a complex of two features (Site 23002), and a stone wall (Site 23003).

Site 23002

Site 23002 is a complex comprised of a terrace (Feature A) and a low wall (Feature B). The site is located just north of Kekuanooa Street in an area densely vegetated with pandanus and guava. Feature A consists of well-built stone terrace located on the southern side of a natural depression (Figure 12). The depression is roughly oval in shape, measuring 22.3 m long (east-west), 3.2 to 6.4 m wide, and 1.5 to 2.7 m below the surrounding ground surface. There is very little soil in the bottom of the depression. The terrace is comprised of a stone retaining wall built along the edge of the depression. This wall is constructed of stacked and faced subangular basalt cobbles and small boulders (Figure 13). It slopes inward from the base to the top, ranging in height from 0.44 to 1.1 m above the uneven floor of the depression.

The surface of the terrace is level and is crudely paved with small cobbles. The surface of Feature A is 15.8 m long (east-west) and 0.95 to 1.9 m wide. The southern side of the terrace abuts the base of a natural slope, that angles down to the north. No cultural remains were noted on the surface of Feature A.

A 1.5 m long by 1.0 m wide test unit (TU-1) was excavated into the surface of Feature A, originating at the retaining wall along the north side, and extending to the south, into the structure. The excavation of this unit revealed a single layer of tightly packed subangular basalt cobbles and small boulders, overlying bedrock (Layer 1). This layer of stones varied in thickness from 1.1 m at the retaining wall, to 0.65 m at the southern end of the excavation (Figure 14). No cultural remains were recovered from TU-1.

Feature B consists of a low stone wall located 3.8 m upslope to the south of Feature A, and 1.75 m north of the steep dropoff to Kekuanooa Street (see Figure 12). The wall is 9.6 m long (east-west), 0.79 to 1.0 m wide and 0.29 to 0.35 m in height (Figure 15). No cultural remains were present at Feature B.

The function of the Feature A terrace and depression is problematic. The feature is well-built and resembles a trail; however, it does not continue in either direction and this is not a result of subsequent land modification because the surrounding terrain is unmodified. The terrace fill forms a narrow paved surface between the faced terrace wall and an outcrop to the south. The surface is less than 2 m wide and is too narrow to be a typical habitation feature. The excavation in the terrace did not encounter any artifacts or food remains providing further evidence that it is not a habitation feature. The excavation also did not encounter any soil indicating that it was not used for cultivation.

The adjacent depression has high, nearly vertical walls on all sides except a narrow place at the eastern end where it is accessible via a moderate slope. The terrace extends the vertical sides of the depression along an outcrop to south. If the eastern end formerly had a low wall of stone or wood, then the depression could have served to exclude free-ranging pigs or cattle from its interior. Alternatively, it could



Figure 10. Site 23001, Feature A Concrete Slab, view to north-northeast



Figure 11. Site 23001, Feature B Concrete Slab, view to north



Figure 13. Site 23002, Feature A Terrace, view to southwest

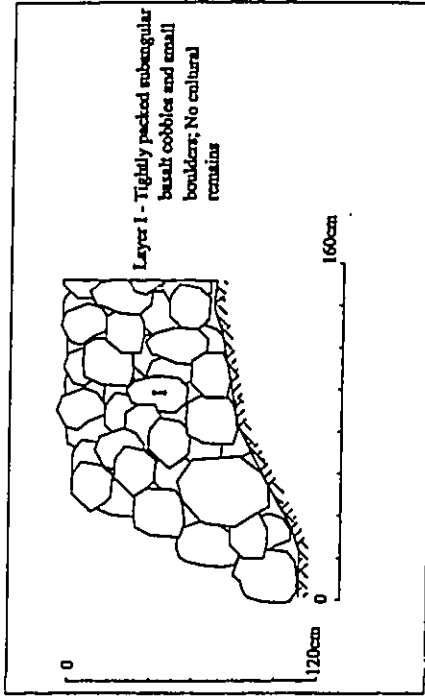


Figure 14. Site 23002, Feature A, TU-1 XXX Face Profile

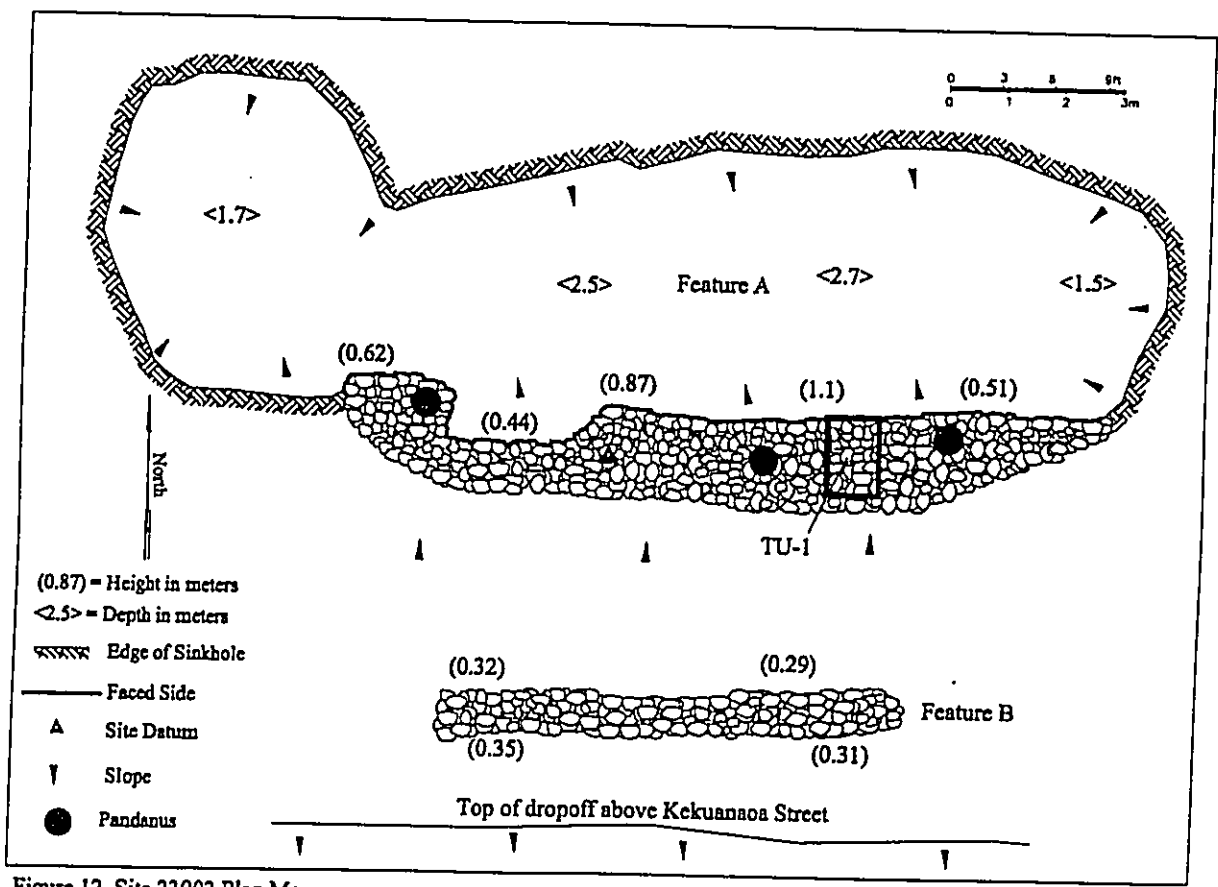


Figure 12. Site 23002 Plan Map

have served as a pen or trap for livestock. The former interpretation is potentially supported by the findings of the Hammett and Bush (2000) survey of the nearby Kaunakoa Military Reservation. They identified a lava depression (Site 21659) that was modified with stones stacked 3-4 courses high around its perimeter. Although the interior of the depression lacked soil, Hammett and Bush conclude that the depression was probably used by Hawaiians for "mulch-type agriculture" (2000:27). The Feature B wall is too low to be a ranch wall and it is probably a segment of an agricultural enclosure or simply a stone clearing feature.

Site 23003

Site 23003 is a stone wall located near the southwestern corner of Survey Area 4 at c. 42 ft elevation. The wall originates at the edge of the vegetation bordering Kekuanoa Street and extends 13.4 m to the north. The northern end of the wall has apparently been destroyed by bulldozing activity in the area. The wall is constructed of stacked subangular basalt cobbles and small boulders. It is 0.95 to 1.0 m wide at the base and 0.7 to 0.8 m wide at the top (Figure 16). The wall ranges in height from 0.75 to 0.85 m. The interior of the wall is core-filled with small, subangular cobbles. No cultural remains were found in association with Site 23003. The height of this wall and its method of construction suggests it functioned as a livestock control feature, likely used to restrict the movement of cattle. Site 23003 is altered and in fair to good condition.



Figure 15. Site 23002, Feature B Wall, view to west



Figure 16. Site 23003 Wall, view to north

CONCLUSION

The identified site and features conform to the traditional Hawaiian site/feature types expected based on previous archaeological work and historic documentary research. As expected, agricultural features were identified and a primary transportation route, the Puna Trail, formerly traversed one survey area. No surface evidence of subsurface cultural deposits was identified and it is unlikely that such deposits would be present because there is very little soil over the lava bedrock in the area and because much of the area has been extensively disturbed by construction activity.

The terraced depression at Site 23002 is formally similar to a walled depression (Site 21659) identified during Hammett and Bush's (2000) survey of the nearby Keaukaha Military Reservation. The walled depression was situated at 80 ft elevation placing it with the lower portion of McEldowny's (1979) Upland Forest Zone. This zone was situated between approximately 50 ft and 1,500 ft elevation and was characterized by scattered residences among economically beneficial trees and agricultural plots of dryland taro and bananas. The terraced depression and associated wall identified during the current study document traditional Hawaiian agricultural activity in area that was transitional between McEldowny's Coastal Settlement Zone, which was a coastal band extending 0.5 miles from the shoreline, and the Upland Agricultural Zone.

Also as expected, historic remains consisted of a ranch wall (Site 23003) and an airport-related facility (Site 23001). The ranch wall probably dates to between the mid-1800s and early 1900s. The radio transmitter repeater (RTR) site probably dates to between the 1930s and 1960s prior to the airport's upgrading to accommodate jet aircraft.

Significance Assessments and Recommended Treatments

Pursuant to DLNR (1998) Chapter 275-6(d), the initial significance assessments provided herein are not final until concurrence from the DLNR has been obtained. Sites identified and relocated during the survey are assessed for significance based on the criteria outlined in the Rules Governing Procedures for Historic Preservation Review (DLNR 1998 Chap 275). According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:

1. Criterion "a": Be associated with events that have made an important contribution to the broad patterns of our history;
2. Criterion "b": Be associated with the lives of persons important in our past;
3. Criterion "c": Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
4. Criterion "d": Have yielded, or is likely to yield, information important for research on prehistory or history; and
5. Criterion "e": Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity.

Based on the above criteria, Sites 23001-3 are assessed as solely significant under Criterion "g". The sites have yielded information important for understanding prehistoric and historic land use in project area. Site 21273, the Puna Trail which is no longer present, was assessed by Hammett and Bush (2000) as potentially significant under Criteria "a" and "d", but the portion extending through the Keaukaha Military Reservation was deemed to have lost its integrity. This portion was not assessed as significant and the same assessment applies to the formerly present trail segment in the current project area.

Recommended Treatments

The mapping, written descriptions, photography, and test excavations at Sites 23001-3 adequately documents them and no further work or preservation is recommended. No further work or preservation is recommended for the portion of Site 21273 trail alignment in the project area. Well-preserved examples of the trail are present outside of the project area (Last 1997).

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APPENDIX F
CULTURAL IMPACT ASSESSMENT

Cultural Impact Assessment

**Hilo International Airport
Proposed Improvements**

Waiākea, Hilo, Hawai'i



CULTURAL IMPACT ASSESSMENT

**Hilo International Airport Proposed Improvements
Waiākea, South Hilo, Hawai'i**

Prepared For:

**State of Hawai'i
Department of Transportation**

Prepared By:

Wilson Okamoto & Associates, Inc.

February 2002

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February 2002

TABLE OF CONTENTS

1. INTRODUCTION 1

2. METHODOLOGY AND TASKS 1

3. PROJECT LOCATION AND GEOGRAPHICAL EXTENT 2

4. A CULTURAL PERSPECTIVE 3

 4.1 Mai Ka Pō Mai – From Out Of The Darkness: The Kumulipo 3

 4.2 Pelehonuamea and Hi'ikaikapoliopole 5

5. THE NATURAL LANDSCAPE 7

6. TRADITIONAL LAND USE PATTERNS 10

7. WAIĀKEA – A ROYAL RESIDENCE 14

8. SETTLEMENT PATTERNS 17

 8.1 The Mahele of 1848 18

9. KEAUKAHA HAWAIIAN HOME LANDS 19

 9.1 Hilo Airport and Keaukaha Hawaiian Home Lands 22

10. INTERVIEWS AND CONSULTATION 28

 10.1 Oral History of Keaukaha 29

 10.2 Project-Specific Interviews 29

 10.3 Identified Cultural Resources, Practices and Beliefs 30

11. FINDINGS 34

12. RECOMMENDATIONS 35

13. BIBLIOGRAPHY 37

14. GLOSSARY 39

1. INTRODUCTION

This cultural impact assessment was prepared in conjunction with the Environmental Assessment for the proposed improvements to the Hilo International Airport. The purpose of the assessment is to satisfy the requirements of Hawaii Revised Statutes Section 343-2 which was amended by Act 50 and approved by Governor Cayetano on April 26, 2000 to include cultural practices. This assessment provides an overview of native Hawaiian cultural resources, practices and beliefs pertaining to the ahupua'a within which the project site is located, and an assessment of potential impacts of the proposed improvements. In addition, the assessment focuses on the community of Keaukaha, which is situated immediately adjacent to, and which has had a long relationship with the Airport.

2. METHODOLOGY AND TASKS

This cultural impact assessment was prepared in accordance with the methodology and content protocol provided in the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, November 19, 1997). This included examining cultural resources, practices and beliefs of the ahupua'a within which the project site is located by conducting documentary research, and consulting with individuals and/or organizations with knowledge of the general surrounding area.

A literature review was conducted which included archaeological and anthropological studies and reports, historical and anthropological texts, published and recorded interviews and/or oral histories, land use records relating to Land Commission (Mahele) Awards, historical maps, and environmental and cultural assessments prepared for surrounding properties. Materials available at the Bishop Museum Archives and Library, University of Hawaii Mānoa Hamilton Library Hawaiian Collection, State Survey Office, State Department of Land and Natural Resources Land Division, State Archives, and State Historic Preservation Division were reviewed. A listing of references used in the preparation of this assessment is provided in the bibliography at the end of this report. This assessment does not repeat or include all that has been previously documented about the Hilo District, the ahupua'a of Waiākea, or the Keaukaha region. It does however attempt to provide the Hawaiian perspective of the historical traditions and cultural resources.

Three oral interviews with four individuals, all of whom have generational connections to Keaukaha, were conducted for the preparation of this assessment. Two of the interviews were recorded and transcripts of the interviews were returned to the participants for their review. The third interview was not recorded, but a summary compiled from diligent note taking was returned to the participants for their review. Written verification and acknowledgement was received for use of the information in conjunction with the Environmental Assessment for the proposed improvements from two of the interviewees. Verbal permission was given for use of the information from the third interview in this report. Interviews and consultations previously conducted in conjunction with published archaeological, anthropological, historical and environmental review reports and texts were also reviewed.

Throughout this assessment the use and spelling of Hawaiian words with 'okina and kahakō for the most part follows the *Hawaiian Dictionary* by Mary Kawena Pukui and Samuel H. Elbert, and are not italicized. The spelling of place names and use of 'okina and kahakō is primarily based on *Place Names of Hawaii* by Mary Kawena Pukui, Samuel H. Elbert, and Esther T. Mookini. As for direct quotations, the orthography of Hawaiian words and place names, and the use of italics are reproduced as they appear in the original source.

3. PROJECT LOCATION AND GEOGRAPHICAL EXTENT

This assessment was prepared for proposed improvements to the Hilo International Airport situated in the ahupua'a of Waiākea, in the moku of Hilo, present day South Hilo, Island of Hawai'i. The proposed facility improvements are to occur on a total of approximately 64 acres of land within the Airport property which encompasses approximately 1,246 acres.

The ahupua'a of Waiākea, and principally the cultural resources, practices and beliefs associated with the kahakai (shoreline area), kula kai (coastal plains) and wao 'ama'u (lowland wet forest) regions and the community of Keaukaha, was the focus of this assessment. Situated on the windward coast of Hawai'i Island, Waiākea lies on the lower eastern slopes of Mauna Loa and is bounded by the adjoining ahupua'a of Kūkūāu to the north and the Hilo-Puna district boundary to the south.

4. A CULTURAL PERSPECTIVE

Surviving for generations isolated on a few small islands, Hawaiians amassed a wealth of knowledge about their environment, their land, and the creatures with which they shared these islands. The gods in their elemental forms directed the seasons, the nights of the moon, and the life cycle that ensured prosperity for the land and the people. There were specific times for planting, growing, fishing, harvesting, and times of kapu, or prohibition, ensuring that the resources of the land and sea would be sustained.

4.1 Mai Ka Po Mai – From Out Of The Darkness: The Kumulipo

Various cosmogonic genealogies including 'Ōpūkahanua (also referred to as 'Ōpūkahanua), Wēlawahilani, Palikū, and the well-known Kumulipo trace the emergence of these islands and their inhabitants. Composed many generations ago, the Kumulipo is a creation chant and genealogy, more than 2,000 lines long, that records generations of knowledge and understanding of the world. Not only a record of natural evolution and the origin of the Hawaiian people, this chant also contains the link of the chiefly lineages to the deities, the social and natural ordering, the traditional kapu system, and the value system which dictates the relationships between the myriad of life forms on the earth.

From out of the night, the time of darkness, born is the coral polyp, a simple life form and the beginning of the food chain for sea creatures. Born are the plants of the ocean, guarded by their plant counterparts of the land, establishing the relationship between that which is of the ocean and that which is on the land. Born are the creatures that swim in the ocean and born are the larger forest growth plants. The Kumulipo continues with generations of complexity. Born are the winged creatures, the crawling creatures, the walking creatures, the rat, and the dog. Then begins the second time period, and with the dawning of light it is the time for the birth of the gods and the deity forms. The Kumulipo orders the heavens and identifies the celestial bodies, and establishes social and political order, born are the chiefs, and born are priestly lineages. Then comes the time of Papa the Earth Mother and Wākea the Sky Father and the foundations of laws. Born is Hāloa the elder, and from where he is buried grows forth the kalo, the food staple. Born is Hāloa the younger, the first ali'i and the progenitor of the Hawaiian people. The following excerpted lines of the Kumulipo show the increasing complexity of the creation chant and the connection of the Hawaiian to the environment.

- 1 'Ō ke au i kahuli wela ka honua When space turned around, the earth heated,
- 2 'Ō ke au i ka huli lole ka lani When space turned over, the sky reversed,

junior lineage cares for and serves the senior, and the senior lineage provides food and shelter. It is a symbiosis. The universe is ordered into parts, and each part is needed to complete the whole. Through this common genealogy, the value system is established whereby the 'āina, or the land is an ancestor to be cherished and respected as a grandparent. This culturally prescribed behavior is exhibited through the concepts of aloha 'āina and mālama 'āina, love and caring for the land.

4.2 Pelehonuamea and Hi'iakaikaipolopete

In addition to the birth and peopling of these islands, another important facet of the Hawaiian understanding of environment was the continued expansion of landmass and the establishment of first growth on this new land. The sisters Pelehonuamea and Hi'iakaikaipolopete play a dynamic role in the creation and vegetating of new lands that is still witnessed on Hawai'i Island today. Pele is the lava and the fire that both consumes the land and creates new land. It is her younger sister Hi'iaka that causes the first plant shoots to burst forth from the barren rock. Pele's journey begins in Kahiki from where she and some members of her family leave in search of a new home. They arrive at the northern islands of the Hawaiian archipelago and Pele tests the new land to determine if the island can accommodate her fires. She is unsuccessful at Nihoa island and moves on to Kaua'i, O'ahu and Maui. But she finds that those islands are also unsuitable. It is finally at Kīlauea on the island of Hawai'i where Pele and her family make their home at Halema'uma'u. From their home on Hawai'i Island, Hi'iakaikaipolopete the youngest and favorite sister journeys on an errand for Pele, to fetch her dream lover Lohi'au from Kaua'i. Hi'iaka's journey is wrought with danger and challenge, not only a physical journey, but a spiritual journey that results in her maturity, growth and eventual emergence as a deity equal to her sister Pele.

As Hi'iaka begins her journey she travels through Waiākea and enters the realm of Pana'ewa; the forest and the mo'o deity. Through her chants, Hi'iaka describes the beauty of her surroundings and the challenges she faces as unfolded. The following chants are just a sampling of the many chants found in *Ka Mo'olelo Ka'ao o Hi'iakaikaipolopete* by Joseph M. Peepoe and *Pele and Hi'iaka: A Myth from Hawaii* by Nathaniel B. Emerson. There are some variations between the many versions of the Pele and Hi'iaka story, the chants and the translations. These chants, from just two versions of the long epic, are presented to provide a glimpse into the depth of the relationship and understanding that the people have with the land.

When the sun appeared standing in shadows
To cause light to make bright the moon,
When the Piciades are small eyes in the night,
From the source in the slime earth formed
Did night give birth.

Born Kumulipo in the night, a male;
Born Pōele in the night, a female;
Born the coral polyp
Born of him a coral colony emerged
Born the fragrant red seaweed living in the sea

Kept by the succulent mint living on land
Born the fish, born the porpoise swimming
there in the sea,
Born the shark, born the goatfish swimming
there in the sea,

Born the larva parent
Came his child a fly, and flew;

Born the egg parent
Came his child a bird and flew;

Papa-earth-placenta-turning,
Papa-sky-turning,
Great-Papa-giving-birth-to-lands,

Papa who lived with Wākea,
Taboo the food sacred to the elders;

Taboo the anesthetic' auhuhu plant
Taboo the 'uhaloa medicine plant for long life
Taboo the leaves spiraling to the side of the
taro stalk,

Taboo the long stalk rising from the inner
branching,
Hāloa the long-breathing stem of the lauloa
taro planted,
The leaf of Hāloa in the sunlight of day there,
Came forth.

(Note: The above lines and translation are compiled from *Mo'olelo Kumulipo-Kumuhonua o Hawaii* by Joseph M. Peepoe, *The Kumulipo Mind: A Global Heritage In the Polynesian Creation Myth* by Rubelitte Kawena Kinney Johnson and *The Kumulipo: A Hawaiian Creation Chant* by Martha Warren Beckwith. The numbering of the lines is provided as a frame of reference for the reader to understand the development of the Kumulipo from the simple to the complex. The lines are numbered following the Kalakaua Text included in *The Kumulipo: A Hawaiian Creation Chant* and may differ from other publications.)

Through Hāloa the relationship between the junior lineage and the senior lineage is clearly displayed, or more specifically between man (junior) and the 'āina (senior). The

3 'O ke au i kūka'iaka ka iā
4 E ho'omāmalama i ka malama
5 'O ke au o Mākali'i ka pō
6 'O ka walewale ho'okumu honua ia
12 Hānau ka pō
13 Hānau Kumulipo i ka pō he kāne
14 Hānau Pōele i ka pō he wahine.
15 Hānau ka 'Ukukō'ā,
Hānau kana, he 'Ako'āko'a, puka
Hānau ka 'A'ala-'ula noho i kai

48 Kia'i 'ia e ka 'Ala'ala-wai-nui noho i uka
138 Hānau ka Ta, hānau ka Na'ia i ke kai ia holo

139 Hānau ka Mānō, hānau ka Moano i ke kai ia holo

293 Hānau ka Nāio ka makua
294 Puka kāna keiki he Nālo, Iele
295 Hānau ka I'ualua ka makua
296 Puka kāna keiki he Mānu, Iele

1792 'O Papa-huli-honua
1793 'O Papa-huli-honua
1794 'O Papa-nui-hānau-moku
1795 'O Papa i noho ia Wākea

1804 Kapu ka 'ai lani makua
1807 Kapu ka 'auhuhu ka mulemulea
1808 Kapu ka 'uhaloa no ke ola loa
1809 Kapu ka 'āhālo ka mānewanewa

1810 Kapu ka hāloa kū ma ka pē'a
1811 Kanu 'ia Hāloa ulu hahaloa

1812 'O ka iau o Hāloa i ke ao iā
1813 Puka.

(Note: The above lines and translation are compiled from *Mo'olelo Kumulipo-Kumuhonua o Hawaii* by Joseph M. Peepoe, *The Kumulipo Mind: A Global Heritage In the Polynesian Creation Myth* by Rubelitte Kawena Kinney Johnson and *The Kumulipo: A Hawaiian Creation Chant* by Martha Warren Beckwith. The numbering of the lines is provided as a frame of reference for the reader to understand the development of the Kumulipo from the simple to the complex. The lines are numbered following the Kalakaua Text included in *The Kumulipo: A Hawaiian Creation Chant* and may differ from other publications.)

Through Hāloa the relationship between the junior lineage and the senior lineage is clearly displayed, or more specifically between man (junior) and the 'āina (senior). The

Panaewa nui moku lehua,
Ohia kupa hao'eo'e,
I ka ua lu lehua ulu—
i wilia e ka manu, ua po—e'.
Po wale Hilo i ka uwahi o kuu aina,

Ola ia kimi ke a mai la ke ahi.

Poepoe, *Mo'olelo Ka'ao o Hi'iakailapolele*, 10/2/1908.

(*Note: This line also appears in other newspaper versions, and in versions collected by the Bishop Museum as follows:

I ka wili a ka manu cu

Po—e. Po wale Hilo i ka uwahi

Interwoven by the playful bird

Darkness. Hilo is engulfed in the darkness of the smoke

Pau ke aho i ke kahawai lau o Hilo:

He lau ka pu'u, he mano ka ihona;

He mano na kahawai o Kula'ipo;

He wai Honouli, he pali o Kamae'e (Kawaea).

He pali no Koolau ka Hilo-pali-ku;

He pali Waiuku, he one ke hele ia;

He one e ke'ehia ia i Wai-olama.

He aka ka wi a ka wai i Pana-ewa—

O Pana-ewa nui, moku-lehua,

Ohii'a kupa hao'eo'e i ka ua,

Lehua ulu i ka wi 'ia e ka manu.

A ua po, e po Puna, po Hilo

I ka uahi o ku'u aina.

Emerson, *Pele and Hi'iaka*, p. 32-33.

A loko au o Panaewa,

Ike au i kimi me ka mano o ke akua,

E kupeku ana i ka lehua,

E haa ana i ka mahale,

Hele hookahi ana Hi'iaka i ka loa,

Aohe koolua, aohe ka mea aloha,

O ua akua aloha ole la o Panaewa.

Poepoe, *Mo'olelo Ka'ao o Hi'iakailapolele*, 10/9/1908.

Upon vanquishing Pana'ewa and the horde of mo'o, Hi'iaka and her travelling companion leave the Hilo area and travel through Hamakua and on to Waipi'o as they head towards Kohala. But Hi'iaka finds that she needs to turn back to rid the lands of

another band mo'o deities, Mahiki and the great mo'o deity Mo'olau. As she confronts and battles the mo'o of Mahiki and Mo'olau she lifts her voice in chant and looks back to Wai'akea and Hilo.

O Wai'akea ka aina,

Wai'akea is the land,

He lau ke akua e haa nei la—e',

Many are the gods that reside there,

I'haa wale ana ka ohia i ka lehua o Mokaulele.

The 'ohii'a dances in the lehua of Mokaulele.

A Kukuilaumania au i Hilo,

I am at Kukuilaumania in Hilo,

Nana aku au ia Wai'akea ia a hewa,

I look upon Wai'akea until I can see no more,

Hoakaa ka aha a ka ua i ka lani.

The gathering of the rain expands in the

heavens.

Poepoe, *Mo'olelo Ka'ao o Hi'iakailapolele*, 3/19/1909.

Pele, Hi'iaka, and Pana'ewa are deities of this land, Wai'akea. The great forest of Pana'ewa which stretched across the southern portion of the Hilo district into the Puna district was named for a merciless mo'o deity which made his home in the dense forest. Pana'ewa is famous for dense groves of 'ohii'a lehua, the birds that drink the nectar of the lehua blossoms, and the rain that scatters the red petals of the lehua. This belief in the destructive and creative powers of the land, and the deification of plants, creatures and places continues to the present day.

The 'ohii'a lehua continues to play a vital role in traditional cultural practices as a kino lau (body form of a deity) used to construct and dress the altar in some hula and warfare arts traditions. The flowers and leaves are used as adornments for hula. The hard wood is used in all manners of carving and building including canoes, houses, tools, implements and weapons.

5. THE NATURAL LANDSCAPE

Situated on the eastern slopes of Mauna Loa, the varied landscape of Wai'akea extends from Pu'u Kipu at an elevation of 6,289 feet above sea level, to the coast of Puhi Bay and Lelewi.

The following excerpts recounting the winds of the Hilo and Wai'akea region come from the lengthy wind chants found in the tradition of Kuapaka'a and the winds of La'amaomao. The story of Kuapaka'a and this particular wind chant has been recorded in a number of sources including the Hawaiian language newspaper *Kē Au Okoa* in 1867, a 1902 Hawaiian language reader, and the *Forannder Collection* originally published in

1918 and 1919. The different versions vary slightly, but the names of the winds remain the same.

Aia la, aia la, o ka makani ku honua,

There they are, there they are, the winds of this land.

Ile Uahiapele ko Kilauea,

The Uahiapele is of Kilauea,

Ile Awa ko Lelauiwi,

The Awa is of Lelauiwi,

Ile Puulena ko Waiākea,

The Pu'ulena is of Waiākea,

Uluau* Hilo-pai-ku.

The Uluau is of the cliffs of Hilo.

*Note: Uluau is also a wind associated with Waiākea. (Pukui, 1986)

Nakūna, *Mo'ikele Hawai'i O Pāka'a A Me Kūpāka'a*, 1902 and Fomander, *Formander Collection Of Hawaiian Antiquities and Folklore*, 1918.

The lands of Waiākea were productive, and the resources of the different environmental and ecological zones were utilized to support the native population. Along the coast fishponds were constructed to raise and harvest fish, an important source of protein. Inland the decomposed lava and consistent rainfall created fertile lands for growing kalo and other food crops. Hala groves provided an abundance of lau hala for weaving and house thatching. The forest, which extended within a few miles of the coast, provided timber, an array of occupational and medicinal trees and plants, as well as a number of bird species.

The productivity of Waiākea and the ability to support a significant population was directly attributable to its extensive water resources. Traditionally, numerous fresh water springs and three streams watered the lands of Waiākea; Waiolama, Waiākea and Waiōa. Along the western border of Waiākea with neighboring Kūkiāu flowed Waiolama stream, and Waiākea and Waiōa streams flowed through the center of Waiākea. These streams and springs provided for numerous fishponds along the banks of the streams and also along the coast. Some of the larger named fishponds included Waiākea, Mohouli, Kalepolepo, Waihole, Ho'akimau (also known as Pi'opi'o for the 'i'i in which it was situated), Waihonu, Hanalei, Kanakea, Kapalaho, and Loko Waka (or Loko Aka). (Note: The names of these fishponds is compiled from a number of sources including testimony given before the Commission of Boundaries in 1873, and Government Survey Registered Map No. 1561. There are some discrepancies in the spelling of the fishpond names between these sources and other published sources.) The fishponds were stocked primarily with the fry of 'ama'ama (mullet) and awa (milkfish) and sometimes āhole and served as an important source of protein. In Waiākea, the fish from Mohouli, Kalepolepo, Waihole and Ho'akimau fishponds were reserved for the ali'i. A description

of these "royal fishponds" and the productivity can be found in the journals of Chester Smith Lyman from 1846.

"June 30. Just after leaving the village we passed the royal fish ponds on the left. These are connected with the bay and contain the finest mullet in large quantity. They are tabu to the natives, and fish from the ponds cannot be purchased at any price. The ponds are navigated by light canoes made of bark, and on our return we saw a large number of them occupied by men engaged in fishing.

June 30. P.M. Took a walk with Mr. Coan to the Royal fish ponds, at the S.E. part of the harbor. They are of brackish water, rise and fall with the tide, and altogether cover several hundred acres. They are generally shallow, but in place of considerable depth. The fine mullet with which they are filled are tabu to all but Royal hooks or nets, and tho' they are innumerable and large, neither natives nor foreigners can often get a taste of them. I saw them collected in a corner of one of the ponds as thick as they could be crowded together, and watched their motions for some time. They are a fine looking fish about a foot long, black on the back, with belly white... (Lyman 1846) (Kelly, p. 14)

The ocean fisheries associated with Waiākea including Hilo Bay, Kūhiō Bay, and Puhi Bay were other important resources of the ahupua'a. A variety of fishing methods were employed some that required great skill while others were more recreational or social. The following excerpt from Kamakau sheds some light on some of the different methods.

"Some kinds of fishing required a fleet of canoes, many nets, and many men; other kinds needed only two, three, or four men, and some, only one man... Fish was obtained in the greatest quantity with nets. Other main ways of fishing were, with basket traps; with hook and line; by prodding about with a stick; by feeling about and grasping by hand or ensnaring between the fingers; by striking loose with stones (the 'opihī); and by drugging fish. A man could also fish with his hands, or with crab or shrimp nets, or with a pole from a ledge or the seashore, or catch fish in tide pools with a scoop net, or go along the seashore with a net, or set a fishline; or search for fish with a small basket trap; or draw a net over sandy spots in the sea or up onto the shore; or drive fish into nets by splashing; or with a pole. But these were not expert ways of fishing... Superior to these ways were fishing with long lines and by diving." (Kamakau, p. 59-60)

Fish was the primary source of protein in the Hawaiian diet. Some fish such as aku, ahi and 'ōpehu were typically dried and could be preserved for consumption at a later time, or could be used in trade for other necessities including kalo. Near to the shore and along

the rocky coastline women and children typically gathered different varieties of limu, 'opihii, wana, hā'uke'uke, 'ōpae, and crabs including, 'a'ama, 'alimihi and kuahonu. The productivity of the lands and seas, abundant natural forest resources, the comfortable climate, and recreation sites supported a healthy population and endeared Waiākea to the all'i class for generations.

6. TRADITIONAL LAND USE PATTERNS

Because of this great understanding of their environment, the land and the creatures that shared the land, Hawaiians devised a harmonious and prosperous existence with the land through various divisions of the land and ocean. One such division of land followed ecological zones, rainfall patterns, soil types and natural vegetation. These specific zones could vary from island to island, and by district depending on rainfall, vegetation, and areas of use. The following list of land divisions is compiled from various sources including, *Hawaiian Antiquities* by David Malo, *Hawaiian Dictionary* by Mary Kawena Pukui and Samuel Elbert, and *The Works of the People of Old* by Samuel Kamakau.

Kua'hiwi	Mountains at the center of an island, backbone
Kuaiono	Peaks or ridges which form the summits of mountains
Lua peie	Craters
Kuamauna	Belt adjoining the rounded swell of the mountain, the mountainside, part directly in back of and front of the summit
Kuaheha	Belt below the kuamauna in which small trees grow
Wao nahele or Wao lā'au	Belt below the kuaheha where the larger sized forest trees grow, inland forest region, timber land
Wao koa	Inland region where koa trees grow
Wao lipo	Makai of the wao nahele, the trees are tall
Wao 'e'iwa	Inland region
Wao ma'ūkele or Wao kele	Belt below the wao e'iwa in which the monarchs of the forest grow, rain belt, upland forest
Wao lani	Mountain area occupied by gods
Wao akua	Belt below the wao ma'ūkele in which again trees of smaller size grow; distant mountain region, inhabited by akua
Wao kanaka	Inland region where people may live or occasionally frequent, usually considered below the wao akua, the area that people cultivate
Wao 'ama'u or (Ma'u)	Belt below the wao akua where the 'ama'u fern grows and where men cultivate the land
Wao 'ilima or 'Āpa'a	Arid, hard, grassland, baked region below the 'ama'u
Pahie'e	Slippery, smooth, possibly named for a species of grass
Kula	Plain, open country, near to the habitations of people

Kahakai	Sea coast, or land near the ocean
Kahaone	Sandy beach
Kālawā	Curve of the beach
'Ae kai	Water's edge, where the sea and land meet

Within each zone, depending on the island and the district a variety of plants were available to the inhabitants for occupational, medicinal, and spiritual uses. Within the ahupua'a of Waiākea there are five distinct vegetation zones that correspond with rainfall and elevation. The listing of plants in each zone is by no means exhaustive, but is provided to help identify the different use areas.

Kahakai (Coastal Vegetation) – A primary habitation and gathering region were naupaka, koali, pā'u Hi'iaka, 'ākulikuli, hala, hau, milo, niu, and kamani plants can be found. In some areas of Hawai'i island, the forest extended to the shoreline and was dominated by 'ōhi'a lehua and lapa. These plants were very important and heavily used in everyday life by the Hawaiian.

Kula/Wao 'Ama'u (Upland Agriculture/Lowland Wet Forest) – Situated near the habitation zone, this was a primary cultivation and gathering region. In some areas of the island this kula region or grassland is large and is dominated by pili, ma'o, kou, nont and 'ilima. In some areas, a lowland wet forest was dominant on the windward side of the islands. This region was dominated by 'ōhi'a lehua and other vegetation included 'ama'u, hala, hau, kukui, and lauau'e.

Wao Kanaka (Lower Forest) – Also dominated by 'ōhi'a lehua, this region was a primary gathering zone of hard woods including large koa trees and plants for occupational, medicinal and spiritual purposes. Other plants that can be found in this zone include kōpiko, 'ie'ie, hāpu'u, 'awa, wauke, and 'uluhe. This zone was heavily utilized and provided woods for building, olonā and 'ie'ie fibers for cordage and basketry, mānaki for kapa and various food plants were grown along the streams or in cleared patches. Among other bird species the 'i'iwi, 'āpāpāne and 'amakihi were trapped and their tiny feathers collect for lei, cloaks, helmets and feather gods for the ali'i.

Wao Akua (Rain Forest) – Entering into the realm of the gods, gathering in this forested region was infrequent. Gathering may have been limited to necessity, if the needed tree, or needed size of the tree was not available in the wao kanaka, or for ceremonial purposes. The large hard wood trees such as 'ōhi'a lehua and koa could be found in this

zone along with loulou, hāpu'u, 'ōlapa and many of the other species also found in the wao kanaka. This zone is also the home for the valuable 'ō'ō and mamō birds whose tiny yellow feathers were greatly desired to produce feather cloaks, capes, helmets, war gods and lei for the chiefly class.

Wao Ma'ukele (Sub-Alpine/Montane Zone) – Similarly, this zone is dominated by 'ōhi'a lehua and koa however much larger in size. Other plants that can be found are 'a'ali'i, 'ōhelo 'ai and pūkiawe. Above this zone Waikēa is cut off by Humu'ula an ahupua'a of the Hilo district that extends along the slopes of Mauna Kea. Humu'ula contained the great adz quarries of Mauna Kea which would have been a coveted resource of the Hilo chiefs.

The ocean was similarly distinguished and named in bands from the water's edge along the coast, out to the sea, and the deep ocean. The naming of the ocean's zones could differ between islands and between districts of the islands depending on a number of factors such as whether the coast was rocky or sandy. A few of the many zones include:

'Ae kai or	Water's edge, where the sea and land meet
Lihī kai	
Pāhola, Hohola or	Where the sea washes over the land
Pāhaha	
Pu'e one or	Where the sea breaks and spreads towards land
Po'ina nalu	
Kai kohola or	General term for shallow seas within the reef
Kohola	
Kai hele kū	Sea for wading, or where footing could be obtained
Papa he'e	Octopus grounds
Kai 'ōhūa	Feeding grounds of young fishes
Kai lu'u	Sea for diving
Kai paeaca	Sea for pole fishing
Kai lawai'a	Sea for deep fishing
Kai mālolo	Where the sea is very dark blue
Moana	Ocean beyond
Kai pōpolohua	The dark blue-purple sea of Kāne that extends to the clouds on the horizon
mea a Kāne	

Identifying that ecological resource zones are typically distributed in bands or belts around the islands, land divisions for resource management extended from the ocean fisheries to the mountains following natural ridgelines and topographical features. The following list of land divisions is compiled from the *Indices of Awards* compiled and

published by the Office of the Commissioner of Public Lands, *Hawaiian Dictionary* by Mary Kawena Pukui and Samuel Elbert, *The Works of the People of Old* by Samuel Kamakau and *Hawaiian Antiquities* by David Malo.

Moku	The islands were each divided into districts called moku.
Kalana	Division of land smaller than a moku, comprised of ahupua'a.
'Okana	District or subdistrict, usually comprising several ahupua'a.
Poko	A smaller division within an 'okana.
Ahupua'a	Land division smaller than a moku, kalana or 'okana extending from the sea to the mountains and containing a sea fishery and sea beach, a stretch of kula or open cultivatable land and higher up its forest. Ahupua'a had definite boundaries, usually of natural features, such as gulches, ridges and streams. Perhaps the most vital resource management unit.
'Ili	Many ahupua'a were subdivided into smaller management units called 'ili.
'Ili kūpono	Nearly independent 'ili land division within an ahupua'a, paying tribute to the ruling chief and not to the chief of the ahupua'a. Transfer of the ahupua'a from one chief to another did not include the 'ili kūpono.
Lele	A feature of the 'ili which often consisted of several distinct sections of land, one along the sea shore, another in the kula lands, another in the terraced and watered taro patch section, and still another in the forest section.
Mo'o	The arable portions of the 'ili were divided into small tracts or fields called mo'o or mo'o 'āina; a smaller division than lele primarily for cultivation purposes.
Paukū	Land division smaller than mo'o.
Kihāpai	Smaller than a paukū, this was a cultivated patch, a field or garden belonging to and cultivated by the tenants.
Kō'ele	Small unit of land farmed by a tenant for the chief.
Pō'alima	Same as kō'ele. In later years were worked for the chiefs by tenants on Fridays only, named after the Hawaiian word for Friday.
Kulcana	Small areas of an ahupua'a which the tenants had improved or cultivated and used for their own purposes, and to which they substantiated their claims and perfected their rights, securing from the Land Commission an Award of Title in Fee Simple.
Konohiki	The person who had charge of an ahupua'a, an agent who managed a chief's lands. The word konohiki in time came to be applied to the land under such agent's care, thus the land held by a chief, and ahupua'a or 'ili was known as "konohiki land."

Other less familiar terms for small pieces of arable land include: kuakua, hakupa'a, mālua, nana'e, kīpoho, puluwai, and pā'e'i.

Waiākea is a large ahupua'a within the moku of Hilo, situated in a portion now known as South Hilo. Pi'opi'o was an 'i'i kōpono of Waiākea, and Honohonou was another smaller land division within Waiākea. Makaokū, another smaller land section and heiau named for the husband of the goddess Hina also associated with Mokuola and with fishing practices using ko'a (dedicated fishing grounds).

7. WAIĀKEA – A ROYAL RESIDENCE

One of the earliest accounts of Waiākea is found in the exploits of 16th-century chief 'Umi-a-Lihoa, son of Lihoa the paramount chief of Hawai'i Island. 'Umi-a-Lihoa successfully challenged his elder brother's right to rule and proceeded to invade and conquer each district of Hawai'i Island until he had unified the island under his rule. Prior to conquering the district of Hilo, 'Umi-a-Lihoa anonymously spends some time in the court of Kulukulu'ā, chief of Hilo who lived at Waiākea. Another important royal site in Waiākea is Kanukuokamanu, a famous surfing site where 'Umi-a-Lihoa joins in a celebration of the Hilo chiefs. Kanukuokamanu is on the western side of the Wailoa River and establishes this area as a place of courtly entertainment where hula and games such as pūhenehene were included in the evening's activities. (Kamakau, p. 15-17) In the following generations, 'Umi-a-Lihoa's descendants continued to control and rule the unified districts of Hawai'i Island.

In the 18th century, the supremacy of Hawai'i Island was again in flux and it was a time of warfare between the district chiefs. It was 'Alapa'inui, a chief with genealogical ties to the Kona district who emerged as the victor and again unites the districts of Hawai'i Island under his rule.

"Alapa'i lived for some years in Hilo, and it was while there that Keoua, called Ka-lani-kupu-a-pa-i-ka-lani-nui, fell ill of a lingering sickness at Pi'opi'o adjoining Wailoa in Waiākea and died there in 1752." (Kamakau, p. 75)

With the death of Keoua, his older brother Kalani'ōpu'u begins to challenge Alapa'i's right to rule. Kalani'ōpu'u and Keoua were the hereditary heirs to the land of Hawai'i, but Alapa'i had seized it through force of arms. After a number of battles, Kalani'ōpu'u was victorious and became ruler over the island of Hawai'i. During his lifetime Kalani'ōpu'u must continue to do battle to squelch the rebellions of the district chiefs.

"The heiau of Moa'uia was erected in Waipi'o at this time, and after its dedication by Ka-lani-'ōpu'u the chief set out for Hilo with his

chiefs, warriors, and fighting men, some by land and some by canoe, to subdue the rebellion of I-maka-Ko'oa, the rebel chief of Puna. In Hilo Kalani'ōpu'u built the heiau of Karowa at Pu'uco and after dedicating it he went to stay at 'Ohele in Waiākea while his army went to fight in Puna." (Kamakau, p. 108)

Soon after Kalani'ōpu'u's death some of the Hawai'i Island chiefs formed a conspiracy to wrest the rule of the land from Kalamikauikaouli Kiwala'ō, Kalani'ōpu'u's young son and heir, and give it to Kamehameha. After many skirmishes and battles Kiwala'ō is killed in battle and the island of Hawai'i is divided between three ruling chiefs. Keoua Kū'ahu'ua becomes the ruling chief over Ka'u and Puna, Keawema'uhihi rules over half of Hilo, half of Puna and half of Hāmākua, and Kamehameha took Kona, Kohala and half of Hāmākua. Keoua Kū'ahu'ua kills the Hilo chief Keawema'uhihi and ravages Kohala. Kamehameha who is spending time in Molokai returns to do battle, but after much fierce fighting the two sides diffuse with Kamehameha returning to Waipi'o and Kohala, while Keoua stayed at Hilo.

"At Hilo Keoua divided the land among his chiefs and warriors; the fat mullet of Waiākea and Pi'opi'o became theirs." (Kamakau, p. 152)

In the end it is Kamehameha who finally takes control of Hawai'i Island, and Hilo with its koa forests becomes an important headquarters for the construction of war canoes and other preparations for war needed to support Kamehameha's quest for the neighboring islands. In *Hilo Bay: A Chronological History* compiled by Marion Kelly, Barry Nakamura, and Dorothy Barere the following account of Kamehameha's time in Waiākea is found in the journals of Archibald Menzies, the naturalist aboard Captain George Vancouver's ship the *Discovery* in 1794.

"January 9th ...having reached abreast of it [Waiākea] within three or four miles of the shore...we shortened sail...and hove to with our head and armed under the direction of Mr. Whidbey to examine this reported harbor. Some time after the boats left us we were visited by a few of the natives mostly in single canoes...Not long after these, a double canoe was seen coming off...In this we soon recognized our old friend, Kamehameha with some other chiefs...As they came from the east side of the bay, they missed meeting with our boats who kept the western shore close on board going in [Menzies 1920:138].

As it was given out last year that it was our intention to anchor here with the vessels...Kamehameha said that he remained on this part of

the island on purpose to receive us, and that he had been for some time looking out for us with daily expectations.... [Ibid.: 140-141]

Regarding Vancouver's visit to Hawai'i Island Kelly, et al include the following discussion and conclusions drawn from the journals of other explorers in Hawai'i at the time.

"Protesting that he should not leave Hilo, where the concluding ceremonies of the Makahiki season were yet to take place, Kamehameha was nevertheless prevailed upon to sail with Vancouver to Kealahou (Vancouver 1967[3]:5-6). There may have been other reasons for his reluctance: Edward Bell, clerk of the *Chatham*, wrote of this encounter that Kamehameha did not want to leave Hilo because he had already collected a large supply of hogs and vegetable products expressly for this visit; secondly, that the area was preferable to that about Kealahou; that the surf was greater here ('in which lay one of his greatest amusements') and lastly, that all his canoes and property, including firearms and ammunition, were here (Bell 1929:2[18]). Bell's account indicates that Kamehameha had been in residence in Hilo for some time, perhaps a matter of several months.

"Kamehameha's plans for spending the 1793-1794 Makahiki season in Hilo would have been known since the previous year when he made the agreement with Vancouver to be in Wai'ikea upon the latter's return. Thus, there was ample time for the people of the area to expand their plantings up into the *kula* lands, or open county back of Hilo Bay, in anticipation of the coming of Kamehameha and his court of well over a hundred persons, as well as for Vancouver with his crew of 145 men." (Kelly, p. 9)

It was not until 1810 after many battles that Kamehameha finally unites all of the Hawaiian Islands under his rule. For 14 years he had fought to unite the islands and he ruled them for 23 years. At the age of 83 on May 8, 1819 Kamehameha died at Kamakahonu, Kailua, Kona, Hawai'i. Upon his death his personally held lands including Wai'ikea, descended to Liholiho, his son and heir to the kingdom. All the large 'ili kūpono which included Pi'opi'o, Kamehameha had given to his wife Ka'ahumanu. (ii, p. 70)

Upon the death of Liholiho Kamehameha II, his younger brother Kamehameha III became king. During his reign in the 1840s, land tenure in Hawai'i entered a transitional period terminating in the "Great Mahele" of 1848, which furnished the facility for the acquisition of real estate in fee simple. Kamehameha III after reserving

certain lands for himself as his own private property, surrendered the majority of the lands to his chiefs and people. The lands of Wai'ikea were retained by Kamehameha III and became part of the Crown Lands, set aside for the prosperity of the kingdom. As for the 'ili kūpono of Pi'opi'o and the lands of Honohonou, these went to Victoria Kamehameha, granddaughter of Kamehameha I and heir to Ka'ahumanu.

8. SETTLEMENT PATTERNS

The settlement patterns of the maka'āinana, cultivation practices and relationship to the environment has been studied in great detail by E.S. Craighill Handy. The following excerpts from his early publication describe cultivation methods in South Hilo, Wai'ikea and Keaukaha.

"In lava-strewn south Hilo there were no streams whose valleys or banks were capable of being developed into terraces, but cuttings were stuck into the ground on the shores of islets for many miles along the course of the Wailuku River far up into the forest zone. In the marshes surrounding Wai'ikea Bay, east of Hilo, taro was planted in a unique way known as *kuru kipi*. Long mounds were built on the marshy bottom with their surface 2 or 3 feet above water level. Upon the top and along the sides of these mounds taro was planted. Flood waters which occasionally submerged the entire mound are said to have done no harm, as the flow was imperceptible. This swampy land is now abandoned to rank grass. *Kipi* (mounds) were also formerly made along Alenaio Stream, above Hilo. I am told that farther seaward in Wai'ikea, taro is still grown in the ingenious method of heaping up around a taro, which is submerged in water, and held upright by chunks of lava; the stones presumably accumulate refuse enough to nourish the taro, along with the food taken in by the roots from lava and water.

On the lava-strewn plain of Wai'ikea and on the slopes between Wai'ikea and the Wailuku River, dry taro was formerly planted wherever there was soil enough. There were forest plantations in Panaewa and in all the lower fern-forest zone above Hilo and along the course of the Wailuku River." (Handy, 1940, p. 125)

Handy includes the following description of Wai'ikea from the diary of William Ellis who made a tour of Hawai'i Island in 1823 to select prospective mission stations.

"The face of the country in the vicinity of Wai'ikea is the most beautiful we have yet seen [he had come via Kau and Puna], which is probably occasioned by the humidity of the atmosphere, the frequent rains that fall here, and the long repose the district has experienced from

volcanic eruptions. The light and fertile soil is formed by decomposed lava, with a considerable portion of vegetable mould. The whole is covered with a luxuriant vegetation, and the greater part of it formed into plantations, where plantains, bananas, sugar-cane, taro, potatoes and melons, come to the greatest perfection. Groves of cocoa-nut and bread-fruit trees are seen in every direction, loaded with fruit or clothed in luxuriant foliage."

Regarding 'uala or sweet potato another staple crop, Handy describes cultivation in Waiākea and Keaukaha:

"Sweet potatoes have never been grown much in the wet lowlands of South Hilo, but today there are a number of Hawaiian gardens in upper and lower Waiākea and about Hilo town where sweet potatoes are raised successfully by very high mounding so that tubers and foliage do not mould from constant rains and damp soil. In the prosperous Hawaiian settlement of Keaukaha, I am told, a first crop of sweet potatoes may be successfully grown in the shallow soil on top of the lava, but subsequent crops raised on the same ground are small and very hard." (Handy, 1940, p. 165)

8.1 The Mahele of 1848

In the 1840s during the reign of Kamehameha III, land tenure in Hawai'i entered a transitional period terminating in the "Great Mahele" of 1848. King Kamehameha III who inherited control of all the lands with the kingdom chose to provide the opportunity for fee simple ownership of land to his chiefs and people. The maka'āinana, the native tenants, were able to make claims for and receive title to their kuleana, the areas of land which they personally used. Kamehameha III after reserving certain lands for himself as his own private property, surrendered the majority of the lands to his chiefs and people. The lands of Waiākea became part of the Crown Lands, set aside for the prosperity of the kingdom. As for the 'i'i kūpono of Pi'opi'o and the lands of Honohonou, these went to Victoria Kamamalu, granddaughter of Kamehameha I and heir to Ka'ahumanu under Land Commission Award 7713.

Within the ahupua'a of Waiākea a total of 37 native tenants made claims to lands of which 27 were awarded. None of the awarded lands are situated within the project area. The claims are recorded in the Native and Foreign Registers which typically includes information regarding the location of the claim, and sometimes information regarding the type of use. Additional information regarding the claims and use of the land can also be found in Native and Foreign Testimony records. Most of the claims were made for

kāhāpai (small land division, cultivated plot), pā (yard or pen), pā hale (house lot) and kipi kalo (taro patches). Award, register and testimony records also mention a burial site, 'ōhi'a and hala groves, 'ulu trees, kukui trees, the ponds and springs.

9. KEAUKAHA HAWAIIAN HOME LANDS

In the early 1900s, Prince Jonah Kūhiō Kalaniana'ōle recognized that the population of full-blooded Hawaiians was steadily decreasing and he sought out ways to revitalize the Hawaiian people and get them back on the land. At the request of the Legislature of the Territory of Hawai'i and the persistence of Prince Kūhiō and his supporters, the United States Congress passed the Hawaiian Homes Commission Act in 1920. The Act reserved 203,500 acres of public lands to help realize Prince Kūhiō's vision of 'Āina Ho'opulapua, or "restoration through the land." The lands set aside for the Hawaiian Homes Commission were poor quality, typically barren. The Commission lacked any substantial budgetary support to assist homesteaders or to pay for infrastructure improvements, and homesteading in the early years was slow and difficult.

In 1920, the original draft of the Hawaiian Homes Commission Act did not include any lands in Waiākea. The Territorial Legislature inserted these lands, and several others, in their amendment to the Act in 1921. In 1924 the Hawaiian Homes Commission set the metes and bounds for land in Pana'ewa and Keaukaha. Hawaiian Homes Commission Resolution #2 dated, April 19, 1924, created Keaukaha Tract I consisting of 621.52 acres and Keaukaha Tract II containing 1,376.48 acres. House lots were quickly awarded in Tract I, however, over time much acreage in Tract I has been taken for various State and County uses. (Palapala Ink, p. 4) Other lands were sold to private interests justified by the need to raise funds to pay for roads and waterlines. Originally referred to as "Kūhiō Settlement," Keaukaha was the second unit of homestead lands offered; the first settlement was on the island of Moloka'i. According to the Executive Officer and Secretary of the Hawaiian Homes Commission in 1925, Keaukaha was "not suited to agriculture, [therefore] the lots will be offered to Hawaiians and part-Hawaiians who desire to possess land upon which to erect their own homes. There are large numbers of Hawaiians in and about Hilo who desire lots, and it is expected that working men will form a majority of the applicants." (Kelly, p. 226)

In 1989 Rhea Akoi compiled an oral history of Keaukaha in celebration of the 65th anniversary of the community. *Ku'u Home / Keaukaha* includes the recollections of many of the original homesteaders as well as Hawaiians that were living in the Keaukaha

Tribune Herald reported an old Hawaiian burial cave was found by laborers clearing the Hilo Airport. They had been told by an aged Hawaiian living in the area that they were venturing into sacred ground. Therefore they were cautious and kept a sharp lookout for burial evidences." (Akoi, p. 48)

"We were not afraid of sharks. My mother taught us that there was always one shark that took care of its own area, from one end of the bay to the other end. We would give the shark some of our fish." (Akoi, p. 48)

"This area of Keaukaha has much to offer as far as history, that is not recorded today. We have two heiaus that I can think of. One is Puhi which was a fishing heiau. The other is in the pond of the Kepoo family. There were two mano (sharks) in Puhi. According to the old folks, these mano were the white kind. It is said that one family use to be related to this mano. The old grandmother of this family would go to the heiau every morning take food out of the bag and feed the mano everyday. It was sort of an aumakua for this family, and whenever they went to the beach, it protected them. There's another story that is very interesting. It speaks of Puuhomilo... Puuhomilo is the home of a kupua. Kupua is somewhat like an unusual person. This one was referred to as a big octopus or he'e... it was said that in Keonekahakaha there was another kupua who was a great big white turtle. He would roam the waters there, and all the way down to Seaside..." (Akoi, p. 22-23)

"...at Onekahakaha there is a heiau. It looks like a rock pile but that is a heiau." (Akoi, p. 14)

Extensive research on the history of the Keaukaha settlement is provided by Kelly et al in *Hilo Bay: A Chronological History*. Compiled from Hawaiian Homes Commission and Territory of Hawai'i Aeronautical Commission records, the following excerpts expose the conflict and strain between Keaukaha homesteads and Hilo Airport.

By mid-1927, the actual number of house lots which the Hawaiian Homes Commission had allotted at Keaukaha was 185 (Hawaiian Homes Comm. 1927:38-41). Of these 185 house lots, 95% were occupied, with 60 homes built and 20 more expected to be completed by the end of 1927. The Hawaiian Homes Commission admitted:

...The only encouragement the Commission is giving these people is in the building of their roads. The demand for these house lots is growing daily, more applicants than there are lots available. The heavy outlay for road construction and the funds of the Commission being limited, extensive road construction becomes impossible. Although at this time the Commission is planning to extend Andrews Avenue from Desha to

area before homesteading began. Many of the homesteaders living in Keaukaha today descend from people interviewed by Ms. Akoi. The following excerpts are but a brief glimpse of the history and people of Keaukaha and is provided to show the generational relationship that these homesteaders have with the land.

"I...lived in old Keaukaha before Hawaiian Homes ever was. Those days where I lived was past Seaside...Down there for our livelihood we fished, we picked opihī, wana, from the beach we lived on. To preserve our fish, we cleaned them, slit, salted and then dried them. I loved fishing with the pole, and we use to have black crab (aama) shrimp and he'e (squid). We planted sweet potatoes, our own taro, bananas, peanuts and carnations. There were always carnations planted in the different yards, sugar cane too...I was about fourteen when I moved to Homestead Keaukaha. There were only bushes, guavas, lauhala and ohia trees and afterwards people started to clean. They cleaned with cane knives with the picks, and they worked so hard on the land. Later years, the place all bloomed like a rose." (Akoi, p. 11)

"Now this modern generation wonders how can people raise big families and provide food for them? I followed what my father did. We had taro, sweet potato, sugar cane, a few chickens, pigs, and there was plenty of fish. Sugar cane was our sugar, and we dried up the ocean water and got our salt." (Akoi, p. 17)

"For food, my parents would plant sweet potatoes, bananas and taro, a few vegetables... This home did not belong to Hawaiian Homes Commission... Then when the Hawaiian Homes area opened my mother applied for a place here. We moved (on this land) when I was nine before Hawaiian Homes opened. My mother and a few of the other homesteaders were the first homesteaders here. I remember those days because we didn't have any water system like pipelines. No electricity too and everyone went in back of Auwili to do their washing...At this time the loan from Hawaiian Homes was very hard to get. I remember Mr. Duncan saying it didn't matter what kind of house we built and you should see. There were all kinds of nicknames given for houses built in Keaukaha. They called them the County tool boxes because some were made from the piano boxes, just as long as there was enough room to go in." (Akoi, p. 25-26)

In addition to providing some insight to family life during the early years of the Keaukaha settlement, these oral histories also reveal some very important cultural use and resource information.

"There were no funeral parlors. We buried our people in our yards or in caves where the airport now is...(On September 23, 1925, the Hilo

Kalaniana'ole Highway to enable the County of Hawaii to lay down their six-inch water main.

All of this home construction had been accomplished without any financial aid from the Commission, which had reported in 1925:

For the time being the Commission will be unable to finance the applicants for house lots on the Island of Hawaii, although they are entitled to such assistance under the terms of the Rehabilitation Act. It has been proposed, however, that the lands be subdivided and the lots offered, the Hawaiians taking possession of their holdings and awaiting the time when the Commission can assist them. It is felt that many of those who will apply for house lots will be in a position to erect homes at once [Hawaiian Homes Comm. 1925:14-15].

By mid-1929, the Hawaiian Homes Commission had allotted 239 house lots at Keaukaha, and 205 of these were occupied by Hawaiian families. The Keaukaha settlement had been visited in 1928 by Dr. Elwood Mead of Washington, D.C., a representative of the U.S. Department of the Interior, which oversaw the Hawaiian Homes Commission. In a letter to the Secretary of the Interior soon after his visit, Dr. Mead described the Keaukaha settlement as "an unqualified success." (Kelly, p. 228)

Following these early years the Keaukaha settlement continued to experience growth in the 1930s. By 1933, the population of Keaukaha had grown to 1,300 and the settlement consisted of 219 one-acre lots of which approximately 175 had improvements and 201 were occupied. Although the population in Keaukaha had declined to 964 in 1939, the settlement was being expanded with the construction of a new subdivision consisting of 180 half-acre lots. At this time the threat of World War II loomed on the horizon and in 1939 the chairman of the Hawaiian Homes Commission, Frederick G. Krauss, reported:

"During the past two and a half years, it has been advisable for the Commission to temporarily 'transfer' to the control of the Commissioner of Public Lands...land to be set aside by Executive Orders for...an addition to the Hilo Airport...[which] will require Congressional amendment...to make such transfers permanent." (Kelly, p. 234)

9.1 Hilo Airport and Keaukaha Hawaiian Home Lands

Nearly simultaneously with the development of Keaukaha Hawaiian Home Lands, in 1925, construction of Hilo Airport began. The following detailed history of the development of Hilo Airport can be found in *Hilo Bay: A Chronological History*.

"The almost simultaneous beginnings of the Keaukaha settlement and the Hilo Airport would, as time passed, cause problems mainly concerning land and the expansion of both the settlement and the airport. In all areas of land conflict, the airport would always come out ahead.

Originally 100 acres was set aside for the Hilo Airport (Hawaii [Terr.] Aeronautical Comm. 1928:7)...By 1927, clearing and grading of the Hilo Airport site was proceeding rapidly with the expectation that the field would be partially ready for use of aircraft by December 1, 1927...The Hilo Airport was dedicated in February 1928. On hand for the dedication ceremonies was Clarence M. Young, Director of the Bureau of Aeronautics, U.S. Department of Commerce. In a letter to the Territorial Aeronautical Commission, Young wrote:

It is apparent that the most important need is the establishment of an inter-island air transportation service...Any method of transportation that would put Hilo within 2-1/2 hours rather than 14 [of Oahu]...and would do it daily, that would permit a round trip to all the islands within a single day, could not help but hold forth very attractive possibilities...

On May 16, 1928, the Hilo Airport was enlarged by 41.45 acres by Executive Order 334...The reason for this additional land, according to Colonel Smoot, was:

Owing to the constant northeast trade winds, it was found desirable to change slightly the direction of this field... Work has been slowly, but steadily, progressing upon this field for more than two years by prisoner labor under the direction of the Attorney General and High Sheriff. At present there is an excellent hard and smooth sand and coral runway approximately 300 feet wide and 1675 feet long. When completed this field will have a runway of about 4000 feet in length and 2000* feet in width. (*Note: This figure should probably be 500 feet.)

In 1929, the Hilo Airport was expanded another 86 acres to total 227.45 acres, compared to the original 100 acres. Explained Chairman Smoot of the Aeronautical Commission:

...Deeming it advisable to enlarge this field that eventually runways may be extended and a mooring mast for dirigibles might be erected, an additional 86 acres were incorporated in this airport on January 16, 1929, by Executive Order 350 of the Governor. This airport now comprises 227.45 acres. Work has been slowly, but steadily, progressing upon this field for more than three years by prisoner labor under the direction of the Attorney General and High Sheriff. At present there is an excellent hard

and smooth sand and coral runway approximately 400 feet wide and 2,800 feet long. When completed, this field should have three runways, one 2,200 feet, one 3,300 feet, and one 4,000 feet in length and all 500 feet in width...

On October 6, 1929, the Inter-Island Airways, Ltd., began actual operations. The decade of the 1930s was one of development and expansion of Hilo Airport and included: (1) development of the main runway; (2) the need for a "cross-wind runway"; (3) development by Inter-Island Airways, Ltd., of a terminal building and an airplane shelter; and (4) request for additional land for expansion. (Kelly, p. 230)

As tensions leading up to World War II increased, the Hawaiian Homes Commission found it advisable to transfer lands to be set aside for an addition to the Hilo Airport. At the outbreak of war, Hilo Airport was taken over by the Army Engineers, and an Air Corps fighter squadron stationed there. The Engineers constructed military installations and continued the expansion of runways, taxiways, and parking aprons. This began a period of turmoil for the Keaukaha settlement scarring relations between the residents of Keaukaha and Hilo Airport. According to the executive officer of the Hawaiian Homes Commission, Julian R. Yates, in 1943:

"The war has played havoc with the entire [Keaukaha] project because of the requirements of the military authorities: twenty-two (22) brand new homes were demolished and eight (8) others were moved to make way for military installations. The prospects for the future are anything but bright."

Albert Mahale-a, a recreation director of the Commission reported:

"Early in January, 1942, fifty Keaukaha lessees and their families were evacuated and their lots taken over for the expansion of the Hilo airport. Damages in the amount of \$78,755.86 were paid to three lessees. The homes of some of these lessees were moved onto other lots in the Keaukaha area but most of the evacuees moved to Hilo proper. (Kelly, p. 234)

The name of Hilo Airport was changed to General Lyman Field by Joint Resolution of the Territorial Legislature on April 19, 1943.

After the war, military operations at Hilo Airport steadily decreased, and in September 1946 it was returned to the Territory for operation as a civil airport however, operational control was retained by the Air Force. It was not until 1952 that the airport was returned

to civilian control by the surrender of leases, easements, licenses and permits and improvements were transferred to the Territory by the Federal Government. (Hawaii Aeronautics Commission, p. 35) In 1952 Executive Order No. 1519 set aside a significant portion of government land and former Hawaiian Homes Land to the Hawaii Aeronautics Commission for the Hilo Airport. It is interesting to note in the land descriptions and maps of that time a "Hala Grove Reserve" is identified which is currently a portion of the taxiway and cleared area near the Airport Maintenance Baseyard.

By this time Keaukaha residents had been affected by expansion projects at Hilo Airport and they became aware of another county plan that involved Keaukaha homestead land. The following excerpt provides the perspective and understanding of these actions on Hawaiian homestead land.

"In the 1940's the county designed a twenty year plan which included the reverting of the Keaukaha homesteads land from residential to a light industrial area. This land had become important and now was worth millions of dollars. Its location near the wharf and airport was ideal. The request to change Keaukaha's status was okayed [by] the Department of Hawaiian Home Lands - thus the state became involved.

The first phase of the plan was the extension of the airport which required the lots of sixty-five Keaukaha homes. The homesteaders were evacuated to the Mohouli district but many refused to stay there. The Department of HHL obtained the changing of Panacwa agriculture lands to urban status, thus making it possible for the evacuees to build homes on Hawaiian Home lands. It was important to them to be on Hawaiian lands.

Meanwhile in Keaukaha, whenever the homes needed repairing or when it was necessary to build a new home to replace a broken-down one, the homesteaders were told they could not do so. Even if they were to use their own money! Some whose homes needed immediate attention moved out of the area as no relief was in sight.

Then the rezoning plan was discovered! Numerous homestead meeting(s) were held. In 1968 Keaukaha was rezoned to light industry an action that was contrary to the Hawaiian Homes Act! Now the people understood why they were not allowed to repair or build new houses. The plan was to eventually move all the homesteaders out of Keaukaha.

More meetings were held and in 1970 a lawyer friend of the Keaukaha Association, Stanley Roehrig, assisted the officers in drawing up a Keaukaha Homesteaders Position Statement and a Petition

demanding the rescinding of the rezoning. The petition was taken house to house and 90% of the homesteaders signed it. These were sent to the Attorney General's office where because of governmental bureaucracy it lay stalled.

The association held money making activities to send representatives to the outer islands - wherever the Hawaiian Homes Commissioners were meeting to plead their case. It seemed they were lobbying in vain.

In 1972 Mr. and Mrs. Albert Ahuna went to see then County Chairman Shunichi Kimura who immediately called the Attorney General for the opinion on the Keaukaha Case. The next day it was to have been delivered to his office.

The commissioners next meeting was to be at Keaukaha. Mrs. Ahuna, who was association president, approached Mrs. Abbie Napeahi, our commissioner to check the status of the situation. About 15 residents picketed the outside of the building.

The outcome of the meeting? The Keaukaha homesteaders went! All the years of frustration, working, lobbying and yes, praying were over. Their land that had been taken from them illegally was to be returned at last!

In 1974, the 50th anniversary of the Keaukaha homesteads, the land was officially zoned back to residential." (Akoi, p. 72-73)

Relations between the Keaukaha settlement and Hilo airport were additionally strained when in 1958, Territorial Governor William Quinn set aside by Executive Order No. 1841, nearly 92 acres of Hawaiian Homes Commission land, to be used by the airport for a runway. This area had already been subdivided and affected 66 homestead lots and portions of roadways. The agreement that allowed the transfer of these lands to the Hawai'i Aeronautics Commission also called for a land exchange between the Territory of Hawai'i and the Hawaiian Homes Commission. The land exchange was never carried out and these 92 acres became the focus of contention between the Hawaiian Homes Commission, Keaukaha residents and the Department of Transportation from 1975 to 1980.

In 1962, Executive Order Nos. 2025 and 2027 transferred 194,215 acres of Hawaiian Homes Land in Keaukaha to the State Department of Transportation for the extension of Runway 8-26. Approximately 146 acres of this area had already been subdivided into homestead lots and access roads, affecting 216 homestead lots and various roadways. In

exchange, the Department of Hawaiian Home Lands received 192,691 acres of land in Puna'eva and 1,515 acres in Keaukaha. Soon after, in the late 1960s the State embarked on plans to develop a jet-capacity terminal for Hilo, which was completed and dedicated in 1976.

In 1975 in response to an inquiry from the Department of Hawaiian Home Lands, the Attorney General opined that the setting aside of Hawaiian Home lands by Executive Order No. 1841 was improper. The Hawaiian Homes Commission commenced civil action and while awaiting a ruling, local native Hawaiians, Keaukaha residents and supporters staged two protest demonstrations against the improper transfer of Keaukaha Hawaiian Home lands for airport use. On July 4, 1978, Hawaiian activists blocked traffic at the Hilo Airport, and again on Labor Day of the same year activists marched onto a runway at the Hilo Airport resulting in 51 arrests. All charges against the demonstrators were dismissed. On August 14, 1980 the Circuit Court ruled that Executive Order No. 1841 was illegal and thereby, null and void. As a result, the Department of Transportation was required to make rental payments for the use of the 92 acres of illegally acquired Keaukaha land. (Honolulu Advertiser, 8/15/80 and Honolulu Star-Bulletin, 8/15/80).

The Department of Hawaiian Home Lands and the Department of Transportation entered into an "Interim Agreement" on April 6, 1981 whereby the Department of Transportation agreed to make interim rental payments of \$36,000.00 per month to the Department of Hawaiian Home Lands for the continued use and possession of the Hilo Airport property. The agreement also stipulated that the affected agencies make a genuine effort to resolve all existing airport disputes.

The nine air carriers using Hilo Airport took civil action alleging that their contract with the Department of Transportation did not include rental payments to the Department of Hawaiian Home Lands. On July 27, 1981 the airlines and the Department of Transportation entered into the "Airlines Settlement Agreement" whereby the defendant airlines agreed to relinquish their interest in various airport improvements and funds, and were released from further participation in the "Interim Agreement".

In addition to the land disputes between the Department of Hawaiian Home Lands and the Department of Transportation related to Hilo Airport, there were similar disputes involving Hawaiian Home lands and lease rentals due for Kamuela Airport in South Kohala, Hawai'i and at Moloka'i Airport.

compiled by various sources over many generations make it possible to understand the cultural fabric of a place, genealogical connections, cultural attachments and the relationships between people, each other and their environment.

10.1 Oral History of Keaukaha

In 1989 Ms. Rhea Akoi, a resident of Keaukaha, compiled *Ku'u Home / Keaukaha: An Oral History* a collection of personal interviews and printed material to preserve the memory of, and in honor of the early residents of Keaukaha. Interviews and contributions of more than 25 individuals are compiled in an impressive and comprehensive history of Keaukaha as told by the kama'āina of Keaukaha. Excerpts from some of these interviews relating to cultural practices, areas of use, and relations with Hilo Airport have been incorporated in the previous sections of this report. This is but a small portion of the information that can be found in this report.

10.2 Project-Specific Interviews

In conjunction with the preparation of this report four individuals were interviewed in three interviews. Two of the interviews were conducted in a formal, recorded interview format with a set of questions. The recorded interviews were transcribed and returned to the interviewees for their review along with a verification and acknowledgement form. Both interviewees reviewed the transcribed record, provided edits and comments and returned an edited copy of the transcription and a signed verification and acknowledgement form. The third interview conducted with two individuals was not taped but was recorded by diligent note taking. The third interview primarily focused on the State Department of Transportation's proposed improvements at Hilo Airport and the affects on cultural resources, use and practice. During the interview the project summary, a map identifying the proposed improvements, and the botanical survey and archaeological inventory survey prepared for the proposed airport improvements were made available and discussed. Aerial photos as well as the following maps were also available during consultation: 1917 USGS Hilo Quadrangle, Registered Map No. 1561 (1891 Hilo Town and Vicinity), Registered Map No. 524 (1851 Plan of Waiākea) and a 1938 Map of the Island of Hawai'i.

These interviews demonstrate how traditional knowledge is passed from one generation to the next and through comparison with the interviews compiled by Ms. Akoi it displays a continuum of cultural connection, use and practice on the lands of Keaukaha. These

To resolve these outstanding land and lease rent disputes, on November 30, 1984 the Department of Hawaiian Home Lands, Department of Transportation and Department of Land and Natural Resources entered into what has been termed the "Tri-party Agreement". In simplified terms, The Department of Hawaiian Home Lands would agree to exchange 167,285 acres of land at Hilo Airport, Kamuela Airport and Moloka'i Airport appraised at \$17.42 million for 13,822 acres of State lands at Shafter Flats Industrial Development on O'ahu appraised at \$17.36 million. The Department of Transportation would convey to the Department of Land and Natural Resource excess airport lands at Hilo and Kahului. In addition to the land exchange, a fund was to be established to repay the Department of Hawaiian Home Lands for lease rental due for use of the airports prior to the agreement. On April 23, 1986 an exchange deed transferred the lands between the State Department of Land and Natural Resources and the Department of Hawaiian Home Lands.

The result of these numerous transfers of land and the displacement of many Hawaiian homesteaders from Keaukaha has been a lingering feeling of betrayal and mistrust towards the Department of Transportation. Some members of the Keaukaha community are wary of any proposal related to Hilo Airport and because of the manner in which land was previously taken from Hawaiian Home Lands time and time again, many community members are suspicious of Department of Transportation activities. In the past, the actions that have led to the development of Hilo Airport as it exists today have been at the expense of the Keaukaha Hawaiian Homestead community.

10. INTERVIEWS AND CONSULTATION

Interviews or consultation with kama'āina confirm many important cultural practices and values. Interviews demonstrate how cultural knowledge is passed down through the ages from one generation to the next. Interviews acknowledge the permanence of the cultural value system and the continuity of cultural practice and use. Interviews show the individual relationship to people and places, and exhibit the personal value. Technical studies and historical texts are typically compiled by those not of the land or culture who are unable to understand or convey cultural value or significance. Because of this inability to understand cultural value, the significance of cultural areas, uses and practices are for the most part diminished in historical studies and texts. By including the words of the kama'āina, the people of the land, an interview can begin to reveal the cultural attachment that is usually difficult to communicate. Interviews and oral histories

Interviews contain personal knowledge and activities, and reaffirms the individual's connection to the family, the people of the area, and the land itself. Interviews were conducted with Ms. Uluani Kanaka'ole Garmon and Ms. Pualani Kanaka'ole Kanahale. Ms. Kanahale is one of the kumu hula of Hālau O Kekuhi, and her sister Ms. Garmon is ho'opā'a with Hālau O Kekuhi. Their parents Edith and Luka Kanaka'ole participated in the 1989 oral history project, and this current interview exhibits the continuum of generational connection to Keaukaha and continued cultural practice and use that exists for many Keaukaha families. Keaukaha Community Association president Mr. Patrick Kahawaiola'a was also interviewed and shared his recollections of growing up in Keaukaha and his relationship with many of the participants who were interviewed in 1989. Ms. Ululani Sherlock who is a Keaukaha resident, active in a number of Hawaiian organizations, and is the Office of Hawaiian Affairs East Hawai'i Community Resource Coordinator was also interviewed. Transcripts and signed verification forms from the first two interviews and the interview summary of the third interview are included in Appendix A.

10.3 Identified Cultural Resources, Practices and Beliefs

The cultural resources, practices and beliefs that were identified through the interviews all relate to the Keaukaha region and the Hilo Airport property.

Traditional and Customary Practices

- Traditional and customary activities and practices that occurred and continue to occur in the Keaukaha, Waiākea region include: all types of fishing, ocean and shoreline gathering including salt which is still collected at Lelewi'i, and, gathering of all types of plant materials including medicinal plants, lau hala and hau.
- All types of ocean activities are extremely important to the Keaukaha community, for subsistence as well as recreation. Activities include all types of fishing (net, spear, pole, etc.), gathering varieties of limu, gathering varieties of shellfish ('opihī, ha'uke'uke, wana, pāpā'i) and gathering salt.
- In the early years of the Keaukaha settlement, prior to the establishment of Keaukaha homesteads and in the early years of the homestead settlement, some families had graves on their property, and family members were buried

- on their own land. While some of these burials have been moved to cemeteries, some may still remain.
- Heiau and other religious sites are located along the shoreline and in the coastal lands.
 - In addition to growing food crops such as 'uala and kalo in their yards, early Keaukaha residents also kept gardens and planted vegetables, flowers and fruit trees in that portion of Pana'ewa forest that bordered the Keaukaha settlement prior to the expansion of the airport. Medicinal and occupational plants were also gathered from the forest area that bordered the early Keaukaha settlement.
 - Pana'ewa is the name of the lands that extend from the forests up mauka to the shoreline and include the lands occupied by the airport. Prior to the development of the airport Pana'ewa forest renowned for its great 'ōhi'a lehua stands and fragrant maile encompassed the area immediately mauka or south of the Keaukaha community. Residents of Keaukaha used to follow trails into the forest to gather among other plants 'ōhi'a lehua and maile. In the area of the airport was a big cinder cone named Pu'u Maile, and was a place at which maile could be found.
 - Traditional knowledge and practice is incorporated and taught at Ke Ana La'ahana, a public charter school situated in Keaukaha. For example, the students are taught how to restore and reestablish the productive fish husbandry capabilities of a series of fishponds along the coast which include Hale O Lono, Wailoa, Keonepahu, Kaumealani, and Kamokuna. At Kamokuna there is also a māla where students learn and continue traditional agrarian expertise by growing different varieties of kalo, 'uala, and other native and Polynesian introduced plants. These uses need to be sustained because it supplements and sustains the people and culture. In addition to Ke Ana La'ahana, Lauhuki Preschool and Hālau O Kekuhi are also located at Pā Hoaka, the Native Hawaiian family-based education center situated in Keaukaha and administered by the Edith Kanaka'ole Foundation.

Project Related Concerns

- The proposed improvements could potentially lead to an increase in the types of services and activities (passenger, cargo, helicopter, and military) at Hilo Airport. The improvements could potentially lead to airport expansion and the resuming of overseas flights.
- Groves of pū hala are located within the airport property from which practitioners, including weavers, hula dancers, and lei makers gather lau hala, uluhala and the fruit for a variety of uses including, mats, baskets, cordage, and lei. The location of the proposed helicopter facility is one of the areas where the pū hala grows, and from which practitioners gather. If airport security or personnel observes any gathering, the gatherers are asked to stop gathering and to leave airport property.
- Prior to the airport, all needed gathering was done in the Keaukaha area and the ahupua'a of Waiākea, there was no need to go to other ahupua'a or to the greater forest. By limiting gathering within the airport property additionally requires practitioners to go to other ahupua'a or to the greater forest.
- Any type of noise barrier or noise wall will further cut off the people from the land. Many residents enjoy the view, the wind that blows across the land and the connection they feel with the 'āina. The barrier or wall would minimally reduce airport noise while restricting ability to enjoy the environment and was therefore undesirable.
- For those families that accept sound-attenuation retrofitting for their homes, or for those families that choose to accept an avigation easement, what guarantee will there be that noise levels will not increase? A continuing noise monitoring program for the Keaukaha community should be implemented and sustained.
- Displacement and relocation of homesteaders is not recommended. The transfer of Hawaiian Home Lands for airport related purposes is also not recommended. If however relocation of homesteaders is pursued, it should be voluntary, through one-on-one negotiations with the individual lessees, done with sensitivity and compensation for the homesteaders.

Airport Related Concerns

- The greatest impact of the airport has been on gathering practices. It is as if the whole area is void, doesn't exist anymore. Pana'ewa continues to exist, but when they built the airport, they took away the cultural significance and the traditions associated with that part of Pana'ewa. The airport has destroyed that portion of Pana'ewa forest and has in effect cut off the community from Pana'ewa and the traditional places for gathering 'ōhi'a lehua and maile.
- By taking away the land and the forest, people don't know how to gather in their own land, they don't learn how to take care of their own place. Now, if they need to gather, they need to go way up into the larger forest or to another ahupua'a. Before the airport, everything was available in their "own backyard" and people could live off of the land. It was possible to pick lau hala, and pick maile. Now it is "somebody else's yard." It forces practitioners to gather outside of their area, forces them to gather from another person's place and from the greater forest.
- Within Keaukaha, community members conduct ceremonies or cultural protocols that require stillness and quiet that are disrupted by passing planes.
- There is a noticeable difference in airport related noise since Hawaiian Airlines started using their new 717s. These new planes are much quieter. Aloha Airlines still uses the older, noisier planes, which are noticeably louder. Aloha Airlines also operates cargo flights early in the morning and late into the evening disturbing what are typically quiet hours and sleep time.
- The airport has cut off the Hawaiian people from that piece of their 'āina. From a small airstrip the airport grew and grew, taking more and more land, nearly all at the expense of the Keaukaha community and Hawaiian homestead lands.
- The history of the airport taking land from the Keaukaha community, and forcing people to move without any compensation or reparations for the community has left a feeling of hurt, suspicion and mistrust in many residents. Due to past airport related efforts, many residents are concerned that airport expansion will continue to take Hawaiian Home Lands and displace additional homesteaders.

11. FINDINGS

On every island, native Hawaiian cultural beliefs and practices are continually affected by the loss of land to development that intrudes into the natural setting, disturbs traditional sites, cuts off the traditional access network, eliminates resource areas, and changes the landscape. As people with a strong cultural attachment to this 'āina, with the understanding that this 'āina is the elder sibling of the Hawaiian, the loss of land results in a feeling of loss, regret and alienation for many Hawaiians.

For many residents of Keaukaha, these feelings of loss are compounded by feelings of distrust and suspicion as a result of a long history of dispute with the Department of Transportation and its predecessors over the taking of Hawaiian Home Lands. On more than one occasion Hawaiian homesteaders have been displaced and relocated to accommodate airport expansion which has led to fears that airport expansion may someday eliminate Keaukaha homesteads. Homesteaders displaced from their lands received compensation, but there were acres of Hawaiian Homes' land at Keaukaha that were transferred for airport use without specific compensation to the Keaukaha community. Some of these lands were transferred in exchange for other lands in Pana'ewa or on O'ahu, but for many Keaukaha residents it is as if their community was forced to give up their land without receiving anything in return. This history should shape future relations between Hilo International Airport and the Keaukaha community, and through acknowledgement and understanding a positive relationship founded on honesty and integrity may be achieved.

Based on an assessment of the impacts of the proposed project on the resources, beliefs and practices identified, the proposed improvements at Hilo International Airport will have minimal negative cultural impact upon native Hawaiian cultural resources, beliefs and practices. The following summarizes the findings of the Cultural Impact Assessment relative to the proposed Hilo International Airport improvements:

1. Based on a review of Land Commission claims and awards at the time of the Great Mahele, the project site was not claimed for house lot or agricultural use.
2. Based on the findings of the archaeological inventory survey conducted for the proposed improvements, project specific consultations, and a review of historical documentation, no religious sites or burials are located within the project site. However, consultation and review of historical documentation identifies that burials may exist within airport property.

3. Prior to the development of the airport the Keaukaha settlement was bounded to the south by Pana'ewa forest which was a primary cultural resource for medicinal and occupational plants, as well as being the physical manifestation and home of Pana'ewa the deity. The development of the airport has eliminated this cultural resource as well as the ability to perpetuate traditional and customary practices including appropriate protocols associated with Pana'ewa.
4. Prior to the development of the airport traditional access ways connected the community of Keaukaha with Pana'ewa forest. However, with the development of the airport these traditional accesses have been cut off.
5. Cultural practitioners including weavers, lei makers and hula dancers continue to access and gather from traditional hala groves located on airport property.

12. RECOMMENDATIONS

Every effort should be made by the Department of Transportation to foster a positive relationship with the Keaukaha community. Some community members view current efforts to engage Keaukaha school children in airport activities and public meetings held to keep community members informed of airport plans as a positive first step.

1. Any burials found on the project site should not be disturbed pending consultation with the Department of Land and Natural Resources State Historic Preservation Division. The treatment of any remains should be in accordance with procedures approved by the Hawai'i Island Burial Council and the State Historic Preservation Division.
2. Practitioners that utilize the hala groves on airport property including the site identified as the Proposed Helicopter Facility should be permitted to gather from these hala trees. Recommend that a right-of-entry policy be established to allow practitioners access to the hala groves with prior notification to airport security or personnel.
3. Considering the history of land transfers and exchanges as Hilo International Airport was developed, additional land acquisition should be pursued with caution. If any properties are identified for potential acquisition, the landowner and lessee should be immediately notified. Recommend that any transfer of land be voluntary. Negotiations should be conducted on a one-to-one basis between the Department of

Transportation and the landowner/lessee. Recommend that any transfer of land include fair and equitable compensation to the landowner/lessee.

4. For many community residents, any type of noise wall or barrier would cut off the Keaukaha community from the environment and is therefore not recommended.
5. Participation in the retrofitting of residences for sound attenuation or in the avigation easement project should be voluntary. Landowners and/or lessees for whom this option is available should be notified individually, and negotiations should be conducted on a one-to-one basis. To ensure that participants are aware of noise levels, and to inform them of any significant increases, continued noise monitoring for the Keaukaha community is recommended.

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14. GLOSSARY

For the most part the following definitions follow the *Hawaiian Dictionary* by Mary Kawena Pukui and Samuel H. Elbert. As with many Hawaiian words, there can be numerous and varied definitions for a single word. The definitions provided in this glossary correspond to the use of the words in this report.

ʻĀhole	An endemic fish found in both fresh and salt water.
Ahupua'a	Land division usually extending from the sea to the mountains and containing a sea fishery and sea beach, a stretch of kula or open cultivatable land and higher up its forest.
ʻĀina	Land, earth.
Akua	God, goddess, deity, supernatural.
Ali'i	Chief, chiefess, ruler.
Aloha ʻāina	Love of the land or of one's country; patriotism. Hawaiian value and concept illustrating deep love of the land.
ʻAma'ama	Mullet. A very choice indigenous fish.
Awa	Milkfish.
Hala	The pandanus or screw pine tree. Many uses: leaves (lau hala) for mats, baskets, thatching; the yellow to red fruit for leis, brushes; male flowers to scent kapa, their leaf-like bracts for mats; aerial root for cordage and medicine.
Hiā'uke'uke	Edible sea urchin.
Heciāu	Place of worship, temple, shrine.
'Ili	Land section, next in importance to ahupua'a. Many ahupua'a were subdivided into smaller management units called 'ili.
Kahakai	Beach, seashore, seacoast, seaside, strand.
Kahakō	Macron; a mark placed above a vowel to indicate a long sound.
Kalo	Taro; a staple crop in Hawaii'i.

Kama'āina	Native born, one born in a place.
Kapa	Tapa, bark cloth.
Kapu	Prohibited, forbidden, sacred.
Kūhāpāi	Small land division, cultivated patch, garden, small farm.
Kino lau	Many forms taken by a deity or supernatural body.
Kipi kalo	Hilo term for mound taro patches.
Koa	Hard wood tree and the largest of the native forest trees. Uses include canoes, surfboards, calabashes, house posts, and weapons. The tree is a body form of some deities.
Ko'a	Designated offshore fishing grounds. Shrine built along the shore or by ponds or streams, used in ceremonies as to make fish multiply.
Kula kai	Lowlands, coastal plains.
Kuleana	Property, claim, ownership, tenure, small piece of property as within an ahupua'a.
Kupua	Supernatural being possessing many forms.
Lau hala	Leaf of the hala tree. Uses include mats, baskets, weaving and thatching.
Lei	Any adornment worn around the head or neck. Necklace of flowers, shells, feathers, or ivory.
Limu	General name for seaweed.
Māhele	Land division of 1848, the Great Mahele.
Maka'āinana	Commoner, citizen. <i>Lii</i> , people that attend the land.
Makahiki	Traditional "new year" festival beginning with the rising of Makali'i and lasting for four months. In addition to religious ceremonies and the payment of taxes the festivities include sporting and hula activities.
Makai	Ocean, towards the ocean.

Mālama 'āina	Protect and care for the land. Another Hawaiian value and concept illustrating deep love and care for the land.
Mauka	Inland, towards the uplands.
Moku	District. The islands were each divided into large districts called moku.
Mo'o	Lizard, reptile of any kind, dragon, serpent; water spini.
'Ōhi'a lehua	Hard wood tree. Lehua is the name of the flower. The tree is a body form of some deities.
'Okina	Glottal stop; a speech sound.
'Ōlelo no'eau	Proverb, wise or traditional saying.
'Ōpae	General name for shrimp.
'Ōpihi	Limpets.
Pā	Pen, enclosure, lot, yard.
Pā hale	House lot.
Pāpā'i	General name for crabs.
Pū hala	Pandanus tree.
Pūhenehene	To play a game. The name of game where a stone or piece of wood was hidden by a player and the players of the other team tried to guess who had the game piece. Sometimes accompanied by gambling and played for favors.
'Uala	Sweet potato; a staple crop in Hawaii'i.
Ule hala	Aerial pandanus root.
Wahi pana	Legendary or storied place.
Wana	Edible sea urchin.
Wao	A general term for inland regions.
Wao 'ama'u	Inland low-land forest region where the 'ama'u fern grows; sometimes cultivated.

Interview With: Ulunui Kanaka'ole Garmon and Pualani Kanaka'ole Kanahahele
Interview Date: November 11, 2001
Location: Laehala, Waiākea, Hilo, Hawaii
Interviewer: Ulialia Woodside with Tiffany Mathias

This interview primarily focused on the State Department of Transportation's proposed improvements at the Hilo International Airport and any impacts to cultural resources and practices as a result of the proposed developments. A project summary, map identifying the proposed improvements, and the botanical survey and archaeological inventory survey prepared for the proposed airport improvements were made available to the interviewees and discussed during the consultation. Aerial photos as well as the following maps were also available during the consultation; 1917 USGS Hilo Quadrangle, Reg. Map No. 1561 (1891 Hilo Town and Vicinity), Reg. Map 524 (1851 Plan of Waiākea) and 1928 Map of the Island of Hawaii. This interview was conducted without recording device. The following summary is intended to capture the discussion topics and concerns of the interviewees.

Project Summary and Proposed Improvements

- The project summary identifies the airport as Hilo International Airport; does Hilo airport service any international flights? There are no international flights at this time since overseas mainland service was suspended in December 1986.
- These proposed developments send up a red flag to question what is up for the future. Hilo is in no need for such airport improvements therefore these improvements could translate into an expansion of service. The improvements could mean an increase in the types of services and activities (passenger, cargo, helicopter, and military) at Hilo Airport -- an increase in the number and types of planes that fly in and out of Hilo Airport, the potential to resume overseas flights, and use of runway as a back-up landing site for the space shuttle program.
- It raises the red flag to ask, who is behind the need for this development, where is the funding coming from? For example, the astronomers have been able to get all the streetlights in Hilo changed to (low pressure sodium) yellow lights, and then the telescopes appeared.

APPENDIX A

Ms. Ulunui Kanaka'ole Garmon & Ms. Pualani Kanaka'ole Kanahahele
Interview Summary,
Mr. Patrick Kahawaiola'a
Interview Transcript and Verification and Acknowledgement,
Ms. Ulialani Sherfcock
Interview Transcript and Verification and Acknowledgement

Botanical Survey (Funk, 2001)

- The botanical survey only included the areas of proposed improvements and no candidate, proposed, listed threatened or endangered species were found. The areas surveyed were previously cleared during the war for the Naval Base. The survey didn't find any 'ōhīa trees and there doesn't seem to be much of a native forest in the areas surveyed for the proposed improvements.
- Before the airport, the area mauka of the Keaukaha community was all forest. Then during World War II a small airstrip was constructed, along with a lot of military housing and quanset huts, but on the Puna side. The military kept the forest for camouflage between the buildings. When they did clear an area they scattered the area with seeds for quick growing rubbish plants. There was a section of the Puna Trail that the military used, but it was the military's use of the forest that really opened the way for the development of the airport. The first airport was on Silva Street by the Hawaiian Air cargo building.
- But there still is pūhala. Gatherers pick lauhala from the trees growing at the airport including the site proposed for relocating the helicopter facility.

Traditional and Customary Practices

- Traditional and customary activities and practices that occurred and continue to occur in the Keaukaha, Waiākea region include: all types of fishing and shoreline gathering including salt which is still collected at Lelewi; and, gathering of all types of plant materials including lauhala and hau. Prior to the airport, all the needed fishing and gathering was done in this area, they did not go to other ahupua'a.
- Pana'ewa is the name of the lands that extend from the forests up mauka to the shoreline and include the lands occupied by the airport. Prior to the development of the airport Pana'ewa forest renowned for its great 'ōhīa lehua stands and fragrant maile encompassed the area immediately mauka or south of the Keaukaha community. Residents of Keaukaha used to follow trails into the forest to gather among other plants 'ōhīa lehua and maile. In the area of the airport was a big cinder cone named Pu'u Maile, and was a place at which maile could be found.

- The airport has destroyed that portion of Pana'ewa forest and has in effect cut off the community from Pana'ewa and the traditional places for gathering 'ōhīa lehua and maile. Nevertheless, all types of traditional shoreline and ocean activities still occur, and they still gather lauhala and hau.
- They continue to gather lauhala from the airport property. However if they are seen, airport security comes to make them stop gathering and leave the airport property. The gathering of lauhala should be permitted. The more they pick the lauhala the better it is for the tree. The relationship between the airport and the community would improve if airport security could be educated about the traditional lauhala stands and allow gathering practices.
- Traditional knowledge and practice is incorporated and taught at Ke Ana La'ahana, a public charter school situated in Keaukaha. For example, the students are taught how to restore and reestablish the productive fish husbandry capabilities of a series of fishponds along the coast which include Hale O Lono, Wailoa, Keonepahu, Kaumealani, and Kamokuna. At Kamokuna there is also a māla where students learn and continue traditional agrarian expertise by growing different varieties of kalo, 'uala, and other native and Polynesian introduced plants. These uses need to be sustained because it supplements us and sustains the culture. In addition to Ke Ana La'ahana, Lāuhuki Preschool and Hālau O Kekuhi are also located at the Pā Hoaka the Native Hawaiian family-based education center situated in Keaukaha and administered by the Edith Kanaka'ole Foundation.

Proposed 15-foot noise barrier

- Do not build the noise wall. First DOT-Airports cut the small airstrip, taking some land. Then they just grew and grew and cut a bigger airstrip, taking more land. The wall will again cut us off from our land; can't see our land. How much more do we have to give?

Impacts of Existing Airport Activity

- The greatest impact of the airport has been on gathering practices. It is as if the whole area is void, doesn't exist anymore. Pana'ewa continues to exist, but when they built the airport, they took away the cultural significance and the traditions associated with that part of Pana'ewa.

- By taking away the land and the forest, people don't know how to gather in their own land, they don't learn how to take care of their own place. Now, if they need to gather, they need to go way up into the larger forest. We should take care of our own place. Before the airport, everything was available in our own backyard and people could live off of this land. Pick their own lauhala, pick their own maile. Now it is somebody else's yard. It forces us to go gather outside of our area, forces us to gather from another person's place and from the greater forest.
- When Runway 3-21 is used, the flight patterns force planes to take-off over Puhi Bay and to be closer to the ocean. The vibrations and the noise of the planes flying low over the ocean can affect the marine life including dolphins, turtles, whales and other animals that frequent the area near Puhi Bay. The loud noise and vibrations also impacts the fishponds along the coast. In addition, we don't know what kind of residue from airplanes overhead and airport activity is left on the ocean and fishponds that might harm marine life.
- The big picture is what to do with the runway. It is right in the middle of Hawaiian Homes' lands, so it is always going to affect Hawaiian people. Moving the runway will take more of the forest, it will affect Pana'ewa, and it will affect Hawaiian people. It always impacts Hawaiians.

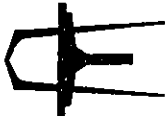
Final Thoughts and Recommendations

- Can't do anything about the airport. It is where it is. As long as the airport stays within the current boundaries, that's fine. No expansion beyond current boundaries.
- No increase in air traffic.
- No large planes. No 747s.
- No mainland flights – no international flights. No heavies.
- No cutting of lauhala trees; allow gatherers to pick lauhala from airport property.
- Airport personnel have been visiting Keaukaha School and have been offering field trips for school children to try and improve relations with the community. There is a need for that kind of interaction from the airport's side and it benefits

- the airport. That's why they're doing it, but it doesn't help the community. The airport should hire more Hawaiians from the neighborhood.
- Don't do anymore improvements. If there is a need to renovate or redesign the airport, do it with a Hawaiian theme hiring Hawaiian designers and artists.
- Stop exchanging DHHL lands on one island for lands on another island. The previous land exchange between DHHL and DOT that established Hilo Airport exchanged residential lands at Keaukaha for a small acreage of commercial land at Iwilei, O'ahu. What happens when there are no lots for homesteaders on Hawai'i Island, do they have to move to another island? It is impacting Hawaiians again. Why us? Hawaiians and the Department of Hawaiian Home Lands started off with the junk land.
- The impact of the airport is farther reaching than just Keaukaha. Need to stress that the airport forces us to go gather outside of our area, forces us to gather from another person's place and from the greater forest. People should take care of their own land and resources, but the airport has taken that away, it has taken away the ability to live off your own land.
- The sewer outfall is also a concern. There are so many uncertainties and unknowns. The waste could be affecting the ocean – the limu and other marine life.

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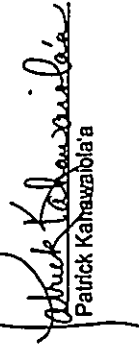
VERIFICATION AND ACKNOWLEDGEMENT

The attached transcript is a record of an interview conducted by Ulialia Woodside of Wilson Okamoto & Associates, Inc. for a cultural assessment prepared in conjunction with the Hilo International Airport Environmental Assessment.

Interviewee: Patrick Kahawaiola'a

Date: August 16, 2001

I have reviewed the attached transcript and have made the necessary corrections on the attached transcript. I acknowledge that the information therein may be used in conjunction with the cultural assessment and environmental assessment prepared for the Hilo International Airport.


Patrick Kahawaiola'a

12/1/01
Date

Interview With: Patrick Kahawaiola'a
Interview Date: August 16, 2001
Interview Location: Puhi Bay, Keaukaha, Hilo, Hawaii
Interviewer: Ulialia Woodside

(Begin recording and transcript. Interview already in progress and discussing sound attenuation of homes, and needing to keep windows closed because of air conditioning.)

PK: ...my wife was a firm believer in she no close windows. So, I had the hardest time, beuse I tell her, "why you going put the heater on if you going leave the window open?" And you know, but, it came to the point, where in our room the windows were open; in my kids room was shut. I used to get up in the morning and find my boy sitting right on the heater, I said, "son you going to catch fire." He was one cold bloody Hawaiian he would just sit on that heater. I had a floor heater.

But, you're right. I don't think of those things. Because like most Hawaiians now, see, I used to, and I got to believe it in my heart, but I left here at 18. I mean, please thank you Jesus; get me off this rock. Get me off, I can not stand it anymore. I don't know how our people can live here like this. But of course as soon as I left, you know, I was thinking, are you crazy, you fool you made such a mistake. However, I was stuck. I was in the service, you know. I couldn't just, you can't just, oh, I'm homesick, I'm going home. And I couldn't do that, so, I couldn't. And then when I got out I got married, stayed there, raised my kids there. But all the while, saying hey, wait. Something's missing from me. I'm from the rock; I am the rock. And I'm in some place where I am totally out of my environment. It's not that I can not be part of the environment. I did it for 20 years but I was totally out of my environment. Then came home and said, look the 'ulu, look the this, oh, that's what that thing is, oh, that's how, oh, I miss eating this... And that's what I'm saying. So, for this community, that's why I am a fierce advocate for what happens in this community. I'm not prepared anymore to let it just... get taken away. With due respect to my kupuna, my dad, my mom, my dad more so. In their know, to try and change the destiny. Always was they wanted to raise kids to be law abiding, do the right thing, no make shame, no do this. And a lot of cultures had that. But I find that it is not only because I had an opportunity to be away and see how other people, how they interacted, how they were treated. That for me, I'm not prepared to let Hawaiians be treated that same way again. And, you know.

UW: Let's go through some of these basic questions first. Your name?

PK: My name is Patrick Kahawaiola'a.

UW: And you live right here in Keaukaha?
PK: I live at 260 King Ave. Hilo, Hawaii.

UW: And you were born and raised here in Keaukaha?

PK: I was born and raised here. I consider myself, and guys, there's a group of us, in our age group, 56, 57. When we were growing up, we came to the realization, one time we all got together, that we consider ourselves to be first generation Keaukaha. Because the majority of us, our parents came from someplace else. My dad basically was from Kaua'i, my mom was from Maui. My mom was from Hāna. I like to keep telling my brothers, I have two of them, they were both born in Honolulu, that you know, me, I'm from Keaukaha, you guys are from O'ahu, me, I'm from Keaukaha. So, I consider myself first generation Keaukaha. I was born and raised here. Product of the homestead, born on the homestead.

UW: As a child growing up, what do you remember about Keaukaha? And what did you guys used to do, what was a typical day, a typical weekend?

PK: Well, it's needless to say, that ocean was a very, very big part of our day. As quick as we could we used to get to the beach. We would all meet and get there. However, you know, now that I can reflect on it. The beach was there, but not just basically for recreation. It was there for sustenance. We all learned at a very early age how to go pound 'opihi. Not for sell. We never realized the amount of money that you could make from the ocean. But at that time, that was all part of like, recreating. You know, pounding 'opihi, make hā'uke'uke, go gather wana, limu kohu. And we would do all that and go home, you know, everyone took home. That was pre-Tupperware days, so you never had Tupperware, but everyone would go home and you would have one 'opihi bag, out of an old pillow. And that is how we carried all our things home. We would spear, we dive, you know, we dove for fish, spear fish. And that's what we did for sustenance. Every Saturday I did that, for my dad, cause my mom died when I was five. But every Saturday I would come down. My dad he was real one Hawaiian. You know, no eat rice, only poi, onion, sardines. But fiked fish so I would go get all this kind of fish for him and go home. Cause my brothers they all left, you see we're all ten years apart. My oldest brother lives in Waimānalo, he's 76 years old. He'll be 77 in September. So, you know, we're all far apart in age, so they were all gone. But that's what we did. There were other things that we did in Keaukaha but, the ocean, we gravitated to the ocean. If we did anything, it was go to the ocean first and then we did other things. Now, and right here, this was the area.

UW: The whole coastline?

PK: This coastline. I would say from the wharf, from Kūhiō Bay to the end of the road here, like Pu'umaile...

UW: Lelewi?

PK: ...yeah, Lelewi, would be... was our grounds that we would do... Until somebody taught us that eh, not only can you throw net, you can cross net, and you know. So the older we got we would go kāpeku, we would go paepeae/paipai and that would from there we found that as we got older, had to be maybe 15, 16, 17 years old. I guess. We found out we can make money from the bounties of the sea. So we would go kāpeku for nenua, and kala, and all these, moano. We would go to a certain, what we would call a certain cross. If you wanted to eat manini you'd go here. If you wanted to eat kūmū you'd go there. If you wanted to eat kaka you'd go here. So, we were pretty, maybe, in that way, not knowing, but we became gatherers, and we could pick a certain place. If you could tell us what you want, that is where we would go get. So, that's my upbringing and that's what I really like about this area.

UW: That's maikai. And what do you know about the history of this place? You mentioned that what you know is from the book *Chronological History of Hilo*.

PK: Yes, the *Chronological History of Hilo*, that book, however I realize because I lived it. The dates are in that book, however I do know this. Keaukaha is the second settlement to open. The first being Moloka'i. Hawaiian Homesteads this was the second to be settled, and this was settled... Keaukaha Association, we're going to celebrate our 78th reunion in 2003. So in about in the year 1927 was when it was opened. There were people living here earlier. But officially it was opened at that time. The Government, the Federal Government at that time had no monies to go and, so the people who were awarded the leases went out and hand-clear the property, did this. I was very, very fortunate, and some of them are still alive today, to have my... everybody's an uncle, an auntie, a kupuna, everybody was that way. So I have an uncle now, Kaimoon Calles. He's still alive he's 88, 89 years old, and he was one of the first families that were here. So tells me about working at the wharf. Carrying in, you know, floating lumber that was floating, and water logged. Bring those home through trails, and carrying it home and erecting a structure, all the brothers and sisters. That's the Napeahi family; Auntie Abbie Napeahi, she's a Calles, and she's still alive. This is her brother that told me this. And there are many, many of them that are here. And I remember growing up we used to see those houses; go to those houses. I mean I lived in a home that never saw paint on it, until 1983 it was still there, and my mother got an award in 1939.

UW: So that's my recollection of how it was, the area. I would tend to, not dispute, but, with anybody who is from Keaukaha would tell you, when you would ask

them, "what was here," coconut trees were a rarity. We were not raised with coconut trees. We were raised with lauhala, pili grass. And what is now, what we call the back of our, where the airport is now, the back of our homestead was the leading edge of the Panaewa forest because 'ohia, and all those, uluhe, all that grew back there. So, that was our claim to fame. We had the ocean on one end, and if you turn around and ran to our auntie's lot way in the back, we were into the forest. One of our... the age group that we, I was in, cause I don't think anyone since then has done it, they couldn't. One of our biggest claims to fame was having to deal with the airport, was that the airport was just that small, that we could climb the fence. Every May Day we need to go into the forest, go gather maille, or whatever. We climb the fence, throw our bikes over the fence. You can see, I'm quite sure they could see us, we could see them. It was a cat and mouse game. They would send a truck out there. And because the truck had to put a big flag on it to come across, we could see it. So we would take off with our bikes, cross the runway, into the forest. They had some roads in there so, and we was gone. Just throw the bike in some bushes, jump into the uluhe and the guy he no can find us. And we would go in there, we would gather, we'd gather maille, things we need to make our May Day lei. And when we were done, little bit dark, you know, ahiahi, we would turn right around, jump back on our bikes and come back across.

UW: So there were probably, before the airport was there, some trails, for these coastal people here to go up to...

PK: I would have to believe. I would have to. Because, we went to Panaewa forest through the airport.

UW: You didn't already have an access this way...

PK: Yes, we didn't go down Kalaniana'ole, Kekuaaoa, and go Katanikoa all that way. We did not. We knew. That's why guys would ask, "where you guys went, in the forest?" Yeah, we went in the forest. But we went through the airport. And guys would say, you can not do that. Well, for us, you see, for us it was like, you no can. Well first thing you tell one Hawaiian you no can, well, we going show you we can.

UW: Especially one young Hawaiian boy.

PK: One young Hawaiian kid. So that's how we grew up. And already by that time the military had taken parts, that part of the airport. That's why there were roads in there, the military had a base in there. That was part of a military reservation in there. And they had.... You know Hawaiians, you give them the ocean, we had the Pacific Ocean, but they had a swimming pool. Back in one of those clubs, they had a military club back there some where, I can not think of the name now. But, because the pool was there, you know,

we would go and dive in the pool. And now that I think about it we were diving through 'ele'ele and what ever other kinds growth they had in there. But never made us no difference, just dive. Those were challenging things, but that's things that stay in my mind, but not realizing, we were doing what our people, and our culture dictated that we did. Why we went. Because we went to school adorned on May Day. We went to school, we were decked out. This was Hawaiian and everyone look it for granted, but when we came from Keaukaha, I mean, we were the sweetest smelling guys, we made leis, we gathered the plumeria. We were happy that at one time the County decided to plant plumeria all along the highway, so that was easy to gather, but everyone's yard had it. We gathered, but the maille, the different types of palapala, we all gathered from there because it went right into the forest.

I was never a weaver, however, I knew many of our kupuna before who did that, to go inside and pick up. Mrs. Lum Ho was one, Johnny Lum Ho's mom. I gained a lot of insight from her, because every time you saw her, Auntie Martha, we saw her.... we thought that was all how Hawaiian ladies would be. She was with rubber boots, blue jeans, scarf on her head, big papate cover all her face, long-sleeve blue chambray shirt, and I thought everybody... Because I'd see her, I'd see Mrs. Johansen, very rarely did I see our Hawaiian ladies, and I can get slapped from them right now. But maybe we overlooked the others in our community who were schoolteachers, and never go school like that, and one was Mrs. Ioane that we knew was a teacher, Mrs. Ludloff, Mrs. Hohu. The point being, for me, growing up was to see... she was one lady who mahi'ai, she was a mahi'ai. And we looked at her, and you know, you turn around and you saw another, Mrs. Johansen was similarly dressed, you looked at other ladies who were the gatherers, who were the weavers, who did that. And you said, wow, oh that's how tūtū them got to be, auntie them got to be, you see. And that's how I would picture. If you were to tell me to draw one lady right now, I no could relate to one holokū, lovely 'ilima leis. I no could relate, the hair up nice. I no say we never had, we did have, because we had some lovely hula dancers, Rose Kuamo'o was a hula teacher here, kumu hula in our community. You know, her daughters are Watale'ale, Bella Richards, those are her daughters. Some of her daughters are still alive living in this community now, but she was there. Auntie Iwa Haluani, she was a hula, you know, her niece Haleloke went on to play with Arthur Godfried and all of this. So that's the guys I grew up with. So we did have stately, lovely... but you no see them, if there was no hula performance or whatever, we didn't see them. But, we did see, I did, on a constant basis Auntie Martha, Auntie Johansen. Because, why? They were the everyday guys, they went inside mahi'ai under their 'ohia tree, plant the anthurium, make sure the hāpu'u was growing, make sure the orchid was this, that and the other. Made sure the taro was growing, made sure the 'uala was over there growing so that you could have all the... life obviously was so simple because I grew up having, you had sweet potato in your yard. I hated it, but it was there. Because, and I just told my brother who was home, he lives in

Connecticut, and I was telling his kids who haven't been here for about thirty years, you know I hated sweet potato leaves, because that's what I had to eat. My brother made everyday. Being the youngest, I had to go, and it lined our driveway going up. And I had to go out there and pluck, he taught me what leaves to pluck, everyday. And not realizing, see it was right there from my yard, my father didn't have to go buy. I don't know if would have ate broccoli, or whatever. But we had sweet potato leaves, sweet potato, for the starch of course rice, poi. My dad being from Kauai we always had this jar of 'alae dirt, someplace in the house. That at some point in time when we ran out, my job was to go over there, broke 'em up, mix 'em, with all that with the pa'akai make 'em red. Or, we had aunties come from Kauai they would bring sea salt, the regular sea salt and then do it.

UW: What side of Kauai is your papa from?

PK: My dad's from Kapaia. Not until I went to Kauai, to find out that Kapaia... Because he would say Kapaia, another family would say Hanamā'ulu. But, not realizing that they are the same area, so that's where he's from. So that was always in the house. Except my father had this passion for Chinese herbs. I don't know why. All the Hawaiians, I went there, they knew tau si, chau chi, what see, what kind, anything, and they would have it in these bottles. And that's what I remember. I don't remember eating them too much, but that's what it was. But, sustenance, was in the yard. If you needed laro, we had. Hawaiian navel oranges, ma'ra was growing someplace in the yard, or a neighbor had, or somebody had. By no stretch of the imagination did my half-acre have all of these wonderful things. But there was some of something.

UW: But it was in the community.

PK: Yes, in this community there was here. Somebody grew this, somebody grew that. But, everybody had one in their yard, maybe one plant. Some you never take care real good, you never fertilize real good. Mangos, guavas, that's what it was.

UW: So, when you used to go pick the 'uala leaves, you would pick the ones just as they are starting to unfurl, the new ones.

PK: That, and about the three under that, the one and the three. It's not a counting measure, but after awhile you begin to see it. You see one and three.

UW: Kind of similar to when they pick lū'au leaves.

PK: 'Ae. Same thing. That's why I'm saying, obviously, the Hawaiian horticulturist, the people that did it, our ancestors, and that being passed

down generation to generation was the one and three. And it is still today, they will tell you the one and the three. That's why you mentioned with the kalo, same thing. You never went below, that was for feed the animals.

UW: That's for the pigs, feed the pigs.

PK: It's not for human consumption; that's for feed animal. And people say, nah, you making it up. I'm not making it up, my tūtū-man, which had me do that... I had my real tūtū, I never knew because my mother's father was haole, haole-Hawaiian. I never knew him. Well, I shouldn't say I never knew him, we just never had a relationship. While my tūtū-lady she's from Maui, so I never had that nurturing from grandparents. However, in Keaukaha I had plenty tūtū-man, tūtū-ladies. And they were the ones that taught me how to go make the kalo. I was raised, after my mother died, I had Mr. and Mrs. Pahi'o, they raised me, for several years. I mean my father only lived back here, but they were good friends, and they raised me. And she was a great influence in my life, in that she taught me manners. If there was anything, I no care what. That's why I'm saying, Hawaiians weren't uncouth, pagans. No. My auntie, this auntie was... she taught me, she told me, and because I was there with her other three children, and was just like this; when she would call me, it wasn't you know, "yeah, what?" We, I never answered that way, it was, "yes, coming." So she taught me manners, I'd have to say, etiquette. My uncle was a Territory Highway Department worker, they built the Hāmākua Highway. He was very instrumental. Could not read or write, third grade education, but he built the Hāmākua Highway; equipment operator. But he taught me how to be a fisherman. This was pole fishing. When the time to go, right out here, Puhi Bay, right outside 'Awili, Kula Pae, right outside. Right in this area. That's why I said I feel so comfortable, this is the grounds. I'll never... it's not uncomfortable for me to jump in the water and from here I can go down to the other side, and it doesn't bother me. I feel at home, I feel like I'm... I'm comfortable. He would tell me, you know tonight we going... No, he wouldn't tell me, I would overhear him say, at that time they no talk to young kids, but I would hear them say, "tonight we going get 'āweoweo." And they would, and I used to think, what, the fish bite what they like, you not going go catch only 'āweoweo, only mēmpachi. But, you know, again as a young Hawaiian you think, eh, come on.

UW: You going get what get in the net.

PK: Yeah, what get in the net. You going throw the bait out there on the hook. What you going tell? Oh, this bait is only for 'āweoweo. But lo and behold, we come home with 15 'āweoweo because that's what they wanted. Tomorrow, or whenever the season was right, you know, he was a great, I never paid any attention, but they watched the moon, they look the ocean. There was one thing my father always told me, and I did not realize it until I was married and had children of my own... My dad spoke Hawaiian fluently. I

had an option; I could answer in English. I understood Hawaiian, but I had an option to speak in English. So, I chose English, not because I was ashamed of being Hawaiian, but if it's the word, it may be the wrong word, but I could blame my dad for this... See he sent me to a parochial school. I did not go to Keaukaha School and that hurt me because I could not be with my friends. Of course I developed other friends, however, in this community a lot of the Hawaiians decided they were going to send a lot of their kids to Catholic school, and all of us went to Catholic school. And I couldn't understand why we had to go there when we were here; we had a school just down the road. But about the no'eau that my dad would tell me was, never face your 'ōkole to the ocean. And I could never understand it, why. However, I was a firm believer. Now, you have to understand Hawaiians... these tūtū-ladies that I had, if it came to the kalo, there was a pule before you planted, a pule when you pull, when you huki, pule after you pau. You got sick, there was a kāhea, a chant, or whatever. My tūtū would hold me in her arms, I can remember all this, hold me in her arms, chant, kāhea, take me by the window, hold me over there, do all of this. Now, it caused great conflict with me, being Hawaiian and the Catholic religion. You go school I learn, come home, my auntie was very, the auntie that taught me manners spoke proper English. You know, what, da kine, ova dea, it was... so, coming home was a conflict. But yet, learning the kāhea sitting around the table, or with that auntie it was, you did the, you say grace. When I went tūtū-lady's house, we never said grace, I had a paukū. And everybody sat there, you had to say your paukū before you ate. So, you know, not realizing it cause young kid, as I got older I saw a conflict developing within me. Well, you know, you can not worship false gods. Well, then here I am one Hawaiian, come home, before we huki the taro we're saying something. We build a kuahu, we take our pōhaku and we move the pōhaku from the lo'i to the lo'i. And you know, what is this?

But, my dad was a strong believer in that, and not only that but was this, don't face your 'ōkole to the ocean. So I grew up making sure, that if I did, have the opportunity that I need to be in the water, and had to face my 'ōkole to the ocean. Well, I took my dad's word, no face your 'ōkole to the ocean, and my auntie's upbringing of manners, by saying excuse me. And I would do that, all through my life. I do that now; I try to perpetuate that to my kids. But, it did not happen to me until I was in Los Angeles at a camping. I have three kids. My son and his two sisters were at the ocean, very young, at the beach, having fun, we all sitting there, we no can get hurt. The water cold, they no go in the water so I'm not worried. But they were playing in close proximity. And out of all those waves, there was one freak wave. And they had all their backs to the ocean, and I saw that wave coming. And even when I yelled at my kids, even when I told them watch out. And they're looking at me like, what? I mean this guy caught 'em, this wave caught 'em. Boom! And you should have seen me run for three kids. Run grab one here, run grab one there, because they were just going in different directions. And then I heard the words of my dad, never face your... but never was explained to me, you

see because, common sense. Common sense tells you, you no more eyes behind your head, so, you see. If there was any wish I want to impart on our young ones today, when I tell them today, no face your 'ōkole to the ocean. It's to right behind that give them the reason, so that you no get into that situation. But that is basically what I've done, how my life has transpired, and what I do here.

UW: So you talked about building kuahu. Growing up, did you remember if they had any heiau around here?

PK: Well, this area here, right around here, in this area, was one. If you were to take the stories of many of the people, inside that hau forest is another. Although destroyed or partially, I don't like to say destroyed, desecrated, by pōe haole when they came. There was a military camp emplacement, they put some guns emplacement out there. So within that, with inside that hau forest, and I'm so glad the hau forest is so strong and just pili together that people no can go inside and mōkāki, because it's really tight. But we played all up inside there, the ocean goes underneath, the water go way underneath, high tide you can go underneath. Aholehole that's their home there inside there.

Behind this rock here, there is a small channel cut between the rock, behind there is a beautiful pond, big pond. And that was our, we used to get honu. I mean, that's where the home, I believe the home for mullet, the 'ama'ama, all inside there, aholehole. You know you can go in there now, I still go take a look every so often, and you got the freshwater, brackish, all this is spring water, cold, cold water here. You get what they call the 'o'opu, you get that inside there, different types, it's in there. Limu 'ele'ele, still come. People say over here junk, no good, the sewer plant polluted all these places. I tend to agree, however, this little bay here, Puhi Bay, has provided. On any, many occasions, you can come here, I get guys dive, pick up the he'e, the lobster. One year we cross a net out here overnight, and out of 19 fishes that were in there we had like 14 different varieties, you know, like lae. We even, we've caught a 30-pound aku. A 45-pound 'ahi, right here, inside here, caught with a throw net. Because we have the nehu come in here, we have all this, what they call, food fish that the bigger ones eat. They come in here. I grew up eating the honu. I will not tell a Hawaiian that that's an endangered species. I'll let someone else tell them if that's their bag. I do not believe, because obviously as a kid growing up. I mean, if you want to talk about a slaughter. But we did it, not for waste, not for sell, it was to feed. If you talked about seven families coming to the beach, each one maybe having... I was fortunate we only had three, but the majority of my uncles and aunties had seven, eight, nine children, and you take that and multiply that by, you know nine or ten. I'm talking about a hundred people you had to feed every week. And the jobs, the work, wasn't big bucks in the 40s and 50s. So, turtle, we ate that. Twelve, thirteen turtles on a Sunday was a drop in the bucket. But cut up,

divided, everyone look home. So we all grew up, all my friends, we ate that. There was maybe one or two that never ate it, but we all grew up eating it. It's not that I miss, it's not something, but I wouldn't turn down a turtle steak today, you know. And I get my braddahs who continue to do that, clandestinely, or however, but, it's done. I don't look at them as being law-breakers, I look at them, because it was never an intention to sell it, or to gather it for that kind of purpose, there's a financial gain somewhere down the end. I grew up on a sustenance-based livelihood.

We never had... we had to go to our Portuguese friends whose parents made guava jelly. We ate guava, get kūkae pa'a, whatever. We knew where the sweet guava tree was, where the sour guava tree was. But, our friends the Portuguese people, when I went to school, they came and they had jelly. We went store to buy ours, they made, and, "oh, how you guys made that?" "Guava." "Heh? You made that with guava?" So, we never did that, but I could go tell you when you have 'ōkole hi, go over here pick up the small, young shoots, chew and swallow the saliva. You know couple days, you'll be alright. We could gather in this community, and part of that was going outside through the airport. But in this community, sometimes down the beach, they did some soil change down here, so it changed a little. But the laukahi to help take care of the boil, or sore arm. We had all the medicinal lā'au was all around.

UW: Kinehe?

PK: Nehe was growing, you know, you make the tea, kukū. It was a pest as far as I was concerned, a weed, junk. But now I find out you can make tea, because my auntie them made. We have some kupuna that still do that, the nehe, the kukū. I mean we don't see that. There're no kukū stuck on my clothes, you don't see that. I mean, we used to throw darts with those things. "Uhaloa, was my, and will be to the day I die, the best medicine for sore throat. I cough now, I pau in five minutes once I go pull that. I hated it.

UW: Tastes bad.

PK: I hated it, but boy, you know, if you have sore throat. So and I wish, I truly wish it was an opportunity to find some. But whenever we do, whenever somebody clears a lot. Then they go, they find out, what's this. We erected fence around it, we've done certain things to make sure that it's there. Those things were readily available. And I'm prepared to say, as young kids, my generation, we overlooked it. We took it for granted that it was always going to be there. And, I'm not going to shirk away from that thing. "We did not mālama that." We did not. I'm prepared to say that we did not.

UW: Because your history didn't tell you. You did mālama in your way, your way was to use it. Your history didn't tell you that somebody was going to come...

PK:

...come bulldoze, poison. My dad before he died, and before I left. I could still gather, but he'd tell me not to gather on the side of the road. And the reason was, you see. Again, "no pick 'em from there, where you got this?" If I brought something home, "where you got that from?" "Oh, right over here." "No. Throw that away." See, but not knowing, they used to use herbicides on the side of the road. And, uhaloa for one, you have to go down to the root, that's where you have to go. That go down, and all the pesticides go down inside. But speaking about that, about pesticides.

You talk about, that's why I say I can't believe it. I knew it happened in other communities, probably on O'ahu too, but I don't know 'cause I only was raised here. I didn't leave here until I was seventeen, but, I never went farther in this community. Maybe to the other side of the island with my dad, Ka'u, spent a lot of time in Ka'u. But here, they had the DDT. They banned that, they banned that substance. No can use 'em in the world, and us Hawaiians was running in the smoke. Okay? And we did that if the Board of... Department of Health came around every twice a month, twice a month we would be there. But the word would go through the community, you could hear. Of course we could hear that truck. Was a small little jeep, that would go, tck, tck, tck, tck. And the first thing you would hear was the neighbor go, "mosquito car! The mosquito car!" And that would jump from house to house. And what you did? We would sit around and tell what we did. The first thing you did, me being the only one home, the young one. We go in and open all the windows, you open all the windows. 'Cause you want all this thing come inside. And right after it pass, you shut all the windows so you kill everything. I mean that's the mentality. I mean I tell people that, they tell me... you know the pore haole, or doctors... "What? That's dangerous." Eh, look me? I ran right next to the thing. Maybe, but on a humorous side I try and tell people now, in my life, now, to tell them, that maybe that was the way the haole was going get rid of Hawaiians. Was to come and say they was going kill mosquitoes and let... Because nobody, the guy never tell, the guy never tell, I never hear the guy stop the car and say, "get out of here, get away from here." You know he never, he just keep going, tck, tck, tck, tck. And he knew we were there. For Christ's sake, you turn around you had one line of neighborhood kids behind there. So, that's my other life I do that. I always try to throw some humor into... sometimes hurt so much that if you no laugh... So that's basically where it's at, that's my life here, in this community.

To recreate as we got older. I had my friends who could climb, some of these trees here, well, they were a helluva lot shorter, but we climbed it. We made our coconut hats. Someone taught us to make coconut hats. We still have one of them, was there last night. He is 73 years old, James Kaho'iua. But he tells me today, when growing up he would never tell people he knew how to make coconut hats. The reason was, because you sissy. You see, you're sissy if you make coconut hats. Well, some of my friends if I brought them

today, somebody call us sissy, they'd get dirty lickings. Nah, however, we learned, we sat out here on this pu'u, outside here under this tree. Tourism I guess was coming in, in the middle 50s. This was all before statehood. We no had TV. Truly, we had no TV. We never get TV in Keaukaha anyway in my house, until 1961. So, we had no TV, so we weave, he taught us, Mr. Baby Dan Nathaniels, taught us how to weave. But this guy was good. He was a beautiful Hawaiian, but he was good in this way. He would have us sit there and he would say, "okay, tomorrow I'm coming so, you guys going weave hat." And he would bring a car load of tourist, he was a tour guide. And they would take pictures of us, and we would be all shy, nobody look up, everybody maka'u, sit down, no say nothing. And not 'til I got older, in fact when I came back from the mainland, came back, Uncle was getting old, he said, you remember I teach you guys how to do this. You see what he was doing was he had the inside spin. Everybody would take people down to the floral garden; he would go. But, him, he would bring them... his group would have a special, native, you got some native kids over here... Look these natives over here, and look this... And they would come and say, "oh, do you want to sell that thing." And I would say, "I dunno. 25 cents, 30 cents, 40 cents, whatever." Well him, he was like, "no, I think you should pay one dollar-quarter." And I would think, what? "Uncle, tomorrow." But, that's how he was. I can still make a coconut hat. I no can climb the tree but I can make the coconut hat. So, those was our recreation. We played marbles, we played kamapio, we played, you know, card games, games of chance. That's normal in my opinion. We all did it here, in this community, so that's why it's so special to me.

UW: And were there other areas that you used to get other things, like did people carve...

PK: Carving was brought in. We were taught carving here. And I never realize, and I sure wish I had it now, but I know. We made... Papa Henry Auwae, he's from Keaukaha. But his claim to fame as we were growing up was not as a kumu lā'au lapa'au, but he was our woodcarver. He was the one that taught us woodcarving. And he did, he worked at Kūlani prison, so the koa was readily available. You know the boards, the cutouts, whatever, and he brought that for us. And during the summer months he taught us carving. I can remember we going to the Civic Auditorium, after it first opened and we presented something to a summer fun program; our rendition of carving. And we were probably the only summer fun program that had it, we made our lamps, koa. But I never realized the beauty of the hala. The hala tree. People tell me you can not. No. The hala, there are some beautiful grains in the hala, and I did that with some green sand. The green sand I got from Ka'ū, 'cause I was there with my uncle in Ka'ū.

UW: Down at Mahana Bay.

Kahawaiola'a Transcript

Page 12 of 34

PK: I lived at Ni'ole at Mahana Bay. Walking to Mahana Bay with my cousins. Carry out... those are etched in my mind. I found in Ka'ū, I found... and here too, outside on the point, what we call the point at 'Āwili, there was a kōnane board that we saw. Obviously etched in the rocks. And I went there to Mahana Bay and brought back my green sand, and with my hala lamp. If I have the opportunity now, the next time somebody has to knock a lauhala down, I'm going to cut one and try to do one another again. Because people tell me, you can not, well, I did. We did in Keaukaha. Mr. Auwae told us, eh go get this, that, and the other. And then we, speaking about the hala, like I said, that was the tree of choice in here. So that's how we learned about the ocean, right. When the hala falls, the wana was ready... the hā'uke'uke and the wana, those types of things were ready. When the pistil in the lauhala grew out, that was the same. But not realizing the Hawaiian from the mountains had the same. To find the wana was ready for the mountain people was to watch the kō because the lauhala was not readily available there. When the kō flowers, that was their signal to come to the ocean and gather. For us down here, we watch, we never had the kō, so we looked at the lauhala. When the hala started to fall it was time to go, it means the wana was ready for hū, and we went down there to go get. But those are things. We made leis from them.

I was fortunate, I was raised, my neighbors are the Waipās, Abraham and Elizabeth Waipā. And to this day I will dispute anyone, cause I have not seen it, and that's why I'm say I'll dispute anyone, because I have not seen it. They made white lauhala. And people say, oh yeah, they had. Well this, I helped them make. What they did, we went up to the volcano. We gathered sulfur. And I could not realize what the hell I was doing gathering sulfur. But just to go to the volcano with them, ride on their junck-a-lacka truck, we went up there, gather. Bring home the sulfur, and they lit the sulfur. Because the ground, our ground back there was all puka, puka in the back yard, so they lit in the cracks all this sulfur... [End of side one. Interview continues, talking about how lauhala was used to decorate the inside of the house.]

... so when you went in there... oh, look the na'i'a right there, look the pile out there. See 'em, the ripple, there, all their fins coming up. That's why I say I get so moved down here. That's why down here is so easy... there, you see 'em?

UW: They're going across the bay.

PK: Going across, deep out there you know, it's deep. But, that's the... they did that. So, that's why I say I beg to differ. I hear people say, but I no see them do that today. I don't see bleached lauhala today. They say all you had to do was cook the leaves. No. I went the Puna to gather with them, 'cause they were originally from Puna. So we went there, we gathered, brought it home, cooked it, boiled it, whatever. And that did not turn it. And they picked green,

Kahawaiola'a Transcript

Page 13 of 34

cooked it and bleached it. So I grew up with their daughter Mae, and all that. And that helped us because Hilo rains and you had to let it dry out in the yard. They had a circular driveway; they still have a circular driveway. Put it all in middle. And our job was to go play, you play up, but when rain, hurry up hāihāi everything in to the garage, so before it get wet. Wet, going palahū. Ah, look at that.

UW: Ah, look, plenty.

PK: Oh yeah, one whole pod. We had whales out here last year. It was so, it was so... I don't know how to tell. This place is so blessed. We had a whale family stay here. Sometimes these guys are just going through. You should see when they're going jumping, just like... You being from Waimānalo, I'm quite sure you guys see that a lot.

UW: We don't see nāia as much, but when I went to Honokanā'a on Kaho'olawe...

PK: Look, look you see how close. You see the proximity they come in? You see how close? Sometimes they come in this way because of the fish. But it's deep. Right beyond that rock there, that big rock out there. We call it the kākū rock, for us, the kākū rock. 'Cause from there we used to go catch what they call the poor boys' marlin, the kākū, the blue-bone. Well, you can go five feet beyond there and we're talking, it's deep, it's a sheer... And so you'd conjure up... We have a shark hole out there, that we aloha the manō. And the right of passage... we used to have a blowhole on that side 'til they came with the sewer plant. So there was a blowhole there. The right of passage for a young man, for us growing up, was to swim from the blowhole, over here to the kākū rock, by yourself. So you had to... develop and get some... So that's why we are all wonderful swimmers.

UW: Did that manō out here have a name?

PK: I would believe it had. I never knew it. With the only exception from my dad... Who told me, the first time I saw it I was 15 years old, 16, somewhere in there, I came home, I had the goggles under my neck, I was choking I drank 28 gallons of water, something I did, I know what I did. I broke every record it took for swim... I didn't see it here, I saw it down the other side, right there. And I told my dad, I mean I came home all bus', scratched, all over, and he said, "what's the matter?" "Oh, dad, the shark." And this is when he told me, you don't have to worry, because you belong the shark family. By then, okay, 15, 16, all right, I can dig that now. But how the shark know, that's all I like know. Now I got couple slaps. "Don't be stupid." 'Cause now I'm questioning, 'cause there've got to be reasons, and he never like that. My dad was an old fashioned person and he never like that. I tell that to kids today, but I have no fear of them, I have no fear of them. But I'm not stupid enough to go feed 'em and what some people do, who take people go dive

Kahawaiola a Transcript

Page 14 of 34

around 'em. Because they're the creatures, and what's happening now, I mean, I'm in their domain, and I respect them and hopefully... I believe what the Hawaiian says, that's ours, you're 'ohana, that's all my 'aumakua. My niece came back from the mainland -- Connecticut -- and when I told her that story, if she never went out and she bought me one amulet, a manō amulet. And she said, "uncle, here." So, I said, "why you did this?" And she said well you know uncle you told me this, so I figured this, I saw it and I wanted... So I said thank you, and I told my wife, you know what, I'm going to take that and I'm going to do something with it, and I'm going to send it to her, she has I son. I said, I believe your son should have this. Because, she married haole, but your son has to understand. I know where I am, I know who I am... you guys don't know who you are because you came back here. "Oh, I like eat laulau." My brother tries to do what he can on the mainland, but I told her, you guys need to know, and you guys need to be proud of who you are. I don't tell you walk around stick out your chest all the time, but, don't shy away when someone says, why is your hair dark, because her brothers are all blond hair, blue eyes, she's the only one that's dark complexion. You know, same mother, same father, it just happens that my father's side... I just happened to get the Hawaiian. I get the Hawaiian. Those are my recollections in this community and so we had, places to gather. All that. Only when I speak to someone like you who can ask me those questions. You know why it's so easy, because someone a UH student just had me to do an oral history of Kawanānakoā. I said, I'm the wrong guy to see, I'm only 56 years old the Kawanānakoā was built in 1938, you need to get... I can take you to some people. But because I was the president of the community association they wanted my spin on what, how Kawanānakoā came about. And that is why I feel comfortable with your questions because it's in my mind. And every time, I love talking about it because I just love this community.

UW: It's important too that the stories keep getting told.

PK: I find that very easy now for me. Because I am, to me, my generation, even my friends, we get together once in a while, drink and talk about it. The breakwater, even that breakwater. I walked it three times as a kid, well I shouldn't say three times. I walked to the end three times as a kid because we had an uncle, Albert Iokepa, who was as far as I'm concerned again... I guess every island get 'em, but I get one too. He smoked Bull Durham, probably died of emphysema, he used to wheeze. But he taught us the value. We carried his harpoon, we carried the rope, the kaula, all the way. But all we did was go out there, he was the only guy that I knew. My dad guys used net to catch turtle; he used a harpoon. His harpoon was a 15, 16 foot two-by-four that he had made it round, just planned down and put a barb on both ends; one end was three-pronged the other end was a one-prong barbed spear. We'd go out and after a while we'd carry it, because his son was with us, but we'd carry it, we all had an opportunity. He taught us how to

Kahawaiola a Transcript

Page 15 of 34

make 'a'ama during the day. Now you got to remember, guys go make 'a'ama at nighttime, put flashlight, some of my friends are experts at that. But this was during the day, make 'a'ama, catch the eye. Come on, how you do that? But Hawaiians were very innovative. You did that with the niu, you put the niu... I guess in the old days you used wauke or something to make the string very thin. But we used the split niu, put a piece of thread over it, go catch them in the eye, that's one way. The other was to put an 'opihi and jump, with the 'opihi, tickle the back of the bamboo. And we did all of that going out. We didn't gather the 'a'ama until we were coming in. But we pound 'opihi going out, we did h'auke, we did all of that. This is what we did, going out. Uhu, we would stab uhu, turtle, different fishes, whatever. We did that. That was another form of our gathering. Only when I get an opportunity to talk, then I can talk about gathering, what we did. Before it was not gathering, it was subsistence. And that is why, when I hear... I don't categorize say, like the hālau now... with due respect to the hālau, yes, because you go work all day, and you go gather when the competition comes, or the hula performance going come, or whatever you need to do then you go gather.

For us it was how we did. We had to do it, or else we no eat that day, and when uncle says go, we gotta go. It's not, bum-bye. We no tell our elders... even if I was going some place else; maybe I was going play down the park. And my uncle says, "hui, boy, come here." Inside me... but how do I tell my uncle, no. Okay, uncle, wait I go change my clothes, I go home change my clothes, go put on my pants to go in the water. Bum-bye when you go home, you give daddy this. My father worked at the wharf. Now, when I go home, I clean everything and my father go, "ooh, eh, how you got this?" Oh, I went with Uncle Albert and we went down. I never knew my father to worry about, or to say, like I would with my mo'opuna now... where you going? Be careful. I never knew anyone that drowned when I was a kid. Because, no body did, everybody just jumped in the water, nobody did drown. I found out when I was 17 I joined the Navy, I went to the mainland and we jumped in the pool, about 70 of us jumped in the pool all together, about 40 guys no could swim. I was thinking what are you guys doing in the Navy; haole, pōpōlo, right down. I never know. But we went 7 Hawaiians, 7 Hawaiians jump in swim around, backstroke, whatever, and I could never believe it. And that's why the questions you're bringing up... yes, but I can equate it to if someone would say, what we gathered. I never thought of us doing gathering, or those kinds of things whether it be for flora and fauna, for sustenance for eat, for craft making. I never knew. But that's what we did. I did it. I can use the adage: been there, did there, done that. But that's not where I'm at as for as my community.

UW: So where was Keaukaha School, same place?

PK: Same place.

Kahawaiola'a Transcript

Page 16 of 34

UW: And that was the only school for this community.

PK: The Kawanakoa Hall was right out here, the one they are dismantling now, was right out here on the point, and that was used as a nursery school. Churches we have, on Lyman Avenue we have one, Ke Kilo'hana Mālamalama, we have one on the road I am, Ka Uhane Hemolele O Ka Mālamalama, we have a Mormon church, we have a Catholic church, we have a Kūhiō Church, so we have 5 or 6 in the community.

UW: Malia Puka O Ka Lani is the Catholic church. And they've been around...

PK: Right. Kūhiō chapel on Desha Avenue, the Protestant, is probably the oldest, 1927, maybe. Which is 1927, right at the time when the community was coming on board, for their parishioners, so they came on '26, people were moving in, '27 they built the church. And then the Catholic church was there.

UW: Okay, I'm jumping around now. The Keaukaha Community Association, is that one of the SCHHA (State Council of Hawaiian Homestead Associations)?

PK: We are not affiliated with the SCHHA. Past administrations were affiliated with the SCHHA, however, things have changed, where the community believes that the representation that we were getting, the types... Because SCHHA came in to do, met with us in the community, they came, you know, did their selling, their organizational whatever. And the community decided not to be part of it. So we're not part of it. And I believe, I was an instrumental force in not having them... because I have a political view that I believe, politically, that the idea, the idea that they represent all of us. You can not represent all of us, if all of us are not part of it. So, they have a right to go do what they've done, and they went ahead and did it. But, just like in this last law case, lawsuit, with the Barrett, representing Native Hawaiians, their language was that they represented Native Hawaiians. Well, they did not represent Keaukaha, and Keaukaha was on record to say that you don't. Since then they've been trying to get us to come back into the fold, but I refuse... and it could be my own thinking about it. And I'm glad that the community agrees with it. But it's not me - I don't force it on the community. I just tell them that this is where it's at, and if you want me to I'll pursue it. But, in all good conscience I can't take you guys down that road, because I don't believe that's how it will be resolved, politically or whatever way the SCHHA represents, it's not going to get done in the process that they're trying to use. Because the process does create conflict. It created great anxiety when the Barrett case, when word went around, when the SCHHA came out publicly and said, you Hawaiians, you're going to lose your homes. Well, you raise the anxiety level. We get high blood pressure already, and you going do that. Now, you raise the level to something that was unfounded, totally unfounded. That almost a year later, proved to be nothing. So, I no say, no maka ala. But you don't raise the ire of a community, of single moms, of

Kahawaiola'a Transcript

Page 17 of 34

parents struggling, who getting their own hard time, by saying, if you no do this... See, that was an alternative, that's why that wahine got on Yosh last night... if you no do, you're going to lose, you get nothing. Well you can't do that. I found that, because that's how I was raised.

Again, my dad was a very strong disciplinarian... no hang around, no go with that guy, they're bums. That's me, and the more he would tell me, no go. I would go. So, that's how I know. I don't know about wahine, 'cause I never had sisters, but men, I keep saying, boys, that's how it is. When you tell no, they going touch. I try to do that in my life with by telling my kids. I no tell you who to hang around with, who your friends are. When you guys get of age, and there is an age of reason, when you guys do that, not 7, when you guys 18, after that you do what you got to do. You no can shame me, you'll never shame me. You guys get the name, you get my name, Kahawaioia'a... that's your name. That's the only thing I could give you at your birth and you'll take that 'til you die. My daughters, you guys get married, eh, one daughter is a Daifron (2), one daughter is a Sibayan. But I keep telling them, you got to remember, you have Kahawaioia'a, so it's up to you. You never going shame me. What you do in life, you can become a murderer, you can do whatever you want to do, ... it will not shame me, only you have to carry that, you have to carry that burden, to where you got to go. I do not believe I've done that. God rest my mother and father they're gone now. But I've never did anything, that I believe they should be, or I should be ashamed of. But, I don't... by any stretch of the imagination... I've been arrested, for my views as a political activist. I've done kolohé things that I wouldn't want you to be recording, growing up in this environment. I've done my share, I did it. I believe I've asked and gotten the forgiveness, of the people that I needed to. I made right with the Lord, as far as I'm concerned. That I'm prepared to let... if there is one thing that I will always say and tell anybody, that I'm prepared to do this... is to let my actions on earth dictate where I going at the end. And I no can, I ask nothing from no body, that's where I gotta go, I already made. 'Cause my wife, you no can correct me, how I going go over there. If that's where I'm going to go that's where I'm going to go. But it's only going to be through my actions on this earth, this time over here. So I try to impart that in my kids, try to tell that to the young ones in the community, that you have choice, you guys make them, and you carry the burden. Don't, no go look back at your parents, and if you parents, you know, no go hide inside the house if your son did something wrong by today's society.

No, as a community we're supposed to come together, and... That's what was happening in this community. I was finding, it was the history, you know, we had nit-picking, backbiting. One of my philosophies as the president is to reduce neighborhood tension. And that is to make sure... 'cause we got an influx of a lot of new people, and kala mai, guys come from Honolulu, they get the idea that they come here, and in Honolulu we do it like this... We no allow somebody, your neighbor to get pig, sink that. Of course, of course it is. But

you have to understand. My roots... you know that pig, that's for us go eat, or my mo'opuna going graduate next year so I do that to cut down on my cost. But we should not even have to go there... why you get 'em. But that's how I grew up, my neighbor had one pig, chickens, ducks, some aunilie brought over one dozen eggs, when they 'oki the chicken we all go over help clean, and do this, and do that. I mean looking at you I know you are a hula dancer, and the only reason that I say you are a hula dancer is because I see you carrying your Hālauaola bag. I was at the conference that's why I say you look familiar.

UW: I must have seen you there.

PK: Even as you, and obviously through your language, and your participation in the hula, that to me has been has the highest form of trying to perpetuate the culture. That's my opinion; that's the highest form. However, I try to tell Hawaiians, 'cause not all of us are hula dancers, not all of us can chant, not all of us are fluent in the mother tongue, that... you see what Mr. Konanui is doing? You see? That is our culture. It is working everyday. You may tell him he's gathering, but he'd say, 'nah, I gotta pick, the thing looks ripe.' And I'm so happy that he did that. Because that is how I can equate, that is our culture, it lives everyday. Only the Hawaiian don't understand what the culture is. To survive is our culture. Our people came, if that's the way you look at history, the way that it is portrayed, that supposedly we, our ancestors came on the Hōkūi'e'a. Came across on a canoe, on a wa'a like the Hōkūi'e'a came over, brought with them the mafa plant, pua'a, one 'lio, and different kinds of plants that they brought with them to come here. Found this place, lived, nurtured it, watched the trees to grow. Because they didn't come here to a forested place, but to see all that, that is our culture. It lives today, our people just do not know that the mere act of coming down here... in this case a kupuna come look. When he 'ono, then you do that. The mere fact of doing that is that your culture lives. Because anybody else would say, that's just an ornamental plant, I've heard that before. Make rubbish. No get that 'cause make plenty leaves, no get kamani 'cause it does that. I ate kamani, it sustained me, down the beach. Hala, you can make lei, this that, it's 'ono. You open that buggah, you bust that buggah, you get down inside, it's little bit work, but it sustains you. That's what I mean, our culture lives and I believe, because through the hula, through the chant, the music... I'm partial to the music, because I love the music. So, the music, the hula, the language, that to me is the highest form right now, because it is the most exposed form. This last hula conference is just going to do it more, it is going to go to the world. I like to keep for me, with due respect to Auntie Pua and Nalani who grew with up down here, is this... I get plenty girls and men know how to dance hula, they don't know how to kālua pig. Some places you no can kālua pig no more. And one is Los Angeles. We get one pile Hawaiians over there, we no can kālua pig. I went there now you got to boil 'em. You got to boil the pig, you no can kālua. I went there we had imu rock, I sent home, my friends

got me imu rock, send up there, we made everything. You can't do that no more. Now you can understand the reason there, but in Hawaii, I get boys that don't know. Come on, well what do I do now? Set the imu; how? You see. Now, fortunately I have friends that can help them do that. But I learned from our kupuna who have gone, several different styles. I've done some in the hole, I've done some on pāhoehoe, surrounded with rock, with dirt, with sand. Everybody now uses polyurethane, you know Hawaiians are up with the technology — polyurethane. You know, bring a roll of poly. It works. So they were innovative, but that's our culture. That's not... at first it was like, tsa palanalo you guys. Tūiū-man them rolling over in the graves. But you'll find it's less work, so we no need work harder, we just gotta be smarter.

UW: As long as you teach some kids the old way...

PK: As long as you no lose sight of that. Because you go to Ka'ū and there's no polyurethane what do you do? No can make party, no can make ifrau? So you got to be prepared to do that.

And that's all I'm trying to say in our culture. Because I always go to that, I always say, guys no can sew net, what's the sense of talking about going down the beach, we no can go gather the fish, you no can sew the net... there look at the fish. No more throw-net, they don't know how to make one net. What do they say? Kūlia i ka nu'u, go to the source. Well you have to go back to the source, you got to learn how to make one net. I have some people here, some of our aunts, ladies, that still sew net. She still sews nets. Her husband can't do that, fish anymore, but her son... so she sews nets. There are resources still available. Now they get books on how to sew nets. So if somebody would feel 'eleu and go get one book, you can do it. So I'm glad that those kinds of things are in print, however, never can beat sitting down with tūiū. Show you how to make the piko, start the thing, come the pu'umana, do the tūp, make your own haha, we used to have to make, now guys used credit card whatever.

UW: That's right to put it through. Credit card I didn't know.

PK: That's right, I said what you doing uncle, the thing it's the perfect size, for the eye. But to me that's the ingenuity of the Hawaiian people, it was the ingenuity. So the culture lives, it is a living culture. This area has a lot... but that's for me.

UW: Okay, lets move to the airport. Lets talk about the improvements first, what was presented last night. Are there areas of cultural significance that, you think, what they have planned may impact?

PK: Based on my knowledge of what they have planned on the inside, within their boundaries as they have said it... I can not see, and I say that with

reservations, I can not see... and I tend to agree with Yosh and the findings of no significant impact based on what they are going to do on the inside. That's why I asked him for clarification last night. If you're going to build something that is going to make more noise, then yes you will impact the cultural part of it because... and I'm going to make an assumption, we're going to be hypothetical all the way, 'cause you've just got to be hypothetical. What happens when that noise... sometimes the Royal Order of Kamehameha uses this area sometimes to do an 'awa ceremony at 12:00 you know, and before the sun comes up, they do their 'awa ceremony up here. So, if you do that and cargo planes are going to now... cargo has now increased in their productivity and they're going to come, instead of coming in at 1:00 they are going to start from 12:00 on or 11:00 on. I believe that is an impact.

Let me segue just a little way to give an example, and you can correct me if I am wrong. There is no, they say, there is no significant impact to Mauna Kea, when the astronomers were building their thing up there. Yet, the community of Hilo, as far as Mauna Kea was concerned, we were creating an impact on them. How? The lights, okay, the lights we were using in our subdivisions. That they even went to the County Council and had it changed. You see so, eh wait, you guys went up my mountain used 'em... I think that's an impact there but you guys turned it around and you said I'm impacting you. So the County Council now says you have to use this low type of beam. So you see, that's all I'm saying. Maybe they found no significant impact that what they were doing was wrong, I know they are because they destroyed some ahū and whatever. But if I can impact them after they were there... if you no was there I no impact you, I can go get brighter lights, I go see better, it's going to improve my life. But, because of what you do up there, I had to scale back, or live with these yellow lights, so I don't impact you up there. Then I would believe hypothetically there might be certain things, I no can pick it now, I told him, if we just look at, continue the dialog and be open. You see I didn't like this kind, when you sign the thing, forever never, forever. See I no can go there. I been there done that, that's why I don't want our people to go into that. And that is what my only adamanty about it is that, as long as we can go back, the suing part, yeah, no sue me is fine. But no tell me that, "as long as we're reasonable." That's why I love, I was a union president for 20 years those kinds of terms are the best of terms that you can use. Because you can't disagree with terms like reasonable.

UW: You can't quantify it.

PK: Yes how do you do that. So you can't argue. No, you're being unreasonable. It's hard to fight. So I learned the semantics of those kinds of words, significant, adequate, what is it? But you can never ever sue me for a significant rise, an adequate rise, as long as it's reasonable. No, I got to know, specific, in that area. Maybe I no can sue you, and I think that's where

it should end, you sign something that you can never sue me. But if you want to keep adding caveats upon caveats, then I want to say, I can never sue you unless you go up 5 DNL, if you go 6 I'm going sue. So this is what I'm trying to say. Now, just so you know where I'm coming from in thinking. The significance, personally I don't, I can not see. But I'll have to believe, and sometime, eh, sometimes, not everything the haole says is wrong. I no can say that either. Just like the haoles come around and say, you know the sonar sound could be bothering the koholā, I tend to agree. If you was to dive, not to see the koholā, but just to see how fish react with noise, it can be very disruptive. Just like somebody saying I can get a heart attack sitting outside here, especially when the plane comes....

It's funny, they were there last night, the Japanese lady making a lot of the comments, they live right along the fence line, Mrs. Hanohano. But I know what her husband is saying. They hear the planes, but when they changed the runway – they live on 321 – when they changed the runway, that's why I got upset with the DOT, they did not tell this community. That plane when come at three, I was sitting here, and 321 comes this way. And when plane came over I said, eh, something's wrong, why is this guy coming over here? Because normally for us growing up, that was used just as an emergency, something happened. And I was going to tell last night, but that's bull crap, that's history for us. There was only one plane crash I seen here all my life, that they talk about at the end, the buggah run off the end, went off the road, went into the bushes. Okay, the buggah went run off, straight down into the bushes, never go where the McDonalds is now, there was these big bushes there. The buggah went all the way down to the old road, a jet crashed over there, a saber jet, military jet. So that's the only one I saw in my life here in Keaukaha, in Hilo. So I'm not too concerned about those kinds of things, because I believe the technology, I ride the plane all the time. Just like doctors, I believe, for me, doctors. I trust our kupuna with lapa'au, but, when my arm hurts, one cortisone shot, the buggah go away right away. But I will always say, if I no need go see the doctor, give me some nehe tea, some kukū tea, kōko'olau tea, something, noni. What's wrong? Because why, I'm fortunate I can afford to go get a cortisone shot. Some people can not, our people can not. So, I should not begrudge them getting what is necessary. And that's the part of the culture that my community may have to suffer in the loss of it, and I'm prepared to fight for it. Even though I can go buy my own other stuff. That's all I'm trying to say.

And to answer your question again, I don't really believe there is, but I don't want to foreclose the fact that there might be. But how do we do that? We don't know. People got to go work, I'm fortunate I'm retired, so guys are not thinking, oh, I got to make this bill, I've got to meet this. That's what's in your head. You can not come to a meeting one night... I appreciate... I got meetings these guys can go on to 10, 11 o'clock, I got to cut them off. I get community people want to stay, they want to. Because the want to... there's

a hunger to... and I equate that to this, they have a hunger to know what their rights are, and all I'm trying to express to them is, no do like I do, but these are your rights. You have a right to do it, you don't do it fine, move along, I love you still and move on. I'm not going to tell you, no do this; 'cause I can't do that. But I don't see what they're doing right now.

UW: You saw all their recommendations, and their mitigation measures, and I know we talked about a survey, and we raised hands, but, for you personally – the wall works or doesn't work?

PK: I don't think the wall is going to work because the effect of the wall is this... and I just want you to hear what he said, and again you can tell me if I'm wrong. What I heard them say was that the wall was going to take care of the 90 something guys along the fence. That was the primary reason for that wall. But as the OHA trustee said, then you would block the tradewinds that now affect the rest of us that are not going to be with the sound. And that's absolutely right, because when that wind blows from there, that is a cooling breeze. Especially when it comes this way, comes this way into the community, and the only colder wind would be the wind from the mountain. The offshore wind, that's what is here. If you want to talk culture... the offshore wind, that would prevent, I no going say the 15-foot wall going prevent it strongly, but if it does, you prevent an off-shore from coming in here. The offshore does what it does, make the water mālie, you know, you get that with an offshore wind. Now, with the tradewinds being stopped, now they're going to tell me, the way with the convection of the wind going flow like this, it's going to go up, going be down, going come like this... I know that, I'm not stupid, I know it's not just going to fly up in the air, it's going to come back someplace. My point is, you change the direction, it's just like the ocean or the river, or the kahawai, when the kahawai go like this, if it went like this, when somebody go change 'em, make it straight, trust me, it's going to go, go, 'til it goes back to where it like go. I am saying, you change the direction, you're not changing the destiny of that kahawai is going to do, who it nurtures along the ways. So we can not be putting up an obstruction there, that's why it's totally, the community... No sense we beat a dead horse into the floor, because we're not going put... we're against the 15-foot wall.

Now, I no tell you the berm is any better, but aesthetically it may be, the wind can blow through. Somebody said plant trees, landscaping, okay I understand, but however, we got to limit ourselves to the type of landscaping. You not going plant one 40-foot tree right by the airport, because they'll cut it down. But, tell the people that. No go come with fantasies... landscaping I even heard the OHA trustee say put trees, have you ever thought of trees? Well, what are trees? Same thing auntie went say out of one side of her mouth, you build a wall block the wind. Why you put trees on farms? She's a farmer she's supposed to know. When you put trees its called windbreaker, windbreaker. You guys no understand. I no like get into that with my auntie,

but you see. I just love Hawaiians, they say no build a wall, block the wind, but plant a tree. And when you plant the trees it's a windbreaker, what is that? Well maybe the wind can go through and that's why they say windbreaker, but still... And the airport is not going to allow it, and I understand the safety things. I'm just waiting for the shoe to drop.

That's why Hawaiian Homes they went throw me off. They went drop the shoe before the State. And they say it like this... for health and safety of my people what are you going do? Because the Airports they say they got to do this for health and safety, and then you'll be in a deadlock... for health and safety. I do hope... I'm going tell you this, because truly, if this community... if I believe I have the pulse of this community, this community will do one of two things. They'll be apathetic; not become involved anymore, or they will do and say this, that... how do I put it? You know how some people just like to be told, have an opportunity to give input, and that we all have a civil time making the input, giving the mana'o, and then you know what, I got to let it go to the people who got the expertise to do it. With the caveat that there are going to be individuals... see, that's why I don't like the term, if one no like, then it's no go. Well, then they have to massage it that they may have to accommodate the two or three. I don't subscribe to that, but our people are, who we are, and sometimes it is kana'ia to talk in front of 40 guys. That's not one of my problems, we can see that, that doesn't bother me. But it is, for much of the people in my community. I feel that in my heart. That's the reason I chose to become the community president. I decided that it was time for me to accept some of the burdens that was set upon our people, some of them can not bear. I no tell that I can, but I have an understanding wife, she's Hawaiian, she's from Papakōlea, she's a product of the homesteads. So she understands, not fully, because her life in Papakōlea was different than Keaukaha. And I couldn't believe that, that's what I couldn't believe. What, you come from the homestead you no eat fish, what's the matter? That's why I keep telling her, you guys mountain Hawaiians, you guys from the mountains, you guys no eat that kind stuff. You guys eat that kind rosy-apple and all that kind. You guys do down the river swim, you no swim down the ocean, you guys don't know how to swim. That's the only way I feel.

That's why I wanted to make sure with the DOT, I wanted to make sure with the consultants that, some dialog. Maybe it's going to take one more meeting to get it, and if not they're going to proceed what they want. It's got to go... time, I understand. I no like be, just like Mrs. Moniz said, now it looks like an ultimatum. 'Cause every time come... I don't know how you feel about Kamehameha Schools, but Kamehameha Schools is over here in this community, and they came with an ultimatum. You see, that's why they're there, they came with an ultimatum. But, I happened to be in the meeting and Trustee Jervis came with an ultimatum. We've been here 7 months on this island looking for a site, we never find. So Keaukaha is the last resort. And

we're having the meeting now. And we're going to build 'em. Excuse me? Seven months, and you guys coming now? Where were you guys 7 months ago? Well we checked out sites, the one we own by Wainaku, contaminated with arsenic. We go check over here the po'e haole place, we go check over there, contaminated with this... Now, the Hawaiians the only guys left... come to the Hawaiians. So he looked at me, and I had a running match with him that night, and he looked at me and he said, "are you tell me you don't want us here?" "Eh, the shoe fits wear it." "You know what, if you guys don't accept it now we'll leave." I said, "there's the door braddah, aloha, out the door." But, I didn't realize the guy is an attorney, and then he came with "you guys"... and then the challenge became me and the community. "You guys going let him run you guys?" And some of the people that were there last night were there, and just looked at him; there's the door. Hawaiian Homes went kind of swallow hard. But, there were many Hawaiian educators that I knew, were from Keaukaha, that are still teaching now, Kula Kaiapuni, when they said, what are you going to do? And they explained. And I said, can Keaukaha use the place for educational purposes? After, after. Well, we're going to give everything to the Hawaiian Homes when we're done, we're going to give all the buildings. We're going to build Hawaiian Homes a new office. Well, I could care less if they build them a new office. But they did as part of the caveat, and that's how they... so I came up and said this. 'Cause I knew already if I made it, and continued that stand, we would not have had it. And I said, the consensus that I have is that this community would want you to do because you guys going be short time. Supposed to be two years, it's been over 5 now, you see how that goes. But, anyway, for the consensus and as long as we can get some access to those buildings after it's done. And their answer was okay, we can do that, we can try and work that out. And that's what it was, and they built it. They built it in like, 9 weeks. So it can be done, and they did it... [End of tape one. Interview continues, talking about Kamehameha Schools in Keaukaha.]

[Begin tape two.] ...And I said do you know if it was 10%? Silence. 5%, 4? Well you see that was the shameful part, they knew. Was nothing, nothing, nothing from the community. Why? They went out and got their students before they got their school. And that's why they went someplace else, go look over here, go look over there. And now sluck come over here, and that was my only thing. And from there after that I then got involved, you know, really coming out. I used to go to community meetings. But, I had other things I needed to do. And then I could just see my community deteriorating, there was nothing, no activity, nothing moving, we got no programs going, just nothing. And that's the past and I'm prepared to leave it there; not dwell on it. But I wanted to make sure that, eh, I going put my money where my mouth is and make sure that at least that my mouth, if nothing else, not my money, going make sure this community going get something, get something. That's why I want to extract anything and everything I can, from anybody, any agency that want to come here now, I'm going to do it. And I'm going to be

adamant up to a point, up to a point. That's what I'm leading back to. I'm going to go, go, go... not foreclose on shutting them out, beat it. But, I don't have a problem to threaten you with beat it, and then we go beef someplace else. Unless you're prepared to sweeten, sweeten the deal so people can. Like I said personally the noise from the airport doesn't bother me because I got remote control. If never had remote control I'd be pissed, because then I got to get up, or miss something. But, because get remote control, technology came, I learned to use that way rather than get mad at the airline no more. But I still, by no stretch of the imagination am I bull shitting when I say I call Aloha Airline, and I can not see someone saying, "well, we have a waiver." We have a waiver, go take it up with Daniel Inouye. Trust me I will. I will do anything for this community. So that's my only thing with airport and the expansion.

UW: Do you have any other suggestions or recommendations that would be good for the community maybe; that would help the situation?

PK: Well, I think that Mrs. Hanohano raised a good question that she posed to Rodney. If you explain the process, the comment stage, because this is pre-assessment, that maybe a full-blown EIS, trust me I know about a full-blown EIS. It's costly, and it prevents projects from coming on line. That's a common practice they use to prevent, to prevent things from coming on line. Well, I'm not here in the prevention mode. The reason is... I can be but I'm not. The reason is eh, it's our form of transportation. All I want the consultants to understand... and this is strictly from a view that they need to... and that's why I'm asking that to help they put it in a little packet form to let them look at it. A simple summarized thing, to say this is how the process works, you have until this date to do that, and if it is negative, if you guys are going to give a negative response, which I believe they will. You know a negative, which would mean the EA is sufficient enough, then explain why. But also explain why... not we looked into moving the airport, but that we looked into it. Break it down. It was costly, it was this, it's going to cost that. You understand? So that people can see what compelled them to make this decision. Because there are certain things that I'm saying that is compelling me to say it, because for one thing, Hawaiians have never had an opportunity to, especially this community... Has not had an opportunity to be so compelling so as to that we're a key... and I have to look at it that way.

I kind of know in my heart that the project is going to go, but I find a lot of things now are community-based. So communities got to buy into it for it to go smoothly. If it doesn't, then there's all these jagged edges... anxiety on the part of the people who are going to have to do it. Are we going to go? Are we going to have litigation? Are we going to have this and that? And Rodney kind of touched on it last night, Denis kind of said yes, he said yes. Sure I understand it. I know our people missed it, it went over their heads. But, I'm glad that it went over their head, so that we don't get into the

intricacies of that, as opposed to reaching a remedy. And if we look at the word remedy, there's many ways. The remedy could be... some guys... if apathy sets in, right on, right on, for the State, for the DOT, right on for them. It means nobody going show up, nobody going do this, and we can do it. I don't want that. All I want is the people to be able to share, make their noise if that's the right word. Speak from their na'au, tell you what it is, and just, the response back should not be, we did it, done that, been there. It's okay, let me go look. I think that's it... I really never like that phrase before, oh, I'll get back to you. Well, when you do, get back, that's all. We've addressed that, we've addressed this, we've addressed that, and this is the reason why we no can, we think it's too costly, we think it's this, we think it's that. Because I heard this, if you guys no like the wall, we not going build the wall. But you guys going still be stuck with the noise.

Well, I really don't believe it's a noise thing anymore. Because, the noise not going away, it's going be there, I get noise here, every morning, you can come, I'm quite sure, 5 o'clock, 6 o'clock, you'll hear, beep, beep, beep, beep. That's the wharf. And I kind of live in the middle of the subdivision. So I hear, beep, beep, beep, beep, clang, boom, bang, beep, beep, beep, beep. So that's trucks backing up, you know. Sometimes, honestly, to tell you the truth, it does not affect me. I could care, because the reality, I'm really faced with the reality. And that's all I'm asking them, why you guys never address the Mayor's position? The Mayor, I believe the Mayor said, beat it, no come here, move the airport. It's a disservice, he used kind of very strong language, it's a disservice to Hawaiian people to tell them you're going to air condition their houses. It's a disservice. I never hear one Hawaiian say that, I heard the Mayor say that. Politically, I no think he was doing that politically. I don't. Because he was elected already, he wasn't running for office, he was elected, he was the mayor-elect. So what does that have to do with it? So, yes, the suggestion I have is that, just... is to find... work towards finding some remedies as to how we can do it. I really don't know. The suggestion, I really don't know. I can only say that I tend to agree like the lady said, Rodney can you come up, can you do... rather than in that big book, because the big book contains all the words and diagrams... You know, something that, look Keaukaha, this is what we got to do, this why. Just tell you, write it, this is what happened, we no can go there because this over there, we believe this, we have to expand here, the airport, the cargo there, in a short form to explain to the people. And I believe, people will have a better understanding of what can or will happen. More in a loose-leaf scenario, reading material, so they can better address some of those questions.

UW: Are there any other community members that you think it would be real import for me to talk with. I think you know already that I was able to talk to Luana Kawelu and she is going to try and work to get Auntie Alice...

PK: Aumoa. She's a gatherer, a resource person. Her forte is lauhala, but she does many other things. No, I believe that... and there may be others, Auntie Abbie Napeahi, because that from the stand point of... I look at them as being very, they profess to me to be culturally sensitive in the area of Keaukaha. But, that's only playing on words. With due respect, they're my kupuna. If there is anything that can help you, they would be able to... you get a spin on our past. Because they are our past, and we no can improve the future until we know where the past has been. And that's a truism, we are who we are because that's who we are. Those are the people. There may be many. I know she's hard at work still at Alu Like so, you know for her. And the others, no, I wouldn't be able, from her you may be able to get others. If you have the opportunity to make contact with her. I think through Alu Like you would be able to get a hold of her.

UW: I talked to Rayce Bento, I think he's over at Alu Like, their kupuna program coordinator. So he should get back to me, and if not I'll call him up one more time, just to check in.

So what's going to happen now, is I'm going to take this back, hopefully this worked, and I'm going to type up what we did, and then I'm going to give it back to you. You take a look at it. If you like some portions of it, some stuff maybe I got wrong, maybe spelling, people's names, maybe you want to fill in a couple blanks, something else come into mind that you want to put in. I'm going to ask your permission if I can use it in the report. And hopefully we'll come back.

PK: I understand deadlines, everybody has their deadlines. Legislature's open, biannual budget... that I understand. It is my job to make my community understand that, because we can not go the house-to-house and do that. And that's why I took a lot of that thing and said yeah, I'll send a survey. But the survey might not be the kind survey they like. 'Cause, I'm not going to do the survey, but I going to say something like this, do you like the wall, do you want the wall? Yes, or no. Now that's not a survey per se, because now really that's a very subjective survey, it's not an objective survey, it's a subject survey, because I never leave one place for comment. That's my reason for saying. If you guys have such this rapport with the Planning Department of Hawaiian Homes, go do that with Hawaiian Homes. Have them send us all the survey, they have all our names and addresses. Do that.

UW: That's the sentiment I got last night at the meeting. Even with the question of the survey, you don't ask the community to survey itself.

PK: Well, that's why I did a ridiculous exercise in telling Yosh, you want to take a vote now? Because he came back to me, you think we can change, you know the question they said no, can we change around, I going ask the question this way and see if they change. But that's consultants, you have to

think of ways to manipulate, to change it, you have to show the reflection of the fight, the proper perspective. Well, I'm not into that game playing. You want it? But it's all unbiased, all hypothetical. I'm going to explain to them what you just said. And no, the majority, whatever he was looking for, majority, or minority, you got it. I got in the car I told my wife, "whew..." I could of really looked like a fool doing that. But I just had feeling in my heart. Because I've been getting these calls, what about this, what about that? And it can be... you guys, show up at the meeting, voice your... Because I've been getting these calls, what about this, what about that? And it can be... you guys show up at the meeting, voice your mana'o. You guys tell me you like input, that's all I'm trying to do is give you guys input. Because tell stay home they're going to do it. And whatever, and then you guys going sit down... That's why get the word namunamu. If never had one word namunamu, then our people would not be there. But we are. You going go be apathetic about it, let it go. Then go sit in the garage, over 2 case of beer and be namunamu. Too late. You guys had opportunity. Good, bad of indifferent, say it, make it, get it out of your na'au, get it out of your system and move on with life.

UW: If you hear from the community that they have a specific desire... Because it's really easy to say, we no like this and we no like that, and that's good too. But if they have a specific, you know what we really need... what we really want is this and this. If there is a specific, now is the time. I know it's hard too because they want numbers. "Can you tell us how much dollars you're talking?" But...

PK: That's why I didn't interject, because I need to let them get it out of their system, because now with that said... I want Yosh and Rodney and Denis to and those guys to come up... if your number is only 10,000, I heard one guy yell 25,000. But if your number is only 10,000 then say it, tell me this is it. And then the guy can say, yeah I can, or no I no can. Trust me, there are people that are just struggling, they're just struggling to get by, and it's a struggle. And that's all there is, but you're absolutely right, and I'll tell you this, no reflection on the other people, because you're Hawaiian, that's the difference. That's what the other people no can understand about us. We're not different, but we just get certain things... and I'm quite sure the Chinese, the Filipinos, Haoles, all grew up with their own, they had values. We all have. Our link to each other is because we're local people, but when you're Hawaiian and you're attached to the land, it just makes you a different individual. Your whole concept changes.

UW: And I'm trying to work at that, how do you put that in words. Because we know how it feels in here, I can feel it, I know it's there. But, how do I put it on the paper and to accurately capture exactly what you're feeling. You see ladies, they get up to testify, they get up to talk about their 'aina and their homeland, and two seconds they're crying, crying. And other people will question that, is it on cue? But no, it's something from inside here, and how

do you explain what it is that you feel towards this land. And no, I'm not from this 'aina, this is not my 'aina, but because I know how I feel about my 'aina and where my family is from, I can certainly relate.

PK: But if you gathered that part in the meeting, then that's basically all I can ask you to do. Somehow... because I don't know how to do it either. I can verbally express, but I no can put it in a form that when you read it, that's what it means. I don't know the words. I don't know if they have words to show.

UW: And maybe perhaps it's because nobody else besides us comes from here. So nobody else can begin to understand it.

PK: That's why a lot of the times when I do have to write something I use the terms like, vehement. That's like bone-head. That's the only way I can do it, because that's a haole word I can use, vehemently. Whoever said this vehemently objected, or vehemently said. And that's the only kinds of things that I can use, in my limited command of the English language, that is how I can express it. You get one hard job. That's the only thing, that's how it gets to my na'au, to see that, the hurt. There's a hurt. But I want to go beyond the hurt, because the 'eha going be there. I want them just to have an opportunity to just voice their concerns. And then if you can make constructive, be constructive in your criticism, do what you need to do. I let people go on about their hurt and sorrow. I really don't want to hear that because it bothers me too. But if you no can get 'em out, the pilau stay in you and it just doubles. But you see I was happy because at the end, from all the persons I hear talking, talking, talking... at the end some of them were saying, but if you do this then we can do that. And that's all I wanted, I wanted the but. I just wanted to leave the door open for a but, because we were getting close to shutting the door you know. Yosh did a good job of trying to shut the door. Maybe that's his job, but, and I don't think nothing. He got to do what he got to do, and that's what he does. But we're going to get there. I no like them tell me, this is the second time. Well you had four before this second time and you never come here. So why couldn't have had six over here? But you guys went four someplace else, and find out no work because you guys came up with another concept and the concept from the federal government says the community got to buy into it, so you came to the community. I'm not stupid enough, because that's what the University is doing at the old sewer treatment plant. They went around, do everything, gather all their money, and then find out if the community no like, no can do 'em. So now come over here, how you like, what you like. I aloha them, but...

UW: So if you talk to anyone, or you hear anything, or somebody calls you up and they want to talk to me, that's fine. [Interview continues concerning transfer of DHHL lands to DOT-Airports.]

PK: Well, lo and behold, after years of litigation the judge ruled that the State DOT needed to pay \$36,500 a month, a month. That's to cover all the back rent and everything, but they need to pay that from now on, that's what they're going to pay for the 98 acres for the runway. After years of struggle, for the people that walked on the runway, got arrested, people who fought it all the time. Wonderful. Take nothing away from Kahaloawe and those people that were doing that. But they were doing that struggle, they were over here doing this struggle. Everybody had a struggle. Lo and behold the Dept. of Hawaiian Home, State agency decided to go and exchange 208 acres, which is all the airports, Hilo, Waimea-Kohala, Lihue, Kahului, the fly-over, the ingress and egress, the fly-over was Hawaiian Homes, Molokai was the same way. That's why there is agriculture around Molokai, they wanted to make sure, they did want anybody build a home over there. So the impacts would have been all on Hawaiian Homes, all of them. They decided to swap 208 acres for 20, the 20 acres was Māpunapuna. That industrial area there in Honolulu around the airport, Māpunapuna area there, that's the 20 acres that Hawaiian Homes owns. So all those guys in there that lease, they are lessees of Hawaiian Homes. And their mana'o, Hawaiian Homes mana'o was these 208 acres here, the \$36,000 here, the so many 1,000s here, the whatever, whatever, they all equal and equate to \$1.7 million. Hey, Māpunapuna is concentrated. That 20 acres makes \$1.7 million, so land for land, value for value, we're on the money, come on you guys, you got to vote. Keaukaha and Hilo adamantly, Keaukaha adamantly said, no. No. Well our commissioner, at that time was Auntie Eleanor, that's why when you mention her name, I got no problems, they're kupuna and that where my respect goes. When it reached to her, she was a Hawaiian Homes commissioner, the news came back like this, Hawaiian Homes commissioners unanimously approved the land exchange. Cry, hurt, 'eha, we went have a meeting everybody son-of-a-bloody each other. That's why she's lost respect in this community, because the people told her, well we would have lost anyway, so you decided to jump with the winners. When the stand would have been 8 to 1, yes we would have lost, but you would have said what we wanted to say, the record does not reflect Keaukaha's statement. That's the historical part that forever, thrown out in the wind. But the history stays in my mind and the people that were there. We adamantly, said no. You were supposed to go down there representing us and say no, but her answer was, we would have lost anyway. But see that's not the thing. I'm not looking for the loss or the win, you need to plant in the record what Keaukaha... Just like that 39,000 names they found in the protest, see we never knew that. Did you? I never knew until that lady found it. Then it... in Hawaiians... what? It raised up your pride, it made your dignity, as one Hawaiian...

UW: To find your kupuna's name...

PK: That's what our people need. You need pockets of showing where dignity exists. Shoot, I no need assimilate, I no need comply, until you show me

compelling reasons why I got to. And that's the only thing that bothers me. That's 208 acres. But I came up and had an opportunity to make input by saying this. You guys talking about money. What happens when the money stops? What happens? Businesses don't go out of business? Nothing lasts forever. But land stays there forever and ever. So when the \$1.7 million drop, or we lose sight of that, don't you think it would have been better to have 208 acres than 20? Now we only get 20. Right there in the middle of Honolulu. Due respect to Honolulu, right in the middle of town, by the airport no less. That's what we own. If all the businesses decided they move someplace else. Or the County of Honolulu decide that that's not a compatible place to have it. You see, I'm not into compatibility and all that. Eh, what we own, the 208 acres right here. The airport fold up... or if they don't that's fine. But wouldn't we generate \$36,500 monthly? Come on, money in the bank. Airport going close? No. \$36,500 a month. Maybe even get chance for raise the thing, but it going come. But they couldn't see that. And it was our people, it was our leaders. And that's what inside my na'au bothers me.

UW: Those land exchanges haven't always been beneficial.

PK: Never has and never will. Because it has never been done up front. It has always been some devious, back-room deal, to benefit certain people and certain corporations. I tell you it was the leaders, some were Hawaiian leaders, some just happened to be the governor's, or from that time. That's why I take being a leader very seriously. It's a very big burden, you gotta look at what you do, what you say, how you do. It is a kuleana, a responsibility that I've decided to take on, and I don't play around with it. In fact I get kind of little bit hila hila when guys tell me, "oh, you're the community, can you come here do this do that?"

Personally I'm a very outgoing person it doesn't bother me, that's my style. I play music, I'm an emcee, people give me the mike, talking before people is not a problem. But I've developed that, I had to develop that. It was not something that I grew up with. But I always did stupid, not that being the Keaukaha president is stupid, but I like to do stupid things. I can remember taking my wife to Vegas, a whole bunch of us from LA, all the Hawaiians I knew. We caught a bus went there. I took two big stalks of ti-leaves, and my wife was like, "what are you going to do, make ass?" Not to me. They don't know me, I don't know them. They gotta know me for find out what I'm doing. I ended up selling leaves dollar one. "Good luck. This is Hawaiian good luck." And my wife was embarrassed, but I had a ball. I don't have a problem to get up before some people and say what I need to say.

But there are moments when I go home and I think... and I keep telling people, and I'll tell you. I'm a selfish person when it comes to Keaukaha. I'm very selfish. I have no other words to describe it. I want Keaukaha to get

this, that. I want them to get somethings too, 'cause I've seen where other guys get, and we no get. But, do it with humility, be ha'aha'. I don't need the glory. I really don't, and I try not to. And you just surround yourself with good people. It's like Mapuana. I've had the opportunity to see her grow. That's why she's my vice-president. That's why I try and enhance in her, you have these certain rights. She's from Keaukaha. She grew up here. All of them here. Sometimes it's midnight. I try and ask them to adjourn, but they keep going. No body like second the motion. But the hunger for information, that's why in my own simple way, I try to send out a newsletter to them just to keep them informed let them know what's happening. That's why when I look over... we have a membership. You have to pay 6 dollars for a year. But I send a newsletter to all 420. I don't have 420 paying members, but I send to everybody. Eh, you're the community... you are the community. And I made it clear to those that come to the meetings but don't pay their dues... it's not that you're not welcome, you're always welcome. My only thing is, when it comes time to vote for the money, what to do with the money... you no can vote. That's all. But in this community, if we're going to spend money in this community, you benefit too. Pollock, you come too. Except you no can tell me, well I think we should spend the money over there. Then you pay your 5 dollar, then we can decide where we going spend your 5 dollar. But if you no more 5 dollar, no tell me where to spend the money. Only the guys who pay the 5 dollar tell me what they like do with the money. But when we spend it over there, you're welcome to come over there too and partake of whatever. Everybody in this community gets a goodie bag. The kids get one every Christmas. All that I get through donations. Lili'uokalani... They were spending big bucks trying to pay for apples, oranges. So I went to go see the guy, talk to the guy. The guy's been donating apples, oranges for the last three years. He gives me those things. You know apples, oranges, candy... they give me. We pay something. I started going to Honolulu to buy nuts from that place, rather than buying from the store. Wholesaler more cheaper. "Well, I don't know if we can... who are you guys?" Keaukaha community. "I don't know. Are you guys non-profit?" We are, we're a community, this is for the kids. Fortunately one of the office workers was from Hilo... Japanese girl. So I talked to her... oh, yeah by the beach... So every year I can call them and they'll send it to me at cost. I got guys work in the airlines, my classmate. So I go there, and he ask, "anything else?" And I tell him, next year, no retire. And that's how I do what I need to do.

The people here, most of them I've known all my life. And some of the families are still here. So for me, that's why I'm planning this reunion with the new gym... 2003. Right now it's March. I have it tentatively set for March. They are supposed to finish by December 2002. So we're doing March 2003. We're going to a 78-year reunion for the Keaukaha community... I'm trying to knock about 9 birds with one stone. So that we can do big wing-ding and get it out of the way. Really bring the gym in on-line. The reunion, the grand opening, Kūhiō Day Celebration... Because Kūhiō, I believe is very important.

I saw that Kūhiō Day was just a holiday, and people forgot that no was for him, no more the 'āina ho'opulapula. So I'm trying to revive that. Here we are in Keaukaha-Panāewa and we're not even honoring this man. So I'm trying to do that Kūhiō Day Celebration, the reunion, the grand opening. I'm trying to bring back Da Blahlahs of Keaukaha... 'cause the only one missing is Abe Keala, but the majority of them are still around yet. I just got to bring Bernard from Honolulu. But the rest still live in Keaukaha... Piggy, and Randy, and John Kua and Clayton Kua, Revelation Kalauli... they're still here. I'm trying to get them to come back. We've got musicians... Darlene Ahuna, her brother-in-law, Ku'ulei, they're here. All Auntie Eleanor's kids. It shouldn't be a problem, to me, to get them to come back and perform. But there are many that left. So that's what I'm trying to do. And make it a weekend to honor our kupuna, to honor our sports people. Kids that went on to do excel in sports... men and females... do all of that. The kids, the educators, lawyers, do all of that, and bring them all back inside. This is your guys' community. The County might be leasing it. See the rarity of it is, this is going to be a County facility on Hawaiian Homes. See, that's what the County don't like. I keep telling them, you only have a 21-year lease, after that beat it. And we went, as a community, go raise the funds. We went solicit legislators to do that. After they got the money, OHA contributed \$667,000, when they did it... once they got the money... this was the word that came to me as the community president, "okay now we take it from here." I said no way. I'm going to be there. I like look the plan. I'm not going to stand over the construction worker... but I going look that plan 'cause I like this. I like that. And Hawaiians going become apathetic... it's not a big priority. It's a big priority for us to get the new gym, but during the construction phase, we got other things to do... life goes on.

UW: Mahaio for your time...

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VERIFICATION AND ACKNOWLEDGEMENT

The attached transcript is a summary of an interview conducted by Ulialia Woodside of Wilson Okamoto & Associates, Inc. for a cultural assessment prepared in conjunction with the Hilo International Airport Environmental Assessment.

Interviewee: Ulialani Sherlock

Interview Date: August 16, 2001

I have reviewed the attached transcript and have made the necessary corrections on the attached transcript. I acknowledge that the information therein may be used in conjunction with the cultural assessment prepared for the Hilo International Airport Environmental Assessment report which is to be made public.

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Ulialani Sherlock

01/08/02
Date

Interview With: Ululani Sherlock
Interview Date: August 16, 2001
Location: Office of Hawaiian Affairs, 101 Aupuni Street, Hilo
Interviewer: Uialia Woodside

(Begin recording and transcript. Interview already in progress Ms. Sherlock is from Keaukaha and is currently the Office of Hawaiian Affairs East Hawaii Community Resource Coordinator. Her mother is from Keaukaha and her father is from Hōlualoa. She lived in Chicago for a while and has been back in Hawaii for more than 20 years.)

UW: I noticed that you are involved in a number of organizations, or have been in the past.

US: Since I've been home, actually yes. I'm president of the Prince David Kawānanakoa Hawaiian Civic Club. I just retired from being State President of the 'Ahaui Hale O Nā Alii O Hawai'i, and then I'm also president of the Hilo Chapter which is called Hālau O Kalākaua. I sit on the Alii Like Advisory Council. I sit on Ke Ana Lāhāna which is the new charter public school. And it's just all Hawaiian stuff mostly. Just my way of giving back to the community for where I am today. Because if it wasn't for the Hawaiians, my family, my kupuna... so that's my way, and making sure, because I have four grandsons now. So I want to make sure that they have what I have today. So that's why I am involved.

UW: How long have you been here in the OHA office?

US: Two years. September 30 will be two years I've been with the Office of Hawaiian Affairs. Prior to that I was with Hui Mālama Ola Nā 'Ōiwi which is the Native Hawaiian health center for Hawai'i Island. And I was there for seven years as the administrative assistant. So for the last nine years I've been working, serving our Hawaiians, trying to give back to the community. And I really like it, I enjoy it.

UW: Since we know your mother's family is from Keaukaha, what is your first connection or your first relationship with Keaukaha?

US: Well my grandfather is a Namahoe; Daniel Namahoe. From what I hear, he was one of the first people that started the community association, in fact they used to meet at my grandpa's house on Todd Avenue. His house was the Keaukaha Community Association. It goes back to that time when my mom was young. My mom was born in 1917, so this was pre-1900 when all of that occurred. And of course the Namahoe family was pretty much here in East Hawaii... House Lots I guess is what they called it, which is across the airport. So that is my tie with Keaukaha and with Hilo. My tie with Kona is my father... my grandparents were Keiikoa, and my grandmother was a

Komomua; Makuakāne Komomua family. So that's the Kona side... Kahului and Māhala. So, both sides related in Honolulu, I didn't know that I had family here on the Big Island. I only came to know it after I came back from the Mainland. I knew my parents were from Hawai'i Island, but that's about it... not the genealogy or anything, which is now predominant. You look at the OHA papers and you can find your family all in the 'ohana genealogies. But that is my connection as far as Hawai'i Island is concerned.

And I feel very close, look a while when I came home, to identify with Hawai'i, because I was born on O'ahu. And now I feel like a part of it. I also sit on the 'Ahaui Kū Mauna, which is the Kupuna Advisory Council for Mauna Kea. And that's heavy duty. So, I think what I am doing is what I think my mom would have done had she been given the opportunity. I think she went up through seventh grade, and finally got her diploma in 1984 just recently, she was 67 years old, when she got her high school diploma through the adult school. I kind of feel that is part of it, and what my grandparents... I keep asking my mom, where did I get this... but I have it.

UW: Our community needs people that will stand out in the front, it is good work, mahalo.

US: But I feel comfortable about what I'm doing. I know that our thing is just pray, what ever you do, and make sure it is pono. So I try to live by those rules, some times it's hard. I also sit on the Kupuna Consultation for the Volcanoes National Park Service, so for me, it is an education that you just can't get out of the university or out of anybody because this is hands-on. I pull everything out of everything that I belong to and use that to help everyone else. Sometimes for people their focus is so narrow, that they need to be told that they can do other things. Just like with these activists, I think it is fine to believe in doing stuff like that, but I also mostly feel that there are other ways, of handling things instead of reacting – you know sitting down. That's my philosophy.

UW: Going back to Keaukaha, after you moved home, did you see or hear stories about the kinds of activities people participated in – their everyday life. From a cultural assessment perspective it might be where did you gather or practice cultural activities, but to the community it is the everyday activities – they went fishing over here, or picked this over there.

US: My mom used to share that what they used to do, they used to get up and go out to the Puhi Bay area and they used to go... and I think now a lot of people go to where Hui Mālama is... to go get the bait. They would take the limu and use that for fishing. I know my mom and them spent a lot of time at Onekahakaha because they did their own fishing, their limu picking in the Onekahakaha area. So that was part of their survival. I know my grandfather worked at the Hilo Iron Works, so that was like their way of taking care of the

family. And a lot is her sharing with me that most of the stuff that they did was all in Keaukaha. Whatever they got they shared it among themselves and among the community. And I know that when they went fishing, or I know when she would say they used to go out pick timu, if there were families down there that weren't as successful as they were they would make sure the family... they shared. So there is a lot of sharing in the community.

There is a cemetery loo, right at Onekahakaha that is owned by the Mormon Church, I think. And she said that as kids even, they used to go and help take care of the area, but, now I think that it is taken care of by the church. But she said when she was growing up, all the churches, no matter what church they came from, if they were walking in the area they would go pull weeds, and whatever kinds of things. So, there was a lot of sharing.

UW: Speaking of cemeteries, I think I read in a book about Keaukaha that they used to bury, the early settlements, used to bury in the caves, right on their own property. Was that area near the airport?

US: When I first came back from the mainland, I was driving either from my grandfather's house. See my grandfather's house is located between King and Todd Avenue. He has a big property, a whole acre. And I remember driving there and passing a home and seeing a plot, maybe about a block or so from the airport at that time. I'm not sure, because I go by there and I don't see it. And one of the questions I asked my mom was, is that allowed, because of the Department of Health. And she said, yeah, was, they did. They made a plot in their backyard and whatever remains went there. But I know there are some homes there that they have buried their own family members there. Same with I found out in Kona, my grandparents have a heiau in Kahului, in Kona. And developers developed around there, and they put a buffer around. So there is, in Kona, well of course in Kona, everywhere you go there is iwi, more so than here. But I know I did witness, I saw a yard, the one I saw was off of Baker, some where between Todd Avenue and the airport. The other thing is that the property is succeeded, and succeeded, and succeeded. What normally happens in situations like that, which I don't think, may or may not have happened in this particular situation is that, when it goes out of the family succession, I just wonder if maybe the people who are not related to the remains there, took it upon themselves to have it reinterred. And I think that might have happened. I don't know. But it is my feeling that if there was anyone that was going to remove it, than it would be the family. Knowing Keaukaha, and even over the period of time that I have been there, the feeling is still there, the protocol is very important, in everything. And if there are no longer remains, and I doubt very much. I think if there are remains it is because it is still their 'āina, and it will be respected. And I think part of the lease, it is probably written somewhere in the lease, if there are remains of the former family there. And as long as it is family there might be more.

UW: As far as places and sites in Keaukaha, are you familiar with any cultural sites, possibly heiau...

US: The only one that I am familiar with, that I understand, is where the Kamehameha Lodge is. You know, right off of Kalaniana'ole where the Royal Order has their meetings. My understanding is that there was a heiau, in that area, that area is sacred. Which is one of the reasons that area is leased forever and ever to the Royal Order of Kamehameha. But I'm not sure.

UW: Right across from Puhi Bay?

US: The big white building with a flagpole in the front. That's the Royal Order - the Kamehameha Lodge. That is a heiau, was one time a heiau. And I think that is one of the reasons why the property was leased to the Royal Order for as long... And I can tell you one thing. Hale O Nā Ali'i O Hawai'i used to have their meetings there, and it is there, you can feel it, it's there. We don't go back because the building, while it has been renovated and fixed, the liability for me and my members, we can't go back there until technically, because of the kupuna that do belong to my Hāiau, I don't like the chance. But I do know that area. I'm not sure of any other areas around there. I know by Onekahakaha Beach area there is a lot of places there that my mom tells me are very sacred. You know with Hawaiians you don't have to see it, you know it, you feel it.

UW: We were talking a little bit earlier about the churches and graveyards. Have the churches been a strong element in the Keaukaha community?

US: Right, and I go to the Kūhiō Chapel or Haili Church, I'm a member. It's on Desha.

UW: That is one of the older churches...

US: It is the oldest. It was put there, years... in fact my mom was baptized there. She's born in 1917. But it was put there prior to that, because in the olden days they didn't have roads to go to Haili Church when it was down by the Hilo Iron Works area. So when it used to rain and flood, the church was put there to service the Hawaiians, the Keaukaha community that couldn't make it to the church in downtown Hilo. And it has been exactly there, exact same building, the foundation, everything still the same. My mom says she's born and raised there, baptized there and everything. In fact, I think we just had our anniversary, last year we celebrated the anniversary of the chapel. So that is where I go to church, it is a family church, too. In fact my grandfather was one of the very first people that started the church - Daniel Namahoe. So we have a family attachment to the church - the Namahoe family.

UW: You mentioned that there were trails that went down to the Hilo Iron Works...

US: It was like a horse road, a dirt road. It was unpaved, what my mom guys called highways, what did they call it? It was muddy, it was all mud. In fact the Kamehameha Avenue that we have here, went straight through Keaukaha. Of course it stopped with the relocation, the airport and everything, they cut off Kamehameha Avenue. Which is right at the junction where Kanoiehewa becomes Banyan Street. That used to go straight across. If you look at the old maps, Kamehameha went all the way down to King's Landing area. So now, today, what they did was they renamed... if you look at the newer maps of Keaukaha...

UW: This map is a little older, if you notice they don't have the airport on it...

US: Kamehameha Avenue used to come, which is what it is now, from Bayfront and it used to run straight into here, I think this is it. Because the railroad track is here, I think there are remnants where it goes over the pier, out to the pier. But Kamehameha ran right through the whole area. So now the maps that you have of Keaukaha, the street maps... They have Kamehameha which is a new road... So if you drive through Keaukaha and you turn up Kauhane that went to the meeting last night, the first street that you hit is new, it wasn't there before, and that's Kamehameha. They didn't rename it, they named it correctly Kamehameha Avenue. And so all the streets that were there before, except for the newer streets, like they named the street Pakele, Lauae Yung. They are having problems because the streets were politically named, Pakele was the Hawaiian Homes SH, Don, and Lauae Yung lives right on Yung Avenue, so I heard it was a political thing because of her support of the Councilman, it was really sad. But they do have names like Nahale-a, which is a family name, and I live right across from the Nahale-a property. My mom grew up with the Nahale-as. Brown, that's the Brown family the Nathaniels, the Nathaniel family. So a lot of streets are family names. Todd Avenue, she was one of the first principals of Keaukaha School, if you read the history. So the names are all significant place names to the people that live there. The Deshas were the first kahu at Haili Church, and they all have significance to the people that live in the community. But Kamehameha was, it is my understanding from my mom, the road that they would take to go to church to what they call Waiakea, which is where the Waiolo River area is, where the church was before it got put up on Haili. So Kamehameha was their street, their avenue.

UW: Do you know if she ever talked about going, what would be across the airport, to Panaewa Forest?

US: Yes, it used to come all the way down to the airport. But from my understanding it was all trees, that's how it was, all trees, agricultural, and it was barren at that time. There were no homes or anything like that. As far as

people, practitioners and traditional... if you talk to the Kanaka'ole Foundation they have that whole property, they're leasing that Kamehameha Schools property, some 40 acres... and they have the correct place names for that whole area, they have the history on it. But I know my mom says about the fishing areas, the freshwater ponds where they used to go there a lot to go fishing. And I know as a child she would go by Doc Byers' property... they used to do a lot of fishing in that area. Throw net, she used to know all the areas...

UW: Is that the Doc Hills' house?

US: Yes, it is by the Hilo Yacht Club, you can see it I think, across. But, she used to know all the places they used to go to throw net. There are a couple, if you weren't born and raised there you'd never know, there are a couple of places, ponds, where you can go swim and not having to go all the way out to the ocean. Because the water comes in underneath. But she used to tell me about those places, instead of having to go all the way down. Because it is all lava, in certain areas it is all rocks that go all the way down, and it has remnants of where it was used as a pier area. They still have these places that are out there, but all on the ocean side.

UW: Moving to the airport, maybe you can give me your mana'o, maybe the history, the community sentiment, because I know they talk to you about it. How they feel about the airport...

US: Most of the people that were involved or related, because even my grandfather was moved from that area where the Borges are. Well that area is actually where my mom was born and raised, right in that area where the fencing cuts through, on that side of Kauhane. So they were moved twice. They were moved from there, and they were on Todd someplace, and finally moved over to King Street. But as far as the community, I think it is like, for some of them, they are inclined already, it has happened before, there is a lot of suspicion, they don't trust. There is a lot of mistrust in the community. There are a lot of people that I have to take the source into consideration when I act on their complaints. While there are many people that were born and raised there, there are a lot more like myself where we came back. But still have that connection in some way and we are finding now, how we are connected. And I think the generation that lives there now, a lot of them went away, like I did. We went to school and came back and saw the difference between what was there when we were kids versus what is there now. So, there is a lot of that sentiment. I don't know if you call it anger or what, but I think that has a lot to do with the attitude of the people today. "I was born and raised here, I went away to school, and ended up getting married and living on another island, and then my parents passed on so I came home to take care of the 'aina, and I see all these changes, and I don't want this to happen to my kids, or my grandkids." Which is my thing, I have four grandsons that

are eventually going to get my property, my acre, I have one acre. And so I want to make sure that their future, and I think it is the consensus of most people there, it is just that we approach it differently. But there are a lot of things that have been happening in Keaukaha that the people are upset about. There is a lot of mistrust, even among themselves. You can feel it at the meetings, one person is concerned about one thing, and another person is concerned about another thing. Some of the concerns, to me, get kind of ridiculous. Yeah, the planes go right over my house. I can see the numbers on it. But, you know, we're looking at economics, we're looking at survival, we're looking at the whole thing, not just my own personal backyard problems. It is going to happen because of expansion, and because of what is happening.

I think the biggest fear, one of the biggest fears I heard yesterday was, "before we know it the airport is going to go all the way to Kalaupapa." And I think that is the biggest fear, is that there won't be a Hawaiian Home Lands. I don't know if Patrick shared with you the concern about once the land is condemned or taken over, it can never come back to Hawaiian Home Lands. Maybe that's true, I don't know that much about it. I would rather the people look at the whole picture and think about the future of their kids, and make their decisions from there, rather than listening to somebody else. Because the someone else may not be looking at their concerns, or looking at the things that happened to them personally. You know there is a tendency, a real big tendency of people reflecting on other people's pain. Because we are Hawaiians, so we are going to lomi each other, and that is our nature. And that is how we stick together. But we also have to look at things, things are getting more modern. But that doesn't mean that we're going to forget where we came from. You know the balance. That it is going to happen, and we can't do anything about it. But we can move on, and maybe be more sensitive to whatever happens in the future, and learn from the mistakes we made. But it is hard for the community. It is just getting little by little, people are beginning... from when I moved home 20 years ago to today, I can tell you there has been a big difference in terms of people... at the airport in the 1970s. I was in the mainland and I was one of the people trying to get to the airport to get the plane back home to Chicago. And so, the people that were in that group that were arrested are totally different. They kind of like, I don't know, they say, mellowed. But, no, I think they've begun to see that there are other areas that you can address the same things and get a better response or, a more positive action that would benefit everybody. And I look at the airport thing as, if there are alternatives that the community could be aware of, to share that. In other words, what this whole thing is, is to make it less objectionable to the community, and less obtrusive, I guess they call it maha'oi, to make it less maha'oi. Because no matter what happens in terms of this project... and I know a lot of them say, "done deal, they're just here to lomi us" and I think they are trying to work it out, I think they really are. But

you still have people that are... that don't trust, that won't open up. They're like those horse blinders, but there are a lot more people that are not that way, that are not as verbal, or will come out and say so.

UW: At the meeting they discussed mitigation measures, one of them being the 15-foot wall. It seems like many people in the community don't want it, but the people who would be directly affected by it weren't there last night.

US: No, they weren't. The people that are personally involved, or even close to the wall weren't there. But, everyone else who hears the noise but not as, right across the fence were there, and were the ones doing all the talking last night.

UW: So, what is your mana'o on the wall, do you think it is a good idea?

US: They did mention a landscaped kind of wall, versus... I had first hand exposure to this wall that they're talking about. In April/May of this year, I was in Chicago and we drove up to Wisconsin, Milwaukee. And there is a whole strip of this kind of wall up there, and it is ugly. It is ugly. It reminds me of a prison wall. And I think if they would do it in such a way, like he was talking about a mound that was landscaped, I think it would be less objectionable to a lot of the people. Because right now they see the airport and it is pretty, and I know that is one of the reasons that they are against that obstruction. But if you are looking at sound, I think it is possible, if it can be blended into... so that it wouldn't be so ugly. Because right now it looks like a prison wall, the way that it is shown. And I think in my head too, as soon as I realized when I saw that aerial shot, I remembered driving for about 30 or 40 miles on the interstate, just a wall on both sides of the street. And that was put up for the noise from the traffic, not from the airport. It was the people that lived, all these big, rich mansions, that were off of the highway, that were there before the toll-way was put in. That was to keep the sound in the highway.

UW: What about the other suggestion about sound attenuating the houses? Insulating the houses, possibly new doors, and new windows, air conditioning the house. Of course this would be voluntary, and on a case-by-case basis. What do you feel about that?

US: I think it depends on what is in their mind when they accept or decide to go with it. Because a lot of them would say, yes, that's great. Like there was a lady that said, what about the electric bill? Well, unfortunately, you know, you're going to accept a luxury that you don't have to pay for. You will eventually be paying for something as a result of that luxury, and I don't think they are looking at it in that way. And I don't think they looked at it in that way until Patrick mentioned it at the first meeting. But they never would have even thought of it. So that is a new thing. I really don't think they even thought of that. They just looked at the luxury of having their house fixed up, the new

this, the new that, the air conditioning. And if that's going to help, and that's what they want, then I say go with it. But don't expect to get anything outside of that, and don't feel like you need to, because you are already given it free, and you can't take the rest of it.

UW: And it may be a big change for some because they like the windows open, and they like to feel the wind, or to interact with the neighbors, or keep an eye on the kids playing...

US: And there are a lot of things, if you are not used to living in an air conditioned area, there are a lot of things that happen, your house changes, the inside of the house, there are repairs that you don't normally need right now. But you put air conditioning into a house it is going to affect a lot of things, it affects your furniture, your paint, the whole structure of the house. So while it's good, and that's fine, you go to the hotel and you love it. But you don't take care of the hotel, you leave. And I don't think they're looking at that, they're just thinking, oh great air conditioning. But, you only have a small cluster of families that you are looking at, and again it is their choice, and I don't think the community should try and influence them either into or out of it.

UW: Based on what you know about the avigation easement, what is your mana'o on being able to decide voluntarily that for compensation they sign a noise easement?

US: I think depending on the families they might accept it because of the monetary gain. The other thing that I would be concerned about would be the monitoring. Is there going to be a monitoring program going on at that time. If I lived in that house I would never know if it was 60, 75 or 80. But there should be some kind of mechanism in that area that would be able to monitor periodically as it changes and at least let the people know. So that the airport people would realize that it is getting higher, that there may be problems with the community. So to avoid that, they should have it monitored.

UW: And it came up in the meeting that for the community it seems like these measures are an either/or. Either you take it or leave it. Some people seem to feel that in some way DOT has already made their decision and this is just to appease the community. And regardless of what works for the community DOT will get what they want. And then there are some in the community that seem to feel like either they need to take this or they won't get anything at all. Are there any recommendations or suggestions that may have been overlooked that would help to make this more beneficial to the community, something that could be done for the community, or would be better for the community?

US: What I didn't hear last night was, if these families chose to relocate what I didn't hear was, what areas are available. And of the areas that are available,

the lots, are they still in Keaukaha, because a lot of them don't want to leave Keaukaha. And I know the sentiment is that many of them the parents, and grandparents lived there, and their concern now is there kids, like myself. The decision that they are going to make, they are going to have to take into consideration the kids. Because we're going to be gone in 20, 30 years, so the decision that they are trying to make right now, is going to... I hope I'm making this decision for my son so that when he gets older he doesn't cuss me out, after I'm gone, for moving, or that kind of stuff. I don't know of anyone that has talked about moving, except for maybe this one or two they just got their house built, they were part of the self-help program. That one I can sympathize with because they waited so long to get a house. And now they have one, and then they don't have one. And that is a hard dream, it is a hard thing to swallow. There are some that I know personally, that it doesn't really bother them, because if it did they would be there, they would be at the meetings. Or they have made their statement, and they are going to stand by it. So now, it is up to the DOT to approach them with sensitivity, and ask what do you want us to do to meet your needs, not your neighbors, not the people that are upset, but you as a family and you as a person or individual, that would make this comfortable. But I think it is going to have to be on a one-on-one approach and it is going to have to be somebody that understands what that family is going through. Which doesn't necessarily mean somebody that has gone through it, just somebody that can understand.

UW: Regarding those that would be met one-on-one, that would be with those that voluntarily wanted to relocate?

US: Right. To make sure that the decision they make is their decision and they're not going to go to the community and say, they told me I had to, because you are going to get that. Although the ones I have talked to have said, no, we were told that we won't be forced to move, that it was our choice. And I think I have heard from three, or four families that said that. I didn't ask them what was their choice, because I didn't think it was my business, to ask them.

UW: Right. It should be up to each family.

US: It should be done one-on-one with each family that it affects, and not through Hawaiian Homes. But there is a concern, and to assist the families that are affected.

UW: I get that sentiment that the community wants to do what is best for everyone in the community, and even those that aren't there. They want to help their neighbor.

US: Yes, that is the sentiment that you're going to get through out the community. [End of tape. Interview continues discussing location of families that may be interested in the relocation option.]

UW: It is a voluntary option, but I don't think at this time anyone contacted the families that live in the area identified for proposed land acquisition on the improvements map. My recommendation could be that an attempt is made to meet with them and find out if they are interested in relocation.

US: Two of them might be leased out, and the other two the owners are living on the premises. The one property is the Borges, which is Auntie Rhea Akoi's brother's property. The other one is Akoni, but I don't know where that family is because they moved to Waimea, but they are being rented by someone else. The Kika family is there and the Tim Sing family is there, but the other two are not. The Borges property, she is, I think, vice-principal at Hilo Union School. The Akois, Auntie Rhea is an Akoi so she should know. But definitely those people should be approached, or should have been approached. I don't see anything in the files that OHA has that indicates that they were notified, just that they were going to be part of an area that was going to be looked at. Do you know if there are areas within Keaukaha that might be available, if they do choose to relocate? Because that might be something that they might ask, you know, because they might not want to go to Panaewa. They may want to stay in Keaukaha. So, you're going to have those kinds of questions. Other than that, the community is just looking at taking care of each other, and trying to support each other no matter what the decision is. But it has to be out in the open so that everybody knows that it is not hearsay, so and so said something, which is what usually happens. In Keaukaha you have the organizations involved like QLCC, like ourselves that we serve the beneficiaries there. Keaukaha School is, fortunately Cathy Webster who was there before had a real good relationship with the whole community. She's at Hilo High School now. But she's another person in terms of the community, that goes back, another is the Keaukaha Ward the Mormon Church, there are a lot of Hawaiian people there.

UW: Is there anything else that you want to share, any places that might be important to the community?

US: I think for now, the community and for myself, is not to change the area where the recreation hall is, where the kids gather. It is being rebuilt and redone, and everything. And maybe that might be one of the avenues that DOT might want to contribute to because Kawanakoa Hall is like, the heart of Keaukaha. And they were going through so much controversy about having it redone, it is so many years that they've been working on it. And it is a State, OHA, County collaboration to put it together and to build it. I'm not sure in terms of the community itself other than the heart of Keaukaha which is that Kawanakoa area. I think the shock of this expansion was the biggest part, was the biggest part, you know, oh, no, not again. And the fear of relocating, more than what they anticipated. Hopefully, this is something that is not going to happen again in the next 20 years. But that is not something that we

can judge. I think what you're doing with the community is you are sharing, you're being up front, you're being honest. In contributing back to the community, I'm really not in the position right now to make that kind of decision. I think it is something that has to come through the Keaukaha Community Association, because the community is what is being serviced. You may or may not know, but not everyone that lives in Keaukaha belongs to the community association, it is a voluntary thing. So while not all the families belong, whatever happens at that level incorporates everybody. They have ho'olaule'a, all these different things, everyone is invited, and you don't have to be a member to be a part of it, the kōko is there, the blood is there and that is all that is important.

UW: I understand that the association does a lot, for the kids.

US: That is what Keaukaha is all about, the kids, and making sure the kids are off the streets. In order to do that you're going to have to provide programs, crafts, workshops, trips, all those kinds of things. Keaukaha does that for the kids, and it is not just the Keaukaha kids, it's kids from the whole community. If they're interested they bring their kids. QLCC is very, very... you might want to talk to Luana, she's totally Keaukaha. But I see a good side happening here. Because, the community is something that every time there is change, it is not so much the people that are directly affected, but the community as a whole, because it is a whole community. And it is always going to be, oh we heard that before, no matter what kind of project, whether they are Hawaiian or not Hawaiian there is still going to be someone that may have thoughts or objections to it.

UW: Mahalo for all your help, and all you have shared.

APPENDIX G
TRAFFIC IMPACT REPORT

TABLE OF CONTENTS

	Page
I. Introduction	1
A. Purpose of Study	1
B. Scope of Study	1
II. Project Description	1
A. Location	1
B. Project Characteristics	3
III. Existing Traffic Conditions.....	3
A. General	3
B. Area Roadway System	3
C. Traffic Volumes and Conditions	5
1. General	5
a. Field Investigation.....	5
b. Capacity Analysis Methodology	5
2. Existing Peak Hour of Traffic.....	6
a. General	6
b. Kanoiechua Avenue and Kekunaoa Street	6
c. Kanoiechua Avenue and Leilani Street	6
d. Kanoiechua Avenue and Hualani Street	9
IV. Projected Traffic Conditions	9
A. Site-Generated Traffic.....	9
1. Trip Generation Methodology	9
2. Trip Distribution	11
B. Through-Traffic Forecasting Methodology	11
C. Total Traffic Volumes Without Project	12
D. Total Traffic Volumes With Project	15
V. Traffic Impact Analysis.....	15
VI. Recommendations.....	18
VII. Conclusion	19

TRAFFIC IMPACT REPORT

FOR THE

HILO INTERNATIONAL AIRPORT IMPROVEMENTS

Prepared for:

State of Hawaii
Department of Transportation
Airports Division

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November 2001

LIST OF EXHIBITS

EXHIBIT 1	Location Map
EXHIBIT 2	Proposed Site Plan
EXHIBIT 3	Existing AM Peak Hour Traffic
EXHIBIT 4	Existing PM Peak Hour Traffic
EXHIBIT 5	Year 2010 AM Peak Hour Traffic Without Project
EXHIBIT 6	Year 2010 PM Peak Hour Traffic Without Project
EXHIBIT 7	Year 2010 AM Peak Hour Traffic With Project
EXHIBIT 8	Year 2010 PM Peak Hour Traffic With Project

LIST OF APPENDICES

APPENDIX A	Existing Traffic Count Data
APPENDIX B	Level of Service Definitions
APPENDIX C	Capacity Analysis Calculations
APPENDIX D	Existing Peak Hour Traffic Analysis
APPENDIX E	Capacity Analysis Calculations
	Projected Year 2010 Peak Hour Traffic Analysis Without Project
	Capacity Analysis Calculations
	Projected Year 2010 Peak Hour Traffic Analysis With Project

I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the traffic impacts resulting from the implementation of various improvements at the Hilo International Airport on the island of Hawaii.

B. Scope of Study

This report presents the findings and conclusions of the traffic study, the scope of which includes:

1. Description of the proposed improvements.
2. Evaluation of existing roadway and traffic operations in the vicinity.
3. Analysis of future roadway and traffic conditions without the proposed improvements.
4. Analysis and development of trip generation characteristics for the proposed improvements.
5. Superimposing site-generated traffic over future traffic conditions.
6. The identification and analysis of traffic impacts resulting from the proposed improvements.
7. Development of recommended mitigation measures, if appropriate, to address the traffic impacts resulting from the proposed improvements.

II. PROJECT DESCRIPTION

A. Location

The project site is located at the Hilo International Airport in the town of Hilo on the eastern side of the Island of Hawaii (see Exhibit 1). The Airport encompasses approximately 1,246 acres and is owned and operated by the State of Hawaii as part of the Hawaii Statewide Airport System. Main access to Hilo International Airport is provided via Kekuanaoa Street which connects to Kanoelohua Avenue, one of the main arterials within Hilo.

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B. Project Characteristics

The proposed Hilo International Airport Improvements expected to be completed by Year 2010 include:

- Relocation of existing hold cargo facilities to a new building to be located at the west end of the existing air carrier apron.
- Relocation of existing helicopter facilities to a new 15-acre area near the southwest corner of the airport
- Consolidation and relocation of existing general aviation facilities to a new 7-acre site at the west end of the Airport.
- Expansion of the existing terminal area parking lot.
- Expansion of the existing Department of Transportation, Airports Division baseyard.

The proposed site plan is shown as Exhibit 2.

III. EXISTING CONDITIONS

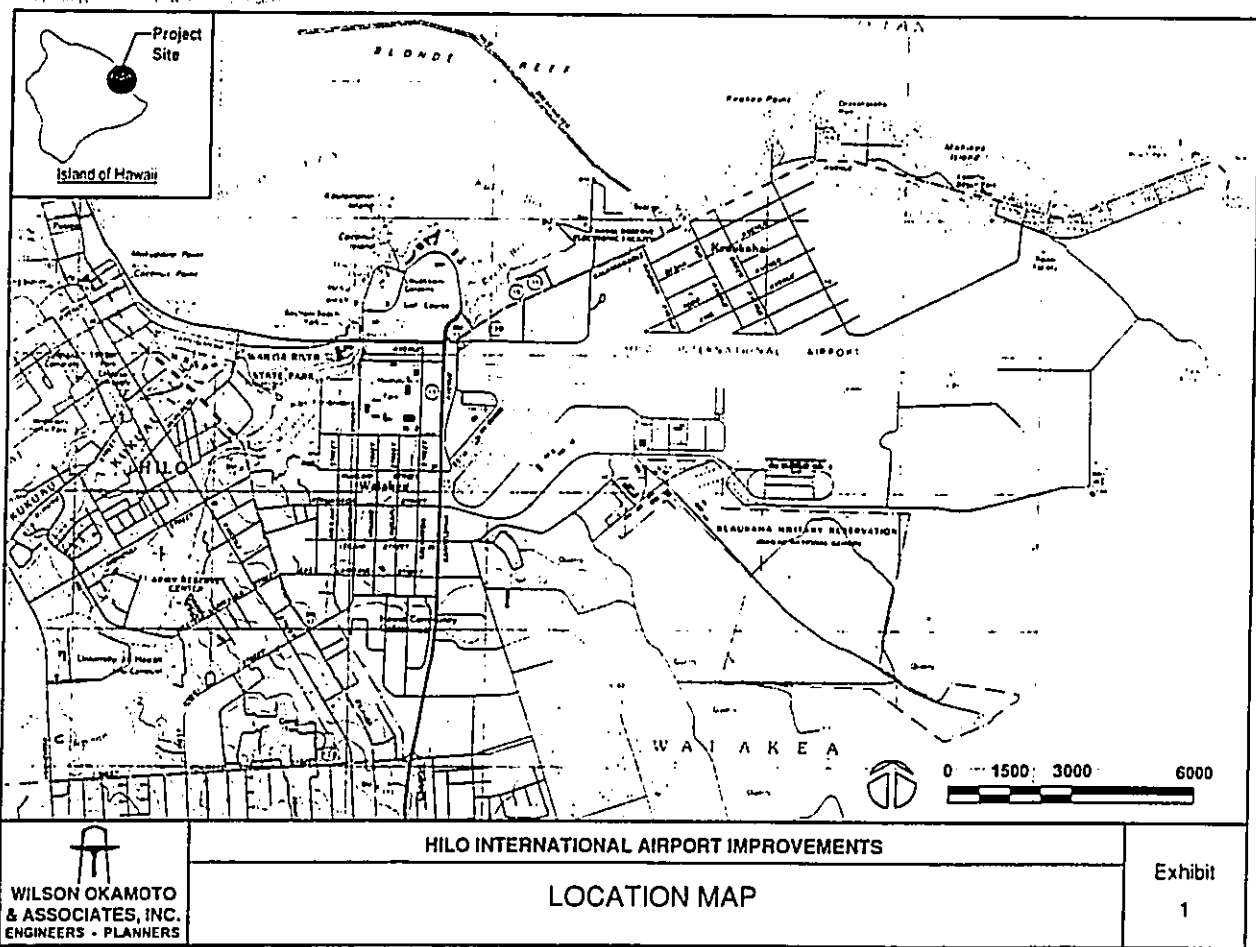
A. General

Hilo International Airport is located adjacent to Kanoelohua Avenue, one of the main arterials in Hilo. Kanoelohua Avenue starts near Hilo Bay and terminates at Volcano Road just south of Hilo. The traffic volumes along Kanoelohua Avenue have increased slowly over the years due to increased development in Hilo.

B. Area Roadway System

In the vicinity of Hilo International Airport, Kanoelohua Avenue is primarily a two-way, six-lane, divided State roadway. At the main entrance to the airport, Kanoelohua Avenue intersects with Kekuaaoa Street, a two-way, two-lane, County of Hawaii roadway. At this signalized intersection, both approaches of Kanoelohua Avenue have four lanes that serve through, left-turn, and right-turn traffic movements. The eastbound approach of Kekuaaoa Street has three lanes that serve through, left-turn, and right-turn traffic movements. The westbound approach of Kekuaaoa Street has two lanes that serve through, left-turn, right-turn traffic movements.

Approximately 850 feet south of the intersection with Kekuaaoa Street, Kanoelohua Avenue intersects with Leilani Street, a predominantly two-way, two-lane, County of Hawaii roadway. At this signalized intersection, both approaches of Kanoelohua Avenue have four lanes that serve through, left-turn, and right-turn traffic



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movements. Both approaches of Leilani Street have one lane at this intersection that serves through, left-turn, and right-turn traffic movements.

Approximately 850 feet north of the intersection with Kekuanana Street, Kanoelehua Avenue intersects Hualani Street, a predominantly two-way, two-lane, County of Hawaii roadway. At this unsignalized intersection, both approaches of Kanoelehua Avenue have three lanes that serve through and right-turn traffic movements. Both approaches of Hualani Street have one lane at this intersection that serves right-turn traffic movements.

C. Traffic Volumes and Conditions

i. General

a. Field Investigation

The field investigation was conducted on August 28 and 29, 2001 and consisted of manual turning movement count surveys between the morning peak hours of 6:00 AM and 8:00 AM, and the afternoon peak hours of 3:30 PM and 5:30 PM at the following intersections:

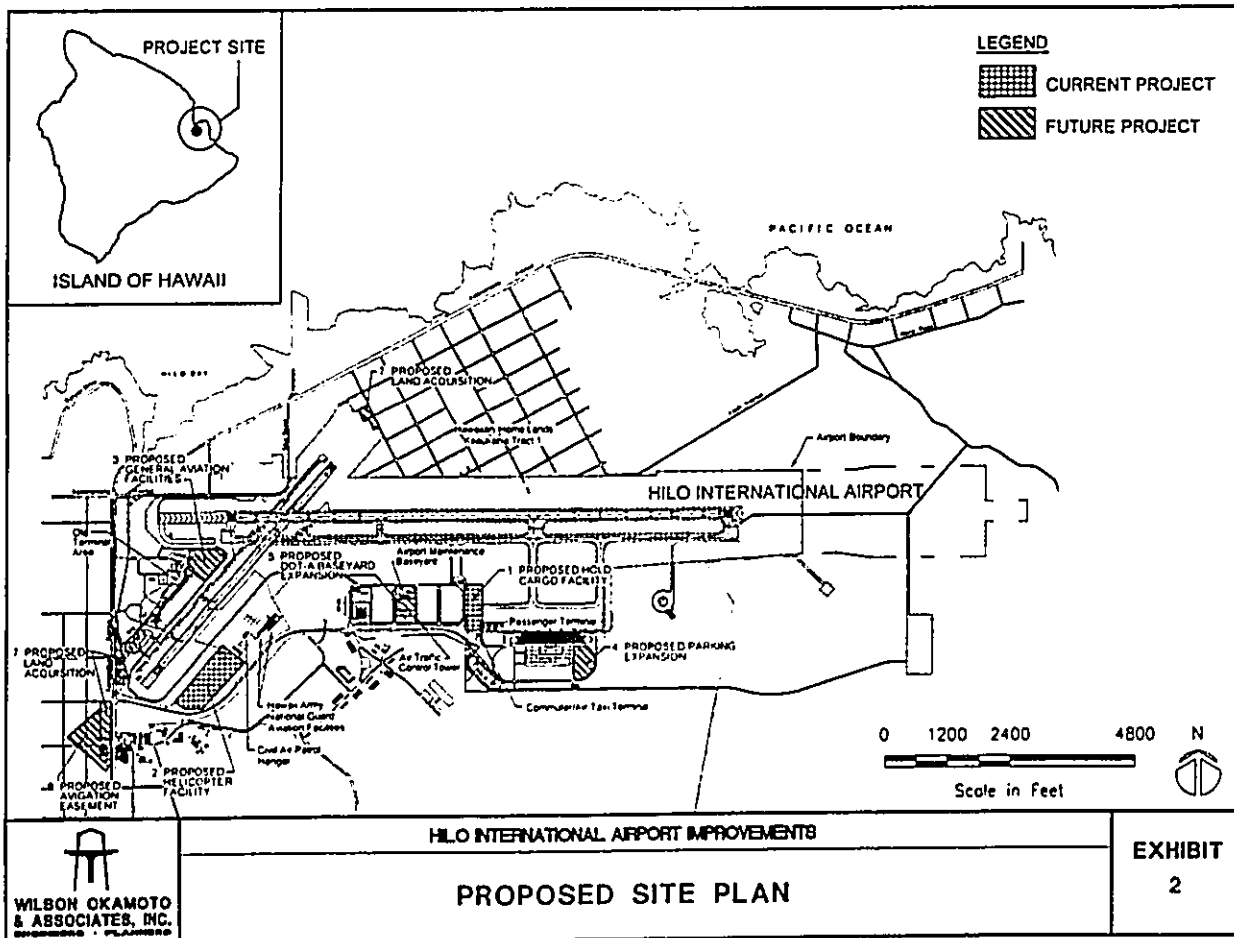
- Kanoelehua Avenue at Kekuanana Street
- Kanoelehua Avenue at Leilani Street
- Kanoelehua Avenue at Hualani Street

Appendix A includes the existing traffic count data.

b. Capacity Analysis Methodology

The highway capacity analysis performed in this study is based upon procedures presented in the "Highway Capacity Manual", Transportation Research Board, 2000, and the "Highway Capacity Software", developed by the Federal Highway Administration. The analysis is based on the concept of Level of Service (LOS).

LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F" with LOS "A" representing an ideal or free-flow operating conditions



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PROPOSED SITE PLAN

EXHIBIT
2

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and LOS "F" unacceptable operating conditions. The LOS definitions are included in Appendix B.

2. Existing Peak Hour Traffic

a. General

Exhibits 3 and 4 show the existing AM and PM peak hour traffic volumes and operating traffic conditions. The AM peak hour of traffic generally occurs between 7:00 AM and 8:00 AM in the proximity of the Hilo International Airport. In the afternoon, the PM peak hour of traffic generally occurs between the hours of 3:30 PM and 4:30 PM. The analysis is based on these peak hour time periods to identify the traffic impacts resulting from the proposed project. LOS calculations are included in Appendix C.

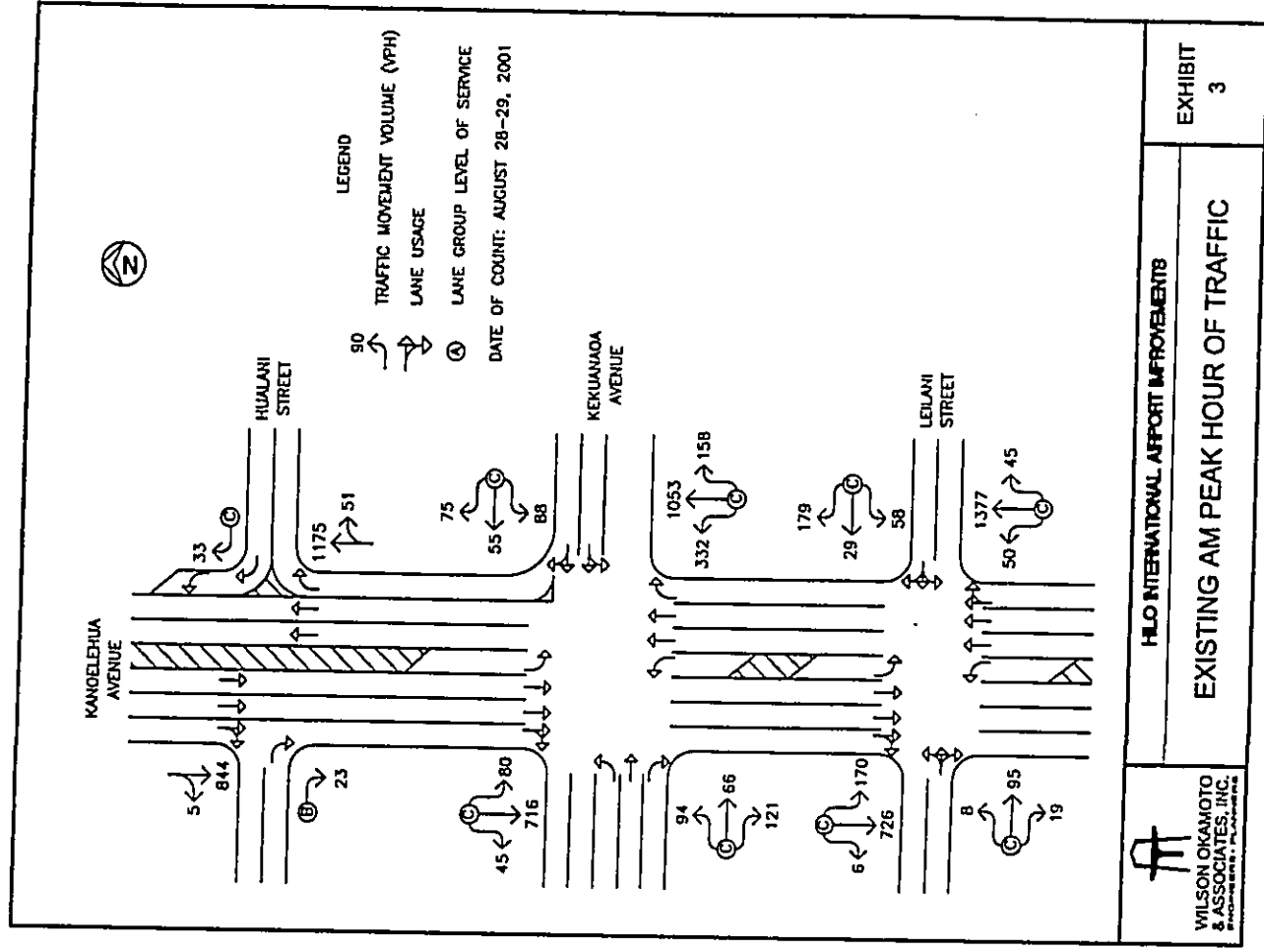
b. Kanoelohua Avenue and Kekuanaoa Avenue

At the intersection of Kanoelohua Avenue and Kekuanaoa Avenue, Kanoelohua Avenue carries 1,543 vehicles northbound and 841 vehicles southbound during the AM peak period. During the PM peak hour, the total traffic volume is heavier with 1,463 vehicles travelling northbound and 1,149 vehicles travelling southbound. Both approaches of Kanoelohua Avenue operate adequately at LOS "C" during the AM and PM peak hours.

Kekuanaoa Avenue carries 218 vehicles westbound and 281 vehicles eastbound during the AM peak hour of traffic. During the PM peak hour, traffic volumes are heavier with 531 vehicles travelling westbound and 485 vehicles travelling eastbound. Both approaches of Kekuanaoa Avenue operate adequately at LOS "C" during the AM and PM peak hours.

c. Kanoelohua Avenue and Leilani Street

At the intersection of Kanoelohua Avenue with Leilani Street, Kanoelohua Avenue carries 1,472 vehicles northbound and 902 vehicles southbound during the AM peak hour of traffic. The total



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EXHIBIT 3

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traffic volume during the PM peak hour is heavier with 1,327 vehicles travelling northbound and 1,463 vehicles travelling southbound. During both peak periods, both approaches of Kanoelehua Avenue operate adequately at LOS "C".

During the AM peak hour of traffic, Leilani Street carries 266 vehicles westbound and 122 vehicles eastbound. Traffic volumes during the PM peak period are slightly heavier with 327 vehicles travelling westbound and 148 vehicles travelling eastbound. During both peak periods, both approaches of Leilani Street operate adequately at LOS "C".

d. Kanoelehua Avenue and Hualani Street

At the intersection of Kanoelehua Avenue with Hualani Street, Kanoelehua Avenue carries 1,226 vehicles northbound and 849 vehicles southbound during the AM peak hour of traffic. The traffic volumes during the PM peak hour are heavier with 1,241 vehicles travelling northbound and 1,137 vehicles travelling southbound.

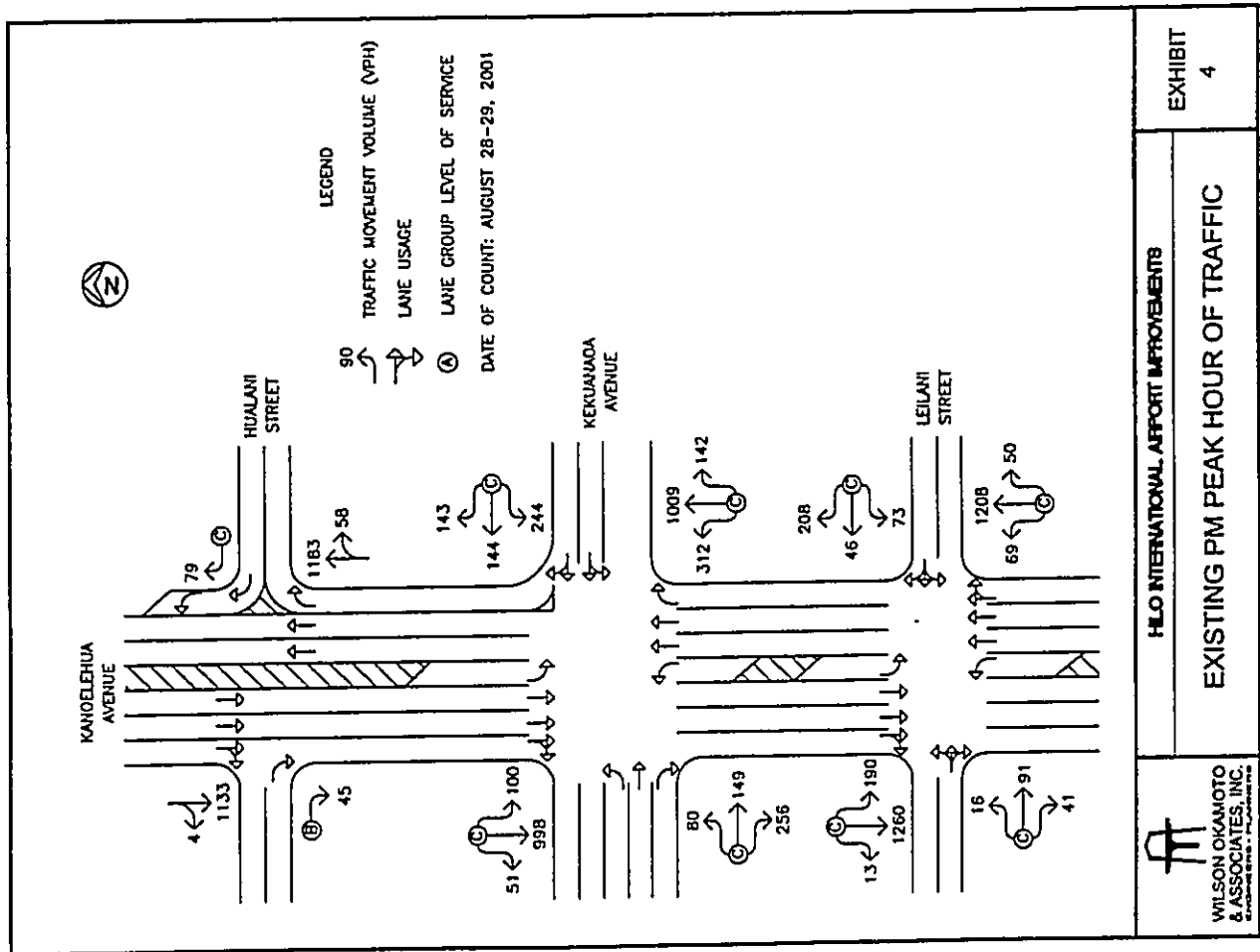
During the AM peak period, Hualani Street carries 33 vehicles westbound and 23 vehicles eastbound. Traffic volumes during the PM peak period are slightly heavier with 79 vehicles travelling westbound and 45 vehicles travelling eastbound. During both peak periods, the westbound and eastbound approaches of Hualani Street operate at LOS "C" and LOS "B", respectively.

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

1. Trip Generation Methodology

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 6th Edition," 1995. The trip generation rates were developed empirically utilizing two methods. The first method correlates the existing vehicle trip generation data with the



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EXISTING PM PEAK HOUR OF TRAFFIC

EXHIBIT 4

number of enplaning passengers. The resulting rates were then utilized to determine the number of additional vehicle trips that would be generated by an increase in the number of enplaning passengers. The second method correlates the vehicle trip generation data with land use characteristics such as the number of vehicle trips generated per square foot of development. Table 1 summarizes the project site trip generation characteristics applied to the AM and PM peak hours of traffic to measure the impact resulting from the proposed Hilo International Airport improvements.

Table 1: Peak Hour Trip Generation

PASSENGER FORCAST			PROJECTED TRIP ENDS		
INDEPENDENT VARIABLE: PASSENGERS ENPLANED Δ FROM YEAR 2001=75 PASS					
AM PEAK	ENTER		29		
	EXIT		21		
	TOTAL		50		
PM PEAK	ENTER		38		
	EXIT		51		
	TOTAL		89		
HOLD CARGO FACILITIES RELOCATION			PROJECTED TRIP ENDS		
INDEPENDENT VARIABLE: SQ. FT. OF DEVELOPMENT AREA=62,833 SQ. FT.					
AM PEAK	ENTER		41		
	EXIT		41		
	TOTAL		82		
PM PEAK	ENTER		38		
	EXIT		37		
	TOTAL		75		

Table 1: Peak Hour Trip Generation (Cont'd)

BASEYARD EXPANSION			PROJECTED TRIP ENDS		
INDEPENDENT VARIABLE: ACRES OF DEVELOPMENT Δ FROM YEAR 2001=2 ACRES					
AM PEAK	ENTER		14		
	EXIT		6		
	TOTAL		20		
PM PEAK	ENTER		6		
	EXIT		12		
	TOTAL		18		
HELICOPTER FACILITIES RELOCATION			PROJECTED TRIP ENDS		
INDEPENDENT VARIABLE: HELICOPTER OPERATIONS Δ FROM YEAR 2001=30 OPERATIONS					
AM PEAK	ENTER		41		
	EXIT		41		
	TOTAL		82		
PM PEAK	ENTER		38		
	EXIT		37		
	TOTAL		75		

2. Trip Distribution

Access to the Hilo International Airport is via Kekuanaoa Avenue and Kanoelohua Avenue. The directional distribution of all site-generated vehicular trips at the intersections of Kanoelohua Avenue with Kekuanaoa Avenue, Leilani Street, and Hualani Street is assumed to remain the same as existing.

B. Through Traffic Forecasting Methodology

The travel forecast is based upon historical traffic count data collected by the State DOT, Highways Division at the intersection of Kanoelohua Avenue and Lanikaula Street. The historical data were analyzed by linear regression techniques to obtain an average growth rate of approximately 0.5% along Kanoelohua Avenue using

Traffic Impact Report for the Hilo International Airport Improvements

2001) as the Base Year. A growth factor of 1.046 was applied to the existing traffic demands to achieve the projected Year 2010 traffic demands.

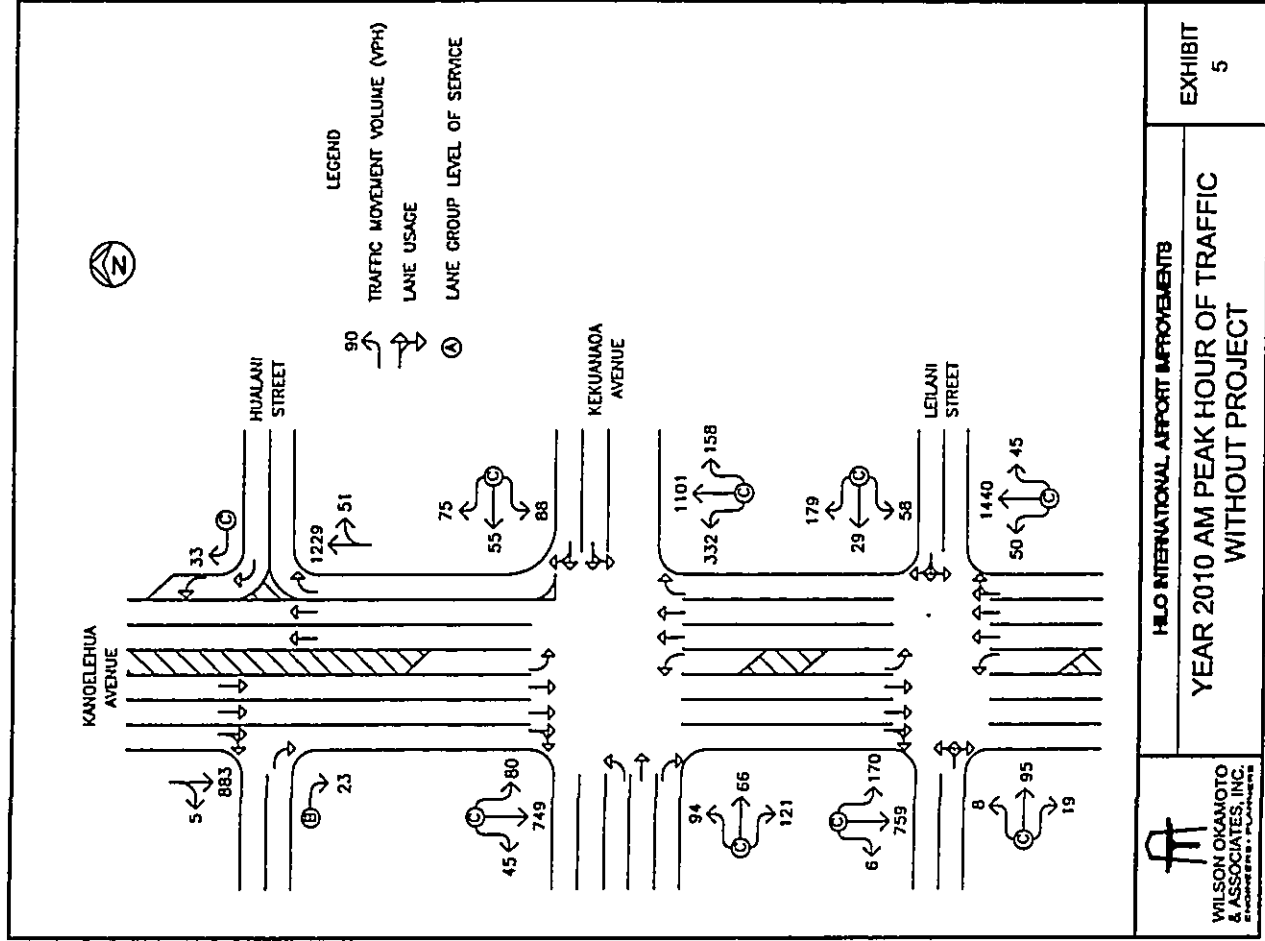
C. Total Traffic Volumes Without Project

Exhibits 5 and 6 show the Year 2010 projected AM peak hour and PM peak hour traffic volumes and operating conditions at the study intersections without the implementation of the proposed Hilo International Airport improvements. A comparison of the existing and Year 2010 projected (Without Project) levels of service at the three study intersections are included in Table 2. The LOS calculations are included in Appendix D.

Table 2: Comparison of Existing and Year 2010 Projected (Without Project) Levels of Service

Intersection	Approach	AM		PM	
		Exist.	Year 2010 w/out Project	Exist.	Year 2010 w/out Project
Kanoelehua Ave./ Kekuaanao Ave.	Northbound	C	C	C	C
	Southbound	C	C	C	C
	Westbound	C	C	C	C
	Eastbound	C	C	C	C
Kanoelehua Ave./ Leilani St.	Northbound	C	C	C	C
	Southbound	C	C	C	C
	Westbound	C	C	C	C
Kanoelehua Ave./ Iiulani St.	Westbound	C	C	C	C
	Eastbound	B	B	B	B

Traffic operations at the intersections of Kanoelehua Avenue with Kekuaanao Avenue, Leilani Street, and Hualani Street are expected remain similar to existing. The levels of service at the three study intersections are not expected to change under the Year 2010 without project conditions.



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ENGINEERS • PLANNERS

HILO INTERNATIONAL AIRPORT IMPROVEMENTS
YEAR 2010 AM PEAK HOUR OF TRAFFIC WITHOUT PROJECT
EXHIBIT 5

D. Total Traffic Volumes With Project

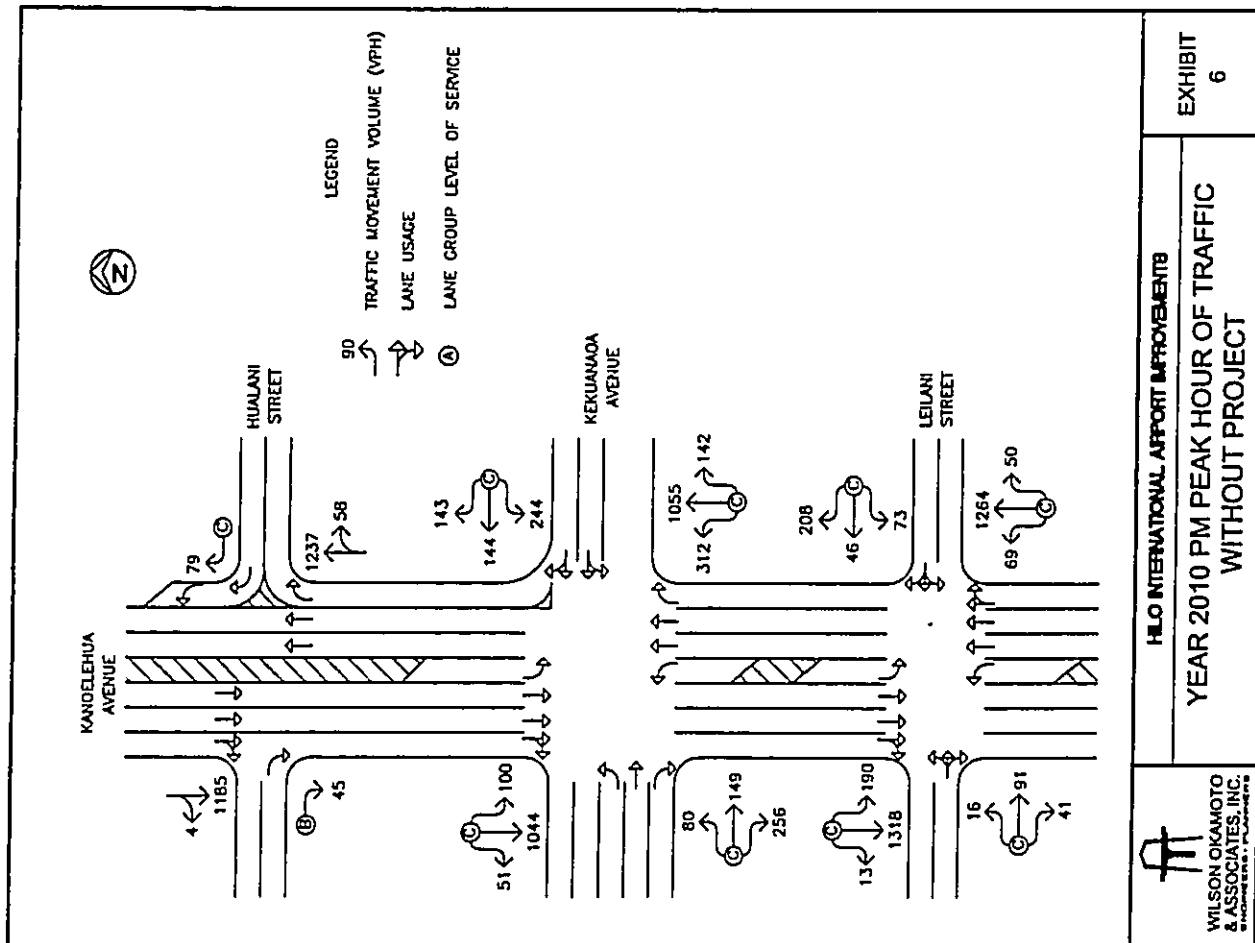
Exhibits 7 and 8 show the cumulative AM and PM peak hour traffic conditions resulting from the projected external traffic and the implementation of the proposed Hilo International Airport improvements. The cumulative volumes consist of site-generated traffic superimposed over Year 2010 projected traffic demands. The traffic impacts resulting from the proposed project are addressed in the following section.

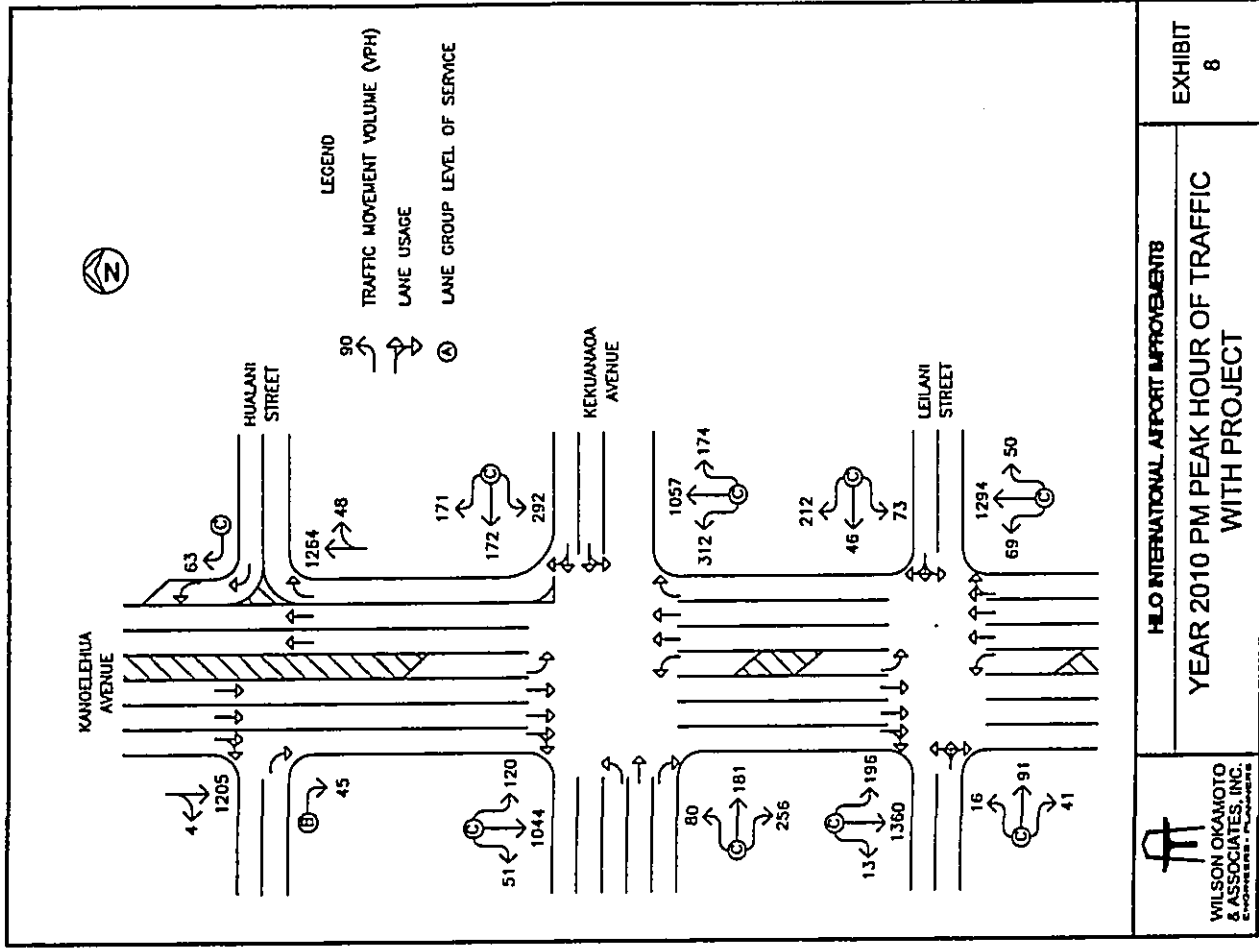
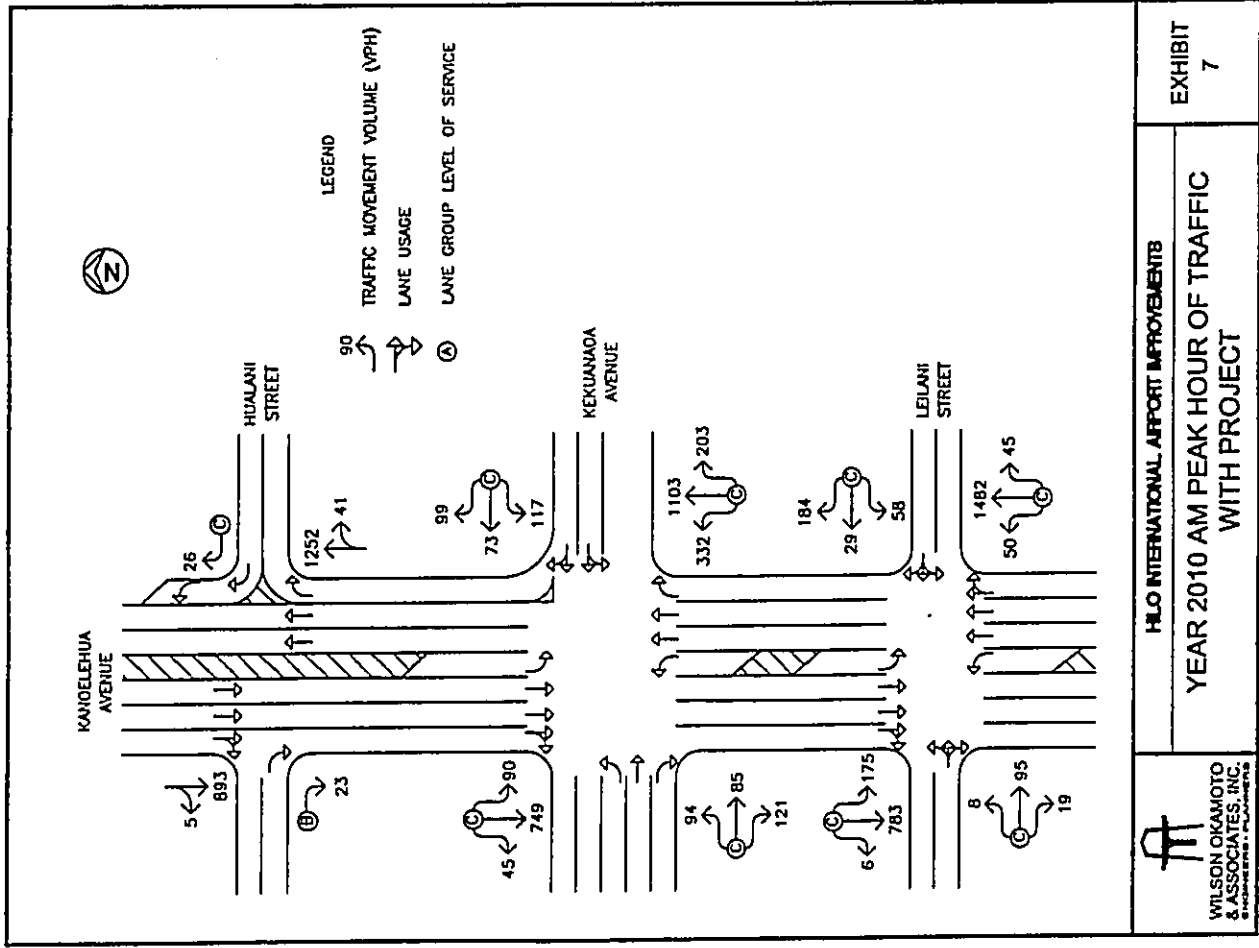
V. TRAFFIC IMPACT ANALYSIS

The Year 2010 cumulative AM and PM peak hour traffic conditions resulting from the projected external traffic and the implementation of the proposed Hilo International Airport improvements are shown in Exhibits 7 and 8, and summarized in Table 3. The existing and projected Year 2010 operating conditions (Without Project) are provided for comparison in Table 3. The LOS calculations are included in Appendix E.

Table 3: Comparison of Existing and Year 2010 Projected (Without Project and With Project) Levels of Service

Intersection	Approach	AM		PM	
		Exist.	Year 2010 w/out Proj.	Exist.	Year 2010 w/out Proj.
Kanoielelua Ave./ Kekuanana Ave.	Northbound	C	C	C	C
	Southbound	C	C	C	C
	Westbound	C	C	C	C
	Eastbound	C	C	C	C
Kanoielelua Ave./ Leilani St.	Northbound	C	C	C	C
	Southbound	C	C	C	C
	Westbound	C	C	C	C
	Eastbound	C	C	C	C
Kanoielelua Ave./ Hualani St.	Westbound	C	C	C	C
	Eastbound	B	B	B	B





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 ENGINEERS ARCHITECTS PLANNERS

HILO INTERNATIONAL AIRPORT IMPROVEMENTS
 YEAR 2010 PM PEAK HOUR OF TRAFFIC WITH PROJECT

EXHIBIT 8

WILSON OKAMOTO & ASSOCIATES, INC.
 ENGINEERS ARCHITECTS PLANNERS

HILO INTERNATIONAL AIRPORT IMPROVEMENTS
 YEAR 2010 AM PEAK HOUR OF TRAFFIC WITH PROJECT

EXHIBIT 7

The traffic operations at the study intersections under the Year 2010 With Project conditions are expected to remain similar to those under the Year 2010 Without Project conditions during the AM and PM peak hours. The implementation of the proposed Hilo International Airport Master Plan Improvements should have a minimal impact on traffic operations in the vicinity of Hilo International Airport.

VI. RECOMMENDATIONS

Based upon the analysis of the traffic data, the following are the recommendations of this study:

1. Maintain Adequate Site Distance
Adequate sight distances should be maintained for motorists to safely enter and exit all driveways and roadways at Hilo International Airport.
2. Modify Hualani Street Connection
Brig Road is located adjacent to the old terminal area and serves as the main access road to the southwest corner of the airport. The connection between Hualani Street and this roadway should be modified to facilitate easier access to the flight school, and cargo and general aviation facilities located in the southwest corner of the airport. Currently, motorists must navigate a winding section of roadway to reach Brig Road from Hualani Street. Brig Road could be realigned to eliminate the winding section and provide a more direct path between the two roadways. Recommend further investigation.
3. Modify Kanoelohua Avenue and Hualani Street Intersection
The intersection of Kanoelohua Avenue and Hualani Street should be converted to a four-way intersection where all turning movements are allowed. Currently, both approaches of Hualani Street only allow right-turn traffic movements. With the existing traffic patterns motorists have two options to reach the main terminal from the southwest corner of the airport. The first option requires motorists to turn right onto Kanoelohua Avenue from Hualani Street and then make a U-turn maneuver to reach the airport's main access road. The second option requires motorists to utilize minor roads to reach Kamehameha Avenue. After turning left onto Kamehameha Avenue, they turn left onto Kanoelohua Avenue to reach the airport's main access road. If the intersection of Kanoelohua Avenue and Hualani Street were converted to a four-way intersection, these vehicles could make a left from Hualani Street onto Kanoelohua Avenue and directly access the airport's main access road. Recommend further investigation.
4. Modify Terminal Area Parking Lot
Consider relocating the exit from the terminal area parking lot from the east end to the west end of the parking lot. Currently, vehicles exiting the parking lot are required to exit at the east end of the lot and loop around through the terminal area to exit the

airport. This creates conflicts between vehicles exiting the parking lot and vehicles picking up or dropping off passengers.

VII. CONCLUSION

The proposed Hilo International Airport improvements are not expected to have a significant impact on traffic operations in the vicinity of Hilo International Airport. In addition to the proposed improvements, intersection and roadway modifications of Kanoelohua Avenue, Hualani Street, and Brig Road, and the terminal area parking lot should be considered at the airport to improve overall traffic circulation between the different sections of the airport and near the main terminal.

Wilson Okamoto & Associates, Inc.
 1907 S. Beretania St., Suite 400
 Honolulu, HI 96826

Counter: D1-0525/D1-0528
 Counted By: IQ/RQF
 Weather: Clear
 Other:

File Name : kanleia
 Site Code : 00000001
 Start Date : 08/29/2001
 Page No : 1

Groups Printed: 1 - Unshifted

Start Time	Kanoelohua Ave Southbound				Lelani St Westbound				Kanoelohua Ave Northbound				Lelani St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
06:00 AM	0	71	16	87	17	1	1	19	5	139	3	147	1	14	3	18	271
06:15 AM	0	85	35	120	30	3	4	37	12	171	2	185	0	14	1	15	357
06:30 AM	3	85	19	107	27	5	3	35	12	208	10	230	4	22	1	27	399
06:45 AM	2	102	40	144	45	5	11	62	11	271	5	287	4	30	1	35	528
Total	5	343	110	458	120	14	19	153	40	789	20	849	9	80	6	95	1555
07:00 AM	0	149	31	180	50	9	14	73	12	290	9	311	4	19	3	26	590
07:15 AM	1	177	37	215	45	6	18	70	15	382	12	409	3	20	2	25	719
07:30 AM	4	183	42	229	44	5	13	62	8	361	18	387	8	26	1	35	713
07:45 AM	1	217	60	278	39	9	13	61	10	344	11	365	4	30	2	36	740
Total	6	726	170	902	179	29	58	266	45	1377	50	1472	19	95	8	122	2762
Grand Total	11	1069	280	1360	299	43	77	419	85	2166	70	2321	28	175	14	217	4317
Approch %	0.8	78.6	20.6		71.4	10.3	18.4		3.7	93.3	3.0		12.9	80.6	6.5		
Total %	0.3	24.8	6.5	31.5	6.9	1.0	1.8	9.7	2.0	50.2	1.6	53.8	0.6	4.1	0.3	5.0	

Start Time	Kanoelohua Ave Southbound				Lelani St Westbound				Kanoelohua Ave Northbound				Lelani St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
Peak Hour From 06:00 AM to 07:45 AM - Peak 1 of 1																	
Intersection	07:00 AM																
Volume	6	726	170	902	179	29	58	266	45	1377	50	1472	19	95	8	122	2762
Percent	0.7	80.5	18.8		67.3	10.9	21.8		3.1	93.5	3.4		15.6	77.9	6.6		
07:45 Volume	1	217	60	278	39	9	13	61	10	344	11	365	4	30	2	36	740
Peak Factor	0.811				0.911				0.900				0.847				0.933
High Int.	07:45 AM				07:00 AM				07:15 AM				07:45 AM				
Volume	1	217	60	278	50	9	14	73	15	382	12	409	4	30	2	36	
Peak Factor	0.811				0.911				0.900				0.847				0.933

APPENDIX A
 EXISTING TRAFFIC COUNT DATA

Wilson Okamoto & Associates, Inc.
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0526/D1-0527
Counted By: TF/CL
Weather: Clear
Other:

File Name : kankeka
Site Code : 00000002
Start Date : 08/29/2001
Page No : 1

Start Time	Kanoehua Ave Southbound				Kekuanaoa St Westbound				Kanoehua Ave Northbound				Kekuanaoa St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
06:00 AM	5	66	17	88	11	5	11	27	36	99	17	152	12	23	4	39	
06:15 AM	7	75	17	99	21	15	28	64	50	131	22	203	17	30	9	56	
06:30 AM	8	81	19	108	10	9	11	30	49	161	31	241	22	28	7	57	
06:45 AM	7	118	11	136	5	11	14	30	50	194	56	300	17	25	20	62	
Total	27	340	64	431	47	40	64	151	185	585	126	896	68	106	40	214	
07:00 AM	11	134	11	156	35	19	32	86	29	243	58	330	17	13	31	61	
07:15 AM	9	175	14	198	21	10	18	49	29	299	97	425	30	9	28	67	
07:30 AM	15	194	18	227	6	10	17	33	49	278	84	411	24	14	19	57	
07:45 AM	10	213	37	260	13	16	21	50	51	233	93	377	50	30	16	96	
Total	45	716	80	841	75	55	88	218	158	1053	332	1543	121	66	94	281	
Grand Total	72	1056	144	1272	122	95	152	369	343	1638	458	2439	189	172	134	495	
Approch %	5.7	83.0	11.3	27.8	33.1	25.7	41.2	8.1	7.5	35.8	10.0	53.3	4.1	3.8	2.0	10.8	
Total %	1.6	23.1	3.1	27.8	2.7	2.1	3.3	8.1	7.5	35.8	10.0	53.3	4.1	3.8	2.0	10.8	

Start Time	Kanoehua Ave Southbound				Kekuanaoa St Westbound				Kanoehua Ave Northbound				Kekuanaoa St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
Peak Hour From 06:00 AM to 07:45 AM - Peak 1 of 1																	
Intersection 07:00 AM																	
Volume	45	716	80	841	75	55	88	218	158	1053	332	1543	121	66	94	281	
Percent	5.4	85.1	9.5	84.1	34.4	25.2	40.4	21.8	10.2	68.2	21.5	15.4	43.1	23.5	33.5	28.1	
07:45 Volume	10	213	37	260	13	16	21	50	51	233	93	377	50	30	16	96	
Peak Factor																	
High Int 07:45 AM					07:00 AM				07:15 AM				07:45 AM				
Volume	10	213	37	260	35	19	32	86	29	299	97	425	50	30	16	96	
Peak Factor				0.809				0.634				0.908				0.732	

Wilson Okamoto & Associates, Inc.
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0525/D1-0528
Counted By: RQF/IK
Weather: Clear
Other:

File Name : kanleip
Site Code : 00000001
Start Date : 08/28/2001
Page No : 1

Start Time	Kanoehua Ave Southbound				Lekani St Westbound				Kanoehua Ave Northbound				Lekani St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
03:30 PM	4	294	52	350	56	15	19	90	11	318	26	355	16	20	2	38	
03:45 PM	6	356	44	406	49	16	19	84	11	308	11	330	9	28	6	43	
Total	10	650	96	756	105	31	38	174	22	626	37	685	25	48	8	81	
04:00 PM	0	333	53	386	54	7	19	80	15	313	12	340	6	16	3	25	
04:15 PM	3	277	41	321	49	8	16	73	13	269	20	302	10	27	5	42	
04:30 PM	1	362	51	414	55	12	19	86	19	273	24	316	9	33	7	49	
04:45 PM	1	333	46	380	55	9	18	82	5	226	18	249	7	19	2	28	
Total	5	1305	191	1501	213	36	72	321	52	1081	74	1207	32	95	17	144	
05:00 PM	0	316	34	350	29	3	7	39	3	261	16	280	8	12	1	21	
05:15 PM	2	302	34	338	21	1	8	30	2	214	13	229	8	11	2	21	
Grand Total	17	2573	355	2945	368	71	125	564	79	2182	140	2401	73	166	28	267	
Approch %	0.6	87.4	12.1	47.7	6.0	1.1	2.0	9.1	3.3	90.9	5.8	27.3	62.2	10.5	4.3	61.7	
Total %	0.3	41.7	5.7	47.7	6.0	1.1	2.0	9.1	1.3	35.3	2.3	38.9	1.2	2.7	0.5	4.3	

Start Time	Kanoehua Ave Southbound				Lekani St Westbound				Kanoehua Ave Northbound				Lekani St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
Peak Hour From 03:30 PM to 05:15 PM - Peak 1 of 1																	
Intersection 03:45 PM																	
Volume	10	1328	189	1527	207	43	73	323	58	1163	67	1288	34	104	21	159	
Percent	0.7	87.0	12.4	47.7	64.1	13.3	22.6	21.8	4.5	90.3	5.2	12.8	21.4	65.4	13.2	32.9	
04:30 Volume	1	362	51	414	55	12	19	86	19	273	24	316	9	33	7	49	
Peak Factor																	
High Int 04:30 PM					04:30 PM				04:00 PM				04:30 PM				
Volume	1	362	51	414	55	12	19	86	15	313	12	340	9	33	7	49	
Peak Factor				0.922				0.939				0.947				0.811	

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1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0768/D1-0769
Counted By: KO/DM
Weather: Clear
Other:

File Name : huakana
Site Code : 00000003
Start Date : 08/29/2001
Page No : 1

Groups Printed: 1 - Unshifed

Start Time	Kanoelehua Ave Southbound				Hualani St Westbound				Kanoelehua Ave Northbound				Hualani St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
06:00 AM	0	94	0	94	11	0	0	11	8	105	0	113	3	0	0	3	221
06:15 AM	0	97	0	97	3	0	0	3	3	143	0	146	2	0	0	2	248
06:30 AM	1	108	0	109	6	0	0	6	5	174	0	179	5	0	0	5	299
06:45 AM	0	137	0	137	4	0	0	4	13	216	0	229	7	0	0	7	377
Total	1	436	0	437	24	0	0	24	29	638	0	667	17	0	0	17	1145
07:00 AM	0	164	0	164	6	0	0	6	11	292	0	303	5	0	0	5	478
07:15 AM	3	194	0	197	12	0	0	12	15	338	0	353	8	0	0	8	570
07:30 AM	1	229	0	230	9	0	0	9	12	296	0	308	7	0	0	7	554
07:45 AM	1	257	0	258	6	0	0	6	13	249	0	262	3	0	0	3	529
Total	5	844	0	849	33	0	0	33	51	1175	0	1226	23	0	0	23	2131
Grand Total	6	1280	0	1286	57	0	0	57	80	1813	0	1893	40	0	0	40	3276
Apprch %	0.5	99.5	0.0		100.0	0.0	0.0		2.4	55.3	0.0		100.0	0.0	0.0		
Total %	0.2	39.1	0.0	39.3	1.7	0.0	0.0	1.7	2.4	55.3	0.0	57.8	1.2	0.0	0.0	1.2	

Start Time	Kanoelehua Ave Southbound				Hualani St Westbound				Kanoelehua Ave Northbound				Hualani St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
Peak Hour From 06:00 AM to 07:45 AM - Peak 1 of 1																	
Intersection	07:00 AM																
Volume	5	844	0	849	33	0	0	33	51	1175	0	1226	23	0	0	23	2131
Percent	0.6	99.4	0.0		100.0	0.0	0.0		4.2	95.8	0.0		100.0	0.0	0.0		
07:15 Volume	3	194	0	197	12	0	0	12	15	338	0	353	8	0	0	8	570
Peak Factor	0.935																
High Int.	07:45 AM																
Volume	1	257	0	258	12	0	0	12	15	338	0	353	8	0	0	8	570
Peak Factor	0.823																

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1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0526/D1-0527
Counted By: CL/TF
Weather: Clear
Other:

File Name : kankekp
Site Code : 00000002
Start Date : 08/28/2001
Page No : 1

Groups Printed: 1 - Unshifed

Start Time	Kanoelehua Ave Southbound				Kekuanoa St Westbound				Kanoelehua Ave Northbound				Kekuanoa St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
03:30 PM	9	231	23	263	48	56	78	182	30	280	80	390	56	42	24	122	957
03:45 PM	11	257	27	295	38	28	56	122	38	255	83	376	60	38	14	112	905
Total	20	488	50	558	86	84	134	304	68	535	163	766	116	80	38	234	1862
04:00 PM	17	284	25	326	28	20	54	102	39	244	73	356	79	25	21	125	909
04:15 PM	14	226	25	265	29	40	58	125	35	230	76	341	61	44	21	126	857
04:30 PM	21	304	18	343	26	39	58	121	37	223	77	337	82	33	17	132	933
04:45 PM	12	264	30	306	16	25	48	89	29	213	63	305	67	38	24	129	829
Total	64	1078	98	1240	99	124	214	437	140	910	289	1339	289	140	83	512	3528
05:00 PM	12	230	27	269	18	18	43	79	33	192	54	279	46	27	21	94	721
05:15 PM	8	239	18	265	22	34	56	112	24	161	49	234	44	20	14	78	689
Grand Total	104	2035	193	2332	225	260	447	932	265	1798	555	2618	495	267	156	918	6800
Apprch %	4.5	87.3	8.3		24.1	27.9	48.0		10.1	68.7	21.2		53.9	29.1	17.0		
Total %	1.5	29.9	2.8	34.3	3.3	3.8	6.6	13.7	3.9	26.4	8.2	38.5	7.3	3.9	2.3	13.5	

Start Time	Kanoelehua Ave Southbound				Kekuanoa St Westbound				Kanoelehua Ave Northbound				Kekuanoa St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
Peak Hour From 03:30 PM to 05:15 PM - Peak 1 of 1																	
Intersection	03:30 PM																
Volume	51	998	100	1149	143	144	244	531	142	1009	312	1463	256	149	80	485	3626
Percent	4.4	86.9	8.7		26.9	27.1	46.0		9.7	69.0	21.3		52.8	30.7	16.5		
03:30 Volume	9	231	23	263	48	56	78	182	30	280	80	390	56	42	24	122	957
Peak Factor	0.948																
High Int.	04:00 PM																
Volume	17	284	25	326	28	20	54	102	39	244	73	356	79	25	21	125	909
Peak Factor	0.881																

Wilson Okamoto & Associates, Inc.
1907 S. Beretania St., #400
Honolulu, HI 96826

Site:
Date: 08/28/01

Day: Tuesd.

Time	AM - Ch 1	PM - Ch 1
11		
9		
11		
25		
19		
23		
25		
22		
5		
0		
0		
2		
Totals	56	156
Peak Hour	10:30	2:45
Volume	33	27
Factor	0.75	0.75
DayTotal	316	

Wilson Okamoto & Associates, Inc.
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0768/D1-0769
Counted By: DM/KO
Weather: Clear
Other:

File Name : huaknp
Site Code : 00000003
Start Date : 08/28/2001
Page No : 1

Start Time	Kanoelehua Ave Southbound				Hualani St Westbound				Kanoelehua Ave Northbound				Hualani St Eastbound				Int Total
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	
03:30 PM	0	281	0	281	42	0	0	42	19	326	0	345	10	0	0	10	658
03:45 PM	1	291	0	292	17	0	0	17	15	302	0	317	16	0	0	16	642
Total	1	552	0	553	59	0	0	59	34	628	0	662	26	0	0	26	1300
04:00 PM	2	318	0	320	9	0	0	9	11	283	0	294	9	0	0	9	632
04:15 PM	1	263	0	264	11	0	0	11	13	272	0	285	10	0	0	10	570
04:30 PM	2	346	0	348	15	0	0	15	8	262	0	270	11	0	0	11	644
04:45 PM	2	297	0	299	7	0	0	7	4	245	0	249	8	0	0	8	563
Total	7	1224	0	1231	42	0	0	42	36	1062	0	1098	38	0	0	38	2409
05:00 PM	1	281	0	282	5	0	0	5	8	230	0	238	4	0	0	4	529
05:15 PM	0	257	0	257	6	0	0	6	5	189	0	194	6	0	0	6	463
Grand Total	9	2314	0	2323	112	0	0	112	83	2109	0	2192	74	0	0	74	4701
Apprch %	0.4	99.6	0.0	100.0	0.0	0.0	0.0	0.0	3.8	96.2	0.0	2192	100.0	0.0	0.0	0.0	4701
Total %	0.2	49.2	0.0	49.4	2.4	0.0	0.0	2.4	1.8	44.9	0.0	46.6	1.6	0.0	0.0	1.6	16

Start Time	Kanoelehua Ave Southbound				Hualani St Westbound				Kanoelehua Ave Northbound				Hualani St Eastbound				Int Total	
	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total	RT	TH	LT	App Total		
Peak Hour From 03:30 PM to 05:15 PM - Peak 1 of 1																		
Intersection 03:30 PM																		
Volume	4	1133	0	1137	79	0	0	79	58	1183	0	1241	45	0	0	45	2502	
Percent	0.4	99.6	0.0	100.0	0.0	0.0	0.0	0.0	4.7	95.3	0.0	1241	100.0	0.0	0.0	0.0	2502	
03:30 Volume	0	261	0	261	42	0	0	42	19	326	0	345	10	0	0	10	658	
Peak Factor																		
High Int Volume	04:00 PM				03:30 PM				03:30 PM				03:45 PM					
Volume	2	318	0	320	42	0	0	42	19	326	0	345	16	0	0	16	0951	
Peak Factor				0.888				0.470				0.899				0.703		

Wilson Okamoto & Associates, Inc.
 1907 S. Beretania St., #400
 Honolulu, HI 96826

Title1 : Hilo Airport
 Title2 : SUNNY
 Title3 : 1023*

Site: I
 Date: 08/29/01

Day: Wednesday

Interval	AM - Ch 1	PM - Ch 1
12:00	0	0
12:15	0	0
12:30	0	0
12:45	0	0
1:00	0	0
1:15	0	0
1:30	0	0
1:45	0	0
2:00	0	0
2:15	0	0
2:30	0	0
2:45	0	0
3:00	0	0
3:15	0	0
3:30	0	0
3:45	0	0
4:00	0	0
4:15	0	0
4:30	0	0
4:45	0	0
5:00	2	0
5:15	2	0
5:30	0	0
5:45	0	0
6:00	0	0
6:15	3	0
6:30	6	0
6:45	4	0
7:00	5	0
7:15	11	0
7:30	6	0
7:45	1	0
8:00	0	0
8:15	0	0
8:30	0	0
8:45	0	0
9:00	0	0
9:15	0	0
9:30	0	0
9:45	0	0
10:00	0	0
10:15	0	0
10:30	0	0
10:45	0	0
11:00	0	0
11:15	0	0
11:30	0	0
11:45	0	0
Totals	42	0

APPENDIX B
 LEVEL OF SERVICE DEFINITIONS

Peak Hour : 6:30
 Volume : 26
 Factor : 0.59
 DayTotal : 42

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically a 15-min analysis period. The criteria are given in the following table.

Table 1: Level-of-Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec/veh)
A	≤ 10.0
B	> 10.0 and ≤ 20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	> 80.0

Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group.

Level of Service A describes operations with low control delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

Level of Service B describes operations with control delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

Level of Service C describes operations with control delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

Level of Service D describes operations with control delay greater than 35 and up to 55 sec per vehicle. At level of service D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level of Service E describes operation with control delay greater than 55 and up to 80 sec per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

Level of Service F describes operations with control delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) criteria are given in Table 1. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. If the degree of saturation is greater than about 0.9, average control delay is significantly affected by the length of the analysis period.

**Table 1: Level-of-Service Criteria for
Unsignalized Intersections**

Level of Service	Average Control Delay (Sec/Veh)
A	≤ 10.0
B	>10.0 and ≤ 15.0
C	>15.0 and ≤ 25.0
D	>25.0 and ≤ 35.0
E	>35.0 and ≤ 50.0
F	>50.0

APPENDIX C

**CAPACITY ANALYSIS CALCULATIONS
EXISTING PEAK HOUR TRAFFIC ANALYSIS**

HCS2000: Signalized Intersections Release 4.1

Analyst: CL
 Agency: 9/13/2001
 Date: 9/13/2001
 Period: AM Peak
 Project ID:
 E/W St: Leilani St
 Inter.:
 Area Type: All other areas
 Jurisd:
 Year : Existing
 N/S St: Kamelelehua Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	3	0	1	3	0
LCConfig	LTR			LTR			L	TR		L	TR	
Volume	8	95	19	58	29	179	50	1377	45	170	726	6
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol	2			18			5			1		

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0				6.0	7.0	42.0	
Yellow	4.0				0.0	0.0	4.0	
All Red	1.0				0.0	0.0	1.0	

Intersection Performance Summary

Appr/Lane Grp	Lane Capacity	Adj Sat Flow Rate (s)	Ratios v/c	g/c	Lane Group	Approach	Delay LOS
Eastbound							
LTR	495	1782	0.28	0.28	25.8 C	25.8 C	
Westbound							
LTR	424	1526	0.64	0.28	32.0 C	32.0 C	
Northbound							
L	118	1770	0.47	0.07	43.5 D		
TR	2363	5064	0.67	0.47	19.3 B	20.1 C	
Southbound							
L	256	1770	0.82	0.14	59.0 E		
TR	2766	5080	0.33	0.54	11.4 B	20.4 C	

Intersection Delay = 21.5 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: CL
 Agency: 9/13/2001
 Date: 9/13/2001
 Period: PM Peak
 Project ID:
 E/W St: Leilani St
 Inter.:
 Area Type: All other areas
 Jurisd:
 Year : Existing
 N/S St: Kamelelehua Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	3	0	1	3	0
LCConfig	LTR			LTR			L	TR		L	TR	
Volume	16	91	41	73	46	208	69	1208	50	190	1260	13
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol	4			21			5			1		

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	28.0				6.0	7.0	39.0	
Yellow	4.0				0.0	0.0	4.0	
All Red	1.0				0.0	0.0	1.0	

Intersection Performance Summary

Appr/Lane Grp	Lane Capacity	Adj Sat Flow Rate (s)	Ratios v/c	g/c	Lane Group	Approach	Delay LOS
Eastbound							
LTR	528	1698	0.32	0.31	24.1 C	24.1 C	
Westbound							
LTR	471	1514	0.71	0.31	32.7 C	32.7 C	
Northbound							
L	118	1770	0.63	0.07	51.5 D		
TR	2192	5058	0.61	0.43	20.2 C	21.8 C	
Southbound							
L	256	1770	0.82	0.14	59.7 E		
TR	2595	5078	0.54	0.51	15.1 B	20.9 C	

Intersection Delay = 22.6 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: CL Inter.:
 Agency: 9/13/2001 Area Type: All other areas
 Date: 9/13/2001 Jurisd: Existing
 Period: AM Peak Year: Existing
 Project ID: E/W St: Kekuaona Ave N/S St: Kanoelehua Ave

	SIGNALIZED INTERSECTION SUMMARY					
	Eastbound		Westbound		Southbound	
	L	R	L	R	L	R
No. Lanes	1	1	0	2	1	2
LGConfig	L	T	R	L	T	R
Volume	94	66	121	68	55	75
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol	12	8	16	8	16	5

Duration 1.00 Area Type: All other areas

Phase Combination	Signal Operations					
	1	2	3	4	5	6
EB Left	A	A			5	6
Thru	A	A			A	A
Right	A	A			A	A
Peds						
WB Left	A				SB	Left
Thru	A				Thru	A
Right	A				Right	A
Peds						
EB Right					EB	Right
SB Right					WB	Right
Green	5.0	20.0			10.0	15.0
Yellow	0.0	4.0			0.0	4.0
All Red	0.0	1.0			0.0	1.0

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/Lane	Lane Group	Adj Sat	Flow Rate	Ratios			Approach
				v/c	g/c	Delay LOS	
Eastbound							
L	248	1770	0.52	0.28	27.7	C	
T	518	1863	0.17	0.28	24.8	C	26.4 C
R	440	1583	0.34	0.28	26.4	C	
Westbound							
LTR	600	2700	0.56	0.22	32.2	C	32.2 C
Northbound							
L	492	1770	0.74	0.28	35.8	D	
T	1770	3539	0.65	0.50	17.6	B	21.1 C
R	792	1583	0.20	0.50	12.6	B	
Southbound							
L	197	1770	0.50	0.11	39.7	D	
TR	1682	5045	0.55	0.33	24.9	C	26.4 C

Intersection Delay = 24.3 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: CL Inter.:
 Agency: 9/13/2001 Area Type: All other areas
 Date: 9/13/2001 Jurisd: Existing
 Period: PM Peak Year: Existing
 Project ID: E/W St: Kekuaona Ave N/S St: Kanoelehua Ave

	SIGNALIZED INTERSECTION SUMMARY					
	Eastbound		Westbound		Southbound	
	L	R	L	R	L	R
No. Lanes	1	1	0	2	1	2
LGConfig	L	T	R	L	T	R
Volume	80	149	256	244	144	143
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol	26	36	14	14	14	5

Duration 1.00 Area Type: All other areas

Phase Combination	Signal Operations					
	1	2	3	4	5	6
EB Left	A	A			5	6
Thru	A	A			A	A
Right	A	A			A	A
Peds						
WB Left	A				SB	Left
Thru	A				Thru	A
Right	A				Right	A
Peds						
EB Right					EB	Right
SB Right					WB	Right
Green	31.0				15.0	5.0
Yellow	4.0				0.0	4.0
All Red	1.0				0.0	1.0

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/Lane	Lane Group	Adj Sat	Flow Rate	Ratios			Approach
				v/c	g/c	Delay LOS	
Eastbound							
L	175	507	0.47	0.34	25.2	C	
T	642	1863	0.24	0.34	21.3	C	23.0 C
R	545	1583	0.44	0.34	23.4	C	
Westbound							
LTR	874	2537	0.78	0.34	31.0	C	31.0 C
Northbound							
L	393	1770	0.84	0.22	51.3	D	
T	1337	3539	0.80	0.38	28.7	C	32.8 C
R	598	1583	0.23	0.38	19.3	B	
Southbound							
L	295	1770	0.39	0.17	34.2	C	
TR	1628	5052	0.73	0.32	28.7	C	29.2 C

Intersection Delay = 30.1 (sec/veh) Intersection LOS = C

HCS: Unsignalized Intersections Release 1.1c

TWO-WAY STOP CONTROL/TWOC ANALYSIS

Analyst: CL
 Intersection: Husiani St/Evanol-hus Ave
 Count Date:
 Time Period: AM Peak

Intersection Orientation: North-South Major St.

Vehicle Volume Data:

Movements:	2	3	5	6	9	12
Volume:	1175	51	844	5	33	23
PHF:	0.83	0.87	0.82	0.45	0.82	0.72
PHV:	0.02	0.02	0.02	0.02	0.02	0.02

Pedestrian Volume Data:

Movements:
 Flow:
 Lane width:
 Walk speed:
 Blockage:

Median Type: Raised Curb
 # of vehicles: 0
 Flared approach Movements:

of vehicles: Eastbound 0
 # of vehicles: Westbound 0

Lane usage for movements 1,2,3 approach:

	Lane 1	Lane 2	Lane 3
L	Y	R	L
T	R	T	T
N	Y	N	N

Channelized: Y
 Grade: 0.00

Lane usage for movements 4,5,6 approach:

	Lane 1	Lane 2	Lane 3
L	T	L	L
T	R	T	T
N	Y	N	N

Channelized: N
 Grade: 0.00

Lane usage for movements 7,8,9 approach:

	Lane 1	Lane 2	Lane 3
L	T	L	L
T	R	T	T
N	Y	N	N

Channelized: Y
 Grade: 0.00

Lane usage for movements 10,11,12 approach:

	Lane 1	Lane 2	Lane 3
L	T	L	L
T	R	T	T
N	Y	N	N

Channelized: N

Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Northbound	Southbound
Shared in volume, major st. vehicles:	0	0
Sat flow rate, major st. vehicles:	1700	1700
Number of major street through lanes:	2	3

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	g	12
t c, base	6.9	6.9
t c, hv	2.0	2.0
P hv	0.02	0.02
t c, g	0.1	0.1
G	0.00	0.00
t 3, it	0.0	0.0
t c, T	0.00	0.00
1 stage	0.00	0.00

Follow Up Time Calculations:

Movement	g	12
t c, base	3.3	3.3
t c, hv	1.0	1.0
P hv	0.02	0.02
t f	3.3	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.

	9	12
Conflicting Flows	675	346
Potential Capacity	396	450
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	396	450
Probability of Queue Free St.	0.88	0.95

Worksheet 10 delay, queue length, and LOS

Movement 1 4 7 8 9 10 11 12

	1	4	7	8	9	10	11	12
V (mph)					47			32
C (mph)					396			450
V/C					0.12			0.05
95% queue length					15.4			10.8
Control Delay					15.4			10.8
LOS					C			D
Approach Delay					15.4			10.8
Approach LOS					C			D

HCS: Unsignalized Intersections Release 3.1c
 TWO-WAY STOP CONTROL(TWSCI) ANALYSIS

Analyst: CL
 Intersection: Hualani St/Panolehua Ave
 Count Date:
 Time Period: PM Peak

Intersection Orientation: North-South Major St.

Vehicle Volume Data:

Movements:	2	3	5	6	9	12
Volume:	1183	58	1131	4	79	45
HFV:	3314	64	1271	4	168	64
PIF:	0.90	0.90	0.89	0.89	0.47	0.70
PIV:	0.02	0.02	0.02	0.02	0.02	0.02

Pedestrian Volume Data:

Movements:
 Lane width:
 Walk speed:
 Blockage:

Median Type: Raised Curb

of vehicles: 0

Flared approach Movements:

of vehicles: Eastbound 0

of vehicles: Westbound 0

Lane usage for movements 1,743 approach:

Lane 1	Lane 2	Lane 3
L T	L T	L T
H Y	H Y	H Y

Channelized: Y
 Grade: 0.00

Lane usage for movements 4,516 approach:

Lane 1	Lane 2	Lane 3
L T	L T	L T
H Y	H Y	H Y

Channelized: N
 Grade: 0.00

Lane usage for movements 7,869 approach:

Lane 1	Lane 2	Lane 3
L T	L T	L T
H Y	H Y	H Y

Channelized: Y
 Grade: 0.00

Lane usage for movements 10,11612 approach:

Lane 1	Lane 2	Lane 3
L T	L T	L T
H Y	H Y	H Y

Channelized: H

Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

Shared in volume, major th vehicles:	Northbound	Southbound
Shared in volume, major th vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Number of major street through lanes:	2	3

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	9	12
t c, base	6.9	6.9
t c, hv	2.0	2.0
P hv	0.02	0.02
t c, g	0.1	0.1
G	0.00	0.00
t j, lt	0.0	0.0
t c, T	0.00	0.00

1 stage

t c

1 stage

6.9

6.9

Follow Up Time Calculations:

Movement

9

12

t c, base

3.3

3.3

P hv

1.0

1.0

t c, g

0.02

0.02

G

1.3

1.3

Worksheet 5 Impedance and capacity equations

Step 1: RT from Minor St.

9

12

Conflicting Flows

657

Pedestrian Capacity

487

Movement Capacity Factor

1.00

Movement Capacity

487

Probability of Queue free St.

0.59

Worksheet 10 delay, queue length, and LOS

Movement

3

4

7

8

9

10

11

12

v (mph)

168

C w (mph)

44

v/c

0.91

551 queue length

20.0

Control Delay

12.0

LOS

12.0

Approach Delay

12.0

Approach LOS

B

HCS2000: Signalized Intersections Release 4.1

Analyst: CL Inter.:
 Agency: 9/13/2001 Area Type: All other areas
 Date: 9/13/2001 Jurisd:
 Period: AM Peak Year : Year 2010 w/out Proj
 Project ID: E/W St: Lailani St N/S St: Kanoelehua Ave

APPENDIX D
 CAPACITY ANALYSIS CALCULATIONS
 PROJECTED YEAR 2010 PEAK HOUR TRAFFIC
 ANALYSIS WITHOUT PROJECT

	SIGNALIZED INTERSECTION SUMMARY										
	Eastbound		Westbound		Northbound		Southbound				
	L	R	L	R	L	T	R	L	T	R	
No. Lanes	0	1	0	1	0	1	3	0	1	3	0
LGConfig	LTR		LTR		LTR			L	TR	L	TR
Volume	95	19	58	29	179	50	1377	45	170	726	6
Lane Width	12.0		12.0		12.0		12.0		12.0		12.0
RTOR Vol	2		18		5		1		1		1

Phase Combination	Area Type: All other areas				Signal Operations			
	1	2	3	4	5	6	7	8
EB Left	A				MB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
MB Right					EB Right			
SB Right					WB Right			
Green	25.0				6.0 7.0 42.0			
Yellow	4.0				0.0 0.0 4.0			
All Red	1.0				0.0 0.0 1.0			

Appr/ Lane Grp	Capacity	Adj Sat Flow Rate	Intersection Performance Summary		
			v/c	g/c	Approach
Eastbound					
LTR	495	1782	0.28	0.28	25.8 C 25.8 C
Westbound					
LTR	424	1526	0.64	0.28	32.0 C 32.0 C
Northbound					
L	118	1770	0.47	0.07	43.5 D
TR	2363	5064	0.67	0.47	19.3 B 20.1 C
Southbound					
L	256	1770	0.82	0.14	59.0 E
TR	2766	5080	0.33	0.54	11.4 B 20.4 C

Intersection Delay = 21.5 (sec/veh) Intersection LOS = C
 Cycle Length: 90.0 sec

HCS2000: Signalized Intersections Release 4.1

Analyst: CL
 Agency: 9/13/2001
 Date: 9/13/2001
 Period: PM Peak
 Project ID: Leilani St
 E/W St: Leilani St
 Inter.: Area Type: All other areas
 Jurisd: Year : Year 2010 w/out Proj
 N/S St: Kanoelehua Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	3	0	1	3	0
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	16	91	41	73	46	208	69	1264	50	190	1318	13
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol	4			21			5			1		

Duration 1.00 Area Type: All other areas

Phase Combination 1 2 3 4

Signal Operations	1	2	3	4
EB Left	A	A	A	HB Left
Thru	A	A	A	Thru
Right	A	A	A	Right
Peds	A	A	A	Peds
WB Left	A	A	A	SB Left
Thru	A	A	A	Thru
Right	A	A	A	Right
Peds	A	A	A	Peds
NB Right	28.0			EB Right
SB Right				WB Right
Green	4.0			6.0
Yellow	1.0			7.0
All Red				39.0

Intersection Performance Summary

Appr/Lane	Lane	Adj Sat	Flow Rate	Capacity	v/c	g/c	Delay LOS	Approach
Eastbound	LTR	528	1698	0.32	0.31	24.1	C	24.1 C
Westbound	LTR	471	1514	0.71	0.31	32.7	C	32.7 C
Northbound	L	118	1770	0.63	0.07	51.5	D	22.2 C
Southbound	L	256	1770	0.82	0.14	59.7	E	21.0 C

Intersection Delay = 22.7 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: CL
 Agency: 9/13/2001
 Date: 9/13/2001
 Period: AM Peak
 Project ID: Kekuaaoa Ave
 E/W St: Kekuaaoa Ave
 Inter.: Area Type: All other areas
 Jurisd: Year : Year 2010 w/out Proj
 N/S St: Kanoelehua Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	0	2	0	1	2	1	1	3	0
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	94	66	121	88	55	75	332	1101	158	80	749	45
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol	30			8			16			5		

Duration 1.00 Area Type: All other areas

Phase Combination 1 2 3 4

Signal Operations	1	2	3	4
EB Left	A	A	A	HB Left
Thru	A	A	A	Thru
Right	A	A	A	Right
Peds	A	A	A	Peds
WB Left	A	A	A	SB Left
Thru	A	A	A	Thru
Right	A	A	A	Right
Peds	A	A	A	Peds
NB Right	5.0	20.0		EB Right
SB Right	0.0	4.0		WB Right
Green	0.0	1.0		10.0
Yellow	0.0	1.0		15.0
All Red				30.0

Intersection Performance Summary

Appr/Lane	Lane	Adj Sat	Flow Rate	Capacity	v/c	g/c	Delay LOS	Approach
Eastbound	L	248	1770	0.52	0.28	27.7	C	26.3 C
Westbound	L	440	1583	0.28	0.28	25.8	C	26.3 C
Northbound	L	492	1770	0.74	0.28	35.8	D	21.4 C
Southbound	L	792	1583	0.20	0.50	12.6	B	26.6 C

Intersection Delay = 24.5 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: CL Inter: Area Type: All other areas
 Agency: 9/13/2001 Jurisd: Year : Year 2010 w/out Proj
 Date: 9/13/2001 Jurisd: Year : Year 2010 w/out Proj
 Period: PM Peak
 Project ID: E/W St: Kekuaaoa Ave N/S St: Kanoelehua Ave

	SIGNALIZED INTERSECTION SUMMARY								
	Eastbound		Westbound		Northbound		Southbound		
	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	0	2	0	1	2	1
LCCConfig	L	T	R	L	T	R	L	T	R
Volume	80	149	256	244	144	143	312	1055	142
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol	26			36			14		

Duration 1.00 Area Type: All other areas

Phase Combination	Signal Operations			
	1	2	3	4
EB Left	A			
Thru	A			
Right	A			
Peds				
WB Left	A			
Thru	A			
Right	A			
Peds				
NB Right				
SB Right				
Green	31.0			
Yellow	4.0			
All Red	1.0			

Intersection Performance Summary

Appr/ Lane	Lane Group	Adj Sat	Flow Rate	Ratios		Lane Group		Approach
				v/c	g/c	Delay LOS	Delay LOS	
Eastbound								
L	175	507	0.47	0.34	25.2	C	23.0	C
T	642	1863	0.24	0.34	21.3	C	23.0	C
R	545	1583	0.44	0.34	23.4	C		
Westbound								
LTR	874	2537	0.78	0.34	31.0	C	31.0	C
Northbound								
L	393	1770	0.84	0.22	51.3	D	34.0	C
T	1337	3539	0.84	0.38	30.7	C	34.0	C
R	598	1583	0.23	0.38	19.3	B		
Southbound								
L	295	1770	0.39	0.17	34.2	C	30.0	C
TR	1628	5053	0.76	0.32	29.6	C	30.0	C

Intersection Delay = 30.9 (sec/veh) Intersection LOS = C

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TMSC) ANALYSIS

Analyst: CL
 Intersection: Hualani St/Kanoelehua Ave
 Count Date: Year 2010 w/out Proj
 Time Period: AM Peak
 Intersection Orientation: North-South Major St.

Vehicle Volume Data:

Movements:	2	3	5	6	9	12
Volume:	1229	51	881	5	13	23
WFR:	1413	59	1037	2	4	23
PHF:	0.87	0.87	0.82	0.82	0.57	0.73
PHV:	0.02	0.02	0.03	0.02	0.02	0.02

Pedestrian Volume Data:

Movements:

Flow:

Lane width:

Walk speed:

Blockage:

Median Type: Raised Curb

of vehicles: 0

Flared approach Movements:

of vehicles: Eastbound 0

of vehicles: Westbound 0

Lane usage for movements 1,2,3 approach:

Lane	1	2	3
L	T	R	L
T	R	L	T
R	L	T	R

Lane usage for movements 4,5,6 approach:

Lane	1	2	3
L	T	R	L
T	R	L	T
R	L	T	R

Lane usage for movements 7,8,9 approach:

Lane	1	2	3
L	T	R	L
T	R	L	T
R	L	T	R

Lane usage for movements 10,11,12 approach:

Lane	1	2	3
L	T	R	L
T	R	L	T
R	L	T	R

Channelized: H

Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

Shared in volume, major th vehicles: Northbound Southbound
Shared in volume, major rt vehicles: 0 0
Sat flow rate, major th vehicles: 1700 1700
Sat flow rate, major rt vehicles: 1700 1700
Number of major street through lanes: 2 3

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement 9 12
t c, base 6.9 6.9
t c, hv 2.0 2.0
P hv 0.02 0.02
t c, g 0.1 0.1
G 0.00 0.00
t 3, lt 0.0 0.0
t c, t: 0.00 0.00
1 stage

Follow Up Time Calculations:

Movement 9 12
t f, base 3.3 3.1
t f, hv 1.0 1.0
P hv 0.02 0.02
t f 3.3 3.1

Worksheet 5 Impedance and capacity equations

Step 1: RT from Minor St.

Conflicting Flow 706 362
Potential Capacity 378 615
Pedestrian Impedance Factor 1.00 1.00
Movement Capacity 378 615
Probability of Queue Free St. 0.87 0.95

Worksheet 10 delay, queue length, and LOS

Movement 1 4 7 8 9 10 11 12
v (vph) 49 32
C w (vph) 378 615
v/c 0.13 0.05
95% queue length 15.9 11.0
Control Delay C C
LOS C C
Approach Delay 15.9 11.0
Approach LOS C B

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL (TMS) ANALYSIS

Analyst: CL
Intersection: Kuaiani St/Kamohelua Ave
Count Date: Year 2010 w/out Proj
Time Period: PM PMA
Intersection Orientation: North-South Major St.

Vehicle Volume Data:

Movements: 2 3 5 6 9 12
Volume: 1237 58 1185 4 79 45
HVR: 1374 64 1331 4 368 64
HVR: 0.70 0.30 0.89 0.89 0.47 0.70
HVR: 0.02 0.02 0.02 0.02 0.02 0.02

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
V Blockage:

Median Type: Raised Curb

of vehicles: 0

Flared Approach Movements:

of vehicles: Eastbound 0
of vehicles: Westbound 0

Lane usage for movements 1,2&3 approach:

L Lane 1 R L T R Lane 2 Lane 3
H Y H H H Y H H H H H Y

Channelized: Y

Grade: 0.00

Lane usage for movements 4,5&6 approach:

L Lane 1 Lane 2 Lane 3
H Y H H H Y H H H H H Y

Channelized: N

Grade: 0.00

Lane usage for movements 7,8&9 approach:

L Lane 1 Lane 2 Lane 3
H H H Y H H H H H H H Y

Channelized: Y

Grade: 0.00

Lane usage for movements 10,11&12 approach:

L Lane 1 Lane 2 Lane 3
H H H Y H H H H H H H Y

Channelized: N

Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Northbound	Southbound
Shared in volume, major th vehicles:	0	0
Sat flow rate, major rt vehicles:	1700	1700
Sat flow rate, major th vehicles:	1700	1700
Number of major street through lanes:	2	2

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement 9 12

t c, base 6.9 6.9
P hv 2.0 2.0
t c, g 0.02 0.02
G 0.1 0.1
t 1, lt 0.00 0.00
t c, T 0.0 0.0
1 stage 0.00 0.00

t c

1 stage 6.9 6.9

Follow Up Time Calculations:

Movement 9 12

t f, base 3.3 3.3
t f, hv 1.0 1.0
P hv 0.02 0.02
t f 3.3 3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.

Movement 9 12

Conflicting Flows 487 446
Potential Capacity 487 446
Pedestrian Impedance Factor 1.00 1.00
Movement Capacity 487 446
Probability of Queue free St. 0.35 0.35

Worksheet 10 delay, queue length, and LOS

Movement 1 4 7 8 9 10 11 12

C (vph) 168 64

C M (vph) 385 540

V/c 0.43 0.11

5% queue length 21.2 12.1

Control Delay C C

LOS 21.2 12.3

Approach Delay C C

Approach LOS B B

APPENDIX E
CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2010 PEAK HOUR TRAFFIC
ANALYSIS WITH PROJECT

HCS2000: Signalized Intersections Release 4.1

Analyst: CL
 Agency: 9/13/2001
 Date: 9/13/2001
 Period: AM Peak
 Project ID:
 E/W St: Leilani St

Inter.:
 Area Type: All other areas
 Jurisd:
 Year : Year 2010 w/ Proj
 N/S St: Kanoelehua Ave

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	3	0	1	3	0
LCConfig	LTR			LTR			L	TR		L	TR	
Volume	8	95	19	58	29	184	50	1482	45	175	783	6
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol	2			18			5			1		

Phase Combination	Area Type: All other areas			Signal Operations				
	1	2	3	4	5	6	7	8
EB Left	A				HB Left	A		
Thru	A				Thru		A	
Right	A				Right		A	
Peds					Peds			A
WB Left	A				SB Left	A		
Thru	A				Thru		A	
Right	A				Right		A	
Peds					Peds			A
HB Right					EB Right			
SB Right					WB Right			
Green	25.0					6.0	7.0	42.0
Yellow	4.0					0.0	0.0	4.0
All Red	1.0					0.0	0.0	1.0

Appr/ Lane Group	Capacity	Adj Sat Flow Rate	Intersection Performance Summary			Approach
			v/c	g/c	Delay LOS	
Eastbound						
LTR	495	1782	0.28	0.28	25.8	C 25.8 C
Westbound						
LTR	424	1527	0.66	0.28	32.4	C 32.4 C
Northbound						
L	118	1770	0.47	0.07	43.5	D
TR	2364	5065	0.72	0.47	20.3	C 21.0 C
Southbound						
L	256	1770	0.84	0.14	63.8	E
TR	2766	5081	0.35	0.54	11.6	B 21.1 C

Intersection Delay = 22.2 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: CL
 Agency: 9/13/2001
 Date: 9/13/2001
 Period: PM Peak
 Project ID:
 E/W St: Leilani St

Inter.:
 Area Type: All other areas
 Jurisd:
 Year : Year 2010 w/ Proj
 N/S St: Kanoelehua Ave

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	3	0	1	3	0
LCConfig	LTR			LTR			L	TR		L	TR	
Volume	16	91	41	73	46	212	69	1294	50	136	1360	13
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol	4			21			5			1		

Phase Combination	Area Type: All other areas			Signal Operations				
	1	2	3	4	5	6	7	8
EB Left	A				HB Left	A		
Thru	A				Thru		A	
Right	A				Right		A	
Peds					Peds			A
WB Left	A				SB Left	A		
Thru	A				Thru		A	
Right	A				Right		A	
Peds					Peds			A
HB Right					EB Right			
SB Right					WB Right			
Green	28.0					6.0	7.0	39.0
Yellow	4.0					0.0	0.0	4.0
All Red	1.0					0.0	0.0	1.0

Appr/ Lane Group	Capacity	Adj Sat Flow Rate	Intersection Performance Summary			Approach
			v/c	g/c	Delay LOS	
Eastbound						
LTR	528	1698	0.32	0.31	24.1	C 24.1 C
Westbound						
LTR	471	1515	0.72	0.31	33.2	C 33.2 C
Northbound						
L	118	1770	0.63	0.07	51.5	D
TR	2193	5060	0.66	0.43	20.9	C 22.4 C
Southbound						
L	256	1770	0.85	0.14	65.6	E
TR	2596	5079	0.59	0.51	15.7	B 22.0 C

Intersection Delay = 23.3 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: CL Inter: Area Type: All other areas
 Agency: 9/13/2001 Jurisd: Year: Year 2010 w/ Proj
 Date: AM Peak Period: Year 2010 w/ Proj
 Project ID: E/W St: Kekuanoa Ave N/S St: Kanoelehua Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	0	2	0	1	2	1	1	3	0
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	94	85	121	117	73	99	332	1103	203	190	749	45
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
R/TOR Vol	30			10			20			5		

Duration 1.00 Area Type: All other areas
 Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A	A	A	A	HB Left	A	A	A
Thru	A	A	A	A	Thru	A	A	A
Right	A	A	A	A	Right	A	A	A
Peds					Peds			
WB Left	A	A	A	A	SB Left	A	A	A
Thru	A	A	A	A	Thru	A	A	A
Right	A	A	A	A	Right	A	A	A
Peds					Peds			
NB Right	5.0	23.0	10.0	15.0	28.0	10.0	15.0	28.0
SB Right	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0
Green	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0
Yellow	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0
All Red								

Cycle Length: 90.0 sec

Intersection Performance Summary

Appr/Lane Grp	Lane Capacity	Adj Sat Flow Rate (s)	v/c	Sat	Ratio	Lane Group	Approach	Delay LOS
Eastbound								
L	284	1770	0.37	0.30	24.5	C		
T	559	1663	0.17	0.30	23.4	C	23.9	C
R	475	1583	0.21	0.30	23.8	C		
Westbound								
LTR	657	2688	0.47	0.24	29.6	C	29.6	C
Northbound								
L	492	1770	0.74	0.28	35.8	D		
T	1691	3539	0.72	0.48	20.2	C	22.7	C
R	756	1583	0.27	0.48	14.2	B		
Southbound								
L	197	1770	0.56	0.11	41.7	D		
TR	1570	5047	0.62	0.31	27.2	C	28.7	C

Intersection Delay = 25.3 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1

Analyst: CL Inter: Area Type: All other areas
 Agency: 9/13/2001 Jurisd: Year: Year 2010 w/ Proj
 Date: PM Peak Period: Year 2010 w/ Proj
 Project ID: E/W St: Kekuanoa Ave N/S St: Kanoelehua Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1	0	2	0	1	2	1	1	3	0
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	80	181	256	292	172	171	312	1057	174	120	1044	51
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
R/TOR Vol	64			17			17			5		

Duration 1.00 Area Type: All other areas
 Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A	A	A	A	HB Left	A	A	A
Thru	A	A	A	A	Thru	A	A	A
Right	A	A	A	A	Right	A	A	A
Peds					Peds			
WB Left	A	A	A	A	SB Left	A	A	A
Thru	A	A	A	A	Thru	A	A	A
Right	A	A	A	A	Right	A	A	A
Peds					Peds			
NB Right	15.0	20.0	10.0	5.0	10.0	5.0	10.0	10.0
SB Right	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0
Green	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0
Yellow	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0
All Red								

Cycle Length: 90.0 sec

Intersection Performance Summary

Appr/Lane Grp	Lane Capacity	Adj Sat Flow Rate (s)	v/c	Sat	Ratio	Lane Group	Approach	Delay LOS
Eastbound								
L	162	728	0.51	0.22	33.5	C		
T	414	1863	0.46	0.22	31.1	C	32.5	C
R	352	1583	0.57	0.22	33.3	C		
Westbound								
LTR	808	3128	0.85	0.39	34.3	C	34.3	C
Northbound								
L	398	1770	0.83	0.50	37.5	D		
T	1376	3539	0.82	0.39	28.7	C	29.5	C
R	616	1583	0.27	0.39	19.0	B		
Southbound								
L	378	1770	0.36	0.44	17.5	B		
TR	1684	5053	0.74	0.33	28.2	C	27.2	C

Intersection Delay = 29.9 (sec/veh) Intersection LOS = C

HCS: Unsignalized Intersections Release 3.1c
 TWO-WAY STOP CONTROL(TMSC) ANALYSIS

Analyst: CL
 Intersection: Hualani St/Kanoelehua Ave
 Count Date: Year 2010 w/ Proj
 Time Period: AM Peak
 Intersection Orientation: North-South Major St.

Vehicle Volume Data:

Movements	2	3	5	6	9	12
Volume:	1252	41	893	5	26	23
HFR:	0.87	0.87	0.82	0.87	0.67	0.72
PHV:	0.02	0.02	0.02	0.02	0.02	0.02

Pedestrian Volume Data:
 Movements:
 Flow:
 Lane width:
 Walk speed:
 Blockage:

Median Type: Raised Curb
 # of vehicles: 0

Flared Approach Movements:
 # of vehicles: Eastbound 0
 # of vehicles: Westbound 0

Lane usage for movements 1,2,3 approach:

Lane	1	2	3
L			
T			
R			
H			
Y			

Channelized: Y
 Grade: 0.00

Lane usage for movements 4,5,6 approach:

Lane	1	2	3
L			
T			
R			
H			
Y			

Channelized: H
 Grade: 0.00

Lane usage for movements 7,8,9 approach:

Lane	1	2	3
L			
T			
R			
H			
Y			

Channelized: Y
 Grade: 0.00

Lane usage for movements 10,11,12 approach:

Lane	1	2	3
L			
T			
R			
H			
Y			

Channelized: H

Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Northbound	Southbound
Shared in volume, major th vehicles:	0	0
Shared in volume, minor th vehicles:	1700	1700
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, minor th vehicles:	1700	1700
Number of major street through lanes:	2	3

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:
 Movement 9 12

t c,base	6.9	6.9
t c,hv	2.0	2.0
P hv	0.02	0.02
t c,g	0.1	0.1
G	0.00	0.00
t j,lt	0.0	0.0
t c,t	0.00	0.00
1 stage		

t c 1 stage 6.9 6.9

Follow Up Time Calculations:
 Movement 9 12

t f,base	3.3	3.3
t f,hv	1.0	1.0
P hv	0.02	0.02
t f	3.3	3.3

Worksheet 6 Impedance and capacity equations

Step 1. RT from Minor St.	9	12
Conflicting Flow	720	366
Potential Capacity	371	611
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	371	611
Probability of Queue Free St.	0.90	0.95

Worksheet 10 delay, queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v/vp/h					39			32
C/v/vp/h					371			611
W/C					0.10			0.05
95% queue length					15.4			11.0
Control Delay					15.4			11.0
LOS					C			B
Approach Delay					15.4			11.0
Approach LOS					C			B

HCS: Unsignalized Intersections Release 3.1c
 TWO-WAY STOP CONTROL/TMSCI ANALYSIS

Analyst: CL
 Intersection: Huslar St/Fanoclehua Ave
 Count Date: Year 2010 w/ PRO
 Time Period: IN Peak

Intersection Orientation: North-South Major St.

Vehicle Volume Data:

Movements:	2	3	5	6	9	12
Volume:	1264	48	1205	4	63	45
PRV:	1404	53	1354	4	134	64
PRF:	0.90	0.90	0.89	0.89	0.47	0.70
PRO:	0.02	0.02	0.02	0.02	0.02	0.02

Pedestrian Volume Data:

Movements:
 Lane width:
 Walk speed:
 Blockage:

Median Type: Raised Curb
 # of vehicles: 0

Flared Approach Movements:

of vehicles: Eastbound 0
 # of vehicles: Westbound 0

Lane usage for movements 1,761 approach:

	Lane 1	Lane 2	Lane 3
L	Y	R	L
T	R	L	T
H	Y	H	H
N	Y	H	H

Channelized: Y
 Grade: 0.00

Lane usage for movements 4,516 approach:

	Lane 1	Lane 2	Lane 3
L	Y	R	L
T	R	L	T
H	Y	H	H
N	Y	H	H

Channelized: N
 Grade: 0.00

Lane usage for movements 7,869 approach:

	Lane 1	Lane 2	Lane 3
L	Y	R	L
T	R	L	T
H	Y	H	H
N	Y	H	H

Channelized: Y
 Grade: 0.00

Lane usage for movements 10,11612 approach:

	Lane 1	Lane 2	Lane 3
L	Y	R	L
T	R	L	T
H	Y	H	H
N	Y	H	H

Channelized: N

Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Northbound	Southbound
Shared in volume, major th vehicles:	0	0
Shared in volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	7	3

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:
 Movement 9 12

t c, base	6.9	6.9
t c, hv	2.0	2.0
P hv	0.02	0.02
t c, g	0.1	0.1
G	0.00	0.00
t j, lt	0.0	0.0
t c, T	0.00	0.00
1 stage	6.9	6.9

Follow Up Time Calculations:
 Movement 9 12

t c, base	1.3	1.3
t c, hv	1.0	1.0
P hv	0.01	0.02
t c	3.3	3.3

Worksheet 6 Impedance and capacity equations

Step 11, RT from Minor St.	9	12
Conflicting Flow	702	454
Potential Capacity	380	553
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	380	553
Probability of Queue free St.	0.65	0.88

Worksheet 10 delay, queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)					134			64
C m(vph)					380			553
v/c					0.35			0.12
55% queue length					19.6			12.4
Control Delay					19.6			12.4
LOS					C			D
Approach Delay					19.6			12.4
Approach LOS					C			B

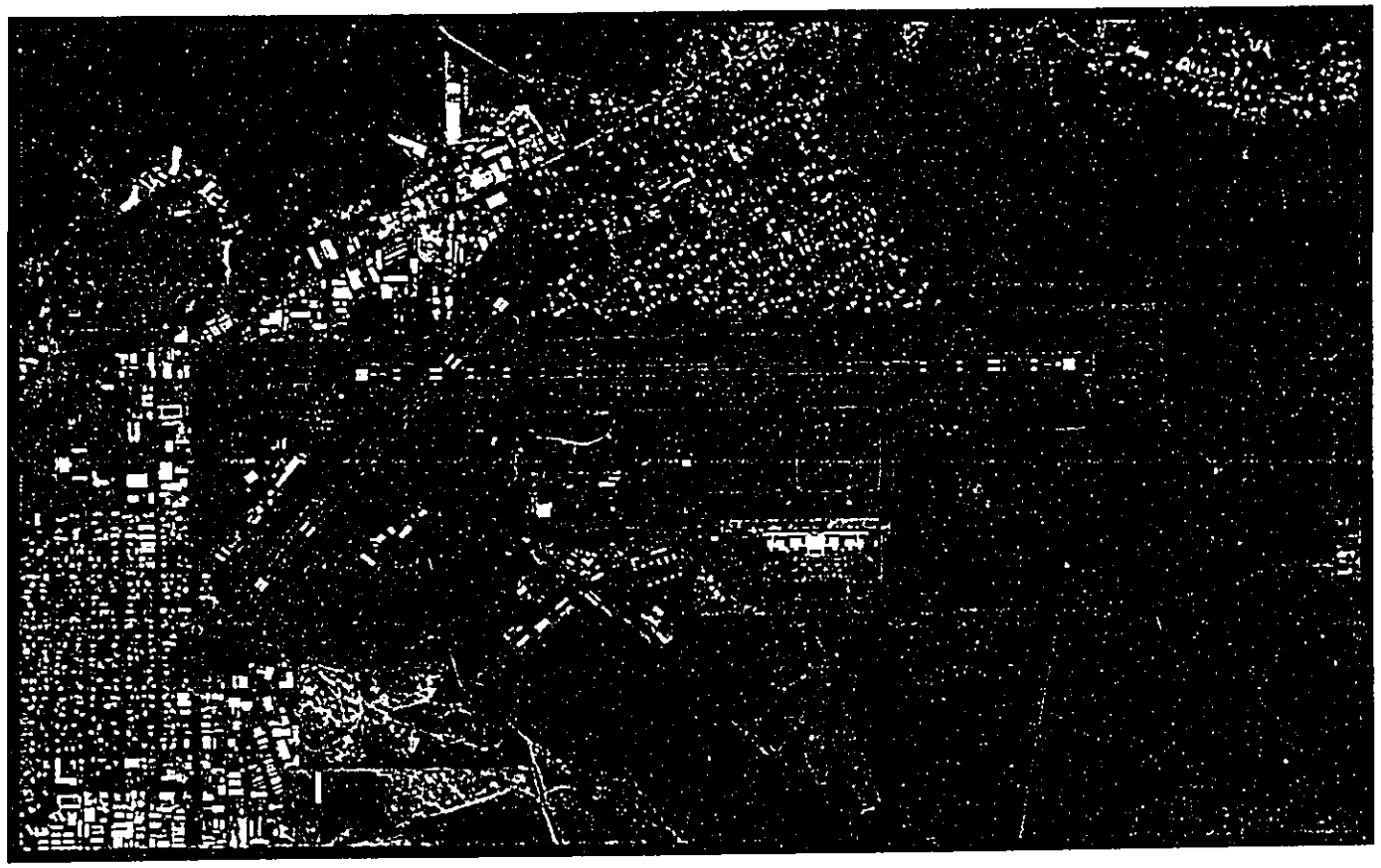
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HILO INTERNATIONAL AIRPORT
FINAL ENVIRONMENTAL ASSESSMENT

Hilo, Hawaii



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

Prepared by

Wilson Okamoto & Associates, Inc.

April 2003

HILO INTERNATIONAL AIRPORT

Final Environmental Assessment


Hilo, Hawaii

This document is prepared pursuant to Chapter 343, HRS and the Administrative Rules,
Title 11, Chapter 200 of the Hawaii Department of Health

Proposing Agency:

*State of Hawaii
Department of Transportation
Airports Division*

Responsible Official:



*Rodney K. Haraga, Director
Department of Transportation*

APR 15 2003

Date

Prepared by:

Wilson Okamoto & Associates, Inc.

April, 2003

TABLE OF CONTENTS

	<u>Page</u>
1. INTRODUCTION.....	1-1
1.1 Overview	1-1
1.2 Project Background	1-1
1.3 Project Need	1-2
1.4 Project Schedule and Cost.....	1-5
2. PROJECT DESCRIPTION AND SETTING.....	2-1
2.1 Project Location.....	2-1
2.2 Project Description	2-1
2.3 Existing and Surrounding Uses	2-13
2.3.1 Existing Uses	2-13
2.3.2 Surrounding Uses	2-16
3. DESCRIPTION OF THE EXISTING ENVIRONMENT, PROJECT IMPACTS AND MITIGATION MEASURES.....	3-1
3.1 Climate	3-1
3.2 Geology and Topography	3-1
3.3 Soils.....	3-2
3.4 Surface Water	3-4
3.5 Ground Water	3-5
3.6 Natural Hazards.....	3-6
3.7 Flora.....	3-7
3.8 Fauna	3-10
3.9 Air Quality.....	3-11
3.10 Noise.....	3-15
3.11 Archaeological Resources	3-24
3.12 Cultural Resources.....	3-28
3.12.1 Traditional Land Use Patterns and Resources.....	3-28
3.12.2 Keaukaha Hawaiian Home Lands	3-29
3.12.3 Hilo Airport and Keaukaha Hawaiian Home Lands.....	3-30
3.12.4 Cultural Resources, Practices, and Beliefs	3-32
3.12.5 Airport- and Project-Related Concerns	3-33
3.12.6 Findings of the Cultural Impact Assessment.....	3-36
3.12.7 Impacts and Recommendations	3-36
3.13 Socio-Economic Considerations	3-37
3.13.1 Population.....	3-37
3.13.2 Economy.....	3-40
3.13.3 Visitor Industry.....	3-41
3.14 Police, Fire and Medical Services	3-44
3.15 Infrastructure and Utilities.....	3-44
3.15.1 Water System.....	3-44
3.15.2 Wastewater System	3-45
3.15.3 Solid Waste.....	3-48

3.15.4	Roadway Access.....	3-48
3.15.5	Aircraft Parking Apron.....	3-51
3.15.6	Drainage System.....	3-52
3.15.7	Electrical and Communication Systems.....	3-53
4.	RELATIONSHIP TO PLANS, POLICIES AND CONTROLS	4-1
4.1	Hawaii State Plan	4-1
4.2	State Land Use District Classification.....	4-4
4.3	County of Hawaii Zoning.....	4-6
4.4	State Coastal Zone Management Program	4-6
4.5	Special Management Area.....	4-10
4.6	County of Hawaii General Plan.....	4-10
4.7	County of Hawaii General Plan Revision Program.....	4-16
4.8	StateWide Airport System Plan.....	4-16
4.9	Hilo International Airport Master Plan.....	4-17
5.	COMMUNITY CONSULTATION	5-1
5.1	Explanation of Noise Descriptors.....	5-4
5.2	Keaukaha Community Meeting: August 15, 2001	5-4
5.3	Person-to-Person and Mail-in Survey	5-6
5.4	Keaukaha Community Meeting: November 21, 2001.....	5-8
6.	ALTERNATIVES TO THE PROPOSED ACTION	6-1
6.1	Cargo facility.....	6-1
6.1.1	No-Action Alternative	6-1
6.1.2	Alternatives.....	6-1
6.2	Helicopter operations.....	6-2
6.2.1	No-Action Alternative	6-2
6.2.2	Alternatives.....	6-2
6.3	General Aviation Improvements	6-3
6.3.1	No-Action Alternative	6-3
6.3.2	Alternatives.....	6-4
6.4	Parking Improvements.....	6-4
6.4.1	No-Action Alternative	6-4
6.5	Dot-A Baseyard Improvements.....	6-4
6.5.1	No-Action Alternative	6-4
6.6	Noise Mitigation.....	6-5
6.6.1	No-Action Alternative	6-5
6.6.2	15-Foot Noise Barrier Alternative.....	6-5
6.7	Land Acquisitions and Avigation Easements.....	6-6
6.7.1	No-Action Alternative.....	6-6
7	REQUIRED PERMITS AND APPROVALS	7-1
8.	ANTICIPATED DETERMINATION OF FONSI.....	8-1

9. CONSULTATION9-1
 9.1 Pre-Assessment Consultation9-1
 9.2 Draft EA Consultation.....9-3

10. REFERENCES.....10-1

LIST OF FIGURES

	<u>Page</u>
Figure 1-1 Proposed Airport Improvements.....	1-3
Figure 2-1 Location Map.....	2-3
Figure 2-2 Tax Map Key 2-1-012	2-4
Figure 2-2A Tax Map Key 2-1-012 Supplementary Map A	2-5
Figure 2-2B Tax Map Key 2-1-012 Supplementary Map B.....	2-6
Figure 2-3 Site Plan, Proposed Cargo Facility	2-7
Figure 2-4 Site Plan, Proposed Heliport Facility.....	2-8
Figure 2-5 Site Plan, Proposed General Aviation Improvements	2-10
Figure 2-6 Site Plan, Proposed Parking Expansion.....	2-11
Figure 2-7 Existing Airport Facilities.....	2-15
Figure 3-1 Soils	3-3
Figure 3-2 Botanical, Faunal, and Archaeological Survey Areas	3-8
Figure 3-3 Base Year 2000 Noise Exposure Map	3-17
Figure 3-4 Existing Helicopter Facility Location and Helicopter Ingress and Egress Routes.....	3-19
Figure 3-5 Proposed Helicopter Facility Location and Helicopter Ingress and Egress Routes.....	3-21
Figure 3-6 Year 2005 Airport Noise Contours, Existing and Proposed Heliport Facilities	3-22
Figure 3-7 Year 2020 Airport Noise Contours, Existing and Proposed Heliport Facilities	3-25
Figure 3-8 Location of Former Railroad	3-26
Figure 3-9 Hawaii County District Map.....	3-38
Figure 3-10 Existing Utilities	3-47
Figure 4-1 State Land Use Districts	4-5
Figure 4-2 Hawaii County Zoning	4-8
Figure 4-3 Hawaii County General Plan	4-13
Figure 5-1 Year 2005 Airport Noise Contours, "No Mitigation"	5-2
Figure 5-2 Year 2005 Airport Noise Contours with 15-Foot Noise Wall.....	5-3
Figure 5-3 Single Event Noise Contours, Runway 8 Departures, B-737 (200)	5-12
Figure 5-4 Single Event Noise Contours, Runway 3 Departures, B-737 (200)	5-12
Figure 5-5 Single Event Noise Contours, Runway 21 Departures, B-737 (200)	5-12

LIST OF TABLES

	<u>Page</u>
TABLE 3-1 AIR QUALITY AT HILO MONITORING STATION, 1999, IN COMPARISON WITH STATE AND FEDERAL AIR QUALITY STANDARDS (in micrograms per cubic meter)	3-12
TABLE 3-2 RESIDENT POPULATION OF HAWAII COUNTY AND STATE, 1980 TO 2000.....	3-39
TABLE 3-3 POPULATION FORECASTS FOR THE STATE OF HAWAII AND COUNTIES, 2005 - 2020.....	3-40
TABLE 3-4 VISITOR ARRIVAL STATISTICS FOR THE STATE, AND NEIGHBOR ISLAND COUNTIES: 1980-1997	3-42
TABLE 3-5 VISITOR ARRIVAL PROJECTIONS FOR THE STATE OF HAWAII, 2000-2020	3-43

APPENDICES

- Appendix A: *Botanical Survey Report for the Proposed Hilo Airport Improvement Sites.*
Evangeline Funk, July 2001.
- Appendix B: *A Survey of Avian and Mammalian Species.* Rana Productions, Ltd., August
2001.
- Appendix C: *Air Quality Impact Report.* J. W. Morrow, December 2001.
- Appendix D: *Acoustic Study for the Proposed New Tour Helicopter Facilities at Hilo
International Airport, Hilo, Hawaii.* Y. Ebisu & Associates, September 2001.
- Appendix E: *Archaeological Inventory Survey.* Haun & Associates, August 2001.
- Appendix F: *Cultural Impact Assessment.* Wilson Okamoto & Associates, February, 2002.
- Appendix G: *Traffic Impact Report for the Hilo International Airport Improvements.*
Wilson Okamoto & Associates, November 2001.

PROJECT SUMMARY

Proposing Agency:	State of Hawaii Department of Transportation Airports Division
Location:	Hilo International Airport, Hilo, Hawaii
Tax Map Key:	(3) 2-1-12: various
Land Area:	Approx. 1,007 acres
Recorded Fee Owner:	State of Hawaii
Existing Uses:	Airport and related facilities
State Land Use Classification:	Urban
County Zoning:	ML-20 (Limited Industrial, 20,000 sf minimum lot size)
Proposed Action:	New hold cargo facility, relocated helicopter facility, general aviation facilities, parking area expansion, maintenance baseyard facilities, residential sound attenuation for nearby residences, land and avigation easement acquisition
Pre-Assessment Consultation:	<u>Federal Agencies</u> U.S. Army Corps of Engineers U.S. Customs Service U.S. Department of Agriculture, Animal and Plant Health Inspection Service U.S. Department of Transportation, Federal Aviation Administration U.S. Environmental Protection Agency U.S. Fish and Wildlife Service <u>State Agencies</u> Department of Agriculture Department of Business, Economic Development and Tourism (DBEDT) Office of Planning Department of Defense (DOD), Hawaii Air National Guard DOD Hawaii Army National Guard, State Army Aviation Office Department of Hawaiian Home Lands Department of Health (DOH) DOH Office of Environmental Quality Control

Department of Land and Natural Resources (DLNR)
DLNR Historic Preservation Division
DLNR Land Division
Department of Transportation
Office of Hawaiian Affairs
University of Hawaii at Manoa, Environmental Center

County Agencies

Department of Public Works
Department of Research and Development
Department of Water Supply
Planning Department

Elected Officials

State Senator David Matsuura
State Representative Jerry L. Chang
Hawaii County Councilman Aaron Chung

Other Interested Parties

Above It All
Airlines Committee of Hawaii
Air-Flo Express, Inc.
Airborne Freight Corporation
Aloha Airlines, Inc.
Century Aviation
Commodity Forwarders
Federal Express Corporation
General Aviation Council of Hawaii
Hawaii Airline Liaison Office
Hawaii Agriculture Industry
Hawaii Flight Academy
Hawaii Orchid Air
Hawaiian Airlines, Inc.
Helicopter Consultants of Maui, dba Blue Hawaiian
Helicopters
Island Hoppers
K & S Helicopters, Inc.
Kamehameha Schools
Keaukaha Community Association
Leslie B. Ito, dba Air Freight Specialist
Murrayair Ltd.
Safari Aviation, Inc.
Sierra Club, Hawaii Chapter
Sunshine Helicopters
Tropical Helicopters
Volcano Helicopters

Individuals

Jacob S. Kiko, Jr.

Allen Tim Sing

Ann Paulino

Francine Y. Lee Etal., Yap Mew Kong Trust

Genesis Lee Loy

Reid Y. Furutani Etal., Able Electric, Inc.

Diane Uyeda

Hayato Okino Etal.

Albert Koizumi Etal.

Janice M. Oshiro Hwang Etal.

**SECTION 1
INTRODUCTION**

1. INTRODUCTION

1.1 OVERVIEW

The State of Hawaii Department of Transportation, Airports Division (DOT-A) proposes to construct various improvements at the Hilo International Airport on the island of Hawaii. The proposed improvements are listed below, with the respective locations shown on Figure 1-1.

1. Development of a new hold cargo facility northwest of the main passenger terminal complex, including associated roadway, vehicular parking, infrastructure, and aircraft parking apron improvements;
2. Relocation of helicopter operations to the southwest corner of the Airport, including the development of lease lots, operational areas, and infrastructure;
3. General aviation facilities, including an aircraft parking apron, a new T-hangar, wash rack, aircraft tie-downs, and lease lots in the Old Terminal Area;
4. Expansion of public and employee parking areas;
5. Expansion of the DOT-A maintenance baseyard;
6. Noise mitigation projects, including sound attenuation for nearby residences and a 15-foot noise barrier between the Airport and the Keaukaha residential subdivision;
7. Acquisition of the triangular area between Kanoalehua Avenue and Runway 3, acquisition of a small area southwest of Runway 3 and west of Kanoalehua Avenue, and acquisition of a small area immediately northeast of Runway 21 for runway protection zone areas (subject to availability and concurrence of the landowner);
8. Acquisition of an aviation easement for the Runway 3 runway protection zone area.

The preparation of this Environmental Assessment is required pursuant to Chapter 343, Hawaii Revised Statutes, and Chapter 200, Title 11, State of Hawaii Department of Health Administrative Rules since the proposed improvements involve the use of State lands and funds, and a helicopter facility. The accepting authority for the Environmental Assessment is the State of Hawaii, Department of Transportation, Airports Division.

1.2 PROJECT BACKGROUND

The Hilo International Airport is located in the town of Hilo on the eastern side of the Island of Hawaii. The proposed improvements are to occur on various sites within the Airport property, with the exception of land acquisitions, exchanges and aviation easements that will be sought for certain parcels near the north and east airport boundaries.

The Airport encompasses approximately 1,247 acres and is owned and operated by the State of Hawaii as part of the Hawaii State Airport System. Hilo International Airport is one of two major airports on the island of Hawaii, and is one of the five major airports in the State of Hawaii. The Airport is classified as a small hub by the Statewide Airport System Plan (June 1998). The *National Plan of Integrated Airport Systems (NPIAS)* classifies Hilo

International Airport as a Commercial Service-Primary-Long Haul, which typically serves long-haul air carrier routes of less than 500 miles since overseas mainland service was suspended in December 1986. The Airport accommodates, and is expected to continue to accommodate, aircraft such as the B-737, DC-9, B-757, B-767, B-717 and some business jet aircraft. Occasionally, large aircraft such as the B-747 and the C-5A use the Airport.

Access to the Airport and existing facilities is from Kanoelehua Avenue via Kekuaaoa Street, Brig Road, and other airport service roads.

1.3 PROJECT NEED

The proposed improvements are based on recently updated master plans, development plans, and the Federal Aviation Regulations Part 150 Airport Noise Compatibility Program document to determine future development that will satisfy forecast aviation demand in a financially feasible manner while addressing environmental and socioeconomic issues and concerns.

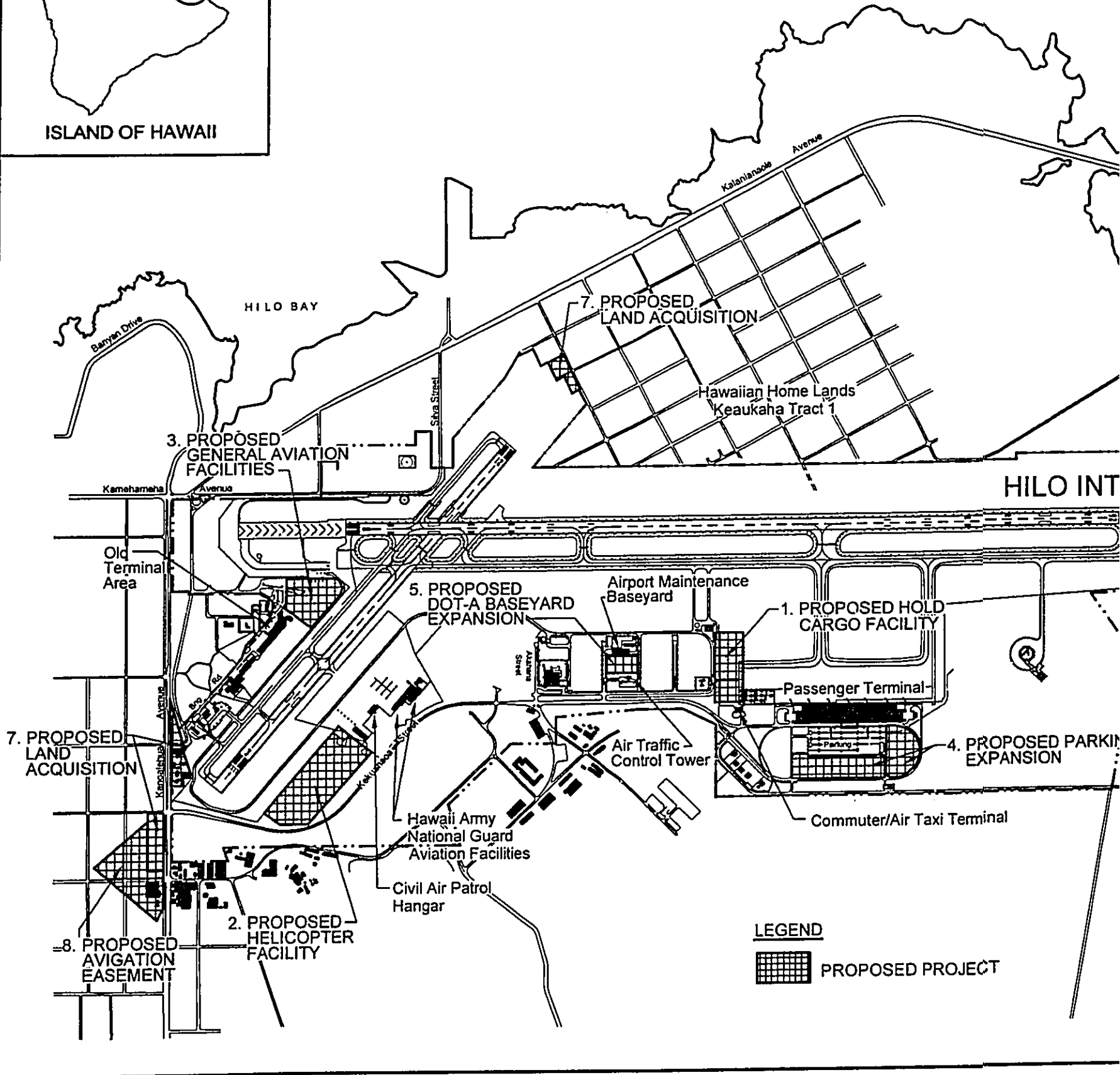
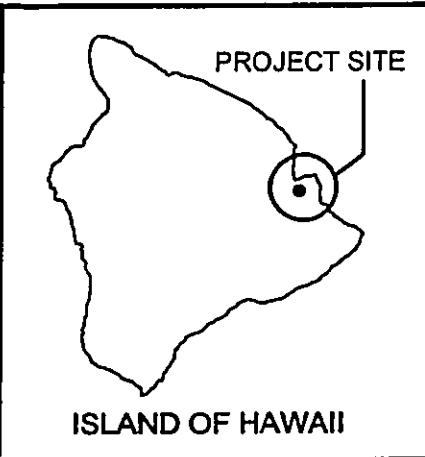
The need for each of the proposed projects is described below:

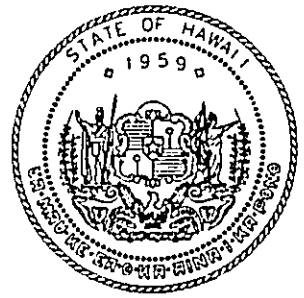
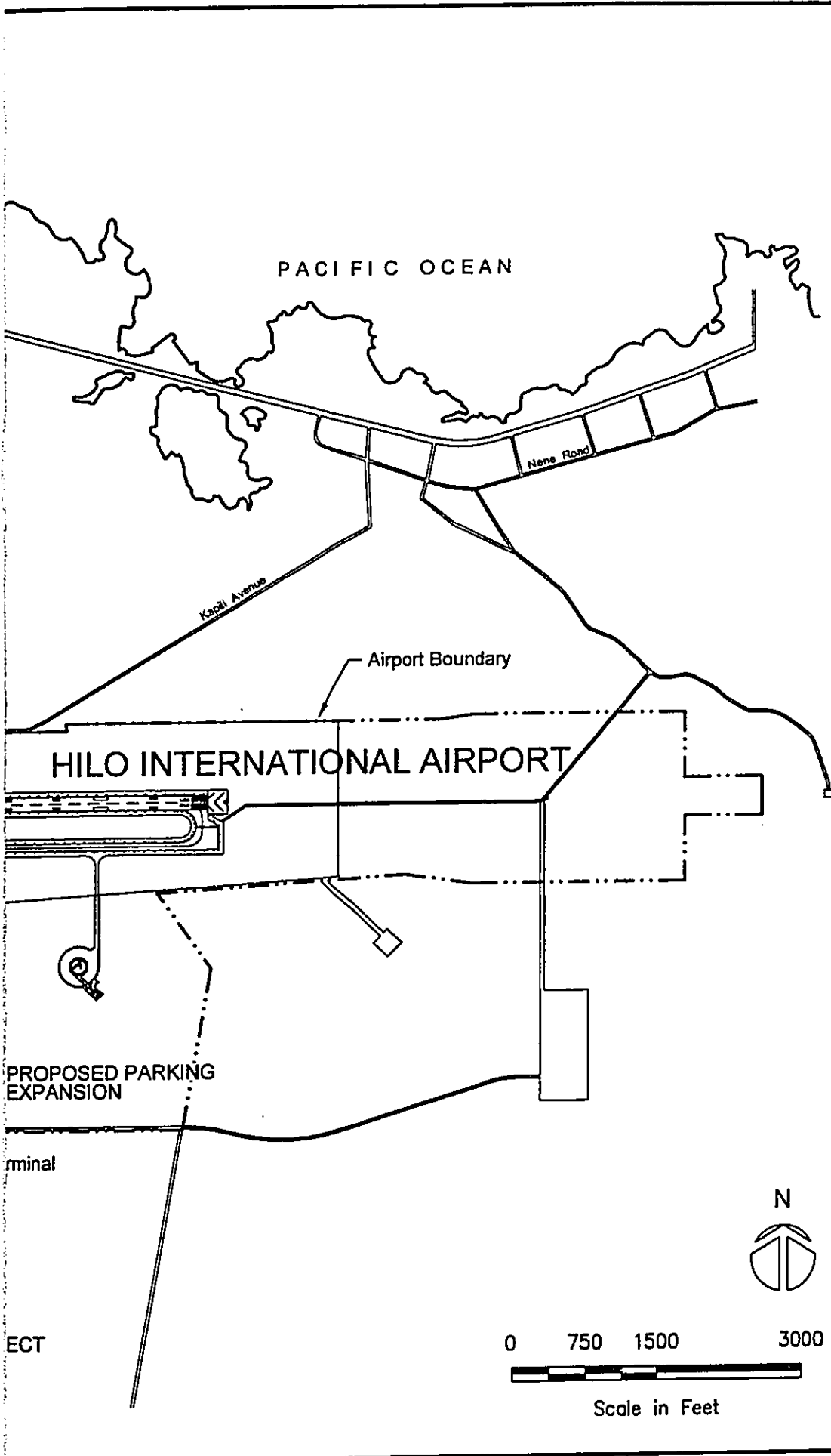
Hold Cargo Building

The primary purpose of the proposed Hold Cargo Building at Hilo International Airport is to relocate tenants currently occupying the existing air cargo facilities at the old passenger terminal at the west end of the Airport. Relocation of air cargo operations will allow for more efficient operations by the primary cargo operators, Aloha and Hawaiian Airlines, as well as the use of the old passenger terminal for other aviation activities. A major drawback to the existing air cargo facilities is the distance from the present passenger terminal area, which requires additional ground handling and split operations. Additional ground handling translates to increased costs to air cargo users.

Heliport

The development of the proposed hold cargo facilities will require the relocation of the existing helicopter facilities. The west end of the air carrier apron is used for helicopter parking, takeoffs, and landings, and such activities would conflict with the relocated air cargo operational area. Currently, the helicopter operator's ticket counters are located in the west end of the passenger terminal building and in the commuter/air taxi terminal such that there is a lack of space for expansion. The existing heliport's 11 helicopter pads are occupied, and two of the operators have plans to acquire additional helicopters in the future. The proposed heliport facility will allow for the consolidation and accommodation of the facility and expansion needs of the five private helicopter operators at Hilo International Airport.





Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HILO
INTERNATIONAL
AIRPORT
ENVIRONMENTAL
ASSESSMENT

PROPOSED
AIRPORT
IMPROVEMENTS

JANUARY 2002
Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 1-1

General Aviation

The General Aviation facilities at Hilo International Airport are insufficient to accommodate the existing number of aircraft and increasing level of aircraft operations. Deficiencies include a lack of hangar space, aircraft tie downs, and lease lots. Existing General Aviation support facilities are very limited. Infrastructure improvements and improvements to the aircraft parking apron are needed, as well as an aircraft wash rack. The proposed improvements to the General Aviation facilities will include a new T-hangar and parking apron to adequately support the present operations and projected future operations.

Parking

Additional parking is needed for both Airport customers and employees. There is ample space to extend the existing parking area toward the east and south in the open areas bounded by the terminal loop road.

DOT-A Maintenance Baseyard

The current DOT-A maintenance baseyard facilities are in need of upgrade and expansion to support the current level of airport operations. Specific facility needs include additional storage areas, office space, and service areas.

Noise Mitigation

Noise levels generated by Airport activities are an ongoing concern with residential areas in the Airport vicinity. Hilo International Airport participated in a voluntary noise compatibility planning process, the Federal Aviation Regulation (FAR) Part 150 Airport Noise Compatibility Planning Program, which implements portions of the Aviation Safety and Noise Abatement Act of 1979.

The FAR Part 150 Noise Compatibility Program report outlines options for noise mitigation, including sound-attenuation improvements to nearby residences and the construction of a 15-foot sound attenuation barrier between the Airport and the Keaukaha Tract I residential subdivision to reduce the number of noise impacted structures.

The wall was included among the airport improvements listed for the proposed project during the pre-assessment consultation phase of this Environmental Assessment (EA). Follow up consultation with the Keaukaha community, however, resulted in the elimination of the sound attenuation wall as a recommended means of noise mitigation. Numerous concerns and objections to the wall relative to views, aesthetics, wind impedance, and effectiveness were expressed at two community meetings, as well as through written comments and correspondence received by the

DOT-A. Community sentiments against the construction of the wall were also expressed during door-to-door interviews of residents along the Airport boundary and through a questionnaire mailed to residents within the area that experiences higher noise levels. As a result, DOT-A will not pursue the construction of the noise wall. Instead, continuing consultation will be pursued relative to options ranging from the attenuation of noise for individual residences to relocation away from the high noise zones.

Land Acquisitions

As determined by Federal Aviation Administration (FAA) safety regulations for areas near the end of runways, certain areas located beyond the Airport property line should be included in a clear zone referred to as the Runway Protection Zone (RPZ). These areas have been noted for acquisition. DOT-A has established a policy to proceed with such acquisitions only with the concurrence of the land owner, or at such time that the land otherwise becomes available.

Avigation Easements

FAA safety regulations also require the State DOT-A to seek avigation easements for areas within the Runway Protection Zone (RPZ), beneath the approach path for runways. Portions of the Runway Protection Zones (RPZ), beneath the approach path for Runways 8, 21 and 3, extend beyond the Airport property line. Acquisition of fee title to those areas would provide the State with the greatest control over uses within these areas and is the preferred course of action. However, where precluded by cost or existing uses, FAA safety regulations require the obtainment of avigation easements over the RPZs. At present the State has avigation easements over the non-airport property included within the existing runway protection zones for Runways 8 and 21. Obtainment of an easement for the Runway 3 RPZ is included as one of the proposed improvements in this EA.

1.4 PROJECT SCHEDULE AND COST

The proposed improvements are expected to be undertaken within the next 10 years, subject to timing and the availability of funding. Preliminary cost estimates for the proposed improvements are as follows:

- | | |
|---|----------------|
| • Hold cargo facility | \$21.3 million |
| • Helicopter facility | \$6.5 million |
| • General aviation improvements | \$6.5 million |
| • Parking improvements | \$2.3 million |
| • DOT-A Maintenance baseyard improvements | \$0.4 million |

- Noise mitigation treatment of residences \$14.6 million
- Land acquisition \$3.5 million

SECTION 2
PROJECT DESCRIPTION AND SETTING

2. PROJECT DESCRIPTION AND SETTING

2.1 PROJECT LOCATION

The proposed project site is located within boundaries of the existing Hilo International Airport in the town of Hilo on the eastern side of the Island of Hawaii (see Figure 2-1). Hilo International Airport is one of four State airports on the Island of Hawaii, and the second largest after the Kona International Airport at Keahole. The Airport occupies approximately 1,247 acres of land on the northeastern side of the town of Hilo.

The airfield at Hilo International Airport consists of two runways, various taxiways, aprons, and navigational aids together with lighting systems and pavement conditions. Airport facilities are located in two main areas south and west of the airfield. The passenger terminal, commuter/air taxi terminal, maintenance baseyard, Federal Aviation Administration (FAA) air traffic control tower, Aircraft Rescue and Fire Fighting (ARFF) facilities and the Airport Industrial Area are located on the southern side of the Airport. On the western side of the Airport, northwest of Runway 3-21 in the old airport terminal area, are facilities that include air cargo, general aviation aircraft maintenance, storage, and fixed base operator facilities.

All of the land within the Airport boundary is owned by the State of Hawaii except for the area occupied by the U.S. Postal Service. The Airport property is administered by the State DOT Airports Division. The State Department of Land and Natural Resources (DLNR) now administers the land between the old passenger terminal, Runway 8-26 and Kanoelehua Avenue that used to be part of the Airport. South of the Airport, surrounding landowners include the State of Hawaii and Bishop Estate, which owns a 177-acre strip of land south of the Airport. The Department of Hawaiian Home Lands (DHHL) controls most of the land to the north and to the east of the Airport. Towards the west, southwest, and northwest are areas owned by smaller private landowners as well as small parcels belonging to the State of Hawaii.

The proposed airport improvements are to occur on a total of approximately 64 acres of land within the Airport boundary, identified by various portions of Tax Map Key (TMK) 2-1-012:009, TMK 2-1-012:114 and 115 (see Figure 2-2, 2-2A, and 2-2B). Proposed noise mitigation projects, such as sound treatment of homes, would occur in the Keaukaha tract I residential subdivision north of the Airport. Proposed land acquisitions include approximately seven acres of both State-owned and private property. Approximately ten acres are included in the area to be covered by the proposed aviation easement. The specific locations of the proposed improvement projects are described in Section 2.2.

2.2 PROJECT DESCRIPTION

The proposed improvements for Hilo International Airport include eight projects that will provide new facilities for cargo, helicopter, and general aviation operations, improve parking,

improve DOT-A baseyard facilities, mitigate noise levels in the vicinity of the airport, and increase safety within Airport airspace and runway approach areas. The facilities will be compliant with the Americans with Disabilities Act (ADA) and Commission on Persons with Disabilities (CPD), as well as Federal, State and County regulations and codes, including, but not limited to Federal Aviation Administration (FAA) regulations and the County of Hawaii Building Code. The proposed projects are further described below.

Hold Cargo Facility

The proposed hold cargo facility will be situated at the west end of the existing air carrier apron, adjacent to the existing helicopter facilities and north of the Commuter/Air Taxi Terminal (see Figure 2-3). The new cargo facility will be in close proximity to the main passenger terminal, facilitating the handling of cargo that is loaded on to passenger aircraft. Planned improvements include one cargo building, access roads and driveways, a vehicular parking lot, aircraft parking apron improvements, utilities, and security fences. The buildings will provide approximately 63,000 square feet of total floor space. Approximately 150 vehicular parking and loading stalls for employees, customers, and delivery vehicles will be provided on the west side of the new buildings. Site improvements will consist of all supporting infrastructure, including water, wastewater, drainage, electrical and communications systems.

The hold cargo buildings are intended for use by Federal and State inspection agencies, Aloha Airlines, Hawaiian Airlines, freight forwarders, and farmers and flower growers, most of whom are currently located within the existing air cargo area in the Old Terminal. One or two all-cargo airlines are planning to develop their own facilities in the Airport Industrial Area on lease lots adjacent to and west of the new hold cargo facility.

Helicopter Facilities

Helicopter operations at the Airport are proposed for permanent relocation to a 15-acre area near the southwest corner of the airport, southwest of the Civil Air Patrol hangar and the Hawaii Army National Guard helicopter facility (see Figure 2-4). The proposed site is comprised of undeveloped land between Kekuanaoa Street and Runway 3. The new helicopter facility would enable the concentration of rotary-wing aircraft operations in one area of the Airport. The proposed helicopter facility would provide two landing/takeoff positions, at least 18 helicopter parking positions (pads), and eight graded lease lots, each with an area of 30,000 square feet. The lease lots would provide space for passenger lounges, offices, hangar facilities, and vehicular parking.

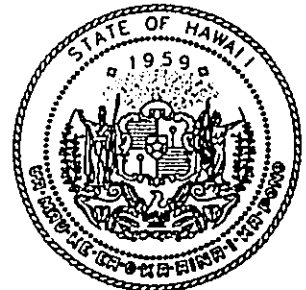
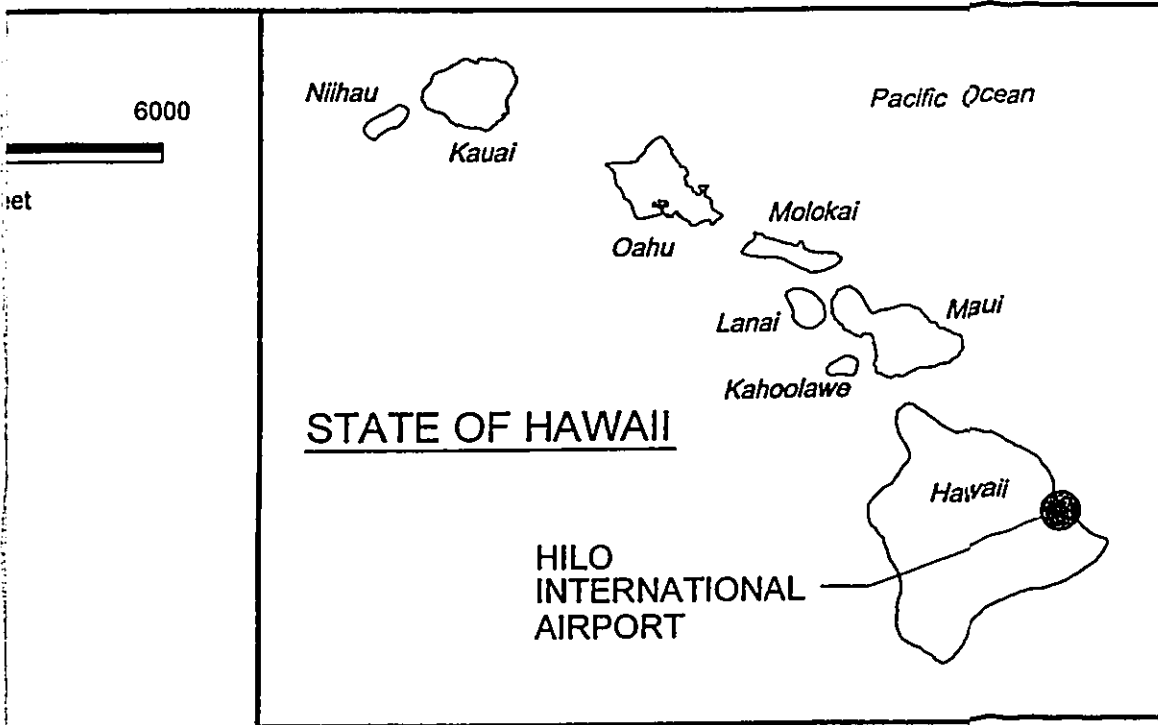
Basic infrastructure will be provided to the lease lots but tenants will be responsible for their facilities development. Potential conflicts with the nearby T-hangar will also be addressed during the facility's design.



0 1500 3000 6000

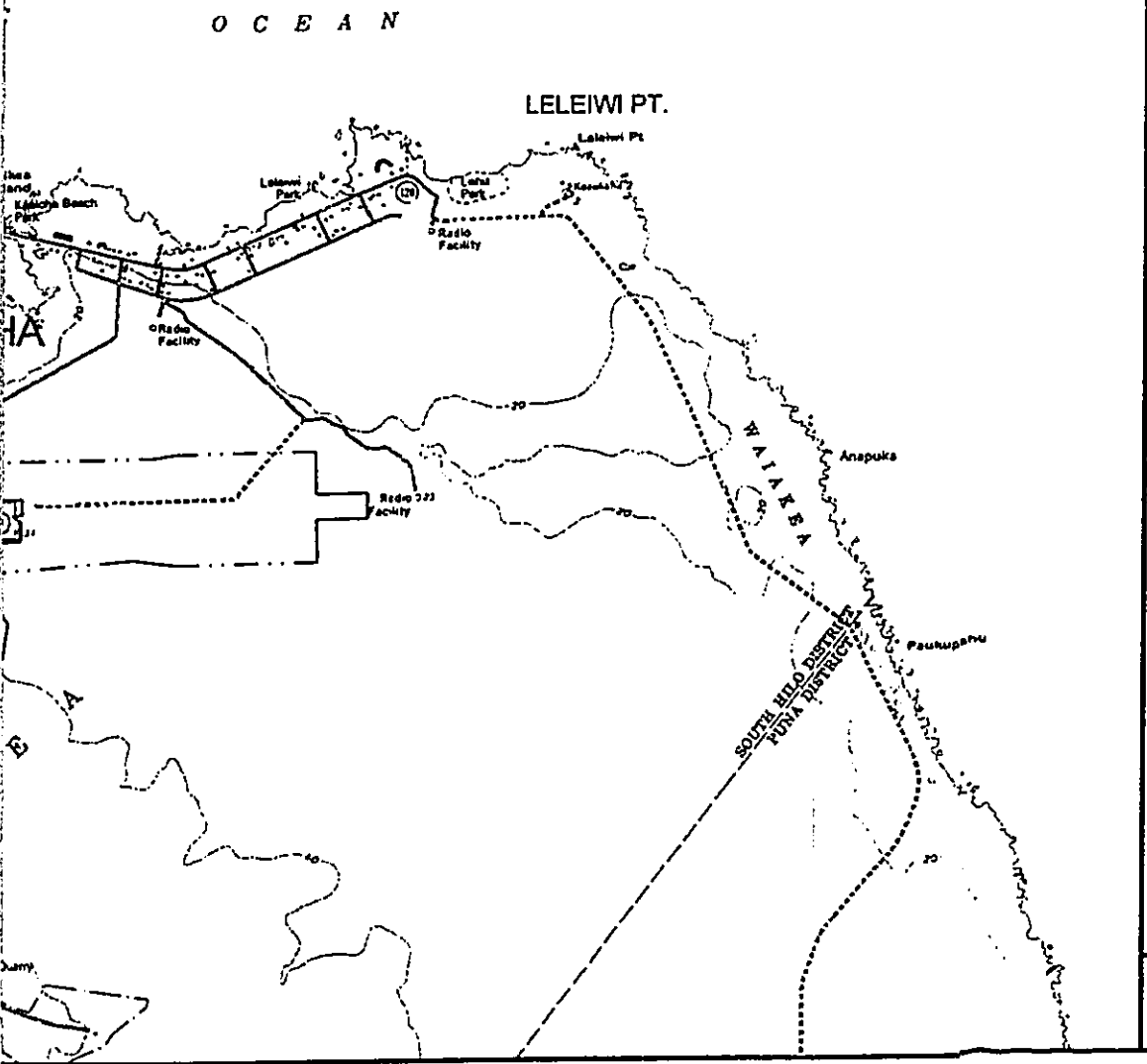
Scale in Feet





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STATE OF HAWAII

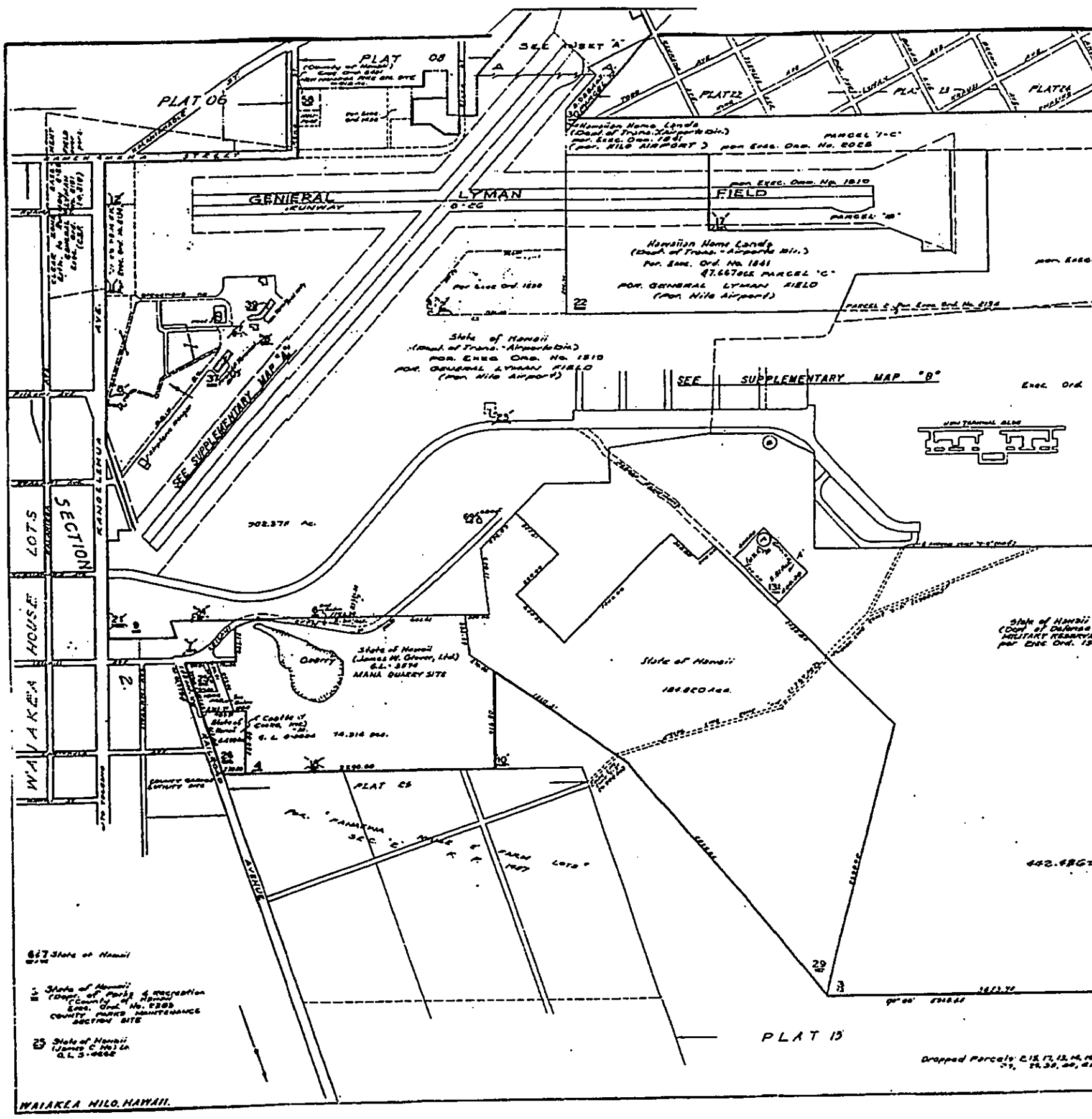
HILO
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AIRPORT
ENVIRONMENTAL
ASSESSMENT



LOCATION MAP

JANUARY 2002
Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 2-1



PLAT 08
 (County of Hawaii)
 Exec. Ord. No. 1810
 FOR GENERAL LYMAN FIELD
 (from Niho Airport)

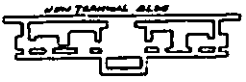
Hawaiian Home Lands
 (Dept. of Trans. - Airports Div.)
 Exec. Ord. No. 1841
 FOR NIHO AIRPORT
 PARCEL 7-C
 PARCEL 8
 PARCEL 9

GENERAL LYMAN FIELD
 PARCEL 7-C
 PARCEL 8
 PARCEL 9

Hawaiian Home Lands
 (Dept. of Trans. - Airports Div.)
 Exec. Ord. No. 1841
 \$7,667,000 PARCEL 'C'
 FOR GENERAL LYMAN FIELD
 (from Niho Airport)

State of Hawaii
 (Dept. of Trans. - Airports Div.)
 Exec. Ord. No. 1810
 FOR GENERAL LYMAN FIELD
 (from Niho Airport)

SEE SUPPLEMENTARY MAP 'B'



State of Hawaii
 (Dept. of Defense)
 MILITARY RESERVE
 per Exec. Ord. No. 154

State of Hawaii
 (James M. O'Brien, Ltd.)
 S.L. 3894
 MANA QUARRY SITE

COPIES OF
 State of Hawaii
 S.L. 3894
 14,314 PAGES

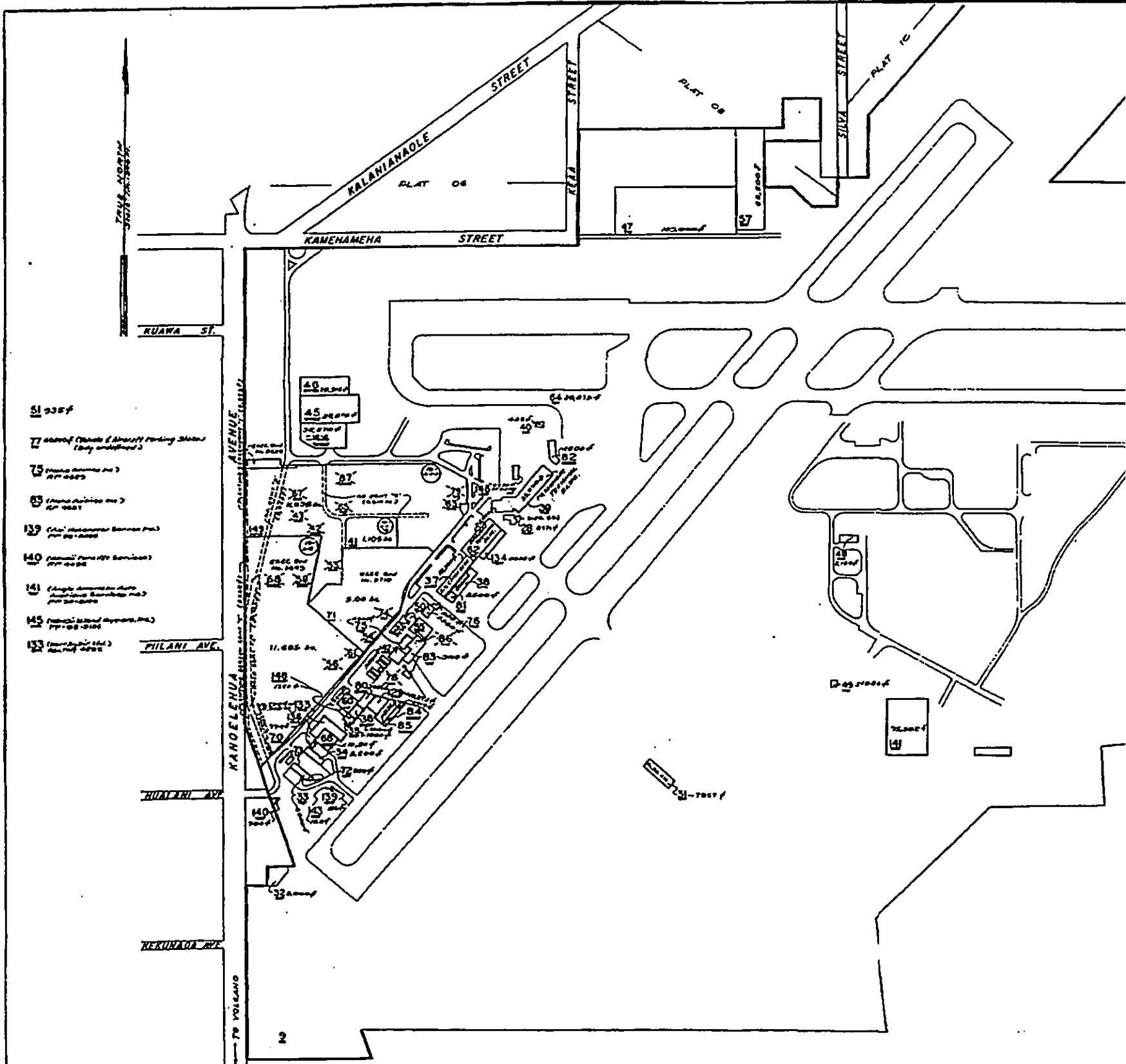
PLAT 05

PLAT 15

Dropped Parcels: 2, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

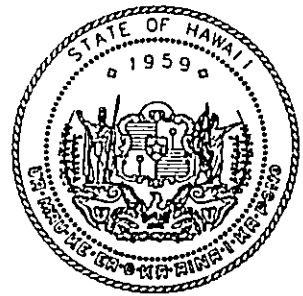
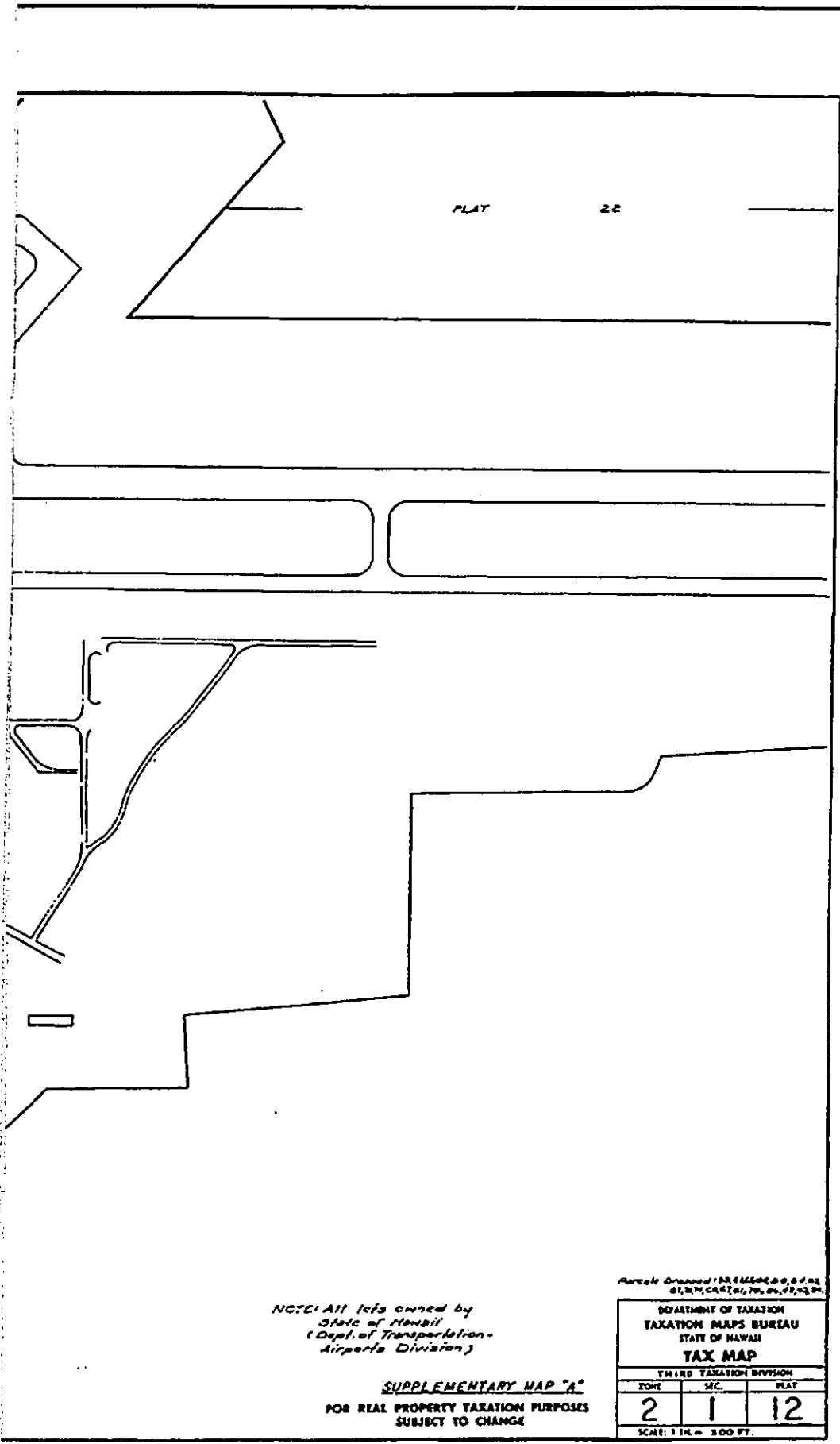
- 617 State of Hawaii
- 618 State of Hawaii
- 619 State of Hawaii (Dept. of Parks & Recreation) (County of Hawaii) Exec. Ord. No. 1809 COUNTY PARKS MAINTENANCE SECTION SITE
- 620 State of Hawaii (James C. Ho) S.L. 3808

WAIAKEA NILO, HAWAII.



- 51 3384
- 77 3385 (Plat of Airfield Parking Areas (Buy undivided))
- 78 (Area between lots 77 & 79)
- 80 (Area between lots 78 & 81)
- 83 (Area between lots 81 & 84)
- 89 (Area between lots 84 & 90)
- 140 (Area between lots 90 & 91)
- 141 (Area between lots 91 & 92)
- 145 (Area between lots 92 & 93)
- 153 (Area between lots 93 & 94)

FOR GENERAL LYMAN FIELD, WAIAKEA, HILO, HAWAII.



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**HILO
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**TAX MAP KEY
2-1-012
SUPPLEMENTARY
MAP A**

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& ASSOCIATES, INC.**

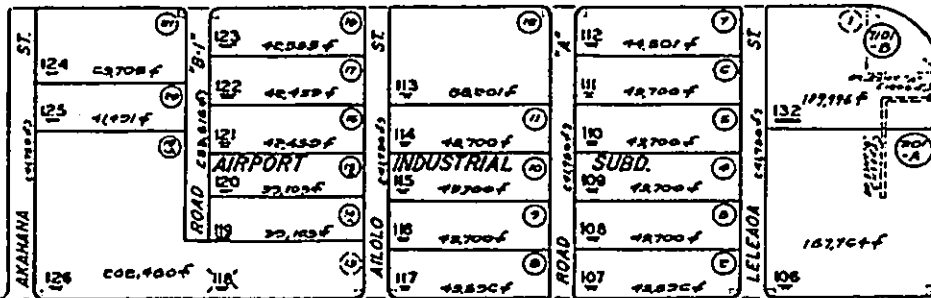
FIGURE 2-2A

RUNWAY

8 - 26

TAXIWAY 0

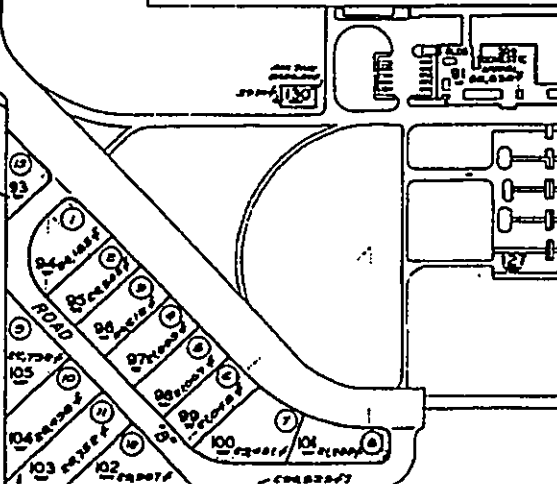
TAXIWAY A



ACCESS

ROAD

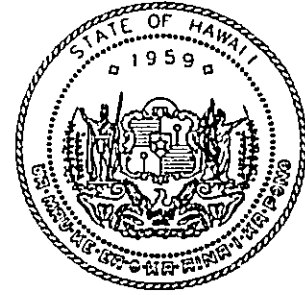
(89,640.44)



G.T.O. AREA SUBD.

Note: All info derived by M/S...
1/20/60
JRP

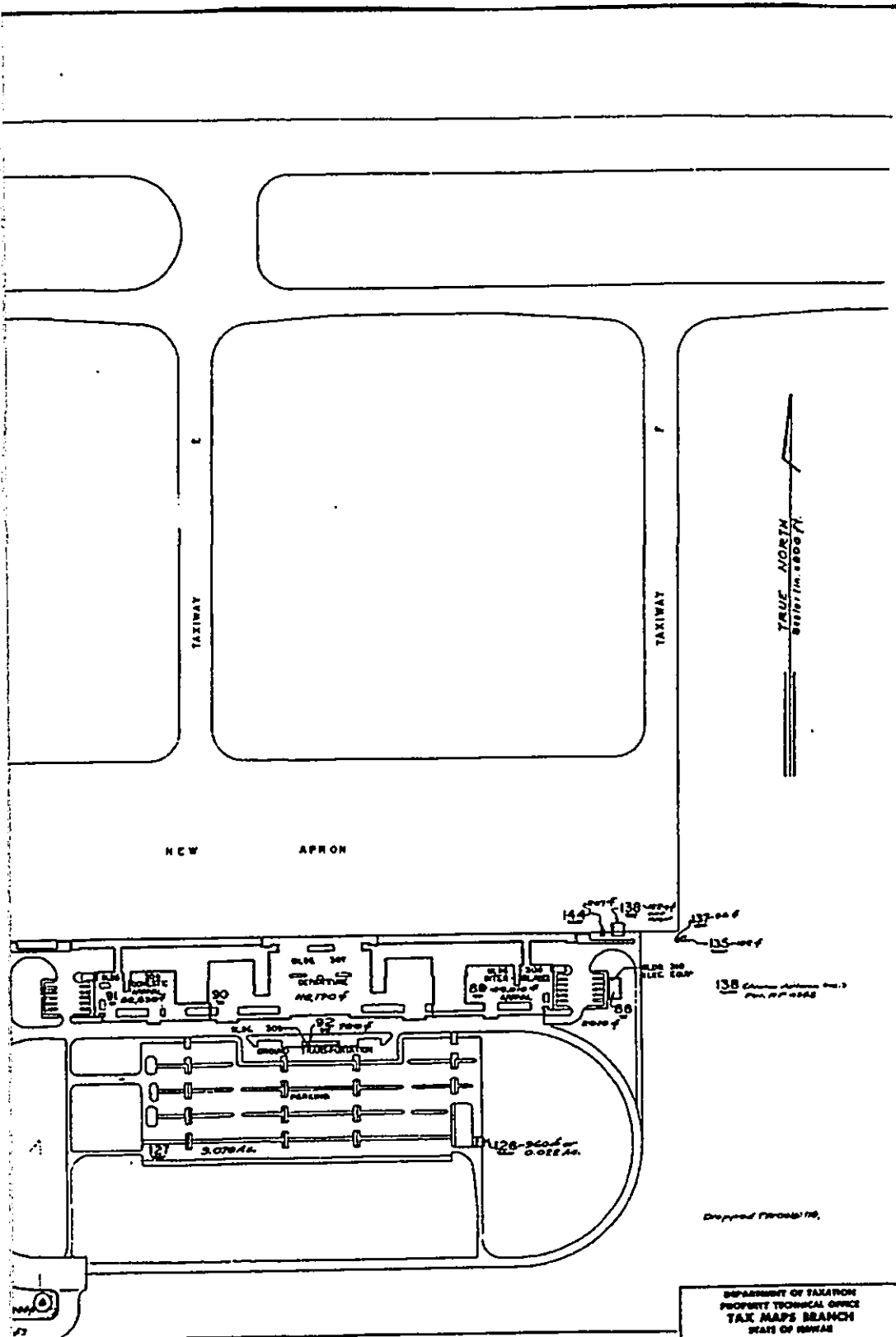
FOR GENERAL LYMAN FIELD (NEW TERMINAL AREA) WAIAKEA, HILO, HAWAII.



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STATE OF HAWAII

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TAX MAP KEY
2-1-012
SUPPLEMENTARY
MAP B



DEPARTMENT OF TAXATION
PROPERTY TECHNICAL OFFICE
TAX MAPS BRANCH
STATE OF HAWAII
TAX MAP

THIRD TAXATION DISTRICT		
ZONE	SEC.	PLAT
2	1	12

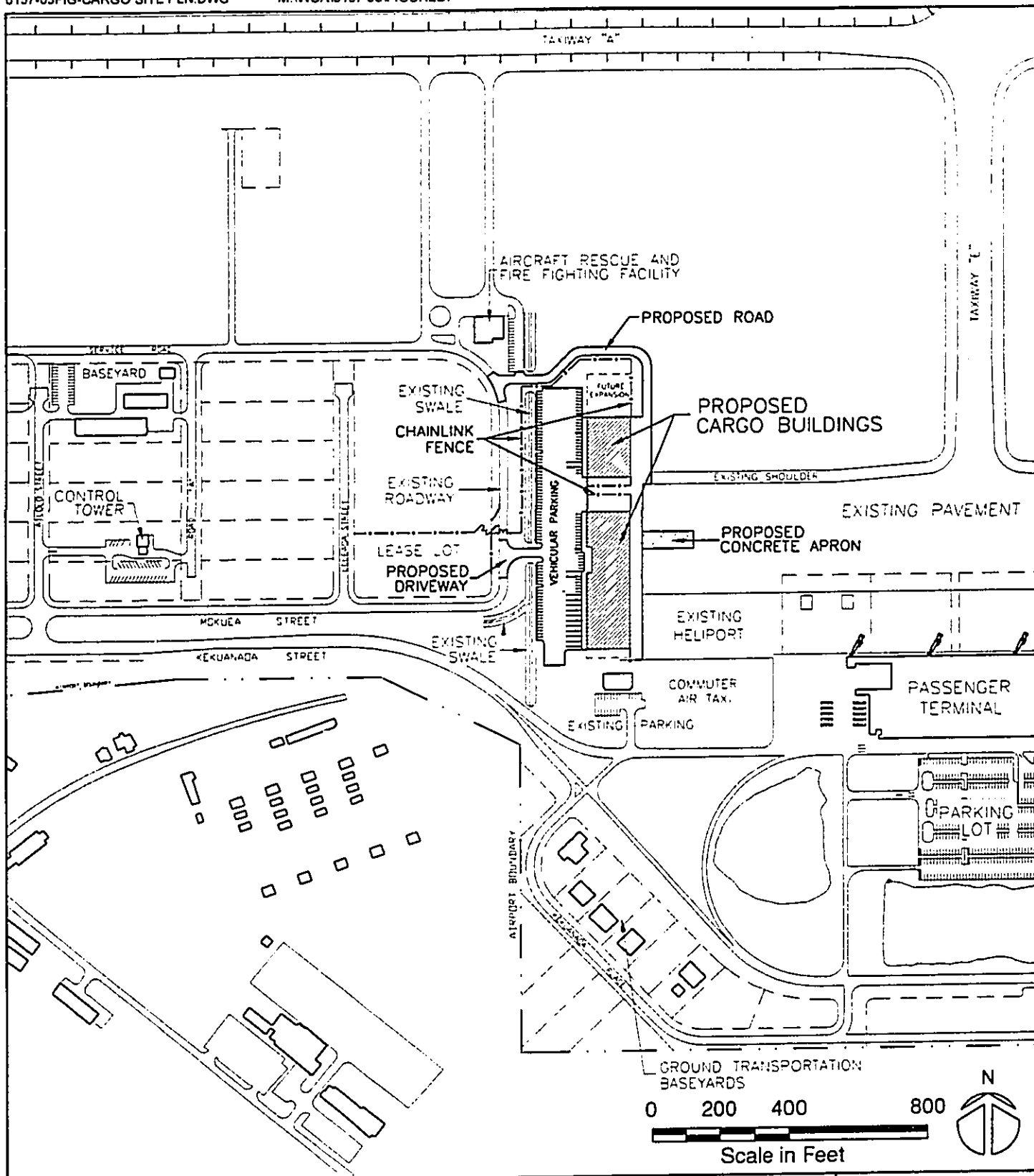
SCALE: 1 IN. = 200 FT.

Note: All info owned by State of Hawaii
Department of Transportation
Airports Division 3

SUPPLEMENTARY MAP "B"
FOR PROPERTY ASSESSMENT PURPOSES
SUBJECT TO CHANGE

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FIGURE 2-2B



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STATE OF HAWAII

**HILO INTERNATIONAL AIRPORT
ENVIRONMENTAL ASSESSMENT**

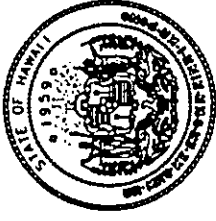
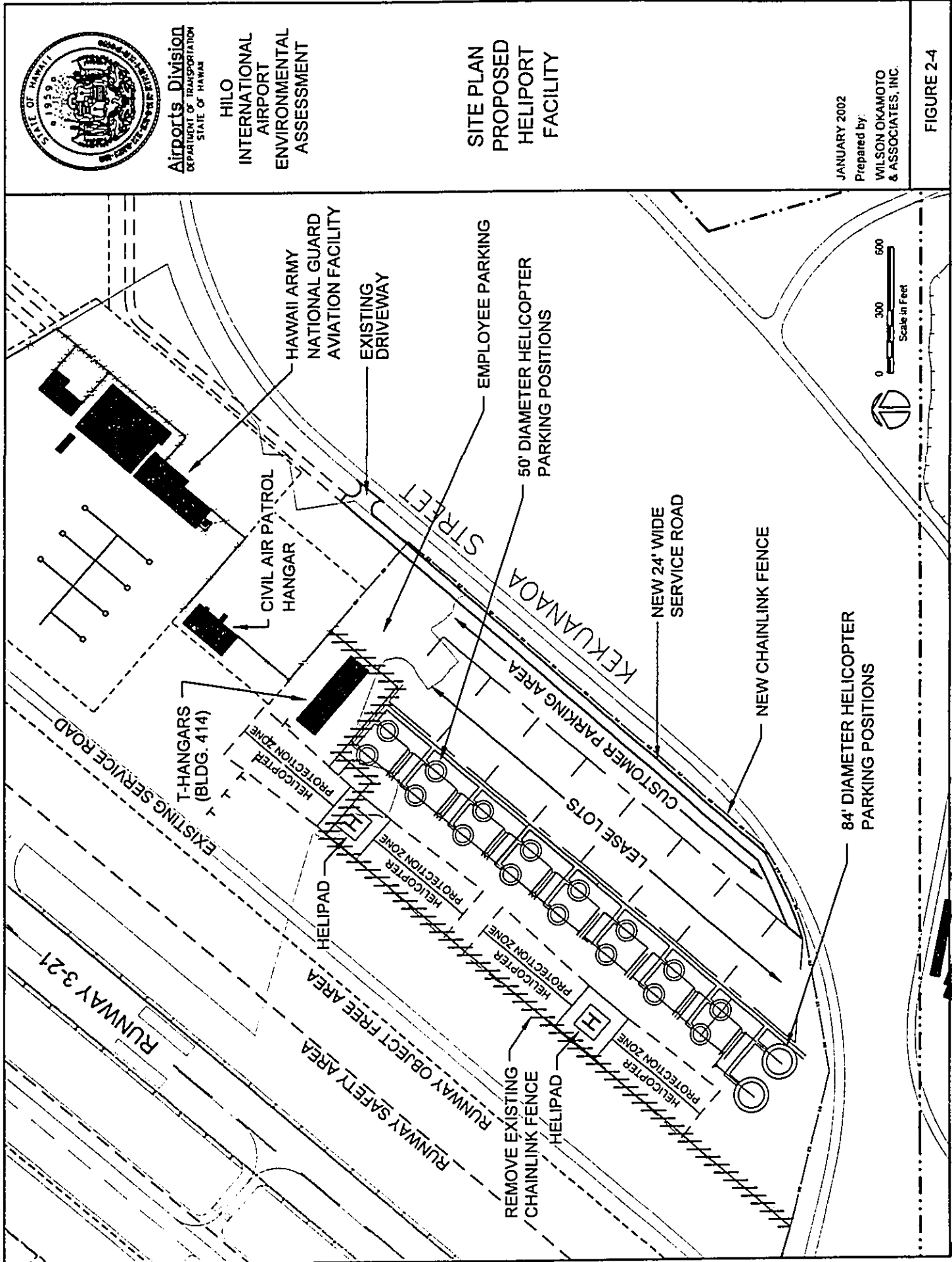
**SITE PLAN
PROPOSED CARGO SITE**

JANUARY 2002

Prepared by:
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FIGURE 2-3

6157-03FIG-HELII SITE PLOT.dwg 14.50 01/28/00 H:\W0A\6157-01\FIGURES\



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**SITE PLAN
PROPOSED
HELIPORT
FACILITY**

JANUARY 2002

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& ASSOCIATES, INC.

FIGURE 2-4

Site improvements will include water, wastewater, drainage, electrical, and fire protection systems. Six-foot high fencing will be installed along Kekuaaoa Street for security and public safety, while the existing fencing along the southeast side of Runway 3 will be removed. Access to the proposed facility will be provided via a 24-foot wide service road through a driveway from Kekuaaoa Street. The service road will lead to a vehicular gate where a parking concession can be located. Parking will be provided in an 0.8-acre area fronting the lease lots along Kekuaaoa Street. The cost of the proposed heliport facility is estimated at \$8.4 million.

General Aviation Facilities

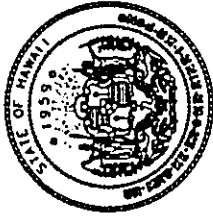
Improved general aviation facilities will be provided on a seven-acre site at the west end of the Airport bounded on the north by Runway 8 and on the south by Runway 3 and the Old Terminal building (see Figure 2-5). Improvements include a new T-hangar building, an aircraft wash rack, aircraft tie-downs, an aircraft apron and lease lots. Site improvements will include water, wastewater, drainage, electrical and communications systems to support future growth and development for the general aviation community.

Parking

The terminal area parking lot will be expanded to the east or to the south (see Figure 2-6) to accommodate a minimum of 150 additional parking stalls to address existing and future requirements for public, employee and rental car parking. A hazardous merge condition on the return loop and entry lane to the parking lot is also planned to be modified.

DOT-A Baseyard Expansion

The existing DOT-A baseyard, located in the Airport Industrial Area, will be expanded to include the two-acre unoccupied lot between the existing baseyard and the air traffic control tower (see Figure 1-1). Specific facilities to be provided include additional storage areas for equipment and materials, office space for maintenance supervisors, a herbicide and storage mixing shed with an eye wash station, and a mechanics service pit.



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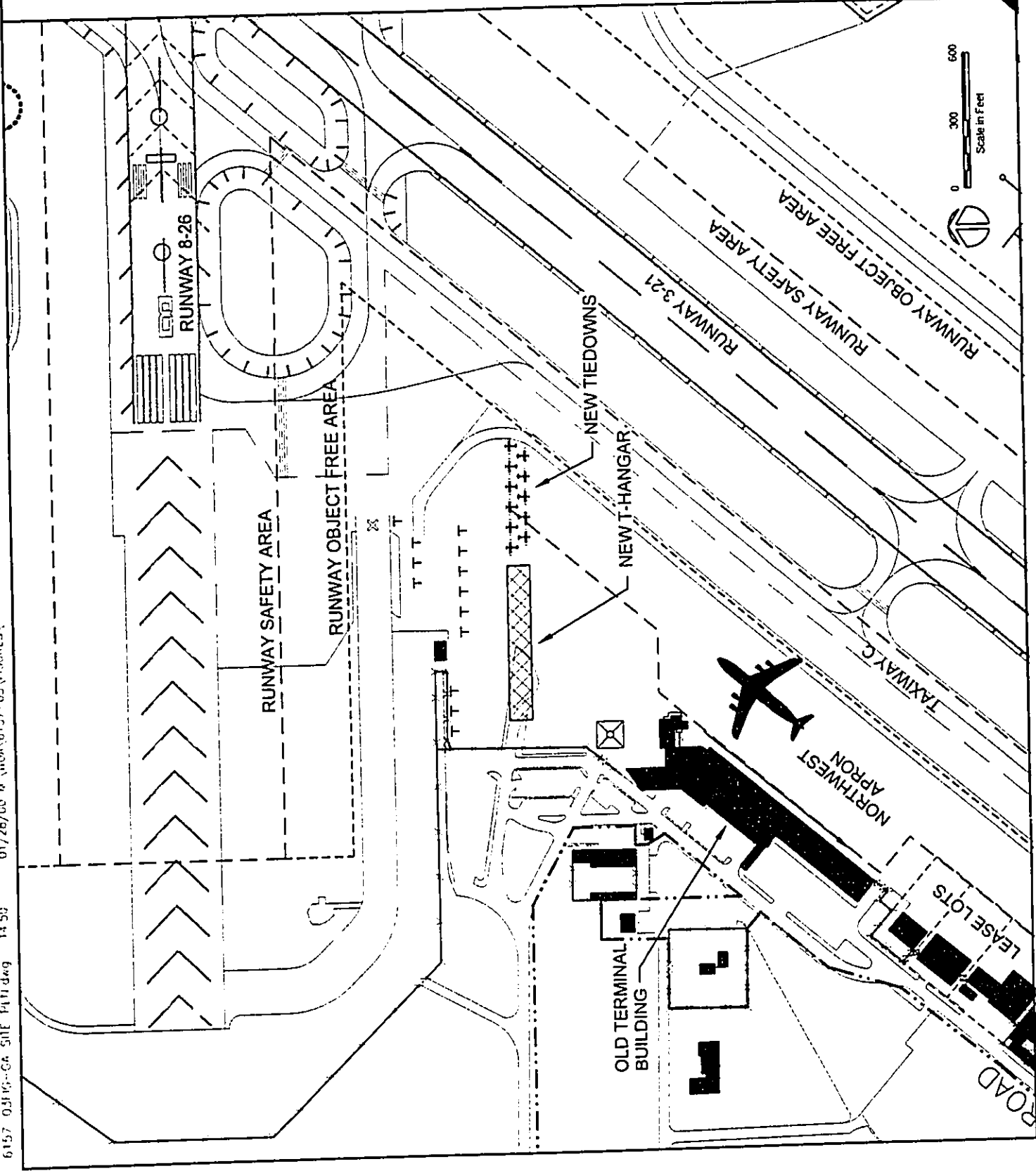
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INTERNATIONAL
AIRPORT
ENVIRONMENTAL
ASSESSMENT

SITE PLAN
PROPOSED
GENERAL
AVIATION
IMPROVEMENTS

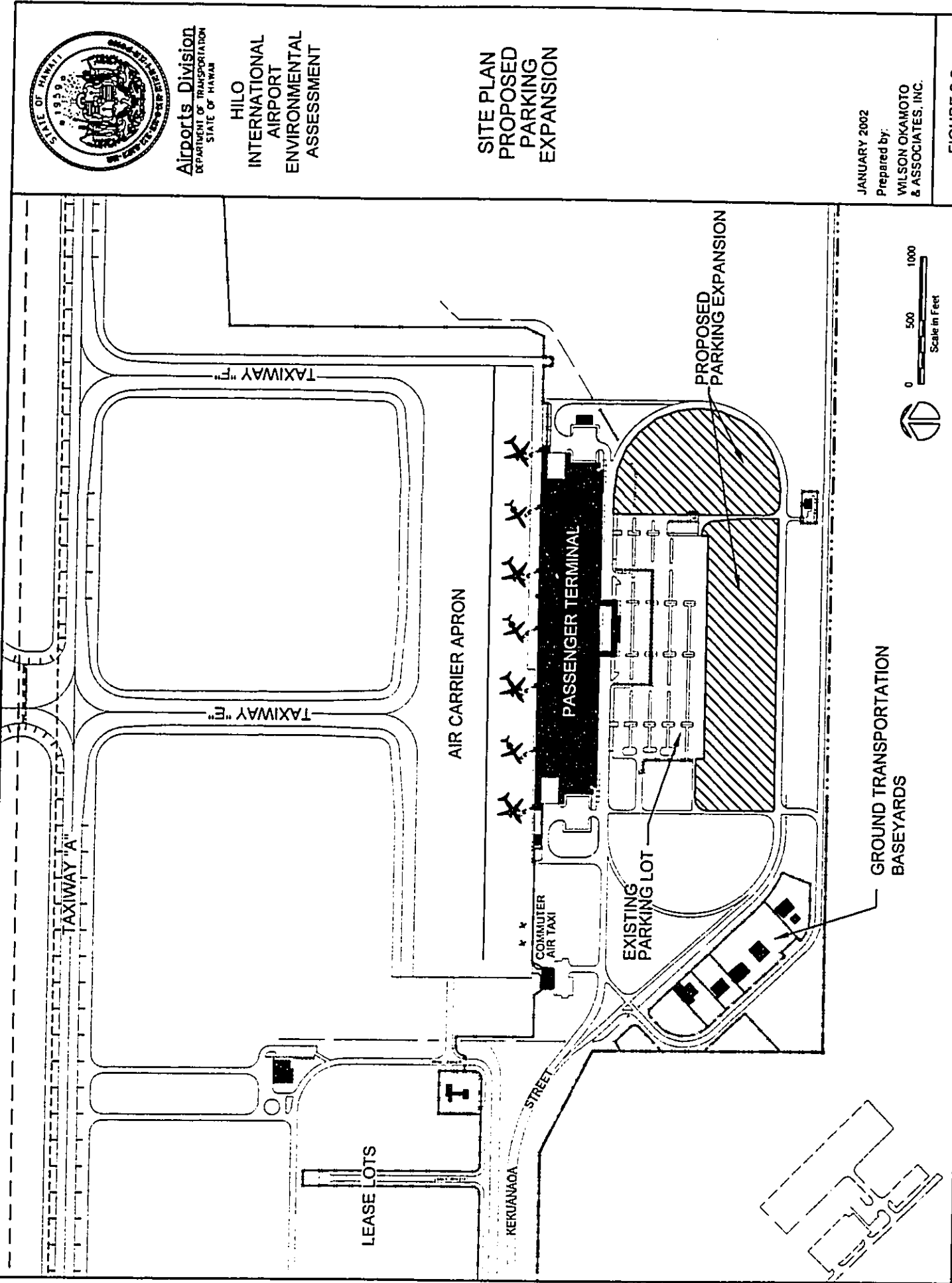
JANUARY 2002
Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 2-5

6157 03FIG-CA SITE Plan.dwg 14.50 01/28/00 M:\WORK\6157-03\FIGURES\



6157-03FIG-PKG SITE PLAN.dwg 14:50 01/28/00 M:\WDA\6157-03\FIGURES\



Airports Division
 DEPARTMENT OF TRANSPORTATION
 STATE OF HAWAII

HILO
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**SITE PLAN
 PROPOSED
 PARKING
 EXPANSION**

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FIGURE 2-6

Noise Mitigation

The FAR Part 150 Noise Compatibility Program (NCP) for the Hilo International Airport indicates that sound attenuation is needed for the residences and public facilities exposed to certain airport noise levels. The residential area most affected by Airport noise is the Keaukaha Tract I subdivision immediately north of the Airport boundary (see Figure 1-1). The NCP report recommended noise mitigation measures, including air conditioning and modifications to residences to provide acoustical insulation. A discussion of the NCP is included in Section 3-9.

The NCP report also recommended a 15-foot high sound attenuation barrier between the Airport and the Keaukaha Tract I residential subdivision to reduce the number of noise impacted structures. Pre-assessment consultation with the Keaukaha community, however, resulted in the elimination of the sound attenuation wall as a recommended means of noise mitigation. Numerous concerns and objections to the wall relative to views, aesthetics, wind impedance, and effectiveness were expressed at two community meetings, as well as through written comments and correspondence received by the DOT-A. Community sentiments against the construction of the wall were also expressed during door-to-door interviews of lessees that reside along the Airport boundary and through a questionnaire mailed to lessees within the 70 DNL noise contour. A discussion of the issues and concerns voiced by the Keaukaha Community is provided in Section 6 of this EA.

Thus, DOT-A will not pursue the construction of the noise wall. Discussion with the Keaukaha community concerning airport noise mitigation will continue relative to residential sound attenuation options and measures, including enclosure and air-conditioning of residences within the 60+ DNL noise contour.

Land Acquisitions and Avigation Easements

Acquisition of lands within the runway object free area portion of the Airport runway protection zones is recommended to meet minimum FAA safety requirements. On the western side of the Airport, a triangular area east of Kanoelehua Avenue, just north of Kekuanaoa Street, extends to within 300 feet of the Runway 3-21 threshold and centerline (see Figure 1-1). The total land area is approximately 2.2 acres and is comprised of 6 privately owned lots. A portion of this property and buildings are within the runway object free area (ROFA). Additionally, land is needed in this area to reduce penetrations of the runway safety area and runway object free area by the Airport service road around the end of the runway.

Portions of the runway protection zones for Runways 3 and 21 extend beyond the Airport property line. Approximately 2.8 acres of land are recommended for acquisition in the runway protection zone southeast of Runway 3 along Kanoelehua and Kekuanaoa Street (see Figure 1-1). Near the northeast end of Runway 21,

approximately 1.7 acres within the Keaukaha Tract 1 are proposed for acquisition through a land exchange with the Department of Hawaiian Home Lands.

DOT-A has established a policy to proceed with such acquisitions only with the concurrence of the land owner, or at such time that the land otherwise becomes available. Acquisition of fee title to those areas would provide the State with the greatest control over uses within these areas and is the preferred course of action. However, where precluded by cost or existing uses, FAA safety regulations require the obtainment of aviation easements over the RPZs. At present the State has aviation easements over the non-airport property included within the existing runway protection zones for Runways 8 and 21. Obtainment of an easement for approximately ten acres of off-airport property within the Runway 3 RPZ is proposed in this EA.

2.3 EXISTING AND SURROUNDING USES

2.3.1 Existing Uses

Figure 2-7 depicts the existing Airport facilities, identifying major facilities and uses that are further described below.

Southern Airport Area: The air carrier passenger terminal at Hilo International Airport is located south of Runway 8-26. Currently there are 10 aircraft parking positions, though only 8 are usable, and there are only 7 passenger-loading bridges. Air carriers currently operating in the main terminal are Aloha Airlines and Hawaiian Airlines. These airlines operate out of the eastern wing and the central wing. The western wing has been underutilized since the termination of mainland overseas service to Hilo. Currently helicopter and fixed wing air taxi sightseeing businesses are using the front ticket counter spaces in the west wing.

Facilities to support air carrier operations include airline offices, ticket purchase/check-in counters, baggage handling, and baggage claim area. Passenger service facilities include check-in passenger holding areas, Airport restaurant, food and beverage services, shops, public restrooms, information, and personal services. There is a ground floor main passenger holding area located in the central wing that serves all seven of the second-floor passenger loading bridges.

Helicopter and air taxi operators use the western end of the passenger terminal building. This space, formerly the overseas terminal, was vacant until the move of helicopter and air taxi services into this area. Blue Hawaiian Helicopters, Sunshine Helicopters, Tropical Helicopters, Volcano Helicopters, and Century Aviation Inc. all operate out of the western wing. Island Hoppers provides air tours from the Sporty's Academy of Hawaii facility near the west end of Runway 8. In the apron area north of the commuter terminal there are 11 helicopter pads which are used for take-off and landing, as well as overnight parking.

The commuter/air taxi terminal is located at the western end of the aircraft parking apron, in a stand alone building, approximately 1,300 feet west of the passenger terminal. The building, encompassing approximately 4,040 square feet, contains two ticket counters, two baggage handling areas, two office/operations areas and a holding room. Safari Aviation, Inc. (helicopter and fixed wing aircraft tour operator) currently leases the space in the building.

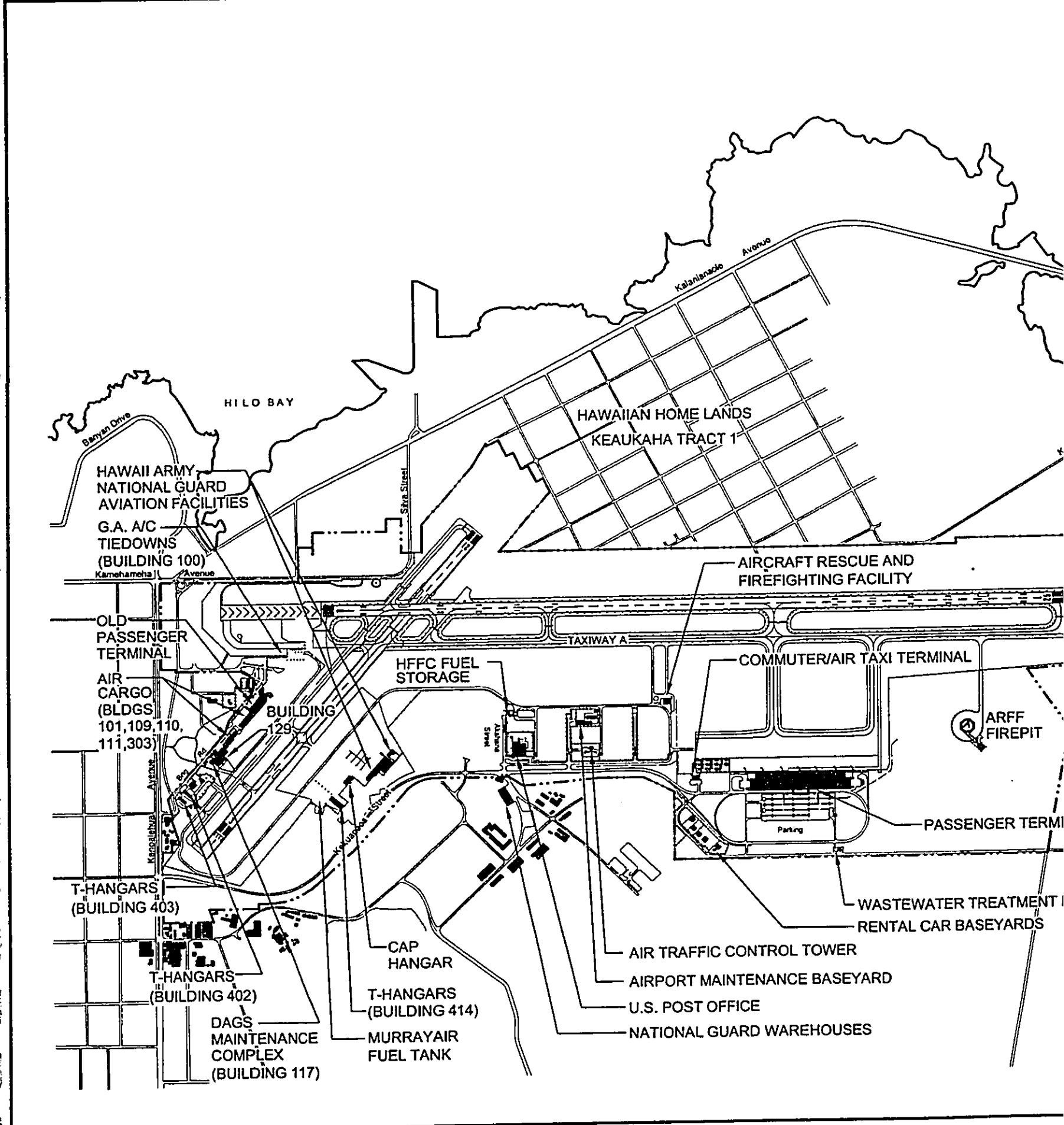
The Airport Industrial Area is located west of the main passenger terminal area, just north of Kekuanaoa Street. It contains 21 lots, with the majority being 1 acre in size. Five of the parcels are currently occupied, one by UPS, two by the FAA, one by HFFC's fuel storage facilities, and one by the State DOT-Airports maintenance yard. The remaining parcels are vacant.

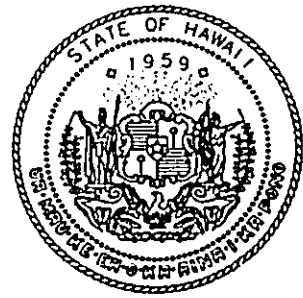
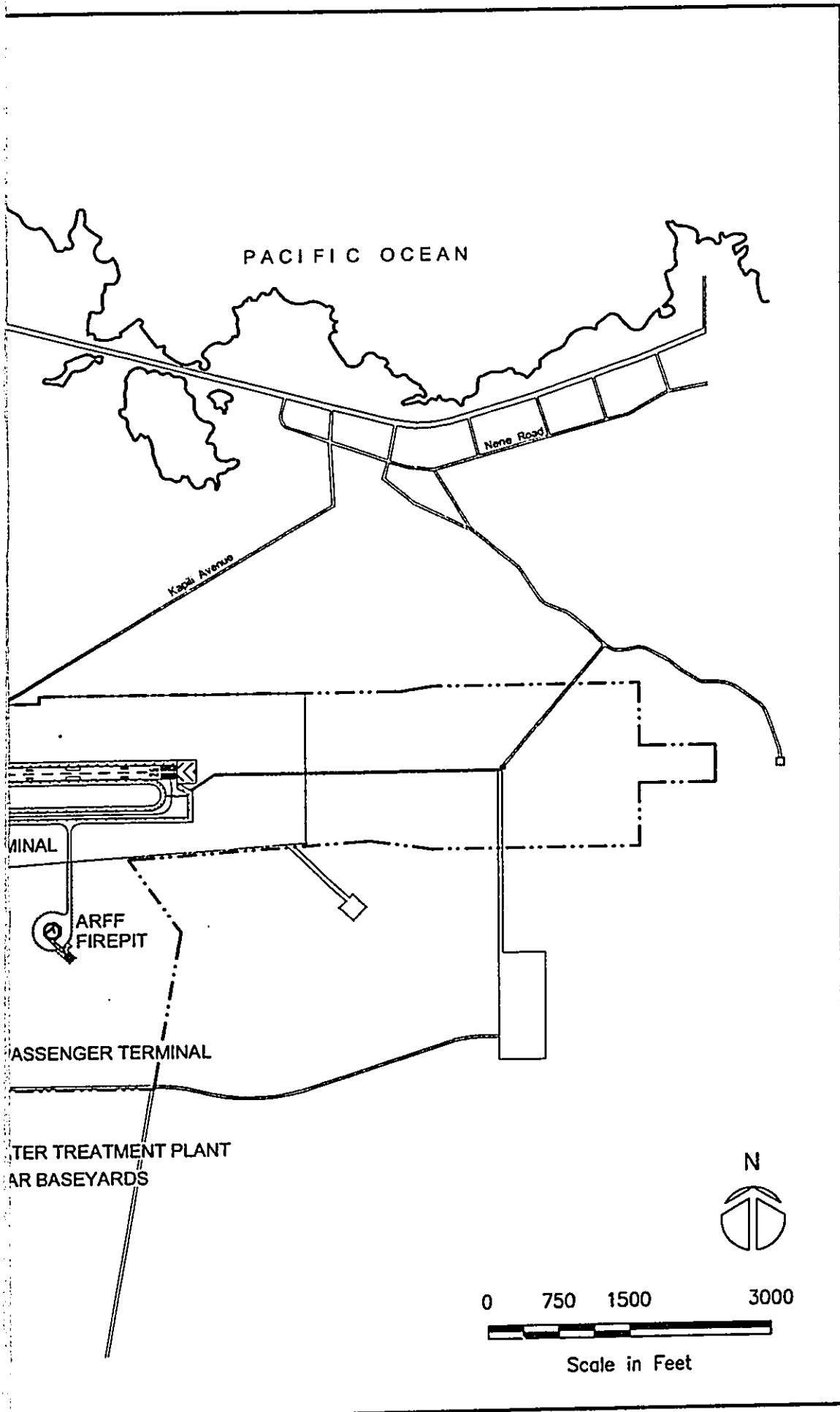
The U.S. Post Office facility is located in the Airport Industrial Area, west of the main passenger terminal on land owned by the U.S. Postal service. Occupying 144,400 square feet, this is the main post office that serves the entire eastern portion of the Island. Most of the incoming and outgoing mail passes through this post office. Access is provided through Akahana Street, which intersects Kekuanaoa Street.

Western Airport Area: General aviation activities are located on the western end of the Airport, near the old airport passenger terminal, and near the Hawaii National Guard/Civil Air Patrol area. State DOT-A records show there were 24 aircraft and 8 helicopters based at Hilo International Airport in 1998.

Sporty's Academy of Hawaii provides a variety of fixed-base operator services at the Airport, including minor airplane repairs, flight instruction, charter services and aircraft rentals. Additionally Phillip Byrnes provides aircraft maintenance services from a T-hangar near the end of Runway 3. These services include minor airframe repairs, fuel sales, flight instructions, charter services, and aircraft rentals. Murrayair leases a hangar at the Airport, which it uses for an administrative and maintenance base for its crop-dusting aircraft. However, due to the recent closing of plantations around the island, these planes are used infrequently. Murrayair does some minor light aircraft repairs as well as most of the fueling for the general aviation aircraft. The company maintains one above ground fuel storage tank.

Air cargo service at the Airport is provided by Aloha Airlines, Hawaiian Airlines, Federal Express, and United Parcel Service. The existing air cargo facilities are located in five buildings on the west end of the Airport. According to the State DOT-A the five buildings have a total area of more than 58,000 square feet. One building was converted from the old passenger terminal into a cargo handling facility, and only portions are suitable and usable for cargo activities. A major drawback to the existing air cargo facilities is the distance from the present passenger terminal area, which requires additional ground handling and split operations.





Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HILO
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ENVIRONMENTAL
ASSESSMENT

EXISTING
AIRPORT
FACILITIES

JANUARY 2002
Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 2-7

Military Areas: The military uses Hilo International Airport as an arrival and departure point for troops from the mainland United States training at the Pohakuloa Training Area. These activities usually take place three times a year, during the spring, summer, and fall. The exercises usually last for 30 days. The Army and Air Force use the aircraft apron located near the Hawaii Army National Guard facilities on the southwestern side of the airfield and the apron fronting the old passenger terminal, on the western side of the airfield.

The 2nd Battalion, 299th Infantry Regiment of the Hawaii Army National Guard is based at the Keaukaha Military Reservation, south of the Airport. There are three structures located on airport property, two warehouses and a caretaker residence. This piece of land is in the process of being transferred to DLNR, who will then execute a land exchange with the Federal government.

The 2nd Battalion's aviation unit, Limited Army Aviation Support Facility #2 is based on the southwest side of the Airport. Currently there are 7 helicopters based here, but that number will soon increase to 11 helicopters. The facility includes an apron, hangars and open-sided sheds. The Drug Enforcement Agency (DEA) uses one of the hangars to house its two helicopters.

The Hawaii Army National Guard has recently constructed Army Aviation Support Facility No. 2, consisting of a helicopter cleaning facility and a new hangar. The helicopter cleaning facility is located on the northern portion of their property. The new hangar is located between the DEA hangar and the Guard's existing hangar. To accommodate the new, heavier aircraft, the apron fronting the area was reinforced, and six helicopter parking pads were constructed.

The Civil Air Patrol (CAP) hangar has space for two small light aircraft, minor aircraft maintenance facilities, office, meeting rooms, restrooms, and a kitchen. When search and rescue operations are being flown from Hilo, a number of itinerant aircraft may park on the apron near the hangar. Additionally when there are military exercises, C-130 airplanes often park on the apron fronting the CAP hangar, for loading and unloading of troops.

2.3.2 Surrounding Uses

Existing land use in the vicinity of Hilo International Airport generally follows the existing zoning pattern. Towards the south and east of the Airport, there is relatively little development and most of the land remains in agricultural use. To the north and southwest of the Airport are industrial and commercial uses, which form a buffer zone between aircraft operations and noise sensitive areas around the Airport.

There is no existing noise buffer between the Airport and the residential homes located on DHHL property to the north. There are also other residential areas near the Airport, approximately 2,000 feet from the end of Runway 3 and 1,000 feet from the end of Runway 21.

Keaukaha Military Reservation: The Keaukaha Military Reservation, the base headquarters for the Hawaii Army National Guard, occupies approximately 440 acres on the southern border of the Airport. The 2nd Battalion, 229th Infantry Regiment is based on the reservation. The reservation contains firing ranges, training areas, barracks, support facilities, and offices for the Army National Guard. There are three structures which are located on Airport property: two warehouses and a caretaker residence. This parcel of land is in the process of being transferred to DLNR, which will in turn execute a land swap with the military for other lands.

Due to the nature of training activities, the number of people present at the facility at any one time varies greatly. The number may range up to the thousands when full-scale military exercises are conducted.

Keaukaha Hawaiian Home Lands Residential Area: The Department of Hawaiian Home Lands controls much of the land along the northern and eastern sides of the Airport. This acreage is part of more than 200,000 acres of public land transferred to the Territorial government by the U.S. Congress when it adopted the Hawaiian Homes Commission Act of 1920 on July 9, 1921. The purpose of the Act was to benefit persons of Hawaiian descent by placing lands in a trust for their sole use. The Act specifically prohibits the sale of trust lands, however, land exchanges are permitted.

The DHHL property along the northern boundary of the Airport is known as Keaukaha Tract I. It has been subdivided into approximately 500 parcels and leased to individual Hawaiian families for nominal amounts. Lot sizes range from 10,000 square feet to one acre. To allow more families to live in this area, there has been substantial infill among the individual lots. Homes in the subdivision are typically one-story in height and of single-wall construction.

The DHHL lands east of the Airport (Keaukaha Tract II) are in agricultural designation, and there are no definitive plans to develop this area. There are approximately seven families granted a right-of-entry to occupy this area, closer to the shoreline. DHHL allows them to reside there until a plan for the area is created.

Consultation with the Keaukaha Community regarding the proposed improvements is described in Section 6 of this EA.

Other DHHL Lands: In 1994-95 the State transferred lands on the western portion of the Airport from DLNR to DHHL. This land included approximately 7 acres. Also included in this transfer was approximately 187 acres south of the Airport, adjacent to the Hawaii Air National Guard land. Currently Bishop Estate and DHHL are in the preliminary stages of executing a land swap for lands north of the Airport, east of Keaukaha Tract I.

Other DHHL lands in the vicinity of the Airport include lands approximately one mile south of the Airport.

Other Residential Areas: Other residential development in the vicinity of the Airport includes housing west and southwest of the Airport in Waiakea. These homes are typically built using single-walls and are open to the air.

There are two condominiums in the airport area, one located northeast of the airport near Leleiwi Point (Hale Kahai) and the other located approximately 1.7 miles west of the Airport on the shoreline (Bayshore Tower). Multiple complaints come from these two developments about noise from aircraft.

Schools, Hospitals, and Other Noise Sensitive Uses: Noise sensitive areas in proximity to the Airport that may be impacted by aircraft noise include the Waiakea Health Center, the school and churches in Keaukaha, and residences north of Runway 8-26, and off the ends of both runways.

SECTION 3
DESCRIPTION OF THE EXISTING ENVIRONMENT,
PROJECT IMPACTS AND MITIGATION MEASURES

3. DESCRIPTION OF THE EXISTING ENVIRONMENT, PROJECT IMPACTS AND MITIGATION MEASURES

3.1 CLIMATE

Hilo International Airport, located at 19 degrees, 43 minutes north, is well within the tropics, which accounts for its relatively uniform temperatures throughout the year. The average daily low temperature at Hilo International Airport ranges from approximately 60° Fahrenheit (F) in February and March, to 70° F in August and September. The average daily high temperatures for those two same periods are 79° and 87° F, respectively. The record high and low recorded at the Airport were 94° and 53° F.

Rainfall at the Airport averages 128 inches per year. Annual rainfall amounts have varied over the past 10 years, ranging from a low of approximately 86 inches to a high of 211 inches. The winter months have the highest average rainfall while the summer has the lowest.

Wind patterns at Hilo International Airport are largely a function of the interaction between the northeasterly trade winds and Mauna Loa volcano. In general, the trades are more persistent in the summer than in the winter, and stronger in the afternoon than at night. In the absence of trade winds, winds become light and variable. Diurnal heating and cooling of the island gives rise to onshore breezes during the day, and offshore breezes during the night.

3.2 GEOLOGY AND TOPOGRAPHY

The Island of Hawaii was formed by lava from five volcanic mountains. Hilo International Airport is located near the coast, at the base of Mauna Loa volcano, in the town of Hilo. Mauna Loa is a shield-shaped dome about 60 miles long and 30 miles wide, and is one of the most prolific lava producers. The town of Hilo, created by Mauna Loa lava flows, is characterized by aa and pahoehoe lava from various eruptions. On the southeast slope, ash deposits, attaining a thickness of 55 feet, blanket the lower slopes of the mountain.

Hilo International Airport is located on relatively flat lava flows, at elevations averaging between 30 to 40 feet above mean sea level. The highest point of the property rises 60 feet in the southwest corner, while the lowest elevation is 10 feet in the northwest corner of the property. The passenger terminal complex is situated at an elevation of approximately 45 feet.

Direct Impacts and Mitigation Measures: No significant impacts on the geology or topography of the project sites are anticipated as a result of the construction and operation of the proposed improvements. Construction of the proposed improvements will involve grading and excavation activities. Although the construction activities will not adversely impact or alter the geologic character of the project sites, there is the potential for increased erosion and runoff due to the increase in impervious surface area. The potential impacts

resulting from any increase in runoff and applicable mitigative measures are discussed in Section 4.3.

The relatively flat terrain of the project sites will minimize the amount of grading required during construction activities. The excavated areas will either be built over, paved over, or backfilled and landscaped to existing contours.

Indirect Impacts: No indirect impacts to geology or topography are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts to geology or topography are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.3 SOILS

According to the U.S. Department of Agriculture Natural Resource Conservation Service, the project site, as well as most of the southern portion of the Airport, is underlain by soils classified as Papai extremely stony muck (rPAE), 3 to 25 percent slopes (see Figure 3-1). The Papai series consists of well-drained, thin, extremely stony organic soils over fragmental Aa lava. These soils are gently sloping to moderately steep, and occur at elevations ranging from sea level to 1,000 feet. The surface layer is very dark brown, extremely stony muck, approximately 8 inches thick. Permeability is rapid, runoff is slow, and the erosion hazard is slight.

The majority of the Airport sits on soil classified as Keaukaha extremely rocky muck (rKFD), 6 to 20 percent slopes. The Keaukaha series of soils consists of well-drained, thin organic soils overlying pahoehoe lava bedrock. These soils occur at low levels of Mauna Loa volcano, at an elevation ranging from near sea level to 1,000 feet. The surface layer is very dark brown muck about 8 inches thick. The soil is rapidly permeable, runoff is medium and the erosion hazard is slight. In places, roots are matted over the pahoehoe lava or may extend a few feet into the cracks.

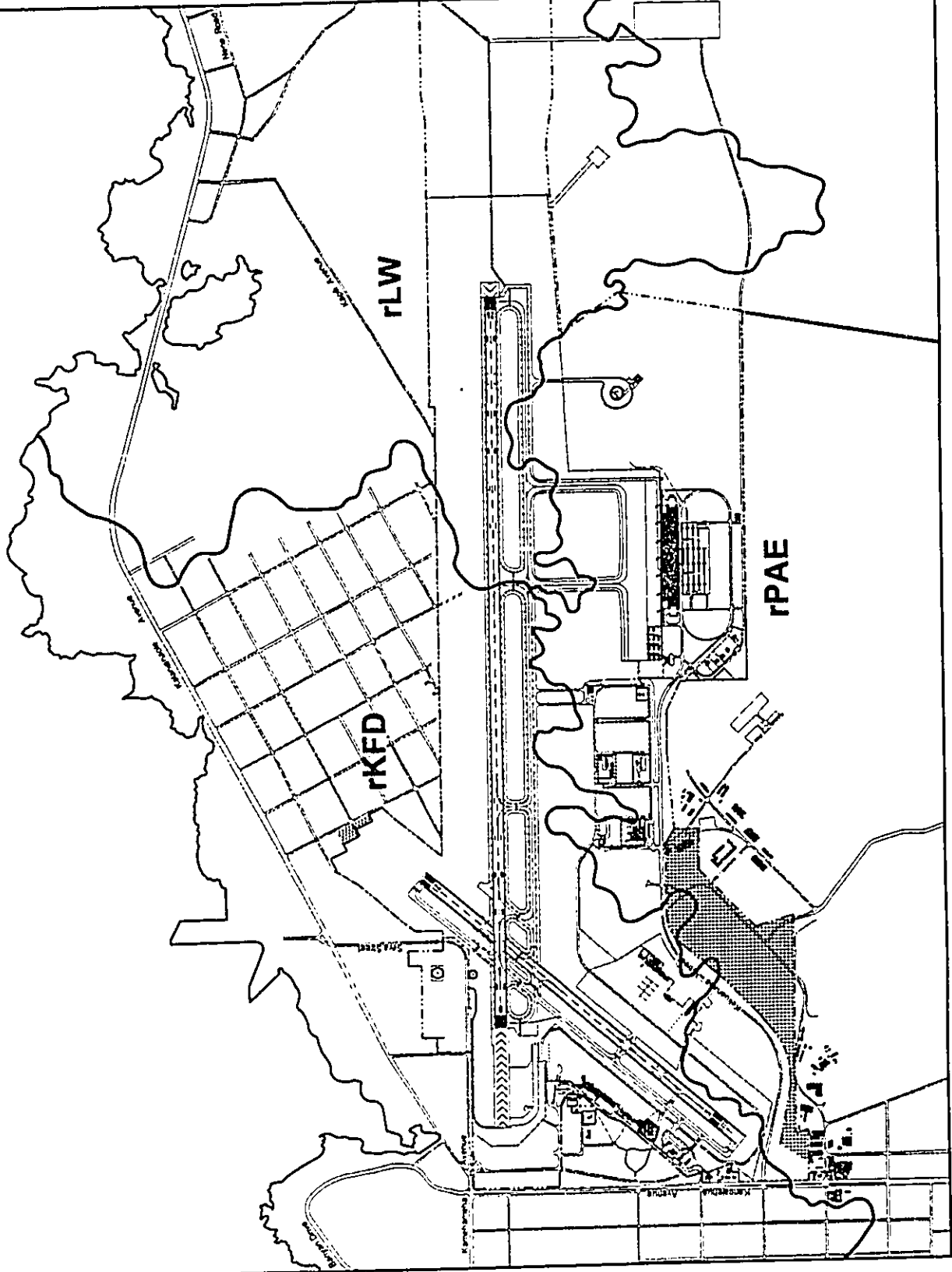
On the eastern end of the Airport, where Runway 8-26 extends eastward, the soils are classified as Lava flows, pahoehoe (rLW). The surface is relatively smooth, though there are areas where the surface is rough and broken. There is no soil covering and is usually bare of vegetation except for mosses and lichens, except in areas of high rainfall where scattered ohia trees, ohelo berry and aalii have gained in foothold in cracks and crevices. This land type is found at elevations ranging from sea level to 13,000 feet. This lava often contributes to the ground-water supply in areas of high rainfall.

The Airport lands do not have a designation relative to the Agricultural Lands of Importance to the State of Hawaii (ALISH), except for a portion of the parking lot and terminal loop area, which is designated as "other land."

6157FIG-SOIL-fig3-1 DWG 1524 01/22/02 M:\WDA\6157-03\FIGURES

SOIL ASSOCIATIONS

- rKFD Keaukaha extremely rocky muck
- rLW Lava flows, Pahoehoe
- rPAE Papai extremely rocky muck



Airports Division
 DEPARTMENT OF TRANSPORTATION
 STATE OF HAWAII

**HILO
 INTERNATIONAL
 AIRPORT
 ENVIRONMENTAL
 ASSESSMENT**

SOILS

JANUARY 2002

Prepared by:
**WILSON OKAMOTO
 & ASSOCIATES, INC.**

FIGURE 3-1

Direct Impacts and Mitigation Measures: No significant impacts on soils within the project sites are anticipated as a result of the construction and operation of the proposed facility. Ground-disturbing activities associated with construction of the proposed improvements will potentially result in increased storm runoff and soil erosion due to the increase in impervious surface area.

Construction of the proposed improvements will have no impact on the Agricultural Lands of Importance to the State of Hawaii (ALISH).

Indirect Impacts: No indirect impacts to geology or topography are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts to geology or topography are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.4 SURFACE WATER

The Airport is located within the Wailoa watershed, which is drained by the Wailoa River and its many branches and tributaries. The Wailoa River flows northeast from Waiakea, through Hilo, and drains into Hilo Bay to the west of the Airport.

Due to the permeability of the aa and pahoehoe lava beneath the soil in the area of Hilo International Airport, there are no well-defined drainage courses in the vicinity. There are no streams or water features within the project site, and according to the wetlands survey conducted by the U.S. Army Corps of Engineers, wetlands in the Hilo area are limited to the Lokoaka and Kionakapahu Ponds, located along the coastline north of Keaukaha.

Direct Impacts and Mitigation Measures: No significant impacts to surface water are anticipated as a result of the construction and operation of the proposed facility. The natural drainage system within the Airport property consists of rainfall percolating through layers of very porous lava to the ground-water table. There are no definable streams or natural drainageways within the Airport property. There are no wetlands located within the Airport, and no potential for navigable waters of the U.S. to be impacted by the proposed improvements.

Grading, excavation, trenching, and filling activities associated with the construction of the proposed project will potentially result in increased storm runoff and soil erosion from exposed loose lava particles and fill material. To mitigate potential storm runoff impacts, construction site work activities will be regulated by the County of Hawaii's grading ordinance and the National Pollutant Discharge Elimination System (NPDES) permit requirements administered by the DOH. The grading ordinance includes provisions related to reducing and minimizing the discharge of pollutants associated with soil-disturbing activities in grading, grubbing, and stockpiling. An NPDES General Permit for Storm Water Associated with Construction Activity is required to control storm water discharges if the

area of soil disturbance from activities such as grading, grubbing, and stockpiling is in excess of five (5) acres. Effective March 10, 2003, an NPDES permit will be required for storm water discharges associated with small construction activities that will disturb a total land area of one (1) acre or more. The permit requires compliance with a Best Management Practices (BMP) plan which, in turn, requires compliance with County ordinances pertaining to grading, grubbing, stockpiling, soil erosion, and sedimentation. The BMP plan typically includes appropriate structural or non-structural mitigative methods such as containment berms and filtration/detention basins that would control the discharge of storm water resulting from construction activities.

Indirect Impacts: During construction of the proposed improvements, storm runoff may carry increased amounts of sediment. Such erosion will be mitigated through adherence to State and County water quality regulations governing grading, excavation, stockpiling, and dewatering. The Airport is built on permeable lava that generally facilitates drainage. Storm runoff from the runways, taxiways, and aircraft parking aprons flows onto the grassed areas on either side of the pavement where it percolates into the ground. Runoff from the main parking area fronting the main passenger terminal is diverted to an open area east of the terminal. Since the Airport does not have a drainage system that diverts runoff into State waters, no indirect impacts to the quality of surface water bodies is anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts to the quality of surface water bodies are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.5 GROUND WATER

According to the aquifer classification system adopted by State of Hawaii Commission on Water Resource Management, the Airport is underlain by the Hilo Aquifer System which is part of the Northeast Mauna Loa Aquifer Sector and contains a complex suite of ground-water resources. The Kau volcanic series of Mauna Loa volcano reaches from the coast to the crest of Mauna Loa. Basal ground water extends several miles inland from Hilo Bay, followed by high level dike and perched water. The coast is free of a sedimentary caprock. The Hilo Aquifer System is composed of a basal, unconfined aquifer of horizontally extensive lavas.

The aquifer has been developed and is currently used for drinking water, however, potable wells are not located in the vicinity of the Hilo International Airport. The Department of Health's Underground Injection Control Program sets the boundaries for determining the effects of development on drinking water quality. The regulatory boundary lies west of the Waiakea residential area.

Direct Impacts and Mitigation Measures: Short-term construction activities are not likely to introduce, nor release from the soil, any substance that could adversely affect ground water.

Construction permit requirements, in particular, the NPDES permit, are expected to limit the area of excavation at any one time and require erosion control, dust control, and other best management practices to minimize the off-site transport of excavated materials.

Long-term operations of the proposed facilities are not anticipated to impact ground-water quality. There are no drinking water sources in the vicinity of the Airport. The Airport property is well outside boundary established by the State Underground Injection Control (UIC) program (HAR Title 11, Chapter 23) to protect underground sources of drinking water from pollution by subsurface disposal of fluids.

Indirect Impacts: No indirect impacts to the quality of ground water are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts to the quality of ground water are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.6 NATURAL HAZARDS

Flood Hazard: According to Flood Insurance Rate Maps (FIRM) prepared by the Federal Emergency Management Agency (FEMA), Hilo International Airport sits on lands that have been designated as Zone X, areas determined to be outside the 500-year flood plain.

The low-lying lands between the ocean and the northern boundary of both runways are subject to tsunamis, which may periodically strike the region. The project site, the main passenger terminal and all of other areas south of the runways are not in the tsunami hazard area, however the existing air cargo area (old terminal), and most general aviation facilities are in the hazard area. To permit residents of Keaukaha to evacuate, the State DOT has agreed to control evacuation access across the airfield in times of emergency. The evacuation route extends south from Gate 33, near Baker Avenue, across the airfield using Taxiway F, and through the main terminal to the loop road.

Seismic Hazard: The Island of Hawaii is susceptible to seismic activity originating in fault zones under and adjacent to the island. The Hawaii County Code relating to the Uniform Building Code (1991 edition) was amended in July 1999 to upgrade the seismic zone for the Island of Hawaii from Zone 3 to Zone 4. The rating system is based on a scale of 1 to 4, with a rating of 4 having the highest risk associated with seismic activity. The Hawaii County Building Code requires that all new structures be designed to resist forces to seismic Zone 4 standards

Volcanic Hazard: Hilo International Airport is located below the Mauna Loa northeast rift zone in the Volcanic Hazard Zone 3, which is the third highest of nine hazard zones established for the island of Hawaii by the U.S. Geological Survey. Hazard Zone 3 is defined as 1 to 5 percent of area covered by lava since 1800, and 15 to 75 percent of area covered by lava in the last 750 years. Increased distance from recently active vents and/or

the topography of the area makes it less likely that flows will cover Zone 3 areas than lands in Zones 1 and 2.

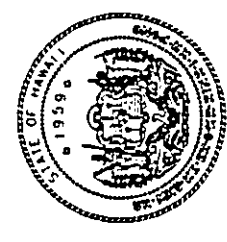
Impacts: Construction and operation of the proposed buildings will not result in increased flood hazards for the project site or the surrounding area. The project site is not subject to coastal hazards such as tsunami inundation, and is situated upon land determined to be in Zone X, outside the 500-year flood plain. The occurrence of an earthquake or seismic activity could pose a risk to property and possibly life within the project site depending upon the intensity of the event. The proposed structures will be designed and built to resist forces to seismic Zone 4 standards in accordance with the Hawaii County Building Code. In the remote event that lava flows approach the project site vicinity, there is the potential for property damage to the proposed buildings and other structures in the Hilo area. Airport emergency evacuation procedures would be implemented.

3.7 FLORA

Due to construction of the Airport, there have been major disruptions to the original site. This and current Airport maintenance practices of keeping encroaching vegetation out of Airport lands have resulted in the land within the Airport boundary consisting almost entirely of introduced species. The majority of these are grasses, but there are small strands of trees and scrub vegetation throughout the southern portion of the Airport.

A botanical survey was conducted by Botanical Consultants in July 2001 (see Appendix A). The survey included undeveloped areas near the passenger terminal and Airport Industrial Area, as these sites were under consideration for parking, cargo, and helicopter facility improvements. The survey areas are shown in Figure 3-2. No candidate, proposed, or listed threatened or endangered species as set forth in the Endangered Species Act of 1973, as amended, are known to exist within the vicinity of Hilo International Airport, and none were found during the survey.

6157-03FIG-BOTANICAL.dwg 14:56 12/3/01 H:\WDA\6157-03\FIGURES



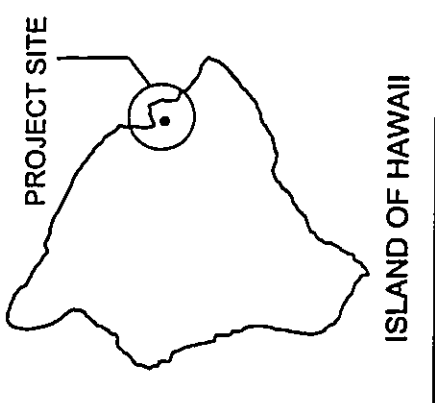
Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HILO
INTERNATIONAL
AIRPORT
ENVIRONMENTAL
ASSESSMENT

BOTANICAL,
FAUNAL, AND
ARCHAEOLOGICAL
SURVEY AREAS

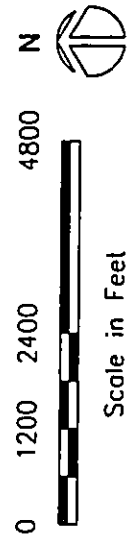
JANUARY 2002
Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 3-2

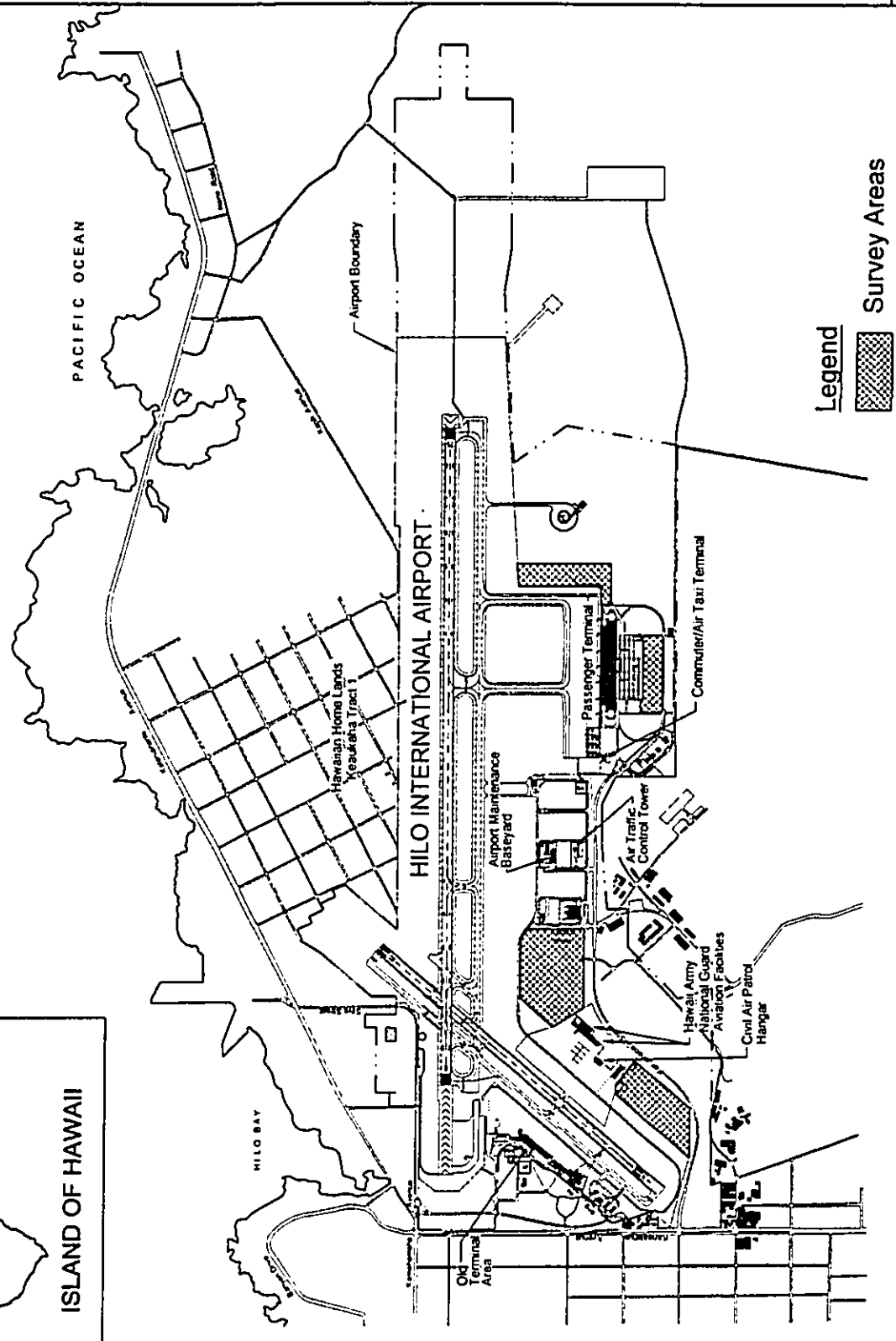


PROJECT SITE

ISLAND OF HAWAII



Scale in Feet



Legend



Survey Areas

The vegetation at the proposed heliport site consists of three vegetation types: Dense Forest, Transition Zone, and Open Grassland. The Dense Forest consists of mostly introduced trees approximately 50 to 75 feet tall. The presence of mango, avocado, strawberry guava, and yellow guava indicated that the area was once landscaped. Several native Ohia trees also exist in this area. Moving from the Dense Forest toward the runway, the Transition Zone vegetation consists of grasses, small trees, and weedy herbs. Beyond the Transition Zone, Open Grassland vegetation abuts the Airport fence. Grasses and herbs are abundant, and a few seedlings occur. All vegetation in this area is under 10 feet in height.

The vegetation in the area west of the Post Office includes Scrub Forest and Open Grassland. The site is dissected by old military roads and contain old concrete building foundations. The Scrub Forest contains a variety of introduced trees and large shrubs from 15 to 20 feet tall. The ground layer consists of introduced grasses and small plants. The Open Grassland is maintained as low stature vegetation by Airport management to assure visibility over the airfield.

The vegetation in the area east of the passenger terminal apron consists of Introduced Weed Tree Forest and Bamboo Orchid/Broomsedge Grassland. The Introduced Weed Tree Forest forms a broad band of almost impenetrable forest along the north, south, and western edge of the site. The central portion of the site is an open area of Bamboo Orchid/Broomsedge Grassland. The vegetation in this area is three to six feet in height with scattered bushes and saplings.

At the site of the proposed parking expansion, the vegetation type is Introduced Weed Tree Forest and is very dense, with a very scant understory.

Direct Impacts and Mitigation Measures: No significant impacts to flora within the project site are anticipated as a result of the construction and operation of the proposed facility as there are no known threatened or endangered species of flora inhabiting the project sites. The proposed improvements will be located within the Hilo International Airport property, where the vegetation on both developed and undeveloped portions of project sites consist entirely of introduced species.

Indirect Impacts: Due to the clearing of the project site for the proposed improvements, the vegetation in these areas will no longer be available for gathering purposes. Currently, members of the community gather plants such as lau hala and hau within the airport property. DOT-A is working with the community to arrange for the continuation of gathering practices within Airport areas.

Cumulative Impacts: No cumulative impacts to floral species are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.8 FAUNA

In general, the majority of fauna found in and around the Airport property are mostly introduced species, such as the mynah, dove and cardinal and feral pigs, dogs cats, rats, and mongoose. There are also livestock and other farm animals in the planning region, including cattle, horses, roosters, and chickens.

A faunal survey conducted in July 2001 by Rana Productions, Ltd (see Appendix B). The survey included undeveloped areas near the passenger terminal and Airport Industrial Area, as these sites were under consideration for parking, cargo, and helicopter facility improvements. The survey areas are shown in Figure 3-2. The endangered Hawaiian hoary bat was observed near the existing passenger terminal and in the parking lot south of the terminal complex. The bat was also observed foraging over the swimming pool and the Old Terminal Complex. The detection of the bat within the Airport complex was not unexpected, as the species is regularly seen in and around Hilo, as well as along the coastline from Puna to North Hilo. Unlike nocturnally flying seabirds, which often collide with man-made structures, bats are uniquely adapted to avoid both man-made and natural obstacles. Bats successfully navigate the landscape and locate their prey with ultrasonic echolocation, which is sensitive enough to allow bats to capture small volant insects at night.

One introduced mammalian species, the Indian mongoose, was observed during daytime hours. However, evidence of the domestic dog, cat, and pig were found within the project sites. All four of these introduced species are deleterious to avian populations. Although no live rodents were detected during the survey, it is likely that roof rats, Norway rats, European house mice, and possibly Polynesian rats use various resources found within the project sites.

The eleven alien species of birds detected during the survey are typical within the highly disturbed lowland areas of the South Hilo District. As for migratory and extralimital species, many of the more than 80 species that have been recorded in Hawaii between the months of September and May can be expected to use various resources that are found within several of the project sites. The most common of these migratory species are the Pacific Golden-Plover, Ruddy Turnstone, and Wandering Tattler. It is also possible that small numbers of the endangered endemic Hawaiian subspecies of the Dark-rumped Petrel and the threatened Newell's Shearwater overfly the Airport and the surrounding area between the months of May and October, but there is no suitable nesting habitat within the project sites for either of these listed pelagic seabird species.

Direct Impacts and Mitigation Measures: No significant impacts to fauna within the project site are anticipated as a result of the construction and operation of the proposed facility. There are no known threatened or endangered species inhabiting the project sites, although some species may use various resources found within the project sites. The proposed facility will be located within the existing maintained area of Hilo International Airport, and thus, no loss of faunal habitat will occur as a result of development.

Indirect Impacts: A potential impact that development of the project sites poses to Dark-rumped Petrels and Newell's Shearwaters is the increased threat that birds will be downed after becoming disoriented by new exterior lighting that may be required in conjunction with one or more of the proposed improvements. To reduce the possibility that nocturnally flying Dark-rumped Petrels and Newell's Shearwaters may be disoriented by external lights and collide with man-made structures, any external lighting planned within the proposed improvements will be shielded. The shielding allows less ambient glare, thereby causing less light pollution. This mitigation measure will minimize the threat of disorientation and downing of Dark-rumped Petrels and Newell's Shearwaters, and at the same time, assure compliance with the County of Hawaii's planning policy that recommends shielding of exterior lights.

Cattle Egrets are a species of concern as a Bird Airstrike Hazard. Although Cattle Egrets were not observed at any of the project sites, the birds are regularly seen within the airport grounds. There are egret roosting areas located north of the Airport, adjacent to Kalaniana'ole Avenue at both Kionakapahu and Lokoaka Ponds. Additionally, egrets regularly use resources within the Wailoa River State Park, which is located due west of the Airport. The DOT-A utilizes wildlife control measures to mitigate potential hazards in consultation with Federal wildlife authorities.

Cumulative Impacts: No cumulative impacts to faunal species are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.9 AIR QUALITY

The present ambient air quality in Hilo is generally good. Table 3-1 shows the 1999 data for air quality monitoring for Particulate Matter (PM₁₀) and Sulfur Dioxide (SO₂) at the Hilo Monitoring Station. This is the most recently published data from the Hilo station, situated on the grounds of the Adult Rehabilitation Center of Hilo on Waianuenue Avenue, approximately 3 miles west of the Airport. Impacts on ambient air quality from the ongoing eruption at Kilauea Volcano are being monitored at this site. The prevailing wind direction at Hilo International Airport is southwesterly with an average speed of about 6 to 7 miles per hour.

Kilauea Volcano continuously emits volcanic gases which result in emissions of over 1,000 tons of sulfur dioxide per day. This approximate level of output has persisted since 1986, and intermittently since 1983. Hawaii's strong sunlight and moist air promote oxidation and hydration of sulfur dioxide to a sulfuric acid aerosol which is partially neutralized to ammonium sulfate. The combination of these aerosols, the remaining sulfur dioxide and other volcanic vapors are locally referred to as "vog", or volcanic fog. The rate of air emissions by Kilauea may produce vog exposures along the plume trajectory which present chronic or acute public health hazards. Kilauea's Puu Oo vent is located approximately 25 miles southwest of the Airport.

TABLE 3-1
AIR QUALITY AT HILO MONITORING STATION, 1999
IN COMPARISON WITH STATE AND FEDERAL AIR QUALITY STANDARDS
(in micrograms per cubic meter)

	Hilo	State Standard	Federal Standard
Particulate Matter			
Range, 24-Hour	5-30	150	150
Annual Mean	11	50	50
Sulfur Dioxide			
3-Hour SO₂			
Range	0 - 652	1,300	1,300
Annual Mean	2	80	80
Sulfur Dioxide			
24-Hour SO₂			
Range	0 - 111	365	365
Annual Mean	2	80	80

Source: State Department of Health, Clean Air Branch, *Annual Summary, Hawaii Air Quality Data, 1999*.

Air quality monitoring for particulates, including dispersed matter such as dust, soot, smoke and liquid droplets from urban and agricultural activities, show that the highest PM₁₀ concentration averaged over 24 hours recorded at the Hilo station during 2000 was 18 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). This is well within the State and Federal standards of 150 $\mu\text{g}/\text{m}^3$. The annual mean was 11 $\mu\text{g}/\text{m}^3$, well below the State and Federal limits of 50 $\mu\text{g}/\text{m}^3$.

Sulfur dioxide gases on the Big Island occur mostly from the emissions of the Kilauea Volcano, but are also emitted from sources that burn fossil fuels such as coal and oil. The maximum 3-hour SO₂ level recorded in 2000 was 438 $\mu\text{g}/\text{m}^3$, within the State and Federal limits of 1,300 $\mu\text{g}/\text{m}^3$. The 24-hour SO₂ levels ranged up to 94 $\mu\text{g}/\text{m}^3$, again well within the 365 $\mu\text{g}/\text{m}^3$ limit of the State and Federal air quality standards.

Air quality in the vicinity of the Airport is generally good due to the windward location of the Airport and the amount of precipitation that occurs in the area. Air quality is expected to improve with the upgrading of aircraft using the Airport. The acquisition of new Boeing 717-200 aircraft by Hawaiian Airlines to completely replace their fleet of DC-9-50 aircraft will result in lower emissions. The B-717 engines generate emissions that are reportedly 60 percent below federal standards.

An air quality impact report was prepared (see Appendix C), as the Airport can be considered an indirect source of air pollution as defined in the federal Clean Air Act. The Airport's primary association with air quality is its inherent attraction for mobile sources of air pollution, including aircraft and motor vehicles. The air quality impact report, therefore, focuses on the surface and air traffic that would be generated by the proposed improvements

and the resultant impacts on air quality. The report indicates that the existing conditions at the Airport and the resultant emissions generated by the existing uses are well within the guidelines for compliance with both state and federal air quality standards.

Since ground traffic in the vicinity of an airport is often found to be the primary source of high pollutant concentrations, particularly carbon monoxide, the air quality impact report also discusses CO levels associated with roadway traffic based on air sampling conducted at the Airport during peak traffic hours. Air samples showed that existing carbon monoxide concentrations remained low during both the morning and afternoon peak traffic hours, averaging less than 1 mg/m³. Weather conditions during the sample collection were characterized by partly cloudy to cloudy skies and light, variable winds averaging 1.0 to 2.2 miles per hour.

Annual emission estimates for the Hilo International Airport were projected for the base year 2001 and the planning year 2010 with and without the project. Emission sources at the airport that contribute to the projections include aircraft, roadway traffic, parking lot traffic, fuel storage, and training fires. Emission levels are expressed in terms of Carbon Monoxide (CO), Volatile Organic Compounds (VOC), Nitrogen Oxides (NO_x), Sulfur Dioxide (SO₂), and particulate matter less than 10 microns in diameter (PM₁₀). Table 3-2 shows the total estimated Airport emissions for 2001, 2010 without the project, and 2010 with the project. Increases in emissions from 2001 to 2010 are expressed both as a percent of the base year 2001 total tons per year (T/yr) and as a percent of the total emission inventory for Hawaii County for 2000. The 2000 Hawaii County Inventory provides perspective on the magnitude of emissions generated by the Airport relative to the emissions generated by the entire county.

While emissions are an important component of any air quality impact analysis and do provide some insight into the significance of impacts, it is the ambient concentrations that are of primary interest because adverse effects are the direct result of high concentrations and duration of exposure. In the simplest terms, it is the emissions affected by meteorological conditions that result in the ambient concentrations. Ambient concentration estimates were generated for Hilo International Airport using the emission estimates above and meteorological data. The results are presented in Table 3-3 along with the corresponding state standards. Compliance with Hawaii Ambient Air Quality Standards (HAAQS) and, therefore, also with the less stringent federal standards is clearly demonstrated.

Automotive emission factors for CO at the intersection of Kanoelehua Avenue and Kekuaaoa Street were generated for the calendar years of 2001 and 2010 with and without the project. In instances where mobile sources are the principal sources of pollutants, CO is normally selected for modeling because it has a relatively long half-life in the atmosphere of approximately one month, and it comprises the largest fraction of automotive emissions.

	Emissions (T/yr)				
	CO	VOC	NO _x	SO ₂	PM ₁₀
2000 Hawaii County Inventory	30,309	17,090	13,693	520,749	34,894
Year 2001 Airport Emissions Base Year	744	84	223	9.4	4.6
% of 2000 Hawaii County Inventory	2.45%	0.49%	1.63%	0.00%	0.01%
Year 2010 Airport Emissions Without Proposed Improvements	744	77	314	13	4.2
% Change from Year 2001 Emissions	0.00%	-8.33%	40.81%	38.30%	-8.70%
% of 2000 Hawaii County Inventory	2.55%	0.49%	1.63%	0.00%	0.01%
Year 2010 Airport Emissions With Proposed Improvements	806	81	319	14	4.5
% Change from Year 2001 Emissions	8.33%	-3.57%	43.05%	48.94%	-2.17%
% of 2000 Hawaii County Inventory	2.66%	0.49%	1.63%	0.00%	0.01%

Source: J.W. Morrow. *Air Quality Impact Report (AQIR), Hilo International Airport Master Plan Phases I & II, Hilo, Hawaii*. Prepared for Wilson Okamoto & Associates, Inc. and the State of Hawaii Department of Transportation, Airports Division. December 14, 2001.

Maximum Concentration	CO		NO ₂ Annual	SO ₂			PM ₁₀	
	1 Hour	8 Hour		3 Hour	24 Hour	Annual	24 Hour	Annual
HAAQS	10,000	5,000	70	1,300	365	80	50	150
2001 Base Year	3,737	1,538	19.3	446	95.8	4.4	18.8	11.3
2010 Without Proposed Improvements	7,569	2,402	22.4	449	96.4	4.5	19.7	11.3
2010 With Proposed Improvements	6,510	2,543	22.6	449	96.4	4.5	20.1	11.2

Source: J.W. Morrow. *Air Quality Impact Report (AQIR), Hilo International Airport Master Plan Phases I & II, Hilo, Hawaii*. Prepared for Wilson Okamoto & Associates, Inc. and the State of Hawaii Department of Transportation, Airports Division. December 14, 2001.

The results for both one-hour concentrations and eight-hour concentrations of CO indicate that under actual peak hour conditions of meteorology and traffic, both the federal and state CO standards are met at and beyond distances of 10 meters from Kanoiehua Avenue. The eight-hour concentrations are conservative estimates because they were derived from the peak hour data used for identifying the "worst-case" one-hour CO concentration.

Direct Impacts and Mitigation Measures: The proposed project will have short-term, construction-related impacts on air quality, including the generation of dust and emissions from construction vehicles, equipment, and commuting construction workers. The contractor will be responsible for complying with State Department of Health (DOH) Administrative Rules, Title 11, Chapter 60, "Air Pollution Control."

During the construction phase, two potential types of air pollution emissions will likely occur: 1) Fugitive dust from soil excavation and the movement of construction vehicles; and, 2) Carbon monoxide and nitrogen oxide emissions from on-site construction equipment and from worker's vehicles and equipment travelling to and from the project site. Compliance with State regulations will require adequate measures to control fugitive dust by methods including frequent watering of loose or exposed soil and dust generating equipment during construction. As may be deemed appropriate, the planning of construction phases and the paving and/or reestablishment of vegetated areas early in the construction schedule will also help control dust. Exhaust emissions from construction related vehicles are anticipated to have negligible impacts on air quality in the project vicinity as emissions would be relatively small and readily dissipated.

Indirect Impacts: No indirect impacts to air quality are anticipated as a result of the construction and operation of the proposed Airport improvements. There are existing air quality issues relative to aircraft operations, as nearby residents have made complaints regarding fumes from jet exhaust. Air quality is expected to improve with the upgrading of aircraft using the Airport.

Cumulative Impacts: The proposed project is not anticipated to have significant long-term or cumulative impacts on ambient air quality in the vicinity of the Airport. As indicated in the earlier discussion of the air quality impact report, ambient air quality estimates for the year 2010 show a slight increase in the levels of NO₂, SO₂, and PM₁₀ compared to 2001 levels regardless of the implementation of the proposed Airport improvements. Likewise, the estimated increase in the concentration of CO from 2001 to 2010 without the implementation of the project is approximately the same as the estimated increase in CO with the implementation of the proposed improvements.

3.10 NOISE

In the communities surrounding Hilo International Airport, existing background ambient noise levels (exclusive to aircraft noise) are estimated to range from 40 to 65 Day-Night Average Sound Level (DNL). Noise measurements taken by Y. Ebisu & Associates as part of the Hilo International Airport Noise Compatibility Program showed the following characteristics:

- Along rights-of-way of major roadways serving the airport are noise levels equal or exceeding 65 DNL.

- Noise levels of 60 to 65 DNL exist along the shoreline of Hilo Bay to Leleiwi Point due to surf noise.
- Extremely low background ambient noise levels were measured (40 to 45 DNL, with minimum instantaneous noise levels of 30 dBA) in the Hawaiian Home Lands, Keaukaha residential subdivision north of the Airport, due to its distance from the surf and major highways.
- Locations along Banyan Drive and in downtown Hilo, areas which are affected by traffic noise, have background ambient levels ranging from 55 to 65 DNL.
- Residential areas which are removed from major roadways and are affected by local traffic have background ambient noise levels ranging from 45 to 55 DNL.
- In general, background ambient noise levels in Hilo are not high enough to mask aircraft noise.

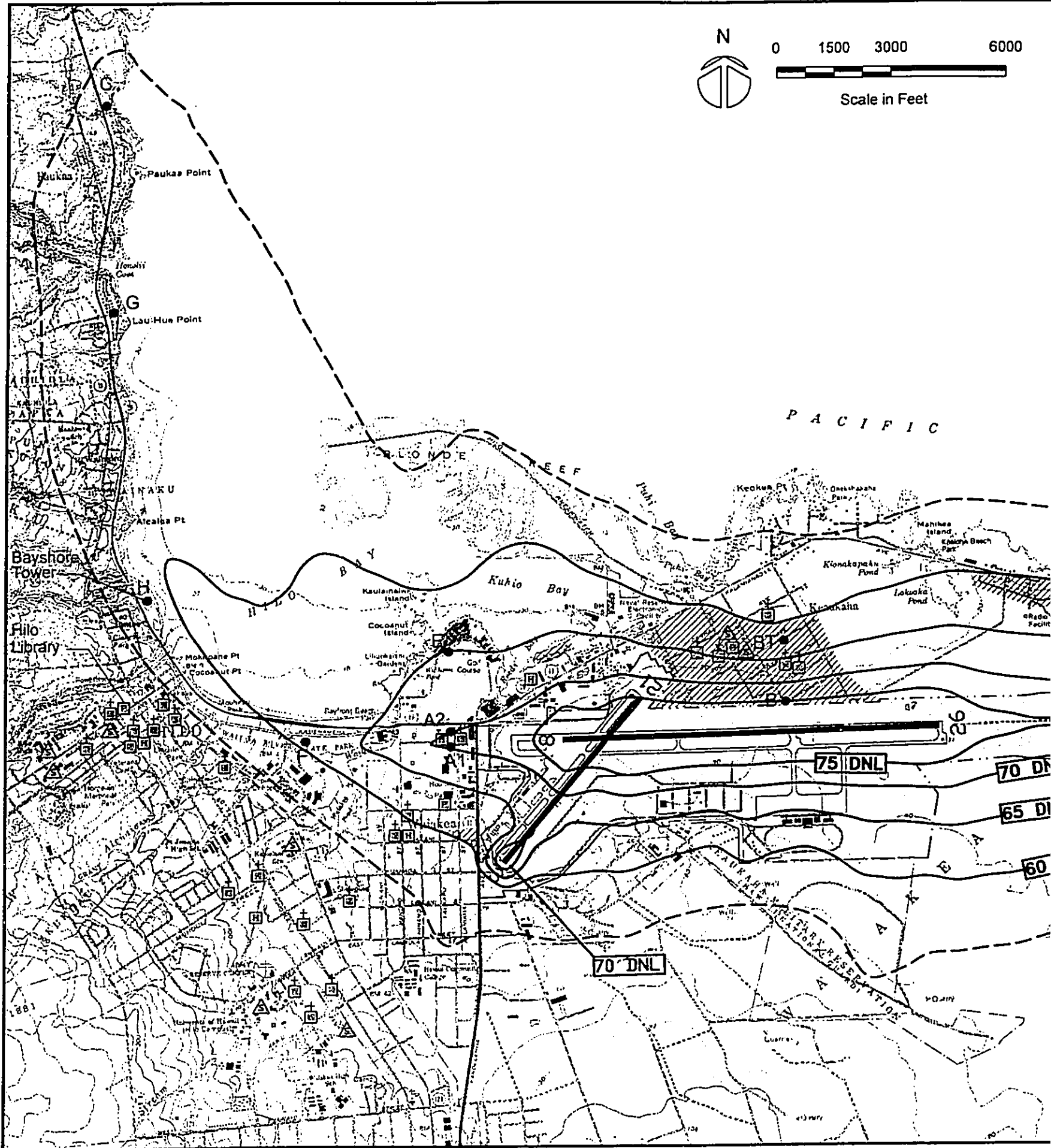
Existing aircraft-related noise was calculated using the FAA's Integrated Noise Model (INM), Version 5.2. The base year 2000 noise contours produced by the model are shown in Figure 3-3. For the purposes of determining noise acceptability for funding assistance from Federal agencies (FHA/HUD and VA), an exterior noise level of 65 DNL or lower is considered acceptable for all dwelling units (residences and apartments). Due to Hilo's open and outdoor living conditions, the predominant use of naturally ventilated dwellings, and relatively low outdoor to indoor sound attenuation afforded by such structures, an exterior noise level of 65 DNL does not eliminate all risks of adverse noise impacts.

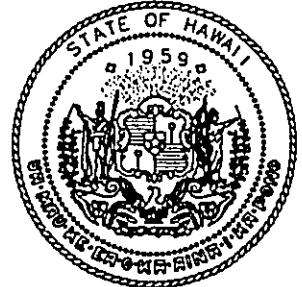
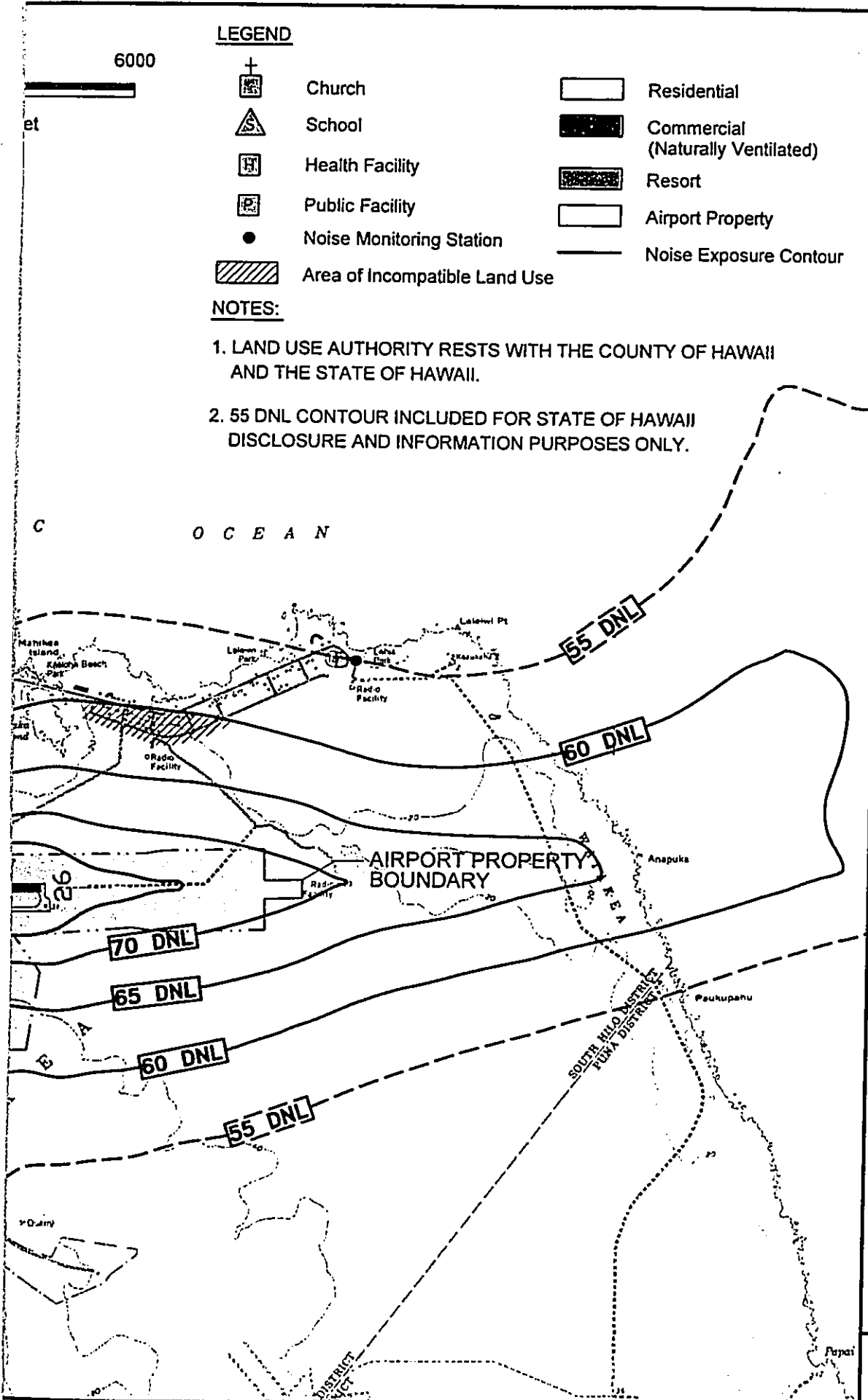
As such, the State DOT-A asked the FAA if, due to Hawaii's special circumstances, mitigation measures in areas subject to noise levels between 60 and 65 DNL would be eligible for federal funding under the FAR Part 150 Noise Compatibility Program. Based on its review of the request, the FAA determined that the 60 DNL noise contour may be included in the FAR Part 150 studies prepared by the State. However, it noted that a more specific case-by-case review of recommended noise mitigation measures will be required prior to any federal funding for these proposed measures, especially within the 60 to 65 DNL contours. These reviews will be accomplished at the time funding is requested for particular mitigation measures.

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6157FIG-NOISE.DWG

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Airports Division
 DEPARTMENT OF TRANSPORTATION
 STATE OF HAWAII

**HILO
 INTERNATIONAL
 AIRPORT
 ENVIRONMENTAL
 ASSESSMENT**

**BASE YEAR (2000)
 NOISE EXPOSURE
 MAP**

JANUARY 2002
 Prepared by:
**WILSON OKAMOTO
 & ASSOCIATES, INC.**

FIGURE 3-3

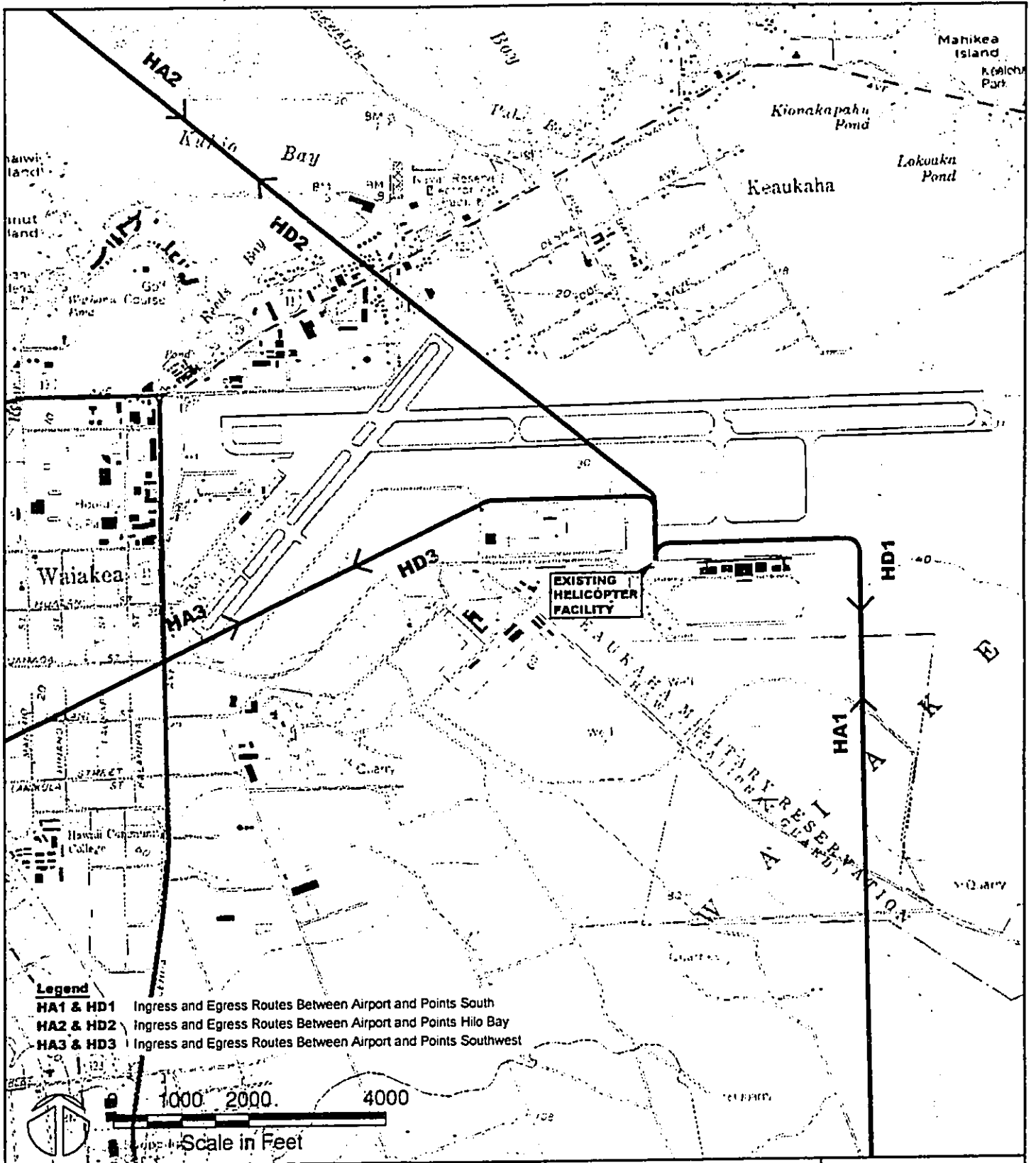
The FAR Part 150 NCP report describes existing land uses located in the vicinity of the Airport and are sensitive to the noise levels generated by Airport activity. Residential areas are located approximately 700 feet from the end of Runway 3 and 500 feet from the end of Runway 21. The Department of Hawaiian Home Lands Keaukaha Tract I residential subdivision is located immediately adjacent to the Airport's northern boundary. Approximately 200 homes of the Keaukaha Tract I subdivision are exposed to noise exceeding 60 DNL. The Waiakea area west and southwest of the Airport is an area of relatively dense single-family and multi-family residential development. Most of the single-family residential structures are typically of single-wall construction and are naturally ventilated. Approximately 30 homes in the Waiakea area between Kanoelehua Avenue and Laukapu Avenue are exposed to noise exceeding 60 DNL. The Leleiwi Point coastal area to the northeast of the Airport contains low and high-rise residential structures. Approximately 35 homes at Leleiwi Point are exposed to noise exceeding 60 DNL. The Reeds Bay coastal area also contains low-rise, single-family residential structures. The Banyan Drive area contains hotels and multi-family apartments. The hotel rooms are typically air conditioned, while the apartment units are typically naturally ventilated.

The locations of noise sensitive schools, hospitals, libraries, and other public-use structures in the Hilo area are shown in Figure 3-3. The Waiakea Health Center immediately west of Runway 8-26, the Bay Clinic near Reeds Bay, the Seven Seas Luau House meeting facility in Waiakea, the five churches and two schools in Keaukaha, and churches in the Waiakea area are the public use structures located closest to the Airport.

A noise study was conducted to determine the noise impacts from projected helicopter operations at the proposed site at the southwest corner of the Airport (see Appendix D). Helicopter noise contours, developed using the FAA helicopter noise model, were compared to existing background ambient noise levels, State Department of Transportation recommendations, and with FHA/HUD and EPA standards and criteria. The future noise environment and potential noise impacts were examined for conditions with and without the proposed heliport using airport activity forecasts for the Years 2005 and 2020. The future noise environment projected without the proposed heliport relocation assumes that the existing heliport near the passenger terminal remains in use.

The noise environment in the vicinity of Hilo International Airport is primarily influenced by commercial jet aircraft. However, the existing helicopter ingress and egress routes overfly noise sensitive residential and resort areas (see Figure 3-4) and, although these individual noise events do not contribute largely to the average noise level on a typical day, the relatively short duration of increased noise induced by a helicopter overflight is at such a contrast to the ambient noise level that numerous complaints and annoyance responses regarding helicopter operations have been received from the community over the years.

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Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

**HILO INTERNATIONAL AIRPORT
ENVIRONMENTAL ASSESSMENT**

**EXISTING HELICOPTER FACILITY LOCATION
AND HELICOPTER INGRESS AND EGRESS ROUTES**

JANUARY 2002

Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 3-4

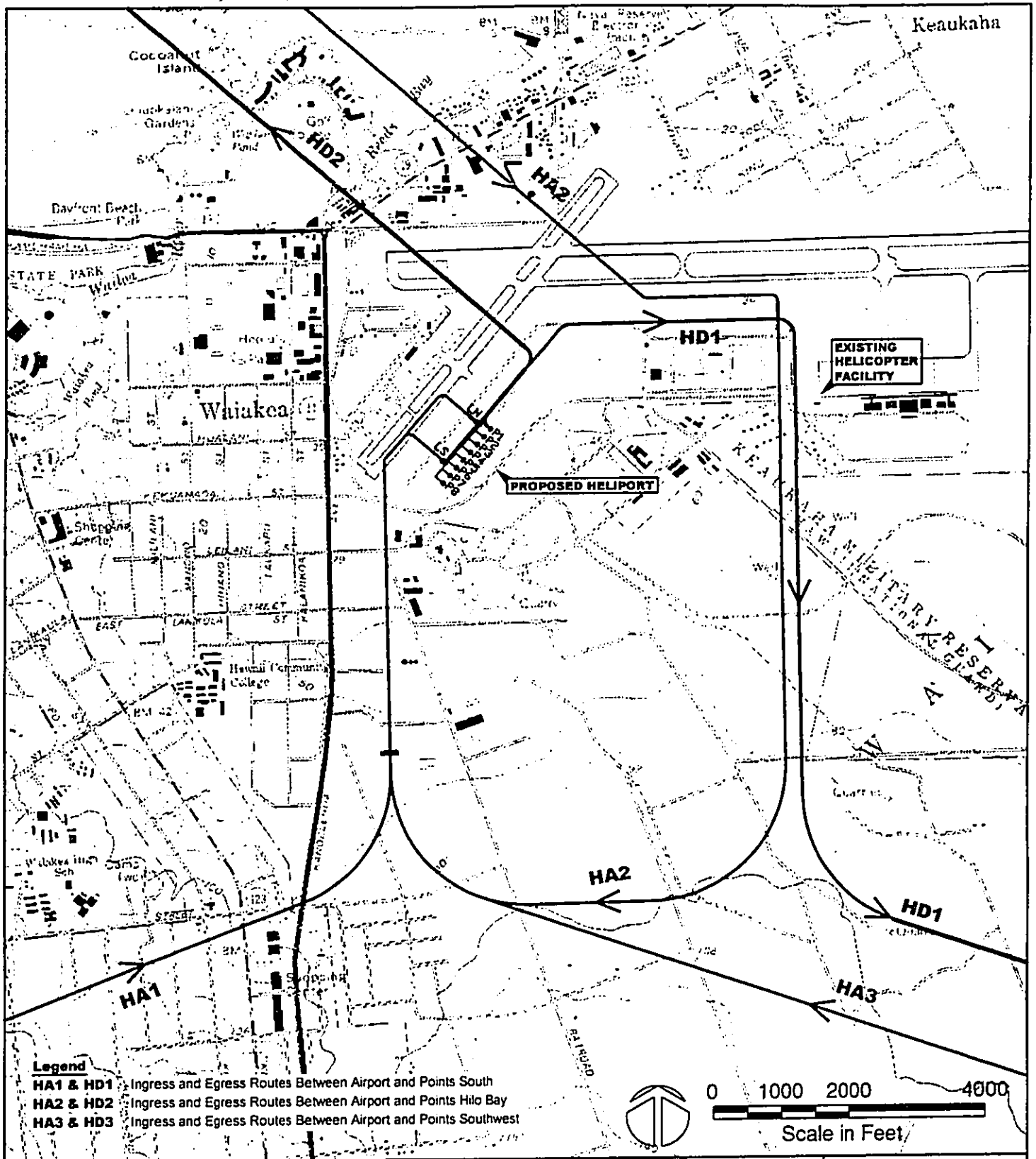
The proposed ingress and egress routes (see Figure 3-5) to and from the proposed heliport were mutually developed by tour helicopter, FAA control tower, and DOT-AIR personnel. These flight tracks should minimize the potential for complaints from area residents concerning low level helicopter overflights. The primary noise mitigation measures recommended for the proposed tour helicopter facility include operational procedures that minimize complaint risks from surrounding noise sensitive properties and that are possible within the operating constraints at the facility. One of the primary mitigation measures for reducing risks of noise complaints is to avoid overflights of such properties, particularly at low altitudes of less than 1,000 feet above ground level. The proposed site allows for the avoidance of low level overflights along all portions of the proposed ingress and egress routes, which is especially important in residential and resort areas. The final approach flight track to the proposed facility was adjusted to avoid low level overflights of the Waiakea residential community southwest of the Airport. The Final heading of the tour helicopters prior to landing at the airport is parallel to Kanoelehua Avenue for altitudes less than 1,000 feet above the ground. The special ingress and egress procedures developed for this facility should be adhered to by all future users of the heliport, whenever weather and safety conditions allow.


Direct Impacts and Mitigation Measures: Noise generated during construction activities will likely be unavoidable during the entire construction period. Unavoidable short-term construction noise impacts will be mitigated to some degree by the contractor's compliance with provisions of the State DOH Administrative Rules, Title 11, Chapter 46, "Community Noise Control" noise regulations. These rules require a noise permit if the noise level from construction activity is expected to exceed the allowable levels stated in the Chapter 46 rules.

It shall be the contractor's responsibility to minimize noise by properly utilizing and maintaining noise mufflers and other noise-attenuating equipment, and to maintain noise levels within regulatory limits. Also the guidelines for the hours of heavy equipment operation and noise curfew times, as set forth by the DOH noise control regulations, will be adhered to. The noise sensitive properties that are likely to experience the highest noise levels during construction activities on the heliport site are the existing residences closest to the southeast end of Runway 3. These residences are located approximately 1,400 feet from the construction area, and adverse impacts due to construction noise are not anticipated due to the large buffer zone that separates the homes from the construction site.

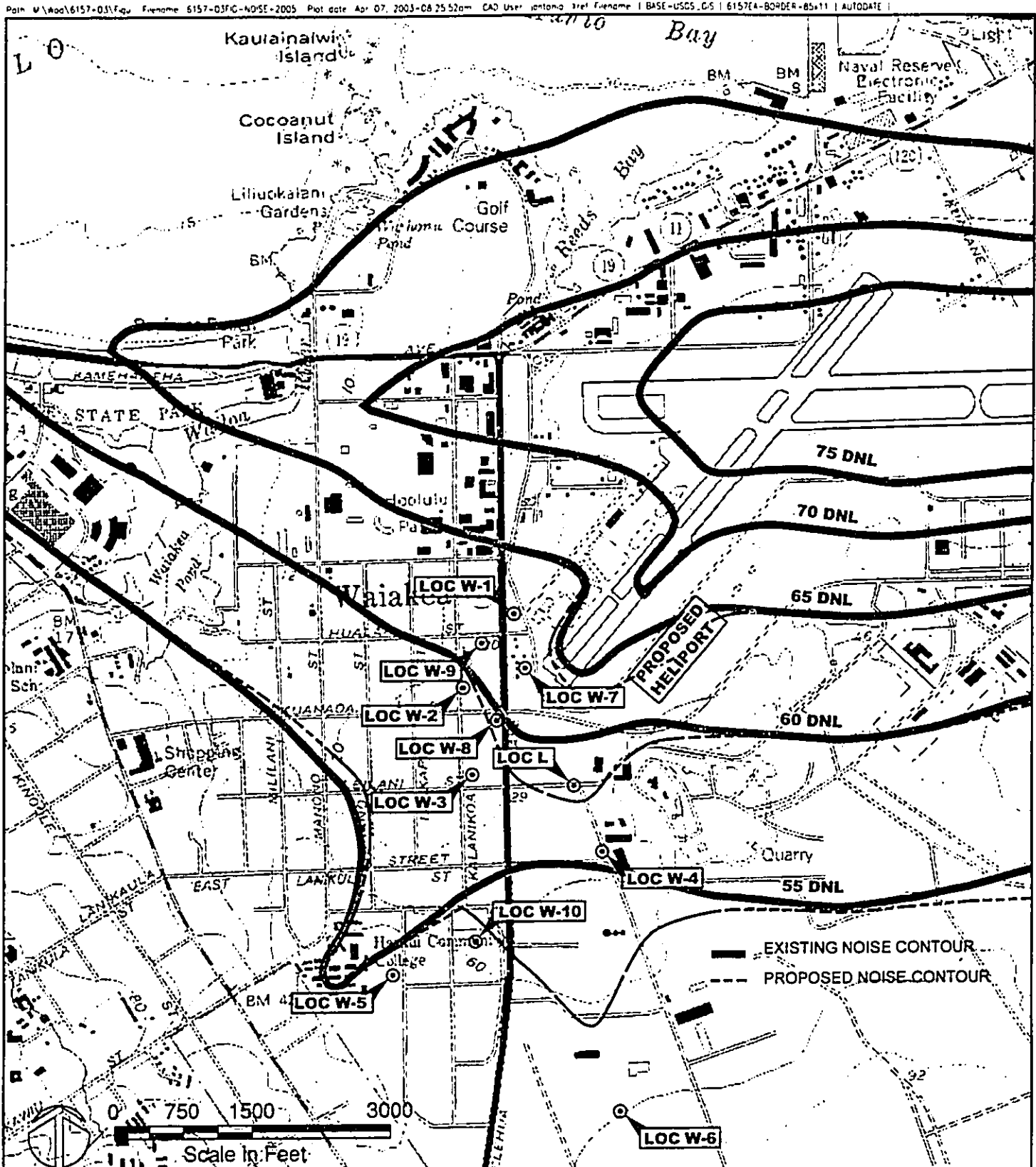
A comparison of the noise contours for the Year 2005 without the proposed heliport and the noise contours for the Year 2005 with the proposed heliport relocation indicates virtually no change in the noise levels in the residential and resort areas to the west and north of the airport (see Figure 3-6). The only area where noise contours are observed to shift significantly is within the 60 and 55 DNL lines to the south of the proposed heliport site, over the industrial and open area between the quarry and Kanoelehua Avenue. Somewhat minor shifts in the location of the 60 and 55 DNL contours are observed within the first city block parallel and west of Kanoelehua Avenue.


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 Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT	JANUARY 2002 Prepared by: WILSON OKAMOTO & ASSOCIATES, INC.
	PROPOSED HELICOPTER FACILITY LOCATION AND HELICOPTER INGRESS AND EGRESS ROUTES	FIGURE 3-5

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 <p>Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII</p>	<p>HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT</p> <p>YEAR 2005 AIRPORT NOISE CONTOURS EXISTING AND PROPOSED HELIPORT FACILITY</p>	<p>JANUARY 2002</p> <p>Prepared by: WILSON OKAMOTO & ASSOCIATES, INC.</p> <p>FIGURE 3-6</p>
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Path: M:\wood\6157-03\Fig File: 6157-03\FG-NDSE-2005 Plot date: Apr 07, 2003 08:25:52am CAD User: jgtona 3rd File: BASE-USCS.GS | 6157EA-BORDER-85x11 | AUTODAT |

The Year 2005 and Year 2020 noise contours for the scenario without the proposed heliport relocation are virtually identical. Thus, the same variations in the 60 and 55 DNL contours observed between the 2005 scenarios are observed between the distribution of noise levels for the Year 2020 without the proposed heliport and the Year 2020 with the proposed heliport relocation (see Figure 3-7).

The shifts in the noise contours in the area south of the proposed heliport site are due to the proposed helicopter ingress and egress routes that were formulated to avoid low level overflights of the residential and resort areas.

There are a few homes located between the southwest end of Runway 3 and Kanoelehua Avenue that will continue to be within the 60 and 65 DNL airport noise contours, which currently qualify for sound attenuation treatment due to existing airport noise in the area. Additional noise mitigation measures should not be required as a result of the development of the proposed heliport.

No adverse noise impacts are anticipated to result from the operation of the new general aviation facilities, as the proposed improvements will serve to accommodate the existing aircraft and level of aircraft operations at Hilo International Airport, and the Airport noise contours are influenced mostly by jet aircraft. The existing general aviation facilities are presently located in the same area.

No adverse noise impacts are anticipated to result from the operation of the proposed cargo facility. Noise from air cargo operations are a function of aircraft operations and flight paths, which will not change with the relocation of ground handling operations to the proposed hold cargo facility near the main passenger terminal. The proposed facility of itself will not generate an increase in airport cargo facility use.

The use of sound attenuation treatment methods in residences within the 60, 65, and 70 DNL contours will mitigate existing airport noise problems through the enclosure and air conditioning of homes. Sound attenuation improvements, as stipulated by the FAA, must be designed to lower interior noise levels within the home to 45 DNL. Sound attenuation treatment would significantly lower sound levels within the home, if the resident chooses to accept such renovations.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed cargo, helicopter, and general aviation facilities.

Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed cargo, helicopter, and general aviation facilities.

3.11 ARCHAEOLOGICAL RESOURCES

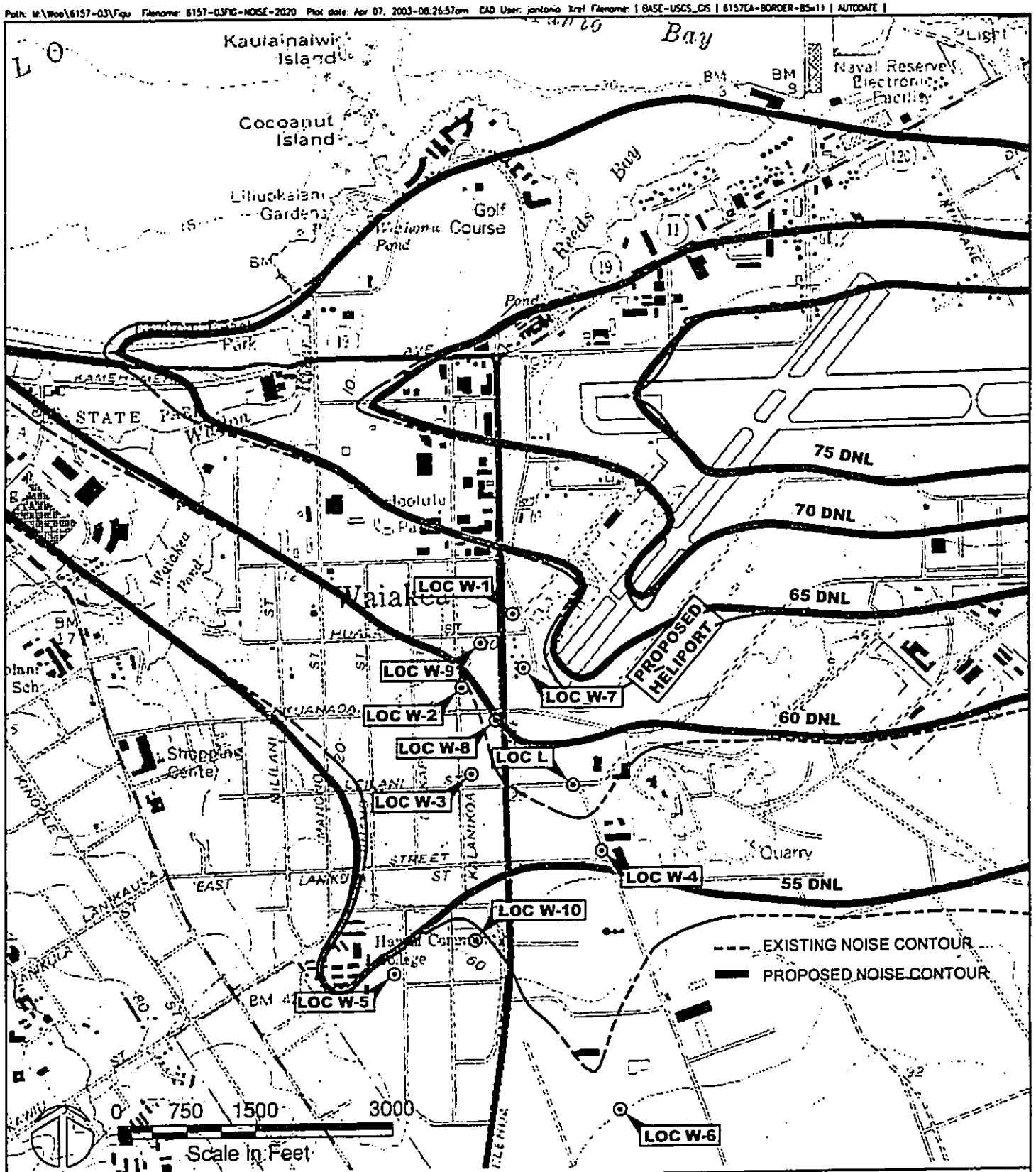
There are no known historic or archaeological sites within the Airport boundary. Extensive clearance of Airport lands have virtually eliminated the possibility of the existence of any above or below-ground artifacts of significance.


A former railroad right-of-way existed at the west end of the Hilo International Airport (see Figure 3-8). The right-of-way was transferred from the Territory of Hawaii by Grant Deed on November 11, 1903 to the Hawaii Consolidated Railway, Limited. The easement was located immediately to the east of what was called "Railroad Avenue" and the 40-foot Road Reserve off of Kanoelehua Avenue. Both the easement and Railroad Avenue extended south to the Puna District. The right-of-way was abandoned on August 1, 1947 and conveyed to the Territory of Hawaii on May 22, 1952. Executive Order No. 1519, which set aside the land for the Airport, notes the abandonment of the railway easement and its return to the Territory. While the easement is still observable on older maps of the Hilo area, it is no longer active. The portion of the easement that crosses Hilo International Airport is under the control of the State DOT-A.

An archaeological inventory survey was conducted by Haun and Associates in undeveloped areas near the passenger terminal and Airport Industrial Area, as these sites were under consideration for parking, cargo, and helicopter facility improvements (see Appendix E). The survey areas are shown in Figure 3-2. The examination of previous archaeological work and historic documentation determined several expectations as to the findings of the field survey conducted in August 2001. Prehistoric to early historic use of the project area was probably limited because the focus of settlement in Hilo was along the coast and the lower reaches of the Wailoa River. The only evidence of traditional Hawaiian use reported for the project area vicinity consists of an agricultural depression and several mounds of stone, or ahu, marking the Puna Trail. The very rocky nature of the terrain probably limited traditional use to gathering floral and faunal resources, transit through the area, and limited agricultural activity. Historic use was probably limited to cattle grazing, as the land is too rocky for the cultivation of sugar cane. Airport-related construction activities in the 1900s resulted in extensive modification and development in the area. Historic sites dating to the 1900s would consist of airport-related infrastructure, including roads and potentially foundations for buildings and other structures.

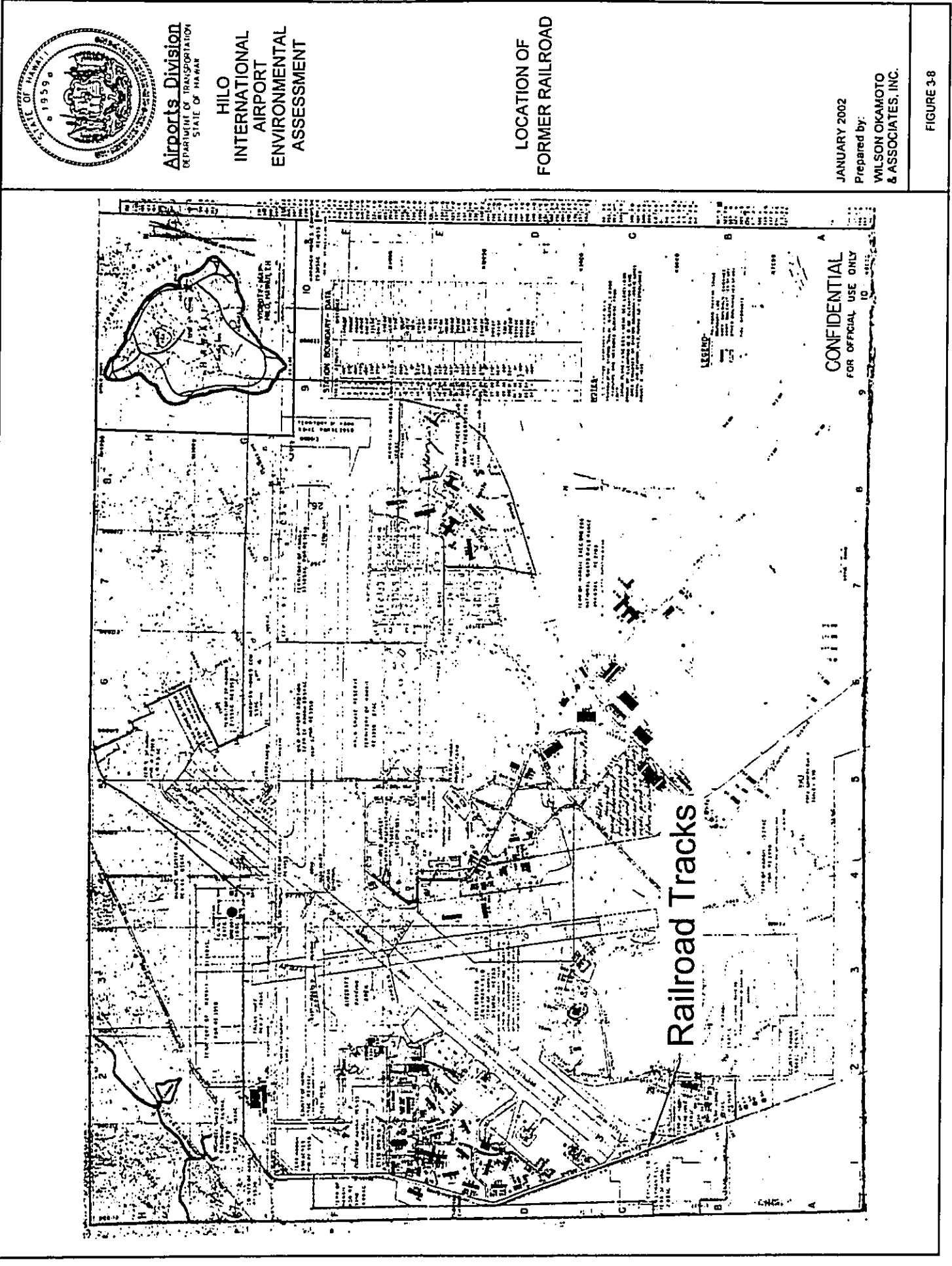
The sites and features identified during the survey conform to the traditional Hawaiian site and feature types expected. Agricultural features were identified and a primary transportation route, the Puna Trail, was found to have formerly traversed part of the survey area west of the Airport Industrial Lots. No surface evidence of subsurface cultural deposits was identified and it is unlikely that such deposits would be present because there is very little soil over the lava bedrock in the area and because much of the area has been extensively disturbed by construction activity.

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 <p>Airports Division DEPARTMENT OF TRANSPORTATION STATE OF HAWAII</p>	<p>HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT</p> <p>YEAR 2020 AIRPORT NOISE CONTOURS EXISTING AND PROPOSED HELIPORT FACILITY</p>	<p>JANUARY 2002</p> <p>Prepared by: WILSON OKAMOTO & ASSOCIATES, INC.</p> <p>FIGURE 3-7</p>
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Lyman airfield 1944 03/20/02 101 M:\W0A\6157-03\Figures



A terraced depression and its associated wall were identified in an elevation zone that is characterized by the remains of scattered residences among economically beneficial trees and agricultural plots of dryland taro and bananas. The site is located in the southwest corner of the airport, near the east end of the proposed heliport site, and it is evidence of traditional Hawaiian agricultural activity in an area that was transitional between coastal settlement areas and upland agricultural areas.

Historic remains identified during the survey include a ranch wall and the foundation for the former Airport radio transmitter repeater (RTR) site. The ranch wall probably dates to between the mid 1800s and early 1900s and is located near the southern boundary of the proposed helicopter facility, north of Kekuanaoa Street. The former RTR site probably dates to between the 1930s and 1960s prior to Airport improvements to accommodate jet aircraft. The former RTR site is located in the Airport Industrial Area, immediately north of Kekuanaoa Street and west of the existing Post Office.

Direct Impacts and Mitigation Measures: No significant impacts on archaeological/historical resources within the Petition Area are anticipated from the construction and operation of the proposed Airport improvements.

All three of the sites identified within the project sites were evaluated for significance in accordance with criteria established pursuant to Chapter 275-6 (d), State Department of Land and Natural Resources (DLNR), Rules Governing Procedures for Historic Preservation Review. According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of five established criteria.

Based on the criteria, all of the sites identified within the project sites are assessed as solely significant under Criterion "d": "Have yielded, or is likely to yield, information important for research on prehistory or history." These sites have yielded information important for understanding late prehistoric to historic land use at Hilo International Airport. The mapping, written descriptions, photography, and test excavation at one of the three sites adequately documents the sites and no further work or preservation is recommended. No further work or preservation is recommended for the portion of the Puna Trail alignment within the project site, as well preserved examples of the trail are present outside of the project area.

The archaeological inventory survey for the project sites was submitted to the State DLNR Historic Preservation Division and is pending their review and concurrence.

Indirect Impacts: No indirect impacts to archaeological or historic resources are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts to archaeological or historic resources are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.12 CULTURAL RESOURCES

A Cultural Impact Assessment was prepared for the proposed Airport Improvements and is included in Appendix F. The assessment provides an overview of native Hawaiian cultural resources, practices and beliefs pertaining to the ahupua'a within which the project site is located, and an assessment of the potential impacts of the proposed improvements. In addition, the assessment focuses on the community of Keaukaha, which is situated immediately adjacent to, and which has had a long relationship with the Airport.

3.12.1 Traditional Land Use Patterns and Resources

The Airport is located in the ahupua'a of Waiākea, and the varied landscape extends from Pu'u Kipū at an elevation of 6,289 feet above sea level to the coast of Puhi Bay and Lelewi. Situated on the windward coast of Hawai'i Island, Waiākea lies on the lower eastern slopes of Mauna Loa and is bounded by the adjoining ahupua'a of Kea'au to the north and the Hilo-Puna district boundary to the south. Waiākea and principally the cultural resources, practices and beliefs associated with the kahakai (shoreline area), kula kai (coastal plains) and wao 'ama'u (lowland wet forest) regions and the community of Keaukaha, was the focus of this assessment.

Hawaiians devised a harmonious and prosperous existence with the land through various divisions of the land and ocean. One such division of land followed ecological zones, rainfall patterns, soil types and natural vegetation. These specific zones could vary from island to island, and by district depending on rainfall, vegetation, and areas of use. Within each zone, depending on the island and the district a variety of plants were available to the inhabitants for occupational, medicinal, and spiritual uses. Identifying that ecological resource zones are typically distributed in bands or belts around the islands, land divisions for resource management extended from the ocean to the mountains following natural ridgelines and topographical features. Within the ahupua'a of Waiākea there are five distinct vegetation zones that correspond with rainfall and elevation.

Waiākea is a large ahupua'a within the moku of Hilo, situate in a portion now known as South Hilo. Pi'opio was an 'ili kūpono of Waiākea, and Honohononui was another smaller land division within Waiākea. Makaokū, another smaller land section and heiau was named for the husband of the goddess Hina and was associated with Mokuola as well as with fishing practices using ko'a (dedicated fishing grounds).

Waiākea was included among the lands personally held by Kamehameha and was passed on to Kamehameha II and Kamehameha III. During the reign of Kauikeaouli Kamehameha III in the 1840s, land tenure in Hawai'i entered a transitional period terminating in the "Great

Mahele" of 1848, which furnished the facility for the acquisition of real estate in fee simple. Kauikeaouli after reserving certain lands for himself as his own private property, surrendered the majority of the lands to his chiefs and people. The lands of Waiākea were retained by Kauikeaouli and became part of the Crown Lands, set aside for the prosperity of the kingdom.

The productivity of the lands and seas, abundant natural forest resources, the comfortable climate, and recreation sites supported a healthy population and endeared Waiākea to the ali'i class for generations. The resources of the different environmental and ecological zones were utilized to support the native population. Along the coast fishponds were constructed to raise and harvest fish, an important source of protein. Inland the decomposed lava and consistent rainfall created fertile lands for growing kalo and other food crops. Hala groves provided an abundance of lau hala for weaving and house thatching. The forest, which extended within a few miles of the coast, provided timber, an array of occupational and medicinal trees and plants, as well as a number of bird species.

The productivity of Waiākea and the ability to support a significant population was directly attributable to its extensive water resources. Traditionally, numerous fresh water springs and three streams watered the lands of Waiākea; Waiolama, Waiākea and Wailoa. Along the western border of Waiākea with neighboring Kūkūau flowed Waiolama stream, and Waiākea and Wailoa streams flowed through the center of Waiākea. These streams and springs provided for numerous fishponds along the banks of the streams and also along the coast. The fish ponds were stocked primarily with the fry of 'ama'ama (mullet) and awa (milkfish) and sometimes āhole and served as an important source of protein. In Waiākea, the fish from Mohouli, Kalepolepo, Waihole and Ho'akimau fishponds were reserved for the ali'i.

The ocean fisheries associated with Waiākea including Hilo Bay, Kūhiō Bay, and Puhī Bay were other important resources of the ahupua'a. A variety of fishing methods were employed some that required great skill while others were more recreational or social. Fish was the primary source of protein in the Hawaiian diet. Some fish such as aku, ahi and 'ōpelu were typically dried and could be preserved for consumption at a later time, or could be used in trade for other necessities including kalo. Near to the shore and along the rocky coastline women and children typically gathered different varieties of limu, 'opihi, wana, hā'uke'uke, 'ōpae, and crabs including, 'a'ama, 'alamihī and kuahonu.

3.12.2 Keaukaha Hawaiian Home Lands

After the "Great Mahele" of 1848, a total of 37 native tenants made claims to lands within the ahupua'a of Waiākea of which 27 were awarded. None of the awarded lands are situated within the project area. Most of the claims were made for kīhāpai (small land division, cultivated plot), pā (yard or pen), pā hale (house lot) and kipi kalo (taro patches). Award, register and testimony records also mention a burial site, 'ōhi'a and hala groves, 'ulu trees, kukui trees, the ponds and springs.

In the early 1900s, Prince Jonah Kūhiō Kalanianaʻole recognized that the population of full-blooded Hawaiians was steadily decreasing and he sought out ways to revitalize the Hawaiian people and get them back on the land. At the request of the Legislature of the Territory of Hawaiʻi and the persistence of Prince Kūhiō and his supports, the United States Congress passed the Hawaiian Homes Commission Act in 1920. The Act reserved 203,500 acres of public lands to help realize Prince Kūhiō's vision of 'Āina Ho'opulapula, or "restoration through the land." The original draft of the Hawaiian Homes Commission Act did not include any lands in Waiākea. The Territorial Legislature inserted these lands, and several others, in their amendment to the Act in 1921. In 1924 the Hawaiian Homes Commission set the metes and bounds for land in Pana'ewa and Keaukaha. Hawaiian Homes Commission Resolution #2 dated, April 19, 1924, created Keaukaha Tract I consisting of 621.52 acres and Keaukaha Tract II containing 1,376.48 acres. Houselots were quickly awarded in Tract I, however, over time much acreage in Tract I has been taken for various State and County uses. Other lands were sold to private interests justified by the need to raise fund to pay for roads and waterlines. Originally referred to as "Kūhiō Settlement," Keaukaha was the second unit of homestead lands offered; the first settlement was on the island of Moloka'i. According to the Executive Officer and Secretary of the Hawaiian Homes Commission in 1925, Keaukaha was not suited to agriculture, and therefore the lots were offered to Hawaiians and part-Hawaiians for residential purposes with the expectation that working men would form a majority of the applicants.

By mid-1929, the Hawaiian Homes Commission had allotted 239 house lots at Keaukaha, and 205 of these were occupied by Hawaiian families. Following these early years the Keaukaha settlement continued to experience growth in the 1930s. By 1933, the population of Keaukaha had grown to 1,300 and the settlement consisted of 219 one-acre lots of which approximately 175 had improvements and 201 were occupied. Although the population in Keaukaha had declined to 964 in 1939, the settlement was being expanded with the construction of a new subdivision consisting of 180 half-acre lots. At this time the threat of World War II loomed on the horizon.

3.12.3 Hilo Airport and Keaukaha Hawaiian Home Lands

Nearly simultaneously with the development of Keaukaha Hawaiian Home Lands, in 1925, construction of Hilo Airport began. Originally 100 acres was set aside for the Hilo Airport. By 1927, clearing and grading of the Airport site was proceeding rapidly with the expectation that the field would be partially ready for use of aircraft by December 1, 1927. The Airport was dedicated in February 1928. On May 16, 1928, the Hilo Airport was enlarged by 41.45 acres by Executive Order 334. In 1929, the Hilo Airport was expanded another 86 acres to total 227.45 acres, compared to the original 100 acres. As tensions leading up to World War II increased, the Hawaiian Homes Commission found it advisable to transfer lands to be set aside for an addition to the Hilo Airport. At the outbreak of war, Hilo Airport was taken over by the Army Engineers, and an Air Corps fighter squadron stationed there. The Engineers constructed military installations and continued the expansion of runways, taxiways, and

parking aprons. This began a period of turmoil for the Keaukaha settlement scarring relations between the residents of Keaukaha and Hilo Airport.

After the war, military operations at Hilo Airport steadily decreased, and in September 1946 it was returned to the Territory for operation as a civil airport however, operational control was retained by the Air Force. It was not until 1952 that the airport was returned to civilian control by the surrender of leases, easements, licenses and permits and improvements were transferred to the Territory by the Federal Government. In 1952 Executive Order No. 1519 set aside a significant portion of government land and former Hawaiian Homes Land to the Hawai'i Aeronautics Commission for the Hilo Airport.

Relations between the Keaukaha settlement and Hilo airport were additionally strained when in 1958, Territorial Governor William Quinn set aside by Executive Order No. 1841, nearly 92 acres of Hawaiian Homes Commission land, to be used by the airport for a runway. This area had already been subdivided and affected 66 homestead lots and portions of roadways. The agreement that allowed the transfer of these lands to the Hawai'i Aeronautics Commission also called for a land exchange between the Territory of Hawai'i and the Hawaiian Homes Commission. The land exchange was never carried out and these 92 acres became the focus of contention between the Hawaiian Homes Commission, Keaukaha residents and the Department of Transportation from 1975 to 1980.

In 1962, Executive Order Nos. 2025 and 2027 transferred 194.215 acres of Hawaiian Homes Land in Keaukaha to the State Department of Transportation for the extension of Runway 8-26. Approximately 146 acres of this area had already been subdivided into homestead lots and access roads, affecting 216 homestead lots and various roadways. In exchange, the Department of Hawaiian Home Lands received 192.691 acres of land in Pana'ewa and 1.515 acres in Keaukaha. Soon after, in the late 1960s the State embarked on plans to develop a jet-capacity terminal for Hilo, which was completed and dedicated in 1976.

In 1975 in response to an inquiry from the Department of Hawaiian Home Lands, the Attorney General opined that the setting aside of Hawaiian Home lands by Executive Order No. 1841 was improper. The Hawaiian Homes Commission commenced civil action and while awaiting a ruling, local native Hawaiians, Keaukaha residents and supporters staged two protest demonstrations against the improper transfer of Keaukaha Hawaiian Home lands for airport use. On August 14, 1980 the Circuit Court ruled that Executive Order No. 1841 was illegal and thereby, null and void. As a result, the Department of Transportation was required to make rental payments for the use of the 92 acres of illegally acquired Keaukaha land.

The Department of Hawaiian Home Lands and the Department of Transportation entered into an "Interim Agreement" on April 6, 1981 whereby the Department of Transportation agreed to make interim rental payments of \$36,000.00 per month to the Department of Hawaiian Home Lands for the continued use and possession of the Hilo Airport property. To resolve these outstanding land and lease rent disputes, on November 30, 1984 the Department of

Hawaiian Home Lands, Department of Transportation and Department of Land and Natural Resources entered into what has been termed the "Tri-party Agreement". In simplified terms, The Department of Hawaiian Home Lands would agree to exchange 167.285 acres of land at Hilo Airport, Kamuela Airport and Moloka'i Airport appraised at \$17.42 million for 13.822 acres of State lands at Shafter Flats Industrial Development appraised at \$17.36 million. The Department of Transportation would convey to the Department of Land and Natural Resource excess airport lands at Hilo and Kahului. In addition to the land exchange, a fund was to be established to repay the Department of Hawaiian Home Lands for lease rental due for use of the airports prior to the agreement. On April 23, 1986 an exchange deed transferred the lands between the State Department of Land and Natural Resources and the Department of Hawaiian Home Lands.

The result of these numerous transfers of land and the displacement of many Hawaiian homesteaders from Keaukaha has been a lingering feeling of betrayal and mistrust towards the Department of Transportation. Some members of the Keaukaha community are wary of any proposal related to Hilo Airport and because of the manner in which land was previously taken from Hawaiian Home Lands time and time again, many community members are suspicious of Department of Transportation activities. In the past, the actions that have led to the development of Hilo Airport as it exists today has been at the expense of the Keaukaha Hawaiian Homestead community.

3.12.4 Cultural Resources, Practices, and Beliefs

Interviews or consultation with the community confirm many important cultural practices and values. Interviews demonstrate the inheritance of cultural knowledge through the generations and acknowledge the permanence of the cultural value system and the continuity of cultural practice and use. Interviews are valuable in demonstrating the individual relationship to people and places, whereas technical studies and historical texts are typically compiled by those not of the land or culture and, thus, fail to convey cultural value or significance.

The cultural resources, practices, and beliefs identified through the interviews relate to the Keaukaha region and the Hilo Airport property and are summarized as follows:

Traditional and Customary Practices

- Traditional and customary activities and practices that occurred and continue to occur in the Keaukaha, Waiākea region include: all types of fishing, ocean and shoreline gathering including salt which is still collected at Leleiwi; and, gathering of all types of plant materials including medicinal plants, lau hala and hau.
- All types of ocean activities are extremely important to the Keaukaha community, for subsistence as well as recreation. Activities include all types of fishing (net,

spear, pole, etc.), gathering varieties of limu, gathering varieties of shellfish ('opihi, hā'uke'uke, wana, pāpa'i) and gathering salt.

- In the early years of the Keaukaha settlement, prior to the establishment of Keaukaha homesteads and in the early years of the homestead settlement, some families had graves on their property, and family members were buried on their own land. While some of these burials have been moved to cemeteries, some may still remain.
- Heiau and other religious sites are located along the shoreline and in the coastal lands.
- In addition to growing food crops such as 'uala and kalo in their yards, early Keaukaha residents also kept gardens and planted vegetables, flowers and fruit trees in that portion of Pana'ewa forest that bordered the Keaukaha settlement prior to the expansion of the airport. Medicinal and occupational plants were also gathered from the forest area that bordered the early Keaukaha settlement.
- Pana'ewa is the name of the lands that extend from the forests up mauka to the shoreline and include the lands occupied by the airport. Prior to the development of the airport Pana'ewa forest renowned for its great 'ōhi'a lehua stands and fragrant maile encompassed the area immediately mauka or south of the Keaukaha community. Residents of Keaukaha used to follow trails into the forest to gather among other plants 'ōhi'a lehua and maile. In the area of the airport was a big cinder cone named Pu'u Maile, and was a place at which maile could be found.

Traditional knowledge and practice is incorporated and taught at Ke Ana La'ahana, a public charter school situated in Keaukaha. For example, the students are taught how to restore and reestablish the productive fish husbandry capabilities of a series of fishponds along the coast which include Hale O Lono, Wailoa, Keonepahu, Kaumealani, and Kamokuna. At Kamokuna there is also a māla where students learn and continue traditional agrarian expertise by growing different varieties of kalo, 'uala, and other native and Polynesian introduced plants. These uses need to be sustained because it supplements and sustains the people and culture. In addition to Ke Ana La'ahana, Lauhuki Preschool and Hālau O Kekuhi are also located at the Pā Hoaka the Native Hawaiian family-based education center situated in Keaukaha and administered by the Edith Kanaka'ole Foundation.

3.12.5 Airport- and Project-Related Concerns

During the examination of cultural resources, practices, and beliefs in the Waiākea ahupua'a and Keaukaha region, concerns were identified with regard to the Hilo International Airport and the proposed improvements.

Airport Related Concerns

- The greatest impact of the airport has been on gathering practices. It is as if the whole area is void -- does not exist anymore. Pana'ewa continues to exist, but when they built the airport, they took away the cultural significance and the traditions associated with that part of Pana'ewa. The airport has destroyed that portion of Pana'ewa forest and has in effect cut off the community from Pana'ewa and the traditional places for gathering 'ōhi'a lehua and maile.
- By taking away the land and the forest, people do not know how to gather in their own land, they don't learn how to take care of their own place. Now, if they need to gather, they need to go way up into the larger forest or to another ahupua'a. Before the airport, everything was available in their "own backyard" and people could live off of the land. It was possible to pick lau hala, and pick maile. Now it is "somebody else's yard." It forces practitioners to gather outside of their area, forces them to gather from another person's place and from the greater forest.
- Within Keaukaha, community members conduct ceremonies or cultural protocols that require stillness and quiet that are disrupted by passing planes.
- There is a noticeable difference in airport related noise since Hawaiian Airlines started using their new 717s. These new planes are much quieter. Aloha Airlines still uses the older, noisier planes, which is noticeably louder. Aloha Airlines also operates cargo flights early in the morning and late into the evening disturbing what are typically quiet hours and sleep time.
- The airport has cut off the Hawaiian people from that piece of their 'āina. From a small airstrip the airport grew and grew, taking more and more land, nearly all at the expense of the Keaukaha community and Hawaiian homestead lands.
- The history of the airport taking land from the Keaukaha community, and forcing people to move without any compensation or reparations for the community has left a feeling of hurt, suspicion and mistrust in many residents. Due to past airport related efforts, many residents are concerned that airport expansion will continue to take Hawaiian Home Lands and displace additional homesteaders.

Project Related Concerns

- The proposed improvements could potentially lead to an increase in the types of services and activities (passenger, cargo, helicopter, and military) at Hilo Airport. The improvements could potentially lead to airport expansion and the resumption of overseas flights.

- Groves of pū hala are located within the airport property from which practitioners, including weavers, hula dancers, and lei makers gather lau hala, ulehala and the fruit for a variety of uses including, mats, baskets, cordage, and lei. The location of the proposed helicopter facility is one of the areas where the pū hala grows, and from which practitioners gather. If airport security or personnel observes any gathering, the gatherers are asked to stop gathering and to leave airport property.
- Prior to the airport, all needed gathering was done in the Keaukaha area and the ahupua'a of Waiākea, there was no need to go to other ahupua'a or to the greater forest. Limiting gathering practices within the airport property requires practitioners to go to other ahupua'a or to the greater forest.
- Any type of noise barrier or noise wall will further cut off the people from the land. Many residents enjoy the view, the wind that blows across the land and the connection they feel with the 'āina. The barrier or wall would minimally reduce airport noise while restricting ability to enjoy the environment and was therefore undesirable.
- For those families that accept sound-attenuation retrofitting for their homes, or for those families that choose to accept an avigation easement, what guarantee will there be that noise levels will not increase? A continuing noise monitoring program for the Keaukaha community should be implemented and sustained.
- Displacement and relocation of homesteaders is not recommended. The transfer of Hawaiian Home Lands for airport related purposes is also not recommended. If, however, relocation of homesteaders is pursued, it should be voluntary, through one-on-one negotiations with the individual lessees, done with sensitivity and with adequate compensation for the homesteaders.

On every island, native Hawaiian cultural beliefs and practices are continually affected by the loss of land to development that intrudes into the natural setting, disturbs traditional sites, cuts off the traditional access network, eliminates resource areas, and changes the landscape. As people with a strong cultural attachment to this 'āina, with the understanding that this 'āina is the elder sibling of the Hawaiian, the loss of land results in a feeling of loss, regret and alienation for many Hawaiians.

For many residents of Keaukaha, these feelings of loss are compounded by feelings of distrust and suspicion as a result of a long history of dispute with the Department of Transportation and its predecessors over the taking of Hawaiian Home Lands. On more than one occasion Hawaiian homesteaders have been displaced and relocated to accommodate airport expansion which has led to fears that airport expansion may someday eliminate Keaukaha homesteads. Homesteaders displaced from their lands received compensation, but there were acres of Hawaiian Homes' land at Keaukaha that were transferred for airport use without specific compensation to the Keaukaha community. Some of these lands were transferred in exchange for other lands in Pana'ewa or on O'ahu, but for many Keaukaha

residents it is as if their community was forced to give up their land without receiving anything in return. This history should shape future relations between Hilo International Airport and the Keaukaha community, and through acknowledgement and understanding a positive relationship founded on honesty and integrity may be achieved.

3.12.6 Findings of the Cultural Impact Assessment

Based on an assessment of the impacts of the proposed project on the resources, beliefs and practices identified, the proposed improvements at Hilo International Airport will have minimal negative cultural impact upon native Hawaiian cultural resources, beliefs and practices. The following summarizes the findings of the Cultural Impact Assessment relative to the proposed Hilo International Airport improvements:

1. Based on a review of Land Commission claims and awards at the time of the Great Mahele, the project site was not claimed for house lot or agricultural use.
2. Based on the findings of the archaeological inventory survey conducted for the proposed improvements, project specific consultations, and a review of historical documentation, no religious sites or burials are located within the project site. However, consultation and review of historical documentation identifies that burials may exist within airport property.
3. Prior to the development of the airport the Keaukaha settlement was bounded to the south by Pana'ewa forest which was a primary cultural resource for medicinal and occupational plants, as well as being the physical manifestation and home of Pana'ewa the deity. The development of the airport has eliminated this cultural resource as well as the ability to perpetuate traditional and customary practices including appropriate protocols associated with Pana'ewa.
4. Prior to the development of the airport traditional access ways connected the community of Keaukaha with Pana'ewa forest. However, with the development of the airport these traditional accesses have been cut off.
5. Cultural practitioners including weavers, lei makers and hula dancers continue to access and gather from traditional hala groves located on airport property.

3.12.7 Impacts and Recommendations

The proposed improvements at Hilo International Airport will have minimal negative cultural impact upon native Hawaiian cultural resources, beliefs and practices, as the development of existing airport facilities and boundaries has already eliminated any cultural resources within the area. Every effort should be made by the Department of Transportation to foster a positive relationship with the Keaukaha community. Some community members view

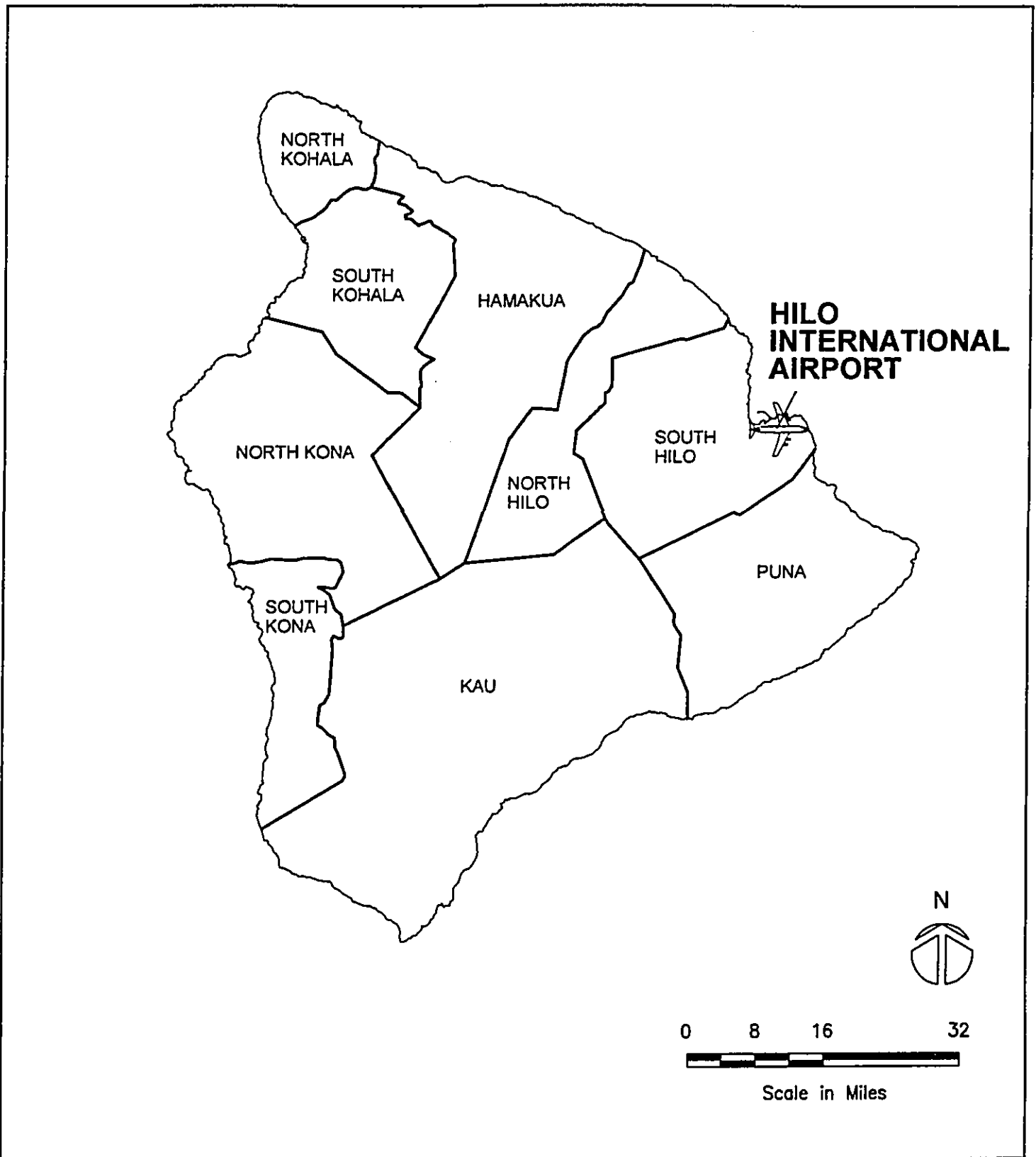
current efforts to engage Keaukaha school children in airport activities and public meetings held to keep community members informed of airport plans as a positive first step.

1. Any burials found on the project site should not be disturbed pending consultation with the Department of Land and Natural Resources State Historic Preservation Division. The treatment of any remains should be in accordance with procedures approved by the Hawai'i Island Burial Council and the State Historic Preservation Division.
2. Practitioners that utilize the hala groves on airport property including the site identified as the proposed helicopter facility should be permitted to gather from these hala trees. If necessary, a right-of-entry policy could be established to allow practitioners access to the hala groves with prior notification to airport security or personnel.
3. Considering the history of land transfers and exchanges as Hilo International Airport was developed, additional land acquisition should be pursued with caution. If any properties are identified for potential acquisition, the landowner and lessee should be immediately notified. Any transfer of land must be voluntary. Negotiations should be conducted on a one-to-one basis between the DOT-A and the landowner/lessee. Any transfer of land must include fair and equitable compensation to the landowner/lessee.
4. For many community residents, any type of noise wall or barrier would cut off the Keaukaha community from the environment and is therefore not recommended.
5. Participation in the retrofitting of residences for sound attenuation or in the aviation easement project should be voluntary. Landowners and/or lessees for whom this option is available should be notified individually, and negotiations should be conducted on a one-to-one basis. To ensure that participants are aware of noise levels, and to inform them of any significant increases, continued noise monitoring for the Keaukaha community may be necessary.

3.13 SOCIO-ECONOMIC CONSIDERATIONS

3.13.1 Population

Hilo International Airport's service area includes most of the eastern portion of the island. This includes the districts of North and South Hilo, and Puna (see Figure 3-9). Portions of the Hamakua and Ka'u districts are also served by the Airport. It is these districts whose economies are most impacted by air traffic at Hilo International Airport.



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

**HILO INTERNATIONAL AIRPORT
ENVIRONMENTAL ASSESSMENT**

HAWAII COUNTY DISTRICT MAP

JANUARY 2002

Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 3-9

Table 3-2 contains data on Hawaii's resident population for the 1980 through 2000. It shows that while the State's population has increased by 14.9 percent (%) and 9.3% over the 1980 to 1990 and 1990 to 2000 periods, respectively, Hawaii County's population growth outpaced this rate, growing at 30.7% and 23.6%, respectively. Overall, Hawaii County's population has grown by 61.5% during this 20-year period. The population growth has been higher for Hawaii, Maui, and Kauai than it has been for Oahu. This indicates that the largest growth rates will be on the Neighbor Islands. Long range forecasts of the State's growth indicate that this trend will continue.

The population in all nine of Hawaii County's districts increased between 1980 and 2000. The South Kohala district experienced the highest percentage of growth during this period (185%). The Puna district experienced the largest increase in the number of new residents (19,584 persons). The populations of South Hilo, Ka'u, and Hamakua grew more slowly, (12.1%, 57.5%, and 19.1%, respectively), while the population of North Hilo experienced only a small increase of 2.47%.

Area	1980	1990	2000	Percent Change	
				1980 to 1990	1990 to 1995
State of Hawaii	964,691	1,108,229	1,211,537	14.9	9.3
C&C of Honolulu	762,565	836,231	876,156	9.7	4.8
County of Maui	70,991	100,504	128,241	41.9	27.6
County of Kauai	39,082	51,177	58,463	30.9	14.2
County of Hawaii	92,053	120,317	148,677	30.7	23.6
Puna	11,751	20,781	31,335	76.8	50.8
S. Hilo	42,278	44,639	47,386	5.6	6.2
N. Hilo	1,679	1,541	1,720	-8.2	11.6
Hamakua	5,128	5,545	6,108	8.1	10.2
N. Kohala	3,249	4,291	6,038	32.1	40.7
S. Kohala	4,607	9,140	13,131	98.4	43.7
N. Kona	13,748	22,284	28,543	62.1	28.1
S. Kona	5,914	7,658	8,589	29.5	12.2
Kau	3,699	4,438	5,827	20.0	31.3

Source: Hawaii State Department of Business, Economic Development & Tourism, *The State of Hawaii Data Book 2000*.

State population forecasts are shown in Table 3-3. According to these projections, the neighbor island population is expected to grow at a faster rate than Oahu. Hawaii County is expected to have the largest percentage increase over the 20 year planning period (55,800 person increase, or 37%). Kauai and Maui Counties are projected to grow at a slightly slower rate, by 21,900 (36%) and 31,400 (25%), respectively. The City and County of Honolulu on Oahu is expected to have the lowest percentage population increase with a gain of 146,600, or 16% by the year 2020.

TABLE 3-3 POPULATION FORECASTS FOR THE STATE OF HAWAII AND COUNTIES 2005 – 2020				
County	Resident Population			
	2005	2010	2015	2020
Honolulu	944,000	980,000	1,016,000	1,050,600
Hawaii	16,600	173,900	189,100	205,400
Kauai	66,600	72,000	77,300	82,800
Maui	132,800	140,900	148,000	155,400
Source:	State of Hawaii, Department of Business, and Economic Development, and Tourism, Research and Economic Analysis Division. <i>Population and Economic Projections for the State of Hawaii to 2020</i> (Report of Results and Methodology). May 1997.			

Direct Impacts: No adverse impacts on the population of Hilo or Hawaii County are anticipated as a result of the construction and operation or the proposed improvements. The proposed improvements will serve the needs of the County's growing population and air transportation needs by providing improved cargo service, reducing overflights of residential areas, and mitigating airport noise levels.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.13.2 Economy

The economy of East Hawaii is rapidly changing. Sugar cultivation, which had been one of the region's main economic activities, is no longer in existence, with the last sugar mill closing in 1996. Diversified agriculture has emerged in its place, producing crops such as macadamia nuts, papayas, guava, ginger root, flowers, and livestock. Diversified agriculture is now the major source of employment in the Puna, North Hilo, Hamakua, and Ka'u Districts.

Hilo is the County seat as well as its most populous town, and most State government departments have offices there. As the Island's main metropolitan area, it also functions as the County's industrial, commercial, and distribution center. Hilo Harbor is one of the Island's two deep-water ports and it serves as the primary shipping point for the diversified agriculture industry. The University of Hawaii at Hilo, a four-year university located less than a mile from the Airport, is expected to continue as an important economic force.

Both Puna and Hamakua are becoming residential communities that serve other districts, with Puna serving the Hilo area and Hamakua serving the fast growing Kohala resort area.

The per capita income of Hawaii County households is below that of the other counties in the State. Unemployment data also reflect that Hawaii County's unemployment rate is above the State average.

Direct Impacts: No adverse impacts on the economy of Hilo or Hawaii County are anticipated as a result of the construction and operation or the proposed improvements. The proposed cargo facility will benefit diversified agricultural producers as well as the greater community by expanding the market, lowering freight costs, and providing timely delivery of fresh produce and other perishables.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.13.3 Visitor Industry

The State and Hawaii County economies are strongly influenced by the visitor industry. Visitor arrival statistics in Table 3-4 show that the number of visitors coming to the State has been increasing since its decline over a three-year period during the early 1990s. Westbound visitors have increased in the last few years. Prior to 1996, westbound visitor counts had been on the decline, but since then have been increasing. Eastbound visitors have been making up for the loss of westbound visitors for most of the 1990s. In 1997 there was a slight decrease in eastbound visitors from the prior year; this decline is expected to continue in 1998. Overall, however, eastbound visitor counts have increased 215% since 1980, while westbound visitors have only increased by 34% over the same period. However, westbound visitors make-up over 60% of the arrivals to the State.

Except for the three-year decline in tourism in the early 1990s, visitors to the State have been increasing. There has been some variation among the Neighbor Islands. Kauai was hit especially hard due to Hurricane Iniki, which ravaged Kauai in late 1992. Since then some recovery has occurred. The other two counties, Hawaii and Maui, have been up and down with no noticeable pattern during the 1990s.

The data show that growth in Neighbor Island arrivals are up from 1980, however, during the 1990s visitor arrivals have been flat at best. Between 1980 and 1990, Neighbor Island westbound visitor arrivals increased by 95%, but since 1990 arrivals have been decreasing or have been flat. Hawaii County has experienced a 22% decrease in westbound visitor arrivals over the period from 1990 to 1997. In this same period, Kauai County has experienced a 33% decline and Maui County has experienced a 21% decline in westbound visitor arrivals. Visitor arrivals also vary widely on Hawaii Island. The majority of visitors stay in West Hawaii (87%), while only 13% stay in East Hawaii.

**TABLE 3-4
VISITOR ARRIVAL STATISTICS FOR THE STATE
AND NEIGHBOR ISLAND COUNTIES: 1980-2000**

Year	Overnight and Longer Visitors	Westbound Visitors	Eastbound Visitors	Westbound		
				Hawaii County	Kauai County	Maui County
1980	3,934,504	3,046,132	888,372	761,103	781,409	1,378,189
1981	3,934,623	2,974,791	959,832	672,683	757,811	1,389,892
1982	4,242,925	3,278,525	964,400	678,170	733,295	1,550,080
1983	4,368,105	3,396,115	971,990	714,030	692,130	1,645,720
1984	4,855,580	3,721,380	1,134,200	760,940	814,590	1,854,690
1985	4,884,110	3,708,610	1,175,500	697,380	832,580	1,831,110
1986	5,607,000	4,256,890	1,350,590	786,930	1,014,650	2,001,870
1987	5,799,830	4,204,010	1,595,820	782,550	1,032,840	1,908,780
1988	6,142,420	4,264,730	1,877,690	782,360	1,043,710	1,884,050
1989	6,641,820	4,705,320	1,936,500	946,540	1,138,230	2,113,100
1990	6,971,180	4,719,730	2,251,450	1,170,830	1,286,360	2,389,970
1991	6,873,890	4,584,460	2,289,430	975,610	1,085,290	1,925,460
1992	6,513,880	3,980,120	2,533,760	909,490	714,880	1,859,680
1993	6,124,230	3,764,520	2,359,710	875,690	444,690	1,790,480
1994	6,430,300	3,997,820	2,432,480	866,300	729,800	1,900,330
1995	6,629,180	3,933,110	2,696,070	850,820	789,640	1,855,730
1996	6,829,800	4,004,450	2,825,350	882,940	828,340	1,830,140
1997	6,876,140	4,077,950	2,798,190	915,410	856,930	1,879,320
1998	6,738,220	4,245,270	2,492,950	961,420	903,840	1,944,200
1999	6,741,037	4,255,621	2,485,416	942,359	929,657	1,866,531
2000	6,948,595	4,446,936	2,501,659	925,356	884,407	1,834,631

Source: *Hawaii County General Plan*, County of Hawaii, Planning Department, November 1989.
County of Hawaii Data Book, 2000, County of Hawaii, Department of Research And Development, July 2000.

Table 3-5 contains projected visitor arrivals through the year 2020 as projected by the State of Hawaii Department of Business, Economic Development and Tourism (DBEDT). Visitor arrivals are projected to increase Statewide through the year 2020. Most of the visitor arrival increases projected for Hawaii County are expected to go to West Hawaii. The decline in visitor traffic to Hilo International Airport led to the shift of overseas airlines from Hilo to Kona International Airport in West Hawaii. This situation is not expected to change.

Direct Impacts: No adverse impacts on the visitor industry of Hilo or Hawaii County are anticipated as a result of the construction and operation of the proposed improvements. The proposed heliport and general aviation improvements will accommodate Hawaii's growing air-tour industry and provide adequate facilities for both helicopters and small fixed wing aircraft at a safe distance from commercial jet aircraft.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

TABLE 3-5 VISITOR ARRIVAL PROJECTIONS FOR THE STATE OF HAWAII 2000-2020				
Number of Visitor Arrivals Per Year				
	2005	2010	2015	2020
Origin				
Total ¹	9,127,400	10,326,900	11,401,700	12,588,400
Non-Japanese	6,115,400	6,815,700	7,411,100	8,056,600
Japanese	3,012,100	3,511,100	3,990,600	4,531,800
Eastbound	4,016,100	4,750,400	5,358,800	6,042,400
Westbound	5,111,400	5,576,500	6,042,900	6,546,000
Average Daily Visitor Census				
Oahu	103,200	110,600	117,500	124,700
Maui	58,000	64,900	71,300	78,300
Kauai	25,800	31,300	35,700	40,600
Hawaii	27,900	33,700	39,600	46,400
Total (State) ¹	214,900	240,500	264,100	290,100
Number of Hotel Rooms				
Oahu	42,178	44,000	46,291	50,303
Maui	22,386	23,989	26,014	28,567
Kauai	9,794	11,327	12,807	14,064
Hawaii	11,851	13,537	16,009	18,208
Total (State)	86,208	92,853	101,121	111,142

¹ - Numbers may not add correctly due to rounding

Source: State of Hawaii, Department of Business, and Economic Development, and Tourism, Research and Economic Analysis Division. Population and Economic Projections for the State of Hawaii to 2020 (Report of Results and Methodology). May 1997.
State of Hawaii, Department of Business, Economic Development, and Tourism, The State of Hawaii Data Book, 1997.

3.14 POLICE, FIRE AND MEDICAL SERVICES

The Hilo area is served by the Hawaii County Police Department. The police assigned to the Hilo International Airport area are from the Hilo Station, which is located approximately 1.4 miles to the west, on Kapiolani Street.

There are three County fire stations in Hilo. The closest fire station is located on Keaa Street, which is north of the Airport. This fire station has direct access to the Airport through Gate 35 and is staffed 24-hours a day. For aviation emergencies, there is a 24-hour Aircraft Rescue and Fire Fighting (ARFF) facility located on the Airport property.

Medical services are available at Hilo Memorial Hospital. The hospital is located approximately 3.1 miles from the Airport.

Direct Impacts: No significant increase in police or EMS service to the Airport is expected, as the proposed improvements will not generate an increase in the number of cargo, heliport, and general aviation users. The new facilities are intended to serve the existing users.

No significant impacts to fire services are anticipated as a result of the proposed project. Construction of the proposed cargo, helicopter, and general aviation facilities will negligibly increase the need for fire protection at Hilo International Airport. The project will be designed and built in compliance with the applicable City and County of Hawaii fire code requirements.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.15 INFRASTRUCTURE AND UTILITIES

The existing infrastructure and utility lines in the vicinity of the project site are shown in Figure 3-10 and are discussed in the sections that follow.

3.15.1 Water System

Existing water resources for the Hilo area come from ground water (65.5 percent) and surface water (34.5 percent). The water system in the Hilo area is served by one main system, and four smaller systems. The Hilo system consumes a daily average of 5.49 million gallons of water from five surface systems and five deep well sources. The surface sources are the Waiakea-Uka Tunnel, the Oloo Flume Spring, Lyman Spring, Wailuku River-Hookelekele Stream, and Kaohama Stream. Three of the smaller systems use deep well sources, while the one remaining source draws its supply from surface water. Industrial and Commercial sources draw water from smaller wells.

Water is supplied to Hilo International Airport by the Hawaii County Department of Water Supply. Water consumption for 1998 was approximately 28,000 gallons per day. Existing water mains and lines are shown in Figure 3-10. There is a 12-inch water line, which loops around the western, northern, and southern edges of the Airport, and crosses under Runway 8-26. Service to the industrial area, main passenger terminal and the Military Reservation is provided by 12-inch branches off the main line. Water for the facilities in the northwest corner of the Airport is supplied through a system of 8-inch lines that tap the Department of Water Supply's 12-inch transmission line along Kanoelehua Avenue.

Direct Impacts: Construction and operation of the proposed Airport improvements will not impact the County of Hawaii Department of Water Supply's surface and ground water sources. Operation of the proposed improvements will not result in a significant increase in water consumption demand, as the proposed action will not generate an increase in the number of users. The new cargo, helicopter, and general aviation facilities are intended to serve the existing users.

Cargo Facility: Currently, a branch of the 12-inch line that services the Airport Industrial Area crosses beneath the northern half of the proposed cargo site. A section of this water line will be abandoned and a new 12-inch line will be installed beneath the parking lot and access driveway around the north end of the proposed buildings. Laterals will be provided to supply domestic water to the new buildings. A separate line, connecting to the existing 12-inch line, will be installed to provide water for the fire sprinkler system. Fire hydrants will be provided in the parking lot area.

Helicopter Facility: Water service to the proposed heliport is expected to be provided off the 12-inch water line south of Runway 3.

General Aviation Improvements: General aviation improvements would be served by the 8-inch water line extending along Brig Road.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.15.2 Wastewater System

Wastewater from the main passenger terminal is collected in an underground pipe system and pumped to the Airport's wastewater treatment plant located south of the passenger terminal. The plant consists of an aeration unit, and treated effluent is disposed of in an injection well.

The estimated capacity of the treatment unit is approximately 18,000 gallons per day for each of two tanks, or 36,000 gallons total.

Wastewater from other areas of the Airport, including the old terminal, is serviced by individual cesspools and septic tanks. The relatively young lava flows on which the Airport is built are quite porous, and no problems have been reported with this method of waste disposal.

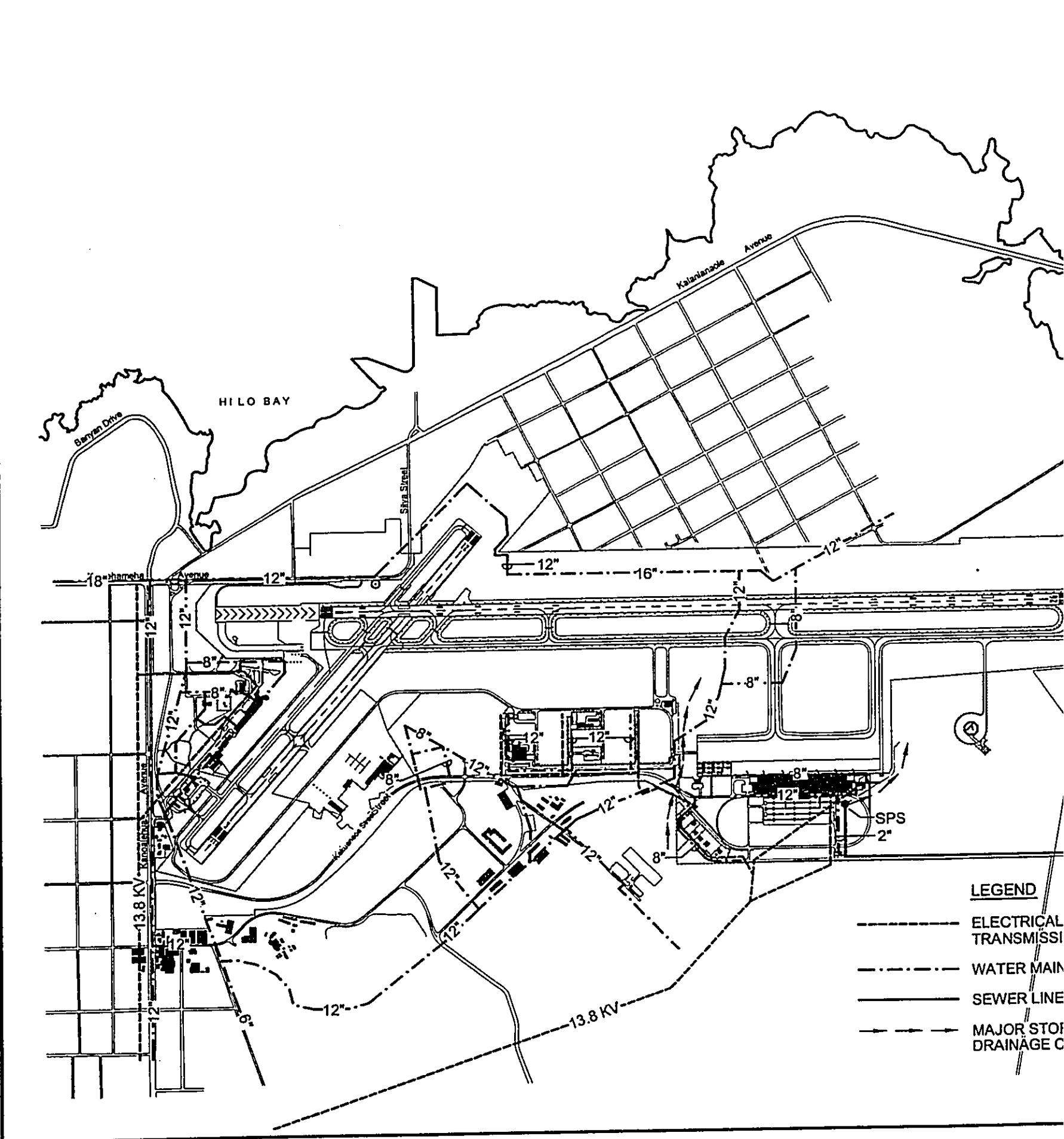
In past decades, the Hawaii Department of Health (DOH) permitted cesspools in Hawaii due to their apparently insignificant impact on drinking water quality, the low density of population, and the availability of affordable alternative treatment and disposal technology. In recent years, all of the above elements have changed and in response, the DOH now prohibits the construction of new cesspools over drinking water aquifers. As custodian of the airport land and its resources, DOT-A is committed to upgrade the treatment and disposal of wastewater generated by Airport operations from its current use of cesspools to septic tanks and drain field by 2003.

Direct Impacts: Operation of the proposed improvements will create a negligible increase in the volume of wastewater treated at the wastewater treatment plant, as the proposed facilities will serve the existing users that are currently serviced by individual cesspools and septic tanks.

Cargo Facility: Wastewater system improvements will include a sewer line from the new buildings with sewer manholes extending along the length of the proposed parking lot to a new pump station. A force main will connect the pump station to the existing sewer line along the terminal loop road, south of the commuter/air taxi terminal. Wastewater generated by the proposed project will be disposed of through the Airport's wastewater treatment plant. The proposed wastewater improvements will be designed to accommodate the facility's peak flow levels and the proposed project will conform to applicable provisions of the Department of Health's (DOH) Administrative Rules, Chapter 11-62, "Wastewater Systems."

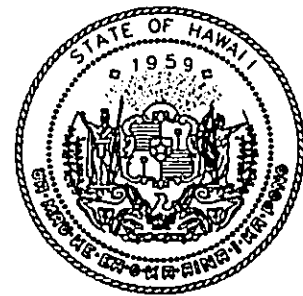
Heliport and General Aviation Facilities: Wastewater improvements will be provided either through the installation of a septic tank and leaching field system acceptable to the DOH or through connection with the County sewer system just west of Kanoelehua Avenue.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.



LEGEND

- ELECTRICAL TRANSMISSION
- · - · - WATER MAIN
- SEWER LINE
- > MAJOR STORM DRAINAGE



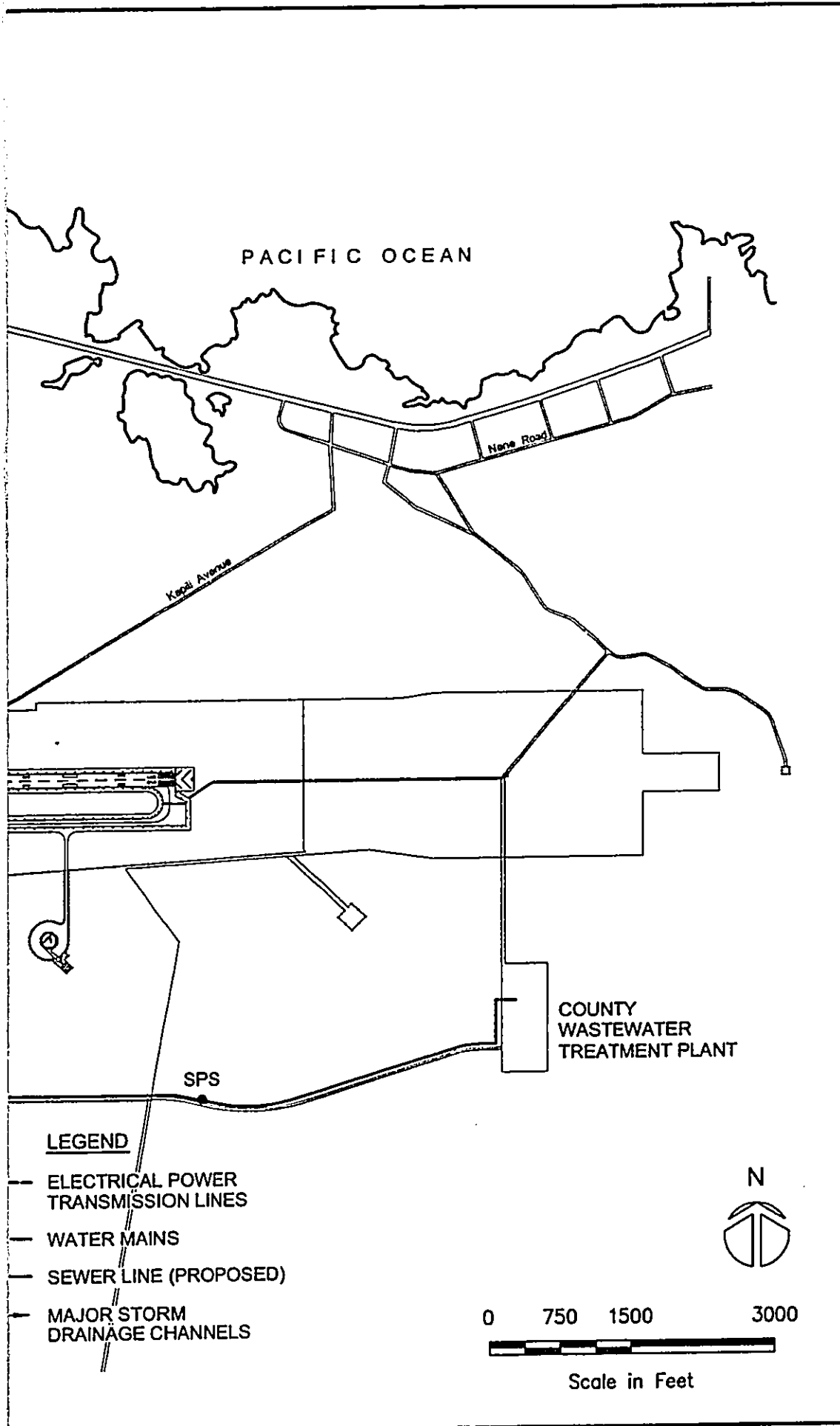
Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HILO
INTERNATIONAL
AIRPORT
ENVIRONMENTAL
ASSESSMENT

EXISTING
UTILITIES

JANUARY 2002
Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 3-10



Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.15.3 Solid Waste

Solid waste generated by the Airport is stored on-site in dumpsters. A private firm, Pacific Waste, collects the waste daily and disposes the material at the County of Hawaii's Hilo landfill.

Direct Impacts: Construction and operation of the proposed buildings will not generate a significant impact on the total volume of solid waste generated at the Airport. Operation of the proposed facility will not result in a significant increase in waste, as the improvements are intended to serve the existing users.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.15.4 Roadway Access and Traffic

Access to the Airport is from Kanoelehua Avenue via the airport access road, Kekuanaoa Street, which leads to the passenger terminal and parking lot. There are numerous connector roads between Kekuanaoa Street and Mokuea Street, the parallel service road for the airport industrial area. Mokuea Street provides access to the site for the proposed cargo facility. Access to the northwest portion of the Airport, where the existing cargo and general aviation facilities are located, is via Hualani Street and Brig Road. Access to the site for the proposed general aviation improvements is also via Brig Road.

A traffic study was conducted by Wilson Okamoto and Associates to evaluate existing roadway and traffic operations in the vicinity of the Airport and to identify and assess the traffic impacts resulting from the implementation of the proposed improvements at the Airport (see Appendix G). Existing site conditions, including general traffic flow, intersection operations, parking lot ingress and egress operations, traffic circulation, lane use, and general traffic operational deficiencies were assessed and are summarized below.

In the vicinity of the Airport, Kanoelehua Avenue is primarily a two-way, six-lane, divided State roadway. At the main entrance to the Airport, Kanoelehua Avenue intersects Kekuanaoa Street, a two-way, two-lane, County of Hawaii roadway. Approximately 850 feet south of this signalized intersection, Kanoelehua Avenue intersects Leilani Street, and approximately 850 feet north of the intersection with Kekuanaoa Street, Kanoelehua Avenue intersects Hualani Street. Both Leilani Street and Hualani Street are predominantly two-way, two lane, County of Hawaii Roadways.

The morning peak hour of traffic generally occurs between 7:00 a.m. and 8:00 a.m. in the proximity of the Hilo International Airport. In the afternoon, the peak hour of traffic generally occurs between 3:30 p.m. and 4:30 p.m. At the intersection of Kanoelehua Avenue and Kekuanaoa Street, the total traffic volume is heavier during the afternoon peak hour, with a total of 2,612 vehicles traveling on Kanoelehua Avenue and 1016 vehicles traveling on Kekuanaoa Street, compared to the 2,384 and 436 vehicles observed, respectively, during the morning peak hour. Both the northbound and southbound approaches of Kanoelehua Avenue operate adequately during the morning and afternoon peak hours. Likewise, the eastbound and westbound approaches of Kekuanaoa Street also operate adequately.

Traffic conditions at the intersection of Kanoelehua Avenue and Leilani Street were very similar to those observed at the Kekuanaoa Street intersection. Traffic is heavier during the afternoon, and all approaches to the intersection operate adequately. Leilani Street experiences a lighter volume of traffic compared to Kekuanaoa Street, carrying 388 vehicles in the morning and 475 in the afternoon.

Peak hour traffic along Kanoelehua Avenue at the intersection with Hualani Street is consistent with the trend described above, with heavier traffic volumes observed during the afternoon peak hour. Both the northbound and southbound approaches of Kanoelehua Avenue operate adequately. The westbound and eastbound approaches of Hualani Street also operate adequately, with slightly more vehicles utilizing the roadway in the afternoon. Hualani Street, however, experiences a significantly smaller volume of cars relative to Kekuanaoa Street and Leilani Street, with a total of 56 vehicles in the morning and 124 vehicles in the afternoon.

Roadway improvements related to the proposed hold cargo facility include an access driveway from Mokuea Street to the proposed parking area. The existing service road providing access from Mokuea Street to the apron area will need to be realigned. Therefore, a new service road will be constructed from Mokuea Street around the north end of the proposed buildings to connect with the aircraft parking apron. An access road located between the buildings will also provide gated access from the proposed parking area to the aircraft apron. Additionally, an access driveway will be constructed from the lease lot immediately east of the project site to Mokuea Street. Security fences will be erected along the site perimeter and between the cargo buildings to ensure controlled access to the airport operating area. The existing security gate on Mokuea Street will be relocated further north toward the Aircraft Rescue and Fire Fighting facility to allow public access to the cargo facility parking lot.

Roadway improvements related to the proposed heliport include a new service road providing access to the proposed lease lots and parking area.

The proposed terminal parking expansion to the east of the existing parking area will accommodate employees, customers, delivery, and semi-trailer vehicles with 109 employee/customer stalls, four ADA stalls, and 20 loading stalls.

Construction and operation of the proposed improvements will not adversely impact traffic flow within the airport area. Benefits of the proposed roadway and parking improvements include a decrease in the number of vehicles travelling around the terminal loop, as well as additional parking specifically to serve cargo and helicopter customers.

Direct Impacts and Mitigation Measures: A traffic study was conducted in the vicinity of the Airport, and included the intersections of Kanoelehua Avenue with Kekuaaoa Street, Leilani Street, and Hualani Street. Total traffic volumes for the three intersections were projected for the year 2010 without the construction of the proposed Airport improvements. Year 2010 projected traffic demands are similar to the existing conditions, and the twelve intersection approaches are expected to perform adequately under the projected minimal increase in traffic demand.

Under the cumulative year 2010 traffic conditions where the demand generated by the proposed Airport improvements is superimposed on the projected external traffic demand, the three intersections are still expected to perform adequately, as any increase is such that operating conditions will remain similar to the existing conditions. The proposed improvements are anticipated to have a minimal impact on traffic operations in the vicinity of the Airport.

Indirect Impacts: There are no indirect impacts to roadway access anticipated as a result of the proposed improvements.

Cumulative Impacts and Mitigation Measures: Although the proposed improvements are not expected to generate a significant increase in the number of vehicles utilizing the roadways, the traffic study found that the existing roadway conditions at specific locations could be improved to ease traffic circulation between different areas of the airport and near the passenger terminal. The following recommendations were made to improve existing circulation patterns:

- Modify Hualani Street Connection: Brig Road is located adjacent to the old terminal area and serves as the main access road to the southwest portion of the Airport. The connection between Hualani Street and Brig Road should be modified to facilitate easier access to the cargo, general aviation, and other facilities located in the area. The existing road alignment requires motorists to navigate a curved section of roadway to access Brig Road from Hualani Street. Brig Road could be realigned to eliminate the curved section and provide a more direct connection between the two streets.

- **Modify Kanoelehua Avenue and Hualani Street Intersection:** The intersection of Kanoelehua Avenue and Hualani Street should be converted to a four-way intersection where all turning movements are allowed. Currently both approaches of Hualani Street only allow right-turn traffic movements. With the existing traffic patterns motorists have two options to reach the main terminal from the southwest corner of the Airport. The first option requires motorists to turn right onto Kanoelehua Avenue from Hualani Street and then complete a U-turn maneuver to reach the Airport's main access road. The second option requires motorists to utilize minor roads to reach Kamehameha Avenue. After turning left onto Kamehameha Avenue, motorists complete a second left turn onto Kanoelehua Avenue to reach the Airport's main access road. If the intersection of Kanoelehua Avenue and Hualani Street were converted to a four-way intersection, these vehicles could turn left from Hualani Street onto Kanoelehua Avenue and directly access the Airport's main access road.

- **Modify Terminal Area Parking Lot:** The exit from the terminal area parking lot could be relocated from its existing location at the east end of the parking lot to the west end. Currently, vehicles exiting the parking lot must travel around the terminal loop road and through the terminal area in order to exit the Airport. This creates conflicts between vehicles exiting the parking lot and vehicles picking up or dropping off passengers.

3.15.5 Aircraft Parking Apron

The proposed cargo facility includes improvements to a 7,500 square foot section of the apron fronting the east side of the proposed cargo facility to create a concrete hardstand for aircraft. Improvements to this portion of the pavement will be specifically constructed to withstand the forces generated beneath the nose gear as the aircraft powers in and out. To accommodate the future expansion of cargo facilities, the Hilo International Airport Master Plan includes the northward expansion of the parking apron by approximately 150 feet in the area between Taxiway "E" and the project site. The location of the cargo facility does not conflict with plans for apron expansion.

Direct Impacts: No significant impacts to the apron area are anticipated as a result of the construction and operation of the proposed facility. The apron improvements are appropriately sited to accommodate air cargo activity at the proposed facility. Although helicopter operators will be required to move their aircraft to an interim heliport location at the opposite end of the terminal, helicopter ticket counter operations will remain in the western part of the passenger terminal.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.15.6 Drainage System

The Airport is built on permeable lava that generally facilitates drainage. Storm runoff from the runways, taxiways, and aircraft parking aprons flows into the grassed areas on either side of the pavement where it percolates into the ground.

Runoff from the main parking area fronting the main passenger terminal is diverted into a ditch on the terminal's eastern side. The ditch carries water to an open area east of the terminal. Run-off from terminal roofs and roadways in the Airport area is disposed of in dry wells. The same method is used to dispose of runoff from the Airport Industrial Area. Along the western edge of the project site is an existing open drainage channel. Drainage in the immediate vicinity is facilitated through this swale.

Industrial activity at a transportation facility, as defined by federal Environmental Protection Agency regulations, consists of "those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified in the regulations." If only one lessee on the airport property engages in industrial activities, the entire airport is required to obtain a National Pollutant Discharge Elimination System (NPDES) permit as a single transportation facility.

A NPDES permit is not required for the Hilo International Airport facility at this time since there is no runoff from the airport into State waters. When planning begins for the installation of a drainage system to divert runoff into State waters, application for a NPDES permit must also be made.

Direct Impacts and Mitigation Measures: No adverse impacts on the existing drainage patterns within the project vicinity are anticipated as a result of the construction and operation of the proposed Airport improvements. During construction, the contractor will ensure that functions of the existing area drainage patterns are not impacted or impeded.

Cargo Facilities: Drainage improvements associated with the proposed air cargo facility include a piping system to collect and direct runoff from the downspouts and truck dock wells on the west side of the proposed buildings to the existing swale along the western boundary of the proposed parking lot. This open channel both conveys and dissipates runoff. The proposed parking area will be graded so as to direct surface runoff toward the drainage swale. On the east side of the proposed buildings, splash blocks will be provided at the downspouts and runoff from this area will sheetflow onto the apron and northward to the grassy area beyond the pavement.

Construction of the proposed cargo facility will disturb approximately 460,000 square feet of ground surface, including the parking lot and expansion of the aircraft parking apron. During construction, storm runoff may carry increased amounts of sediment as a result of erosion along newly excavated surfaces. This will be mitigated by compliance with the County's grading ordinance. The contractor will be responsible for instituting appropriate erosion control measures such as the retention of ground cover and the phasing of construction to minimize erosion of exposed areas, the frequent watering of graded areas, the use of temporary berms and cut-off ditches where necessary, and the reestablishment of ground cover as early as possible in the construction schedule.

After construction is completed, the additional 325,000 square feet of impermeable surface created by the proposed buildings and related improvements are not anticipated to affect the natural drainage patterns within the vicinity of the project site.

Helicopter and general aviation facilities: Drainage for helicopter and general aviation facilities are expected to be handled by dry wells and surface runoff onto undeveloped areas.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

3.15.7 Electrical and Communication Systems

Electrical power is provided to the Airport by the Hawaii Electric Light Company (HELCO). A 13.8-kilovolt overhead transmission line that originates at HELCO's Kanoelehua Generating Station, southwest of the Airport passenger terminal, serves facilities on the south side of the Airport. The line splits into two and enters Airport property at the western and eastern ends of the parking lot. Each line runs underground through twin 4-inch ducts to the electrical equipment building located east of the passenger terminal, across from the bus parking area.

Electrical service to the rental car baseyards and the Airport industrial area is provided via a continuation of the westernmost 13.8 kV line. The underground lines and electrical equipment have been sized to allow build-out on all of the industrial parcels without having to upgrade current transmission facilities.

HELCO's service to the old terminal area is provided by an underground line, which taps into the company's 13.8 kV line along Kanoelehua Avenue. It runs along Kanoelehua Avenue to the utility building north of the old passenger building. Service to other buildings

in that area is via underground lines from the utility building. These lines were designed to accommodate the much heavier electrical demand that existed when almost all of the Airport facilities were located here.

Telephone service to all areas within the Airport is provided by Verizon Hawaii (formerly GTE Hawaiian Telephone Company).

Direct Impacts: No significant impacts are anticipated on the electrical or communication systems as a result of the construction and operation of the proposed airport improvements. Existing underground electrical and telephone lines will be extended to service the new structures. Close coordination with HELCO and Verizon during the construction phase will ensure that utility lines will not be adversely impacted and that electrical and phone service to adjacent areas will not be interrupted. Operation of the proposed improvements will result in a slight increase in energy consumption demand, however, this increase is negligible and will not require an upgrade of the electrical system. Communications systems can be accommodated via existing service lines and the project does not present any conflict regarding telephone service.

Indirect Impacts: No indirect impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

Cumulative Impacts: No cumulative impacts are anticipated as a result of the construction and operation of the proposed Airport improvements.

SECTION 4
RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS

4. RELATIONSHIP TO PLANS, POLICIES AND CONTROLS

This section discusses the conformance and consistency of the proposed Hilo International Airport Improvements to the applicable State of Hawaii and County of Hawaii plans, policies, and controls.

4.1 HAWAII STATE PLAN

The Hawaii State Plan, embodied in Chapter 226, Hawaii Revised Statutes (HRS), serves as a guide for goals, objectives, policies, and priorities for the State. The State Plan provides a basis for determining priorities, allocating limited resources, and improving coordination of State and County plans, policies, programs, projects, and regulatory activities. The proposed Airport improvements support and are consistent with the following State Plan goals, objectives and policies:

State Goals

In order to guarantee, for present and future generations, those elements of choice and mobility which insure that individuals and groups may approach their desired levels of self-reliance and self-determinations, it shall be the goal of the State to achieve:

- (1) A strong, viable economy, characterized by stability, diversity and growth that enables fulfillment of the needs and expectations of Hawaii's present and future generations.*
- (2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems and uniqueness, that enhances the mental and physical well-being of the people.*
- (3) Physical, social and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring and of participation in community life.*

Comment: The proposed Airport improvements would contribute to the attainment of the above goals by creating both short- and long- term employment opportunities for the residents of the County of Hawaii, ensuring the efficiency of import and export cargo services vital to Hawaii County's daily activities, and enhancing transportation services for residents and the visitor industry that is important to the stability of the County's economy. The proposed improvements would also generate State and County tax revenues, which will contribute to economic stability, and government services to the residents and visitors of the County.

Objectives and Policies for Population

Objective: *It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.*

- Policies:**
- (2) Encourage an increase in economic activities and employment opportunities on the Neighbor Islands consistent with the achievement of physical, economic, and social objectives contained in this chapter.*
 - (3) Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the State.*

Comment: The proposed improvements have been developed to enable the Airport to operate more efficiently and economically. The proposed improvements are expected to provide long-term employment opportunities for residents, and economic opportunities for businesses providing equipment, supplies, and services for aviation related activities.

Objectives and Policies for the Economy – In General

- Objectives:**
- (1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people.*
 - (2) A steadily growing and diversified economic base that is not overly dependent on a few industries.*

- Policies:**
- (6) Strive to achieve a level of construction activity responsive to, and consistent with, State growth objectives.*
 - (8) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.*
 - (9) Foster greater cooperation and coordination between the government and private sectors in developing Hawaii's employment and economic growth opportunities.*
 - (10) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.*
 - (11) Maintain acceptable working conditions and standards for Hawaii's workers.*

Comment: The proposed improvements will generate a significant amount of construction activity, along with new private jobs in related and secondary activities, that would create opportunities for upward mobility and family economic security. The construction activity would provide steady employment opportunities for other types of construction trades.

Objectives and Policies for the Economy – Visitor Industry

Objective: *Planning for the State's economy with regard to the visitor industry shall be directed towards achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaii's economy.*

- Policies:**
- (1) *Support and assist in the promotion of Hawaii's visitor attractions and facilities.*
 - (2) *Ensure that visitor industry activities are in keeping with the social, economic and physical needs and aspirations of Hawaii's people.*
 - (4) *Encourage cooperation and coordination between the public and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.*
 - (5) *Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaii's people.*

Comment: The proposed Airport improvements would provide the air transportation facilities needed to serve both residents and visitors. The proposed improvements would provide short- and long-term construction and other employment to the residents of Hawaii County, and have been carefully designed and developed with public input to meet existing and future market demands.

Objectives and Policies for the Economy – Potential Growth Activities

Objective: *Planning for the State's economy with regard to potential growth activities shall be directed towards achievement of the objectives of development and expansion of potential growth activities that serve to increase and diversify Hawaii's economic base.*

- Policy:**
- (1) *Facilitate investment and employment in economic activities that have the potential for growth such as diversified agriculture, aquaculture, apparel and textile manufacturing, film and television production and energy and marine-related industries.*

Comment: The proposed cargo improvements will provide increased market opportunities for the County of Hawaii to transport their existing products, develop new or expanded products or services and increase interest in investment in and outside of the County.

Objectives and Policies for Facility Systems – Transportation

- Objectives:** (1) *An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.*
- (2) *A statewide transportation system consistent with planned growth objectives throughout the State.*
- Policies:** (1) *Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter.*
- (2) *Coordinate state, county, federal and private transportation activities and programs toward the achievement of statewide objectives.*
- (6) *Encourage transportation systems that serve to accommodate present and future development needs of communities.*
- (8) *Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs.*
- (9) *Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification.*
- (10) *Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii.*

Comment: The proposed improvements are designed with sensitivity to the needs of affected communities and the quality of the area's environment and will provide short- and long-term employment, enhancing the economic opportunities such as those reflected in an increase in cargo shipments. The proposed improvements are intended to complement existing and future airport facilities and accommodate the present and future air transportation needs of Hawaii County. The improvements will upgrade the Airport to a more efficient and convenient air transportation facility for the movement of residents, visitors, and cargo.

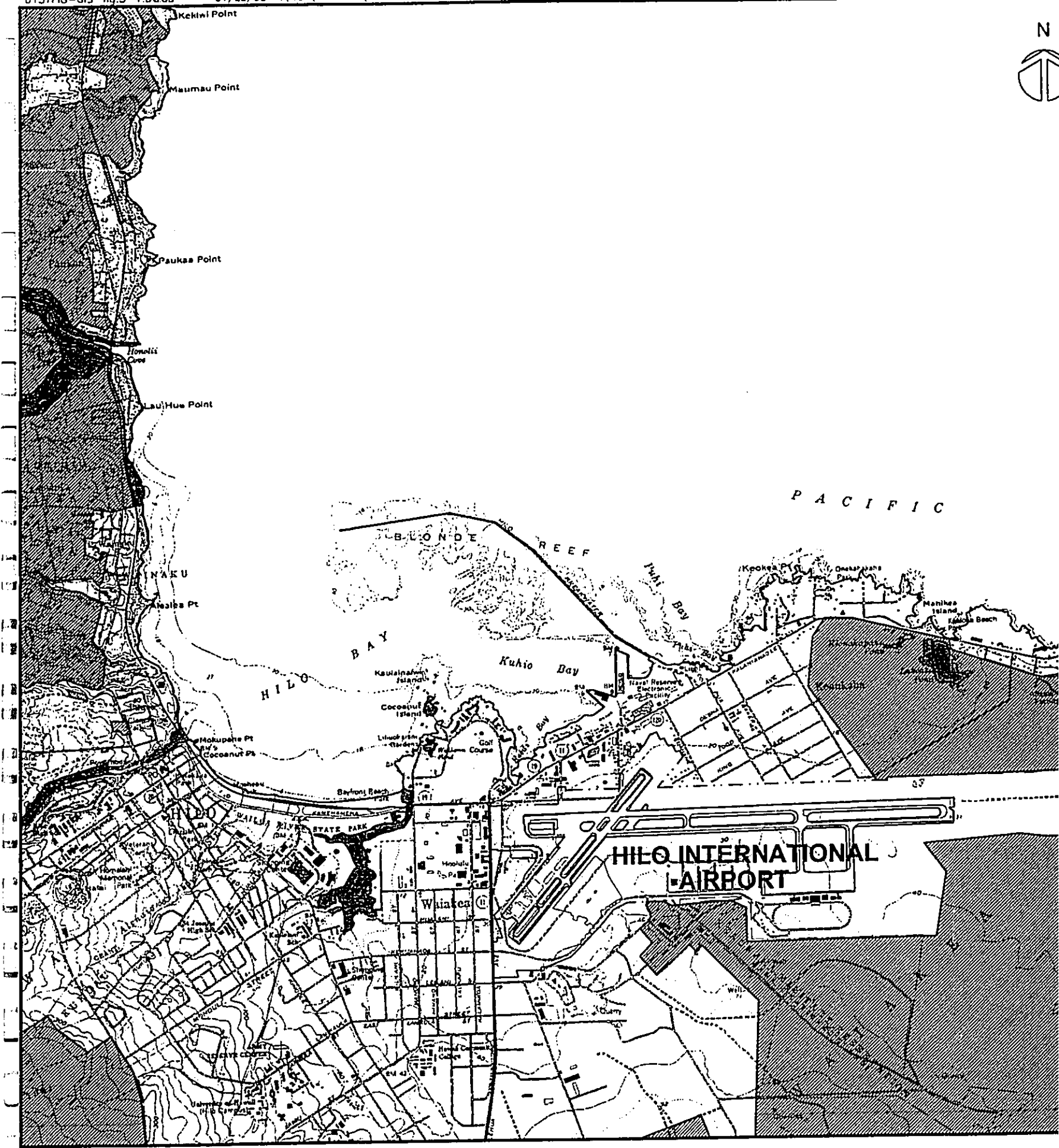
4.2 STATE LAND USE DISTRICT CLASSIFICATION

The State Land Use Law regulates the classification and use of lands in the State to accommodate growth and development, and to conserve natural resources. The State Land Use Commission regulates land use throughout Hawaii under the provisions of Chapter 205, Hawaii Revised Statutes. There are four land use districts: Urban, Rural, Agricultural, and Conservation. The Commission determines the district boundaries and establishes permissible uses in each district.

The Hilo International Airport lies entirely within the Urban District and the proposed air cargo facility is an allowable use (see Figure 4-1). Urban District uses surround the Airport to the north, west and southwest, while the remainder of the lands surrounding the Airport are classified as Agricultural. The nearest lands classified as Conservation are located approximately a half-mile north of Runway 8-26, around Kionakapahu and Lokoaka Ponds.

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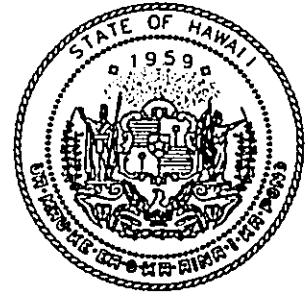
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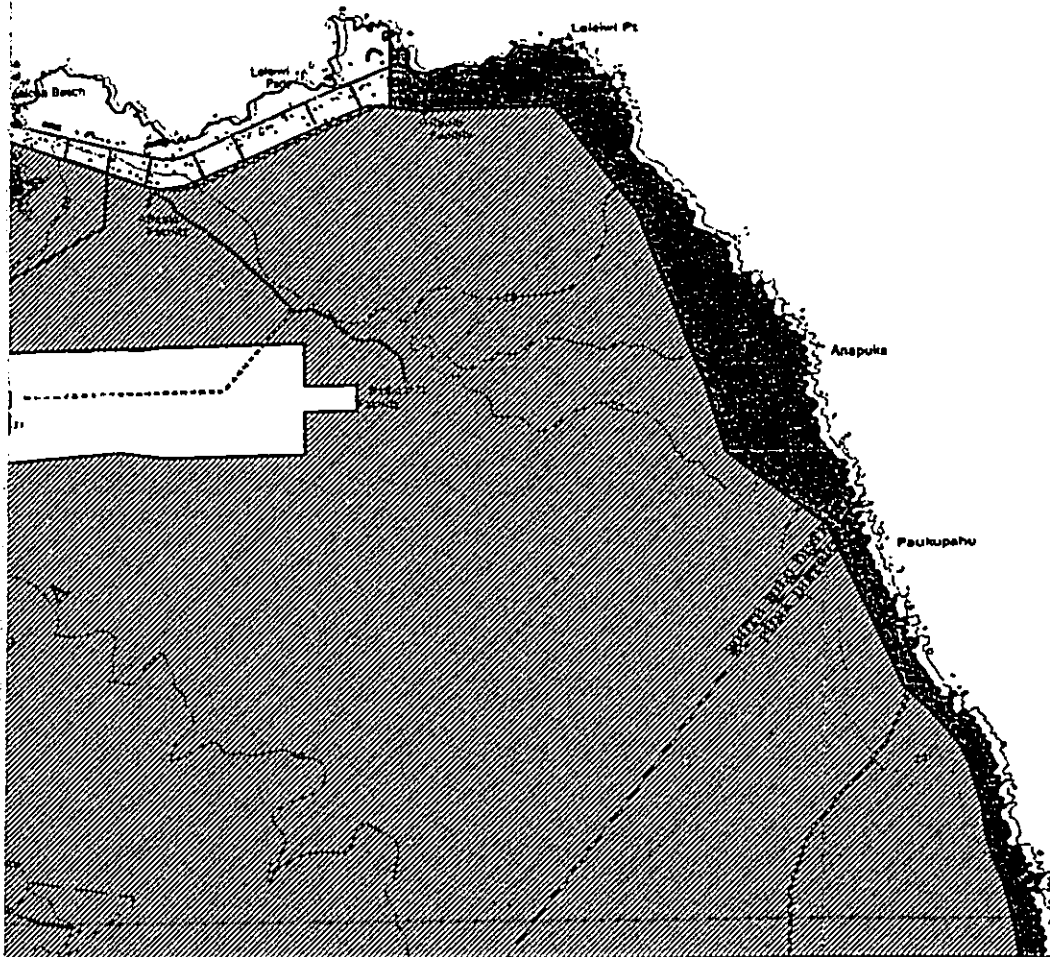
-  Urban
-  Agricultural
-  Conservation



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HILO
INTERNATIONAL
AIRPORT
ENVIRONMENTAL
ASSESSMENT

O C E A N



STATE LAND USE
DISTRICTS

JANUARY 2002
Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 4-1

4.3 COUNTY OF HAWAII ZONING

The County of Hawaii Chapter 25 Zoning Code regulates the type, size, siting and uses of structures within various zoning district classifications.

Hilo International Airport is zoned ML-20, denoting Limited Industrial, 20,000 square feet minimum lot size (see Figure 4-2). Limited Industrial districts are intended for businesses and industrial uses which are generally in support of but not necessarily compatible with those permissible activities and uses in other commercial districts. Airports, heliports and landing strips are permitted uses within the Limited Industrial districts. The maximum allowable building height is forty-five feet. The minimum building site area is 10,000 square feet, and plan approval is required of all structures and uses in ML districts. The proposed airport improvements are permitted uses within the ML-20 district.

Most of the land adjacent to the Airport near the western end is also designated ML-20 (Limited Industrial) or the more permissive MG-1a (General Industrial, 1 acre lot size). This designation only encompasses a width of one block along the western side of Kanoelehua Avenue. Beyond this, the majority of the land is zoned RS-10 (Single-Family, 10,000 square feet lot size).

The Department of Hawaiian Home Lands' (DHHL) Keaukaha Tract I property along the northern edge of the Airport is zoned RS-10 (Single-Family, 10,000 square feet lot size). There is also residential zoned lands northeast of the Airport, along the shoreline. The remainder of land around the Airport is zoned A-5a (Agriculture, 5-acre lot size).

4.4 STATE COASTAL ZONE MANAGEMENT PROGRAM

The State of Hawaii's Coastal Zone Management (CZM) Program, established pursuant to Chapter 205A, Hawaii Revised Statutes, as amended, is administered by the State Office of Planning and provides for the beneficial use, protection and development of the State's coastal zone. The objectives and policies of the Hawaii CZM Program encompass broad concerns such as impact on recreational resources, coastal scenic resources and open space, coastal ecosystems, coastal hazards, and the management of development. The applicability of the CZM objectives and policies to the proposed Airport improvements is as follows:

Recreational Resources

Objective: Provide coastal recreational opportunities accessible to the public.

Comment: The proposed improvements are not anticipated to adversely impact accessibility to nearby coastal recreational resources. The nearest coastal recreational resources are located along Kalaniana'ole Avenue, north of the Keaukaha residential subdivision.

Historic Resources

Objective: Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Comment: The proposed improvements are not anticipated to adversely impact historic and pre-historic resources. As most of the Airport property has already been developed and landscaped for the existing Airport facilities, it is unlikely that any archaeological resources are present beyond those identified in the archaeological survey, as discussed in Section 3 of this EA.

Scenic and Open Space Resources

Objective: Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Comment: The proposed improvements will not adversely impact scenic and open space resources. The proposed improvements are consistent with the current use of the site as an airport and all improvements will comply with building codes and height restrictions. Scenic view planes will not be disrupted.

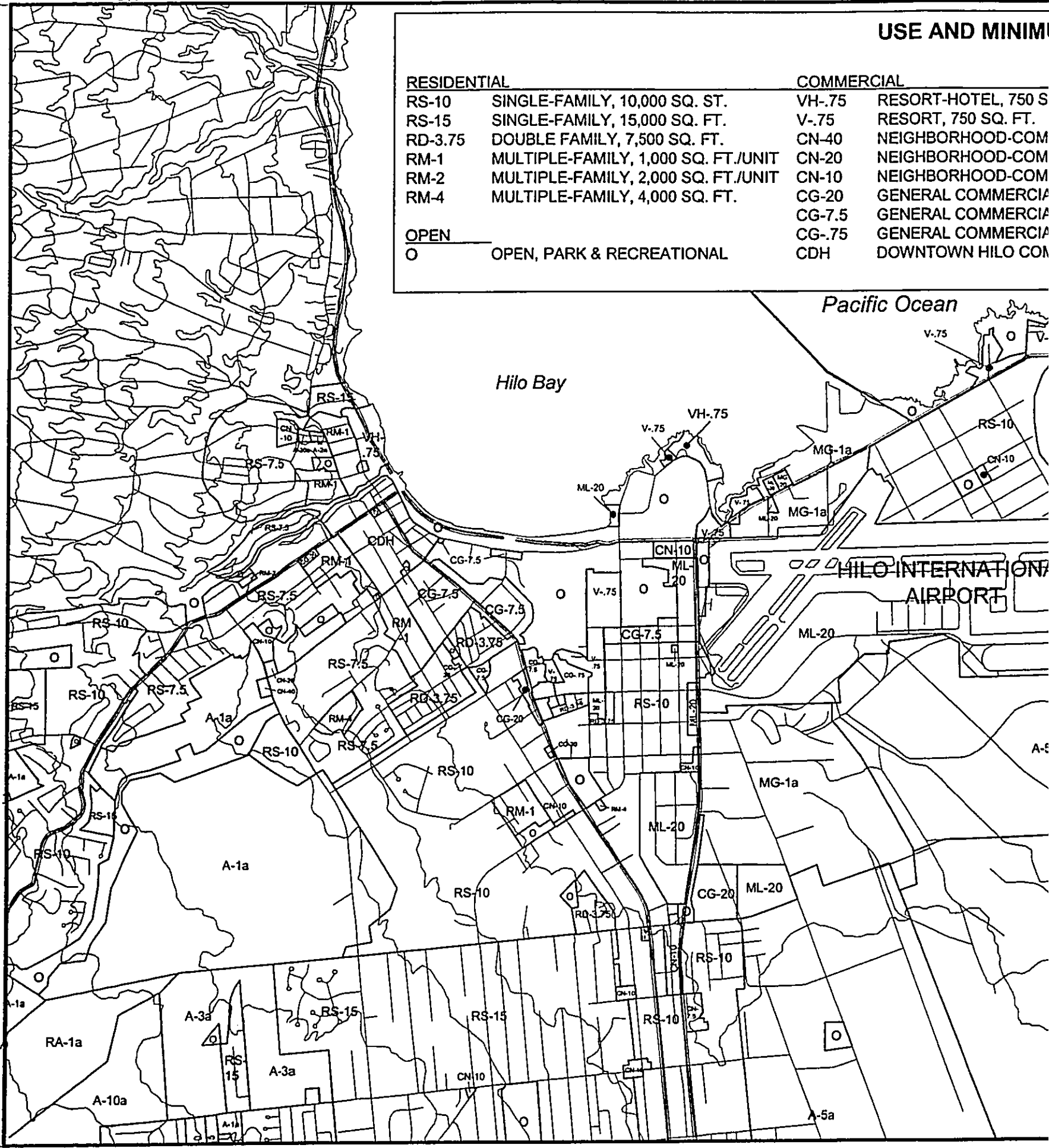
Coastal Ecosystems

Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Comment: The project is not anticipated to have any adverse impacts on coastal resources in the vicinity of the project site. Excavation and grading activities associated with the construction of the proposed improvements will be regulated by the County of Hawaii grading ordinance and the National Pollutant Discharge Elimination System (NPDES) permit requirements administered by the State Department of Health. The grading ordinance includes provisions related to reducing and minimizing the discharge of pollutants associated with soil disturbing activities including grading, grubbing, and stockpiling. The permit requires compliance with a Best Management Practices (BMP) plan which, in turn, requires compliance with County ordinances pertaining to grading, grubbing, stockpiling, soil erosion, and sedimentation.

USE AND MINIMUM

RESIDENTIAL		COMMERCIAL	
RS-10	SINGLE-FAMILY, 10,000 SQ. FT.	VH-.75	RESORT-HOTEL, 750 S
RS-15	SINGLE-FAMILY, 15,000 SQ. FT.	V-.75	RESORT, 750 SQ. FT.
RD-3.75	DOUBLE FAMILY, 7,500 SQ. FT.	CN-40	NEIGHBORHOOD-COM
RM-1	MULTIPLE-FAMILY, 1,000 SQ. FT./UNIT	CN-20	NEIGHBORHOOD-COM
RM-2	MULTIPLE-FAMILY, 2,000 SQ. FT./UNIT	CN-10	NEIGHBORHOOD-COM
RM-4	MULTIPLE-FAMILY, 4,000 SQ. FT.	CG-20	GENERAL COMMERCIA
		CG-7.5	GENERAL COMMERCIA
		CG-.75	GENERAL COMMERCIA
OPEN		CDH	DOWNTOWN HILO COM
O	OPEN, PARK & RECREATIONAL		



AND MINIMUM LOT SIZE

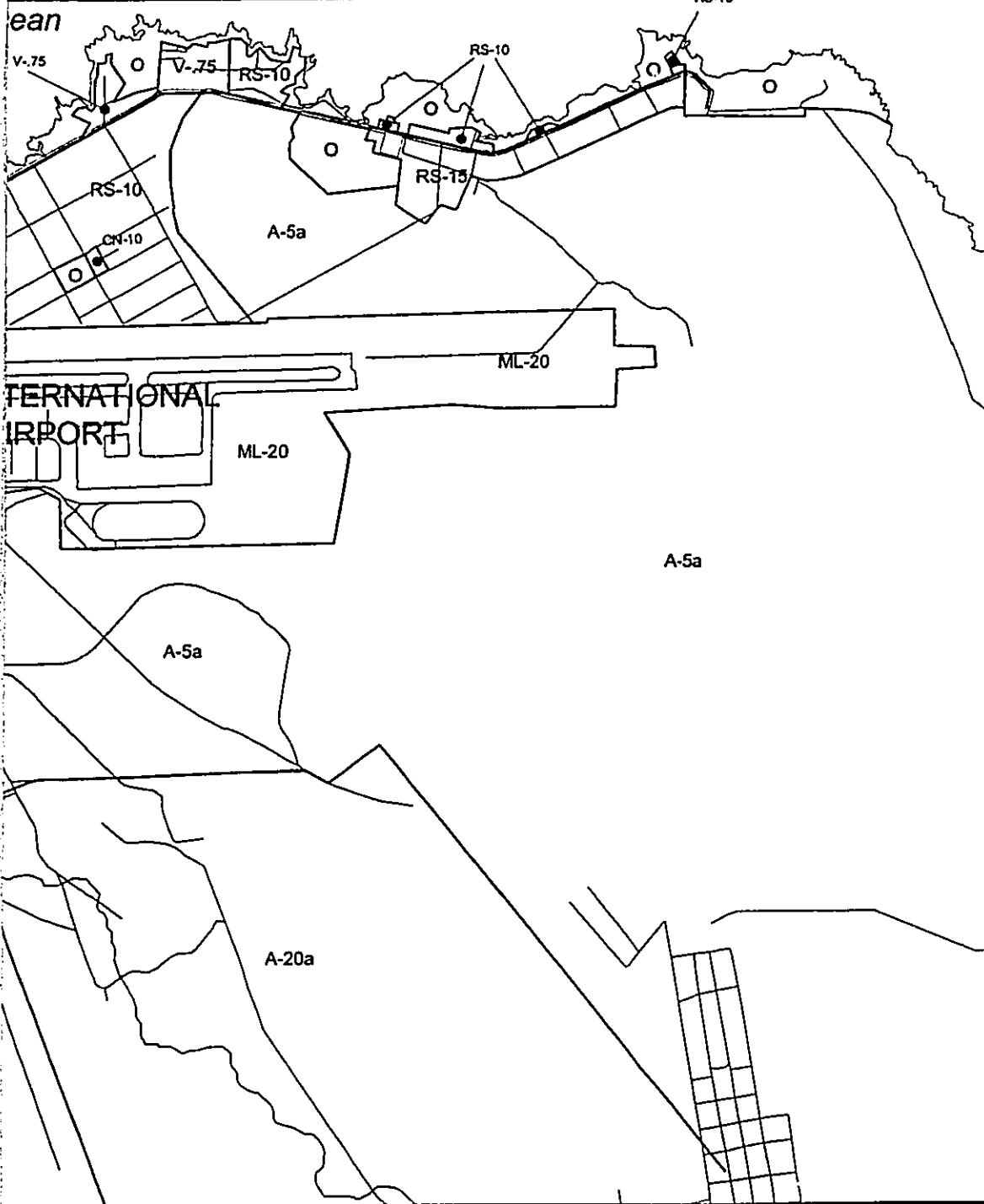
RT-HOTEL, 750 SQ. FT.	INDUSTRIAL	ML-20 LIMITED INDUSTRIAL, 20,000 SQ. FT.
RT, 750 SQ. FT.	MG-20 GENERAL INDUSTRIAL, 20,000 SQ. FT.	MG-1a GENERAL INDUSTRIAL, 1 ACRE
IBORHOOD-COMM., 40,000 SQ. FT.		
IBORHOOD-COMM., 20,000 SQ. FT.	AGRICULTURE	A-1a AGRICULTURE, 1 ACRE
IBORHOOD-COMM., 20,000 SQ. FT.	A-2a AGRICULTURE, 2 ACRES	A-3a AGRICULTURE, 3 ACRES
RAL COMMERCIAL, 20,000 SQ. FT.	A-5a AGRICULTURE, 5 ACRES	A-20a AGRICULTURE, 20 ACRES
RAL COMMERCIAL, 7,500 SQ. FT.		
RAL COMMERCIAL, 750 SQ. FT.		
TOWN HILO COMMERCIAL		



Airports Division
Department of Transportation
State of Hawaii

**HILO
INTERNATIONAL
AIRPORT
ENVIRONMENTAL
ASSESSMENT**

**HAWAII COUNTY
ZONING**



JANUARY 2002

Prepared by:
**WILSON OKAMOTO
& ASSOCIATES INC.**

FIGURE 4-2

Economic Uses

Objective: *Provide public or private facilities and improvements important to the State's economy in suitable locations.*

Comment: The Airport is currently zoned for industrial use and the proposed improvements are appropriately sited, as described in Sections 1 and 2. Implementation of the proposed improvements is not anticipated to result in significant social, visual, or environmental impacts.

Coastal Hazards

Objective: *Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.*

Comment: The Airport is located on lands that have been designated as Zone X, areas determined to be outside the 500-year flood plain. The low-lying lands between the ocean and the northern boundary of both runways are subject to tsunamis, which may periodically strike the region. The sites for the proposed hold cargo facility, helicopter facility, the main passenger terminal and all of other areas south of the runways are not in the tsunami hazard area, however the existing air cargo area (old terminal), and most general aviation facilities are in the hazard area. To permit residents of Keaukaha to evacuate, the State DOT has agreed to control evacuation access across the airfield in times of emergency. The evacuation route extends south from Gate 33, near Baker Avenue, across the airfield using Taxiway F, and through the main terminal to the loop road.

Managing Development

Objective: *Improve the development review process, communication, and public participation in the management of coastal resources and hazards.*

Comment: Information regarding the proposed project is communicated to the public through the environmental review process as provided under Chapter 343, Hawaii Revised Statutes and Section 11-200 of Title 11 Department of Health Administrative Rules.

Public Participation

Objective: *Stimulate public awareness, education, and participation in coastal management.*

Comment: The public is afforded the opportunity to review and comment on the EA pursuant to the requirements of Chapter 343 Hawaii Revised Statutes and Section 11-200 of Title 11 Department of Health Administrative Rules.

Beach Protection

Objective: Protect beaches for public use and recreation,

Comment: The proposed Airport improvements are not anticipated to adversely affect any beaches or shoreline recreational resources.

Marine Resources

Objective: Implement the State's ocean resources management plan.

Comment: The implementation of BMPs and compliance with NPDES permit requirements will ensure the minimization of any risk to marine resources that may result from construction activities. The proposed project will provide long-term economic benefits and is appropriately sited adjacent to existing Airport facilities. Implementation of the proposed improvements is not anticipated to result in significant environmental impacts.

4.5 SPECIAL MANAGEMENT AREA

Pursuant to the Hawaii CZM Program, all counties have enacted ordinances establishing Special Management Areas (SMA). Development within the SMA is subject to the requirements of SMA laws, which are administered by the Planning Commission (SMA Use Permit) and Planning Director (SMA Minor Permit).

The Hilo International Airport is located outside the boundaries of the County of Hawaii's SMA and is therefore not subject to the SMA Use Permit.

4.6 COUNTY OF HAWAII GENERAL PLAN

The County of Hawaii General Plan was adopted by the Hawaii County Council in November 1989. The Plan contains goals, policies, standards and courses of action to guide the development of the County in 13 areas: economic, energy, environmental quality, flood control and drainage, historic sites, natural beauty, natural resources and shoreline, housing, public facilities, public utilities, recreation, transportation, and land use.

Goals are general expressions of the desired long-range direction of the County. Policies describe the method or strategy that should be implemented in pursuit of the goals. Standards provide guidelines to evaluate the quality of conditions, and courses of action are more precise or detailed discussions of alternative solutions for community concerns.

The General Plan also contains land use maps showing the location of desired land uses for the Island of Hawaii. The maps are referred to as Land Use Pattern Allocation Guide Map (LUPAG maps). Hilo International Airport and much of the surrounding land is in the area designated as Industrial uses (see Figure 4-3).

As a policy document, the General Plan provides the legal basis for all subdivision, zoning and related ordinances. It also provides the legal basis for the initiation and authorization for all public improvements and projects. The County of Hawaii Planning Commission is currently updating the General Plan as part of the General Plan Revision Program, which occurs once every 10 years.

The revision process was initiated in January 1998 and the Final Draft of the General Plan revision was released for public review in May 2001.

Goals, Policies, Standards, and Courses of Action:

The proposed improvements at Hilo International Airport are consistent with the following relevant goals, policies, standards, and courses of action of the existing General Plan document:

A. *Economic*

Goals:

- *Provide residents with opportunities to improve their quality of life.*
- *The County shall provide an economic environment which allows new, expanded, or improved economic opportunities that are compatible with the County's natural and social environment.*

Policies:

- *The County of Hawaii shall assist the expansion of the agricultural industry, especially diversified agriculture, through the protection of important agricultural lands, capital improvements and other programs, and continued cooperation with appropriate State and Federal agencies.*
- *The County of Hawaii shall encourage the development of a visitor industry which is consistent with the social, physical, and economic goals of the residents of the County*
- *The County shall identify and encourage primary industries that are consistent with the social, physical, and economic goals of the residents of the County.*

Courses of Action – South Hilo:

- *The County shall encourage the State to provide the necessary funds for the development of the university complex and airport facilities. The County shall*

also provide necessary support services and facilities to aid the development of these complexes.

The proposed improvements will be a source of employment for the region during the construction and operation phases. Direct economic benefits will result from construction expenditures both through the purchase of materials from local suppliers and through the employment of local labor. These wages, profits, and expenditures will have a multiplier effect through increased capital flowing through the region.

The proposed cargo facility will aid in the further development of the agriculture industry. Relocation of the air cargo operations will allow for more efficient operations by cargo operators Aloha and Hawaiian Airlines, freight forwarders, farmers, and flower growers. This translates to lower costs for air cargo users in terms of ground handling and split operations. The new facility will also allow State and Federal inspection agencies to be located in the same structure, eliminating the need to transport cargo to the main passenger terminal for inspection.

The proposed heliport facility will enable operators to better service their clients and provide a safe, professional and attractive tour service. Currently, the helicopter operator's ticket counters are located in the west end of the passenger terminal building and in the commuter/air taxi terminal, and there is no area for expansion or to create a sheltered waiting area for passengers. Operators have also noted safety concerns regarding the close proximity of helicopters on the current parking apron. The proposed facility will allow for the consolidation and comfortable accommodation of the five private helicopter operators at Hilo International Airport.

The proposed improvements to the general aviation facilities will also encourage the visitor industry in Hilo by accommodating the increasing level of aircraft operations. The proposed hangar, parking apron, and infrastructure improvements will adequately support the present and projected future operations.

D. Flood Control and Drainage

Goals:

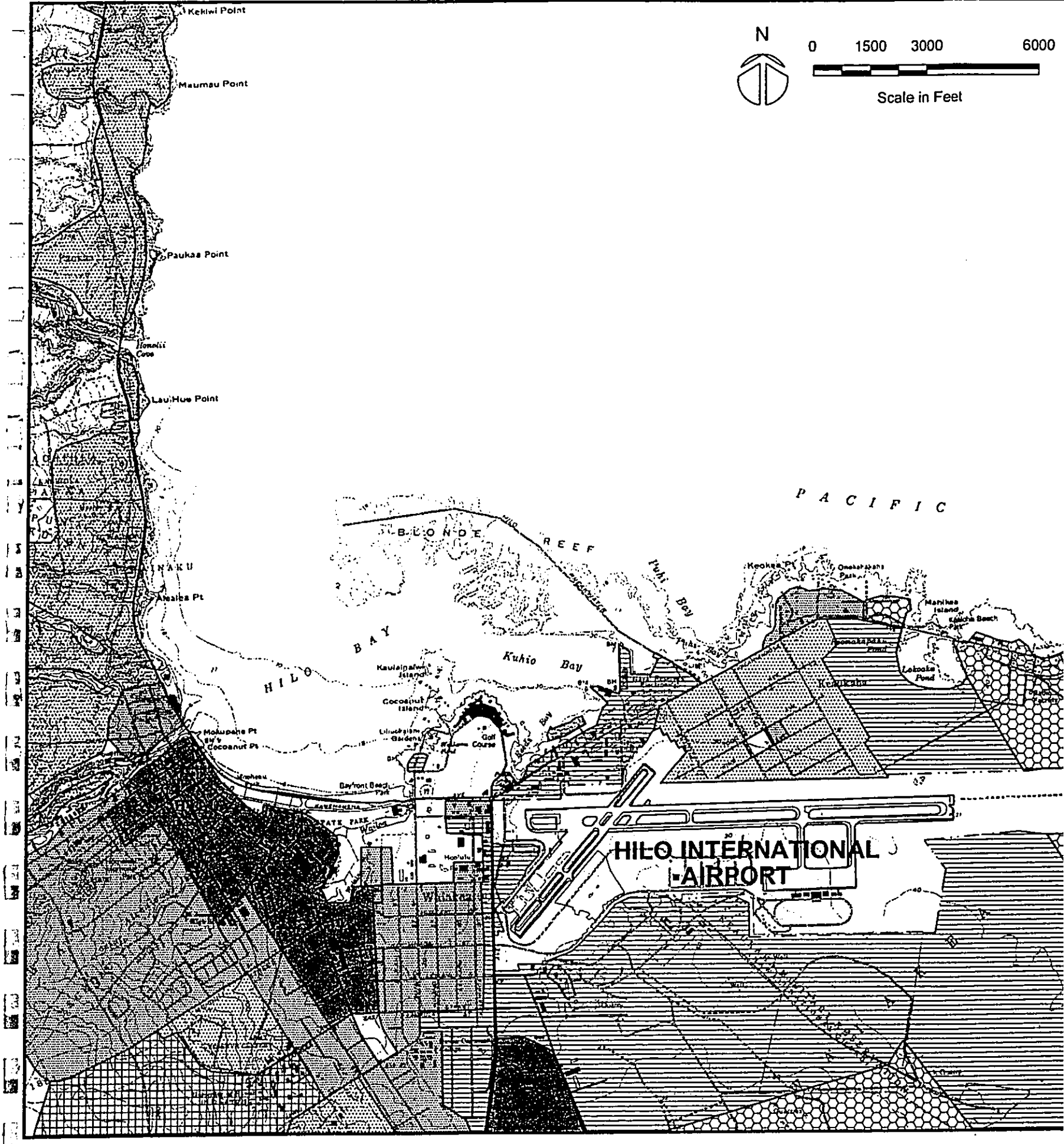
- Control pollution.*
- Reduce surface water and sediment runoff.*

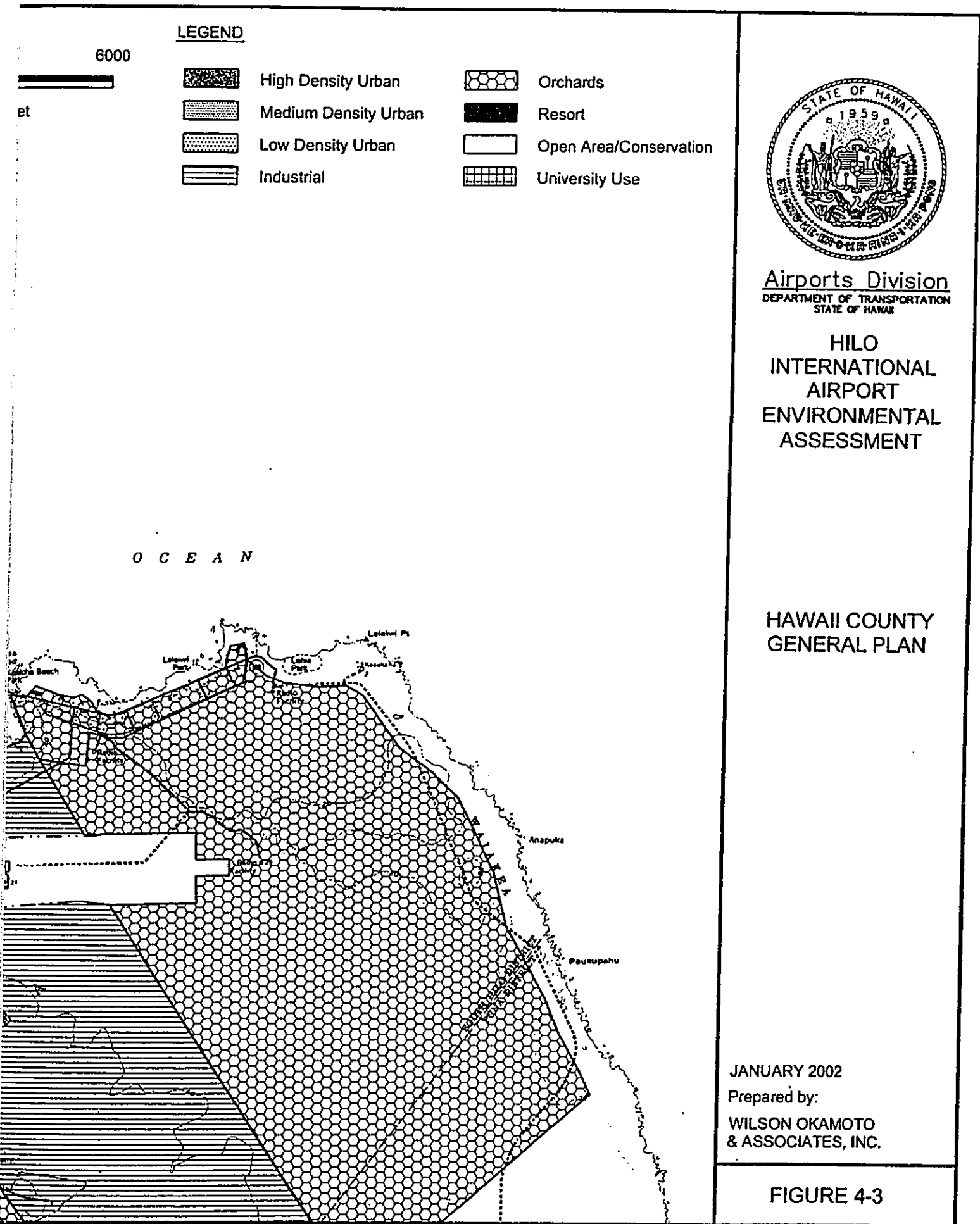
Policies:

- All development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works.*

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6157FIG-GIS-fig 5-3.DWG 16:08 01/22/02 M:\WOA\6157-03\FIGURES





Standards:

- *"Storm Drainage Standards," County of Hawaii, October, 1970, and as revised.*
- *Applicable standards and regulations of Chapter 10, "Erosion and Sedimentation Control," of the Hawaii County Code.*

To mitigate the impacts of storm water runoff discharging into the ground-water system, the use of appropriate Best Management Practices (BMPs) will be used, including on-site pollution-mitigating measures to control erosion and transport of fines, silt, sediments, and other pollutants that could adversely impact ground water or surface State waters. Erosion and runoff control measures are discussed in detail in Section 4 of this EA.

L. Transportation

Goals:

- *Provide a transportation system whereby people and goods can move efficiently, safely, comfortably and economically.*

Policies:

- *The improvement of transportation service shall be encouraged.*

Standard:

- *Transportation systems shall meet the requirements of the State Department of Transportation and the County of Hawaii.*

(2) Transportation Terminals

The following goal, policies, and standard are set forth to guide the orderly development of the County's transportation terminals and related facilities.

Goal:

- *Provide transportation terminals and related facilities for the safe, efficient and comfortable movement of people and goods.*

Policies:

- *The County shall encourage maximum use of the island's airport and harbor facilities.*

Standard:

- *Requirements of the State Department of Transportation.*

As previously described, the proposed air cargo facility will increase efficiency in cargo handling and marshalling. The location of the existing cargo operations in the old terminal area can be utilized by general aviation operators, who are currently at a loss for hangar and

lease lot space. The proposed heliport facility will consolidate helicopter operations at a safe distance from fixed wing aircraft operations. These improvements will also have a positive effect on traffic circulation within the Airport, as a smaller number of vehicles will be travelling along the terminal loop. The proposed parking expansion to the east of the existing terminal parking lot will meet the existing demand for more customer and employee parking. Parking for the heliport, cargo, and general aviation facilities will be accommodated at the respective sites.

M. Land Use

(3) Industrial

Goals:

- Designate and allocate industrial areas in appropriate proportions and in keeping with the social, cultural, and physical environments of the County.*
- Promote and encourage the rehabilitation of industrial areas which are serviced by basic community facilities and utilities.*

Policies:

- It shall be the policy of the County to achieve a broader diversification of local industries by providing opportunities for new industries and strengthening existing industries.*
- Through its zoning powers, the County shall locate industrial areas convenient to transportation facilities, and provide a variety of industrial zoned districts and lot sizes, depending on the needs of the industries and the communities.*
- Industrial development shall be located in areas adequately served by transportation, utilities, and other amenities. Redeveloping or newly developing areas shall be developed in concert with programmed public and privately funded infrastructure to meet the expected needs.*

Standards:

- Industrial activities may be located close to raw materials or key resources.*
- Industrial development shall be conveniently located to its labor resource.*

The proposed improvements at Hilo International Airport are allowable uses within areas the existing General Plan designates for Industrial use. The document recommends the centralization of industrial uses in the Kanoelehua Industrial Area, near the Airport. As all proposed improvements are aviation related, it is appropriate that they are located within the Airport property.

4.7 COUNTY OF HAWAII GENERAL PLAN REVISION PROGRAM

The existing County of Hawaii General Plan is currently undergoing revision by the County of Hawaii Planning Department in accordance with the Plan, which sets forth that a comprehensive review should commence every ten years. Last amended in November 1989, a preliminary review of the General Plan was initiated by the County Planning Department in January 1998. The latest review draft was made available in May 2001 by the Planning Department. The draft revisions to the General Plan include the following: a profile update for each of the elements; amendments to the goals, policies, standards, and courses of action; revision to the General Plan amendment procedures; revision to the land use designations; amendments to the Land Use Pattern Allocation Guide Map; and revisions to the Facilities Map. Following a series of public hearings, the draft revised General Plan awaits processing through the County Council for ordinance adoption.

Goals, Policies, Standards, and Courses of Action:

The proposed improvements at Hilo International Airport are consistent with the following relevant amended goals, policies, standards, and courses of action of the Review Draft III of the County of Hawaii General Plan Revision Program:

A. *Economic*

Goals:

- *Provide residents with opportunities to improve their quality of life through economic development that enhances the County's natural and social environments.*
- *Economic development and improvement shall be in balance with the physical, social, and cultural environments of the island of Hawaii.*
- *Strive for diversity and stability in the economic system.*
- *Provide an economic environment that allows new, expanded, or improved economic opportunities that are compatible with the County's cultural, natural, and social environment.*
- *Strive for an economic climate that provides its residents an opportunity for choice of occupation.*
- *Strive for diversification of the economy by strengthening existing industries and attracting new endeavors.*

Policies:

- *Assist in the expansion of the agricultural industry through the protection of important agricultural lands, development of marketing plans and programs, capital improvements, and continued cooperation with appropriate State and Federal agencies.*
- *Encourage the development of a visitor industry that is in harmony with the social, physical, and economic goals of the residents of the County.*

- *The land, water, sea, and people shall be considered as essential resources for present and future generations and should be protected and enhanced through the use of economic incentives.*
- *Promote a distinctive identity for the island of Hawaii to enable government, business, and travel industries to promote the County of Hawaii as an entity unique within the State of Hawaii.*
- *Assist in the promotion of the agriculture industry whose products are recognized as being produced on the island of Hawaii.*
- *Encourage the further development of the overseas capacity of Hilo International Airport for the exportation of agricultural crops.*

Courses of Action:

- *Encourage the State to provide the necessary funds for the development of the university complex and airport facilities. Provide necessary support services and facilities to aid the development of these complexes.*

C. Environmental Quality

Goals:

- *Control Pollution*

Policies:

- *Encourage the State to continue aircraft noise abatement strategies at Hilo International Airport and the Kona International Airport at Keahole.*
- *Work with the appropriate agencies to adopt appropriate measures and provide incentives to control point and nonpoint sources of pollution.*

Standards:

- *Pollution shall be prevented, abated, and controlled at levels that will protect and preserve the public health and well being, through the enforcement of appropriate Federal, State and County standards.*

D. Flood Control and Drainage

Goals:

- *Prevent damage to man-made improvements*
- *Control pollution*
- *Reduce surface water and sediment runoff*
- *Maximize soil and water conservation*

Policies:

- *Any development within the Federal Emergency Management Agency designated flood plain must be in compliance with Chapter 27.*

- *Development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works and in compliance with all State and Federal laws.*
- *Encourage grassed shoulder and swale roadway design where climate and grade are conducive.*
- *Consider natural hazards in all land use planning and permitting.*

L. *Transportation*

Goals:

- *Provide a transportation system whereby people and goods can move efficiently, safely, comfortably, and economically.*
- *Make available a variety of modes of transportation that best meets the needs of the County.*

Policies:

- *A framework of transportation facilities that will promote and influence desired land use shall be established by concerned agencies.*
- *The agencies concerned with transportation systems shall provide for present traffic and future demands, including the programmed development of mass transit programs for high growth areas by both the private and public sectors.*
- *The improvement of transportation service shall be encouraged.*
- *Consider the provision of adequate transportation systems to enhance the economic viability of a given area.*

Standards:

- *Transportation systems shall meet the requirements of the U.S. Department of Transportation, State Department of Transportation and the County of Hawaii.*
- *Transportation facilities and systems shall conform to the requirements of the Americans with Disabilities Act (ADA).*
- *Transportation systems shall conform with design guidelines established by the American Association of State Highway and Transportation Officials (AASHTO).*

Courses of Action – South Hilo:

- *An extension of Puainako Street east of Kanoelehua should be the main route from the airport terminal for direct access to the business district.*

M. *Land Use (industrial)*

Goals:

- *Designate and allocate industrial areas in appropriate proportions and in keeping with the social, cultural, and physical environments of the County.*
- *Promote and encourage the rehabilitation of industrial areas that are serviced by basic community facilities and utilities.*

Policies:

- *Achieve a broader diversification of local industries by providing opportunities for new industries and strengthening existing industries.*
- *Locate industrial areas convenient to transportation facilities, and provide a variety of industrial zoned districts and lot sizes, depending on the needs of the industries and the communities.*
- *Industrial development shall be located in areas adequately served by transportation, utilities, and other essential infrastructures.*

Standards:

- *Buffer zones shall be established between industrial and adjacent incompatible uses of land.*
- *The direction of wind patterns and the absence of tradewinds shall be considered in the siting of industrial areas.*

4.8 STATEWIDE AIRPORT SYSTEM PLAN

The Hawaii Statewide Airport System Plan (SASP) is a long-range development plan for Hawaii's civilian airport system to the year 2020. One of the State's primary interests in developing this plan was to employ an integrated strategic, financial, and physical planning approach that would provide the foundation for a near- and long-term business plan for the airport system. The system includes 16 airports in four counties. Planning emphasis was placed on five "primary" airports in Hawaii: Honolulu International Airport, Kahului Airport, Kona International Airport, Lihue Airport, and Hilo International Airport.

The SASP provides vision, direction, and tools for future development and financial planning for both the system and individual airports. The SASP includes a Facility Plan that represents the ideal level of airport development and presents all justifiable projects based on the strategic direction, facility requirements, and potential for revenue development.

In the case of Hilo International Airport, the SASP recommends the following development programs containing numerous individual elements:

1. Air Cargo Improvements: New cargo building, related apron and taxiway
2. General Aviation T-Hangar: Construct 6-bay T-hangar
3. FAA Compliance: Acquire properties within Runway Protection Zone and Building Restriction Line
4. Terminal Area Improvements: Relocation of baggage claim, passenger parking lot improvements, signage and graphics improvements, helicopter lease lot facilities, including new building
5. Concession Improvements: Relocate security to central area, renovate existing retail space, reorient concessions to the hold room

6. Baseyard Improvements: Expansion and improvement of existing baseyard facilities
7. Utilities Improvements
8. Noise Compatibility: Update Airport Master Plan and Noise Compatibility Program.

The proposed improvements for Hilo International Airport are consistent with the recommended development programs for air cargo improvements, general aviation T-hangar, FAA compliance, terminal area improvements, baseyard improvements, and Noise Compatibility, as listed above.

4.9 HILO INTERNATIONAL AIRPORT MASTER PLAN

The Hilo International Airport Master Plan is part of an ongoing planning process for the Airport that builds upon previously prepared Airport master plans and development plans. Its objective is to update guidelines for future airport development that will satisfy forecast aviation demand in a financially feasible manner while addressing the community's environmental and socioeconomic issues and concerns. The products of the master planning process include the Airport master plan and the Federal Aviation Regulations (FAR) Part 150 Airport Noise Compatibility Program document. The master plan is based on a 20-year planning horizon. Subsequent development plans that provide greater detail for actual implementation and design will be guided by the master plan, which should be updated every 5-10 years.

The Hilo International Airport Master Plan Update was completed in July 2002. The FAR Part 150 Airport Noise Compatibility Program for the Airport was completed and approved by the FAA in December 2001. The following summarizes the Master Plan recommendations relevant to the proposed improvement projects:

Air Cargo:

A new cargo facility at the eastern end of the Airport Industrial Area is recommended. The facility will have direct access to the air carrier aircraft parking apron. This is important since much of the air cargo is transported as "belly cargo" on passenger flights. Locating the cargo facilities within the Airport Industrial Area will have the additional advantage of keeping trucks carrying cargo to and from the facility from using the passenger terminal loop road.

Helicopter Facility:

A new 5-acre helicopter facility is proposed west of the passenger terminal and cargo areas and southeast of the intersection of Runways 8-26 and 3-21. Placing the helicopter facility in this location should minimize interactions between helicopter and fixed-wing aircraft operations as it is over 700 feet from the centerlines of both Runways 8-26 and 3-21. Access to the helicopter facilities is provided along a

service road off Kekuaaoa Avenue. Vehicular parking could be provided either on the lease lots or between the lease lots and the service road.

General Aviation:

The recommended general aviation facilities are located southeast of Runway 3-21; this is well away from the air carrier and cargo operations. Space is provided to accommodate the 60 based aircraft that the forecasts...indicate will be needed by the year 2010. The existing general aviation facilities northwest of Runway 3-21 will be demolished.

Public/Employee/Rental Car Parking Facilities:

At present, the demand for rental car parking stalls adjacent to the rental car counters exceeds the available supply; at the same time, there is normally a surplus of public parking stalls. To correct this situation, some of the parking stalls that are currently allocated to the general public should be converted to additional rental car ready/return parking. This would not cause an immediate shortage of public parking spaces, but over 200 additional stalls will be needed to accommodate the total forecast 2010 parking needs for public, employee, and rental car parking. These can be provided by adding additional parking bays on the south side of the existing parking area, moving the employee parking into this area, and converting the existing employee parking area to public parking.

State DOT Airports Maintenance Baseyard:

The recommended Master Plan provides for expansion of the existing site of the Hilo International Airport DOT Maintenance Baseyard.

Runway Protection Zones and Building Restriction Lines:

Implementation of the proposed land use plan calls for the State to acquire additional land within runway protection zones...Where short-term funding limitations preclude immediate acquisition, avigation easements should be acquired. The funding priority for the runway protection zones...should be as follows:

- (1) Land within the minimum required runway protection zones.
- (2) Land outside the minimum required runway protection zones but within the recommended runway protection zones.
- (3) Land outside the minimum required runway protection zone but within the 750-foot building restriction line extending to the end of the minimum required runway protection zone.
- (4) Land inside the 750-foot building restriction line extending to the end of the recommended runway protection zone and outside all the areas identified above in priorities 1, 2, and 3.

It is also recommended that the Department of Transportation acquire other land adjacent to Runway 3-21 that is within the 750-foot Building Restriction Line but

outside the existing Airport Boundary. The land northwest and northeast of the intersection of Runway 8-26 and 3-21 should have a particularly high priority.

Kanoelehua Avenue Triangle:

The triangular piece of property along Kanoelehua Avenue on the western side of the Airport, just north of Kekuanaoa Avenue is only a few hundred feet from the runway threshold and centerline, and it is well within the recommended Building Restriction Line. This property should have a high priority for acquisition.

The proposed Airport improvements are consistent with the recommendations of the Hilo International Airport Master Plan. The proposed sites for the cargo facility, heliport, general aviation improvements, and parking improvements differ from that recommended in the Master Plan, as the result of subsequent planning and design efforts. The proposed land acquisitions and aviation easements are also consistent with the recommendations of the Master Plan. However, as stated in Section 1 of this EA, the DOT-A has established a policy to proceed with acquisitions only with the concurrence of the land owner, or at such a time when the land otherwise becomes available.

SECTION 5
COMMUNITY CONSULTATION

5. COMMUNITY CONSULTATION

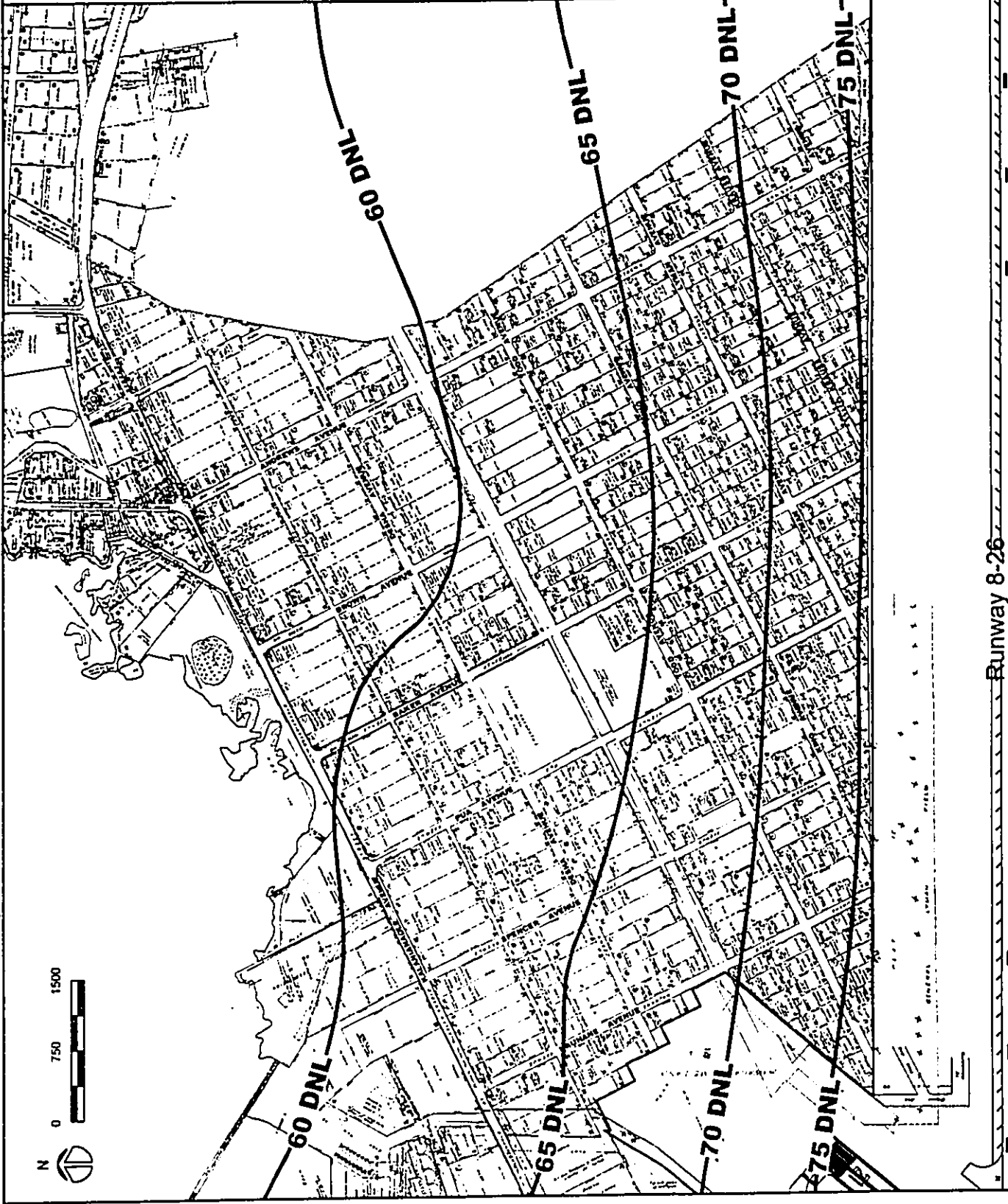
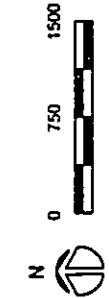
Noise levels generated by Airport activities are an ongoing concern, as there are residential areas in the Airport vicinity. Hilo International Airport participated in a voluntary noise compatibility planning process, the Federal Aviation Regulations (FAR) Part 150 Airport Noise Compatibility Planning Program, which implements portions of the Aviation Safety and Noise Abatement Act of 1979.

The FAR Part 150 Noise Compatibility Program (NCP) for the Hilo International Airport indicated that sound attenuation is needed for the residences and public facilities exposed to certain airport noise levels. The residential area most affected by Airport noise is the Keaukaha Tract I subdivision immediately north of the Airport boundary. The year 2005 noise exposure levels projected for the Keaukaha area are shown in Figure 5-1. The DOT-A has been in consultation with the Keaukaha community regarding the FAR Part 150 Noise Compatibility Program (NCP) for Hilo International Airport. The NCP report recommended noise mitigation measures, including air conditioning and modifications to residences to provide acoustical insulation and the construction of a 15-foot sound attenuation barrier. A discussion of the NCP is included in Section 3-9.

The purpose of the recommended 15-foot high sound attenuation barrier between the Airport and the Keaukaha Tract I residential subdivision was to reduce the number of noise impacted structures in the zone of high noise level north of the Airport. The year 2005 noise exposure levels projected for the Keaukaha area with the construction of the noise attenuation wall are shown in Figure 5-2. This noise attenuation wall was included among the airport improvements proposed during the pre-assessment consultation phase of this EA.

Follow-up consultation with the Keaukaha community, however, resulted in eliminating the sound attenuation wall as a recommended means of noise mitigation. Substantial concerns and opposition to the wall relative to views, aesthetics, wind impedance, and effectiveness were expressed at two community meetings, as well as through written comments and correspondence received by the DOT-A. Community sentiments against the construction of the wall were also expressed during door-to-door interviews of lessees that reside along the Airport boundary and through a questionnaire mailed to lessees in areas exposed to high noise levels. This section details the issues and concerns voiced by the Keaukaha Community during the two community meetings, during the door-to-door survey, and via mail.

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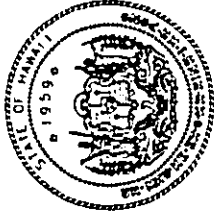
Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HILO
INTERNATIONAL
AIRPORT
ENVIRONMENTAL
ASSESSMENT

Year 2005 Airport
Noise Contours
"No Mitigation"

JANUARY 2002
Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 5-1



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

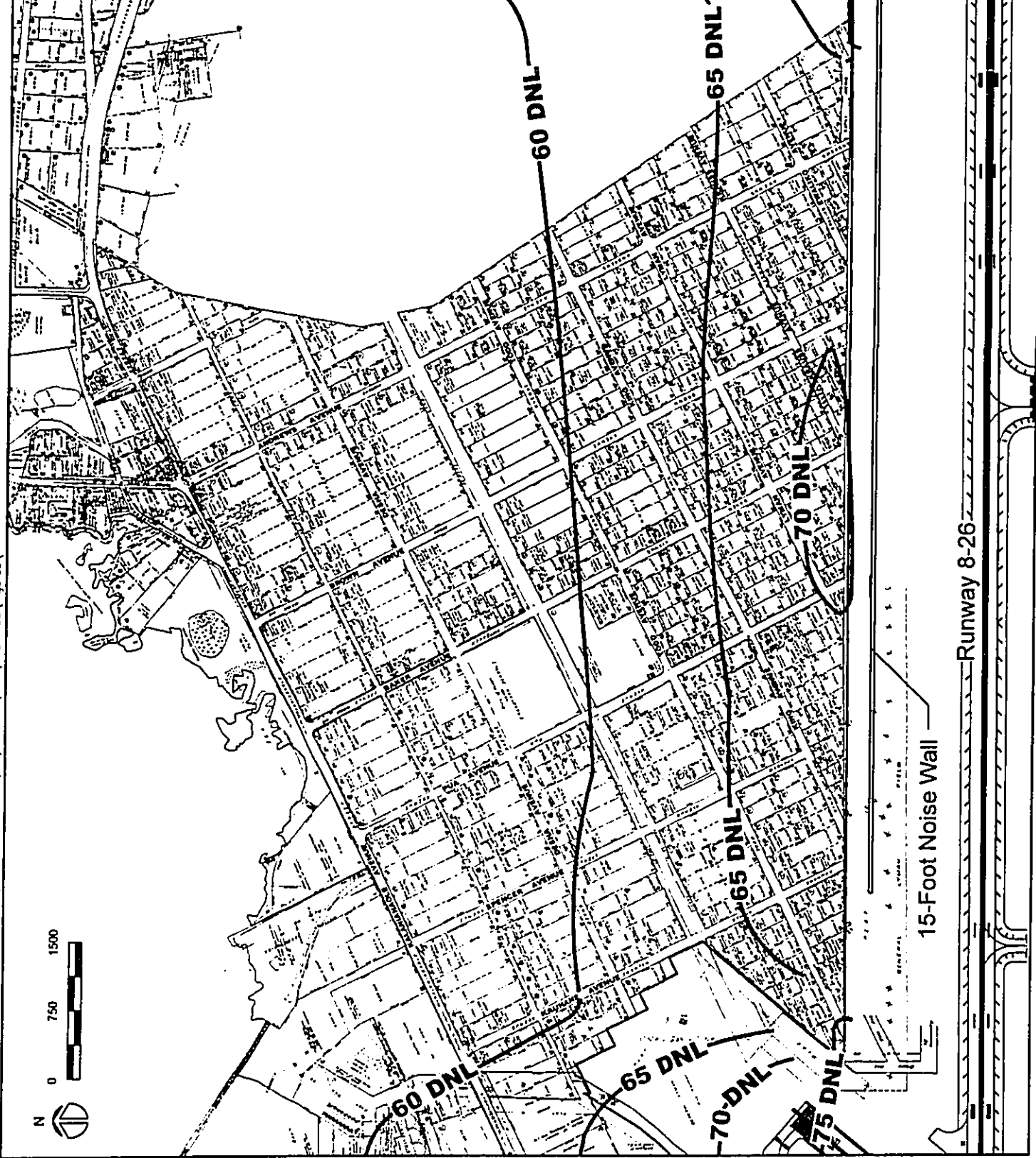
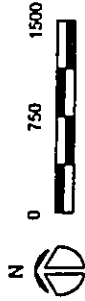
**HILO
INTERNATIONAL
AIRPORT
ENVIRONMENTAL
ASSESSMENT**

**Year 2005 Airport
Noise Contours
With 15-Foot
Noise Wall**

JANUARY 2002
Prepared by:
WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 5-2

6157-03FIG-HOUSE_EXPOSURE-nall.dwg 12:47 10/15/01 M:\Waa\6157-03\Figures\



5.1 EXPLANATION OF NOISE DESCRIPTORS

The noise descriptor used by the FAA to relate aircraft noise levels to land use compatibility, and to assess environmental noise in general, is the Day-Night Average Sound Level (DNL). DNL is a 24-hour average of sound levels as read from a standard sound level meter taking readings in decibels based on human hearing, or dBA. When computing the DNL, a nighttime penalty is imposed, such that sound levels which occur during the night (between 10:00 p.m. and 7:00 a.m. are increased by 10 decibels. DNL exposure levels of 55 or less are typical of quiet rural or suburban areas. DNL exposure levels of 55 to 65 are typical of urbanized areas with medium to high levels of activity and street traffic.

The State DOT-A has adopted the 60 DNL as the aircraft noise limit which should be utilized at a planning level for noise-sensitive land uses which normally involve naturally ventilated structures, including dwellings and public use structures such as schools, libraries, churches, clinics and meeting rooms. This is more stringent than the 65 DNL limit used by the FAA nationally. The FAA has agreed to the use of this limit in the FAR Part 150 Noise Compatibility Program studies in Hawaii, but indicated that a more specific case-by-case review of recommended noise mitigation measures will be required prior to any federal funding for these proposed measures, especially within the 60 to 65 DNL contours.

Sound Exposure Level (SEL) refers to the noise level associated with a single event, such as an aircraft flying past a listener. SEL is computed from the instantaneous sound level readings times the duration of the event.

5.2 KEAUKAHA COMMUNITY MEETING: AUGUST 15, 2001

As part of the pre-assessment consultation phase of this Draft EA, the DOT-A in August 2001 attended a meeting of the Keaukaha Community Association to present an overview of the proposed improvements and receive public input. All of the proposed improvements were briefly covered before a more detailed description of improvements relating to noise mitigation was presented. The accompanying handouts included the meeting agenda, project summary, a figure showing the location of the proposed improvements, a figure showing the distribution of noise contours in the Keaukaha area with the construction of the 15-foot noise wall, and a comment form.

Comments from the Keaukaha Community were offered throughout the presentation as well as during the question and discussion period. The following issues were prevalent during the discussion:

- Options for noise mitigation
- Land acquisitions

The options under consideration for noise mitigation in the Keaukaha area had been presented at previous meetings with the Keaukaha Community Association regarding the Hilo International Airport Master Plan update and the Noise Compatibility Program. In addition to other noise mitigation measures that relate to airport curfews, military activities, and the use of runways, the following recommendations require the involvement of Keaukaha residents and were therefore priorities for discussion at the meeting:

15-Foot Sound Attenuation Wall: Construct a 15-foot high, free standing wall along the common property boundary between Hilo International Airport and Keaukaha Tract I subdivision. The wall would be approximately 40 feet from the existing fence line and would be situated within the Airport property. The approximate length of the wall would be 5,000 feet, with a gate provided at the point where the wall intersects the tsunami evacuation route. The top of the wall would be 15 feet above the elevation of Runway 8-26.

Sound Attenuation Treatment Program: Provide sound attenuation treatment for residences and public use facilities located within the 60 DNL noise contour of the Year 2005 Noise Exposure Map. Naturally ventilated commercial structures inside the 65 DNL contour should also be included in this sound attenuation treatment program. For dwellings, sound attenuation treatments that reduce interior noise levels to 45 DNL or less are required. In general, structures located between the 60 to 65 DNL contours require closure and air conditioning to achieve this design goal. At the higher noise exposure levels of 65 to 75 DNL, closure and air conditioning, plus modifications to the building envelope (new windows, doors, and in some cases, rebuilt walls and ceilings) are required to meet the 45 DNL interior design goal. Sound treatment of homes would be provided in exchange for an avigation easement for the respective property. The State would fund the renovations, as well as the purchase and installation of air conditioning units, but the maintenance and monthly cost would be the responsibility of the homeowner.

Land Exchange and Relocation: Residential structures that are located inside the 75 DNL contour are normally not acoustically treated because of the difficulties in achieving the 45 DNL interior noise level goal with normal residential construction materials and methods. In these situations, relocation of these residences is normally recommended. Continue to examine the possible exchange of lands with Hawaiian Home Lands for suitable State or private lands which could be exchanged for Keaukaha lots within the 75 DNL noise contour.

Purchase of Avigation Easements: Purchase avigation easements from lessees that are not interested in sound treatment of their homes. The easement would cover airport noise levels at or below the existing noise levels.

The subject of acquisition and/or exchange of DHHL lands tends to induce feelings of alarm and negativity within the homestead community. As discussed in Section 3 of this EA, the

development of Hilo International Airport occurred at the loss of Keaukaha Hawaiian Home Lands. Recommendations involving Airport land acquisitions and/or exchanges are of great concern to the residents of the subdivision, and, therefore, such proposed activities were a priority for discussion at the meeting. In response to questions posed by the community, it was clarified that the areas marked for acquisition are located within specific clear zones that the FAA requires for runway safety purposes, and DOT-A will not pursue such acquisitions unless the land is made available by the owner.

As for the options for noise mitigation, the general opinion voiced at the meeting was that the noise wall would not be beneficial and residents did not want it to be constructed. Subsequently, an informal show of hands indicated that 50 percent (%) of the attendees felt that the noise wall should not be constructed, 0% wanted to receive sound attenuation treatments to their homes in exchange for an avigation easement, and one person was in favor of allowing DOT-A to purchase an avigation easement for a cash amount equivalent to the cost of sound treatment. It was suggested that the noise wall should be eliminated from the list of mitigation options, allowing future planning efforts to focus on other solutions. A consensus was reached that a survey of Keaukaha residents should be done to ensure that DOT-A received input from residents who would be most affected by the noise wall.

5.3 COMMUNITY SURVEY ON NOISE WALL

An extensive survey was undertaken by the DOT-A to determine whether the noise wall should be eliminated from the list of options under consideration for noise mitigation. The noise wall was considered to be effective in significantly reducing noise levels within the 70 DNL and 75 DNL contours; residences that are located along the Airport boundary are within the 75 DNL and would be most affected by the construction of the wall. Thus, a survey form was prepared and sent to all homes within the 70 and 75 DNL. The cover letter also indicated that person-to-person interviews would be conducted for those residences along the Airport boundary.

The survey form asked three questions, with space for additional comments at the bottom of the page. The questions were as follows:

1. In general, do you think the 15-Foot Noise Wall is:
 A good idea. A bad idea. No opinion at this time.

2. If you think that the 15-Foot Noise Wall is a good idea, do you prefer:
 A solid wall with landscaping and trees. An earth berm with landscaping and trees. No opinion at this time.

3. If you think this is a bad idea, should we eliminate the 15-Foot Noise Wall as an alternative to reduce airport noise?

___ Yes. ___ No.

A total of 31 homestead lots were identified within the 75 DNL contour along the airport boundary. All of these lots were visited on November 5 and 7, 2001. If no one was at home on the first visit, a second visit was attempted. If the resident was not at home on the second visit, or if no one present at the house could provide comments regarding the wall, a copy of the cover letter and survey along with a note inviting the resident to the next Keaukaha community meeting on November 21, 2001 was left at the entrance of the home or with whomever was at the house.

Of the 31 identified properties, eight lots were vacant, and 23 lots were occupied. Residents of eleven lots stated that the noise wall was a bad idea and should not be constructed. Residents of three lots stated that it made no difference whether the wall was built or not, and the resident of one lot indicated that they would support the wall if it were built more than 100 feet within the Airport property boundary. No one was home on both dates at four of the lots, and the persons present at the remaining four lots were unable to comment on the project.

Mail-in surveys were sent to residents of the 110 lots located within the 70 DNL noise contour that do not abut the airport boundary. With the 23 occupied lots along the airport boundary, the over-all response rate for the survey is approximately 31%, or 41 replies received out of 133 possible replies. The results of the survey are summarized below:

1. *In general, do you think the 15-foot noise wall is:*

	All Responses Received		Residents along Airport Boundary	
	Number	Percent	Number	Percent
<i>A good idea</i>	4	9%	1	4%
<i>A bad idea</i>	28	61%	12	52%
<i>No opinion at this time</i>	9	20%	5	22%

2. *If you think that the 15-foot noise wall is a good idea, do you prefer:*

	Responses
<i>A solid wall with landscaping and trees</i>	2
<i>An earth berm with landscaping and trees</i>	2
<i>No opinion at this time</i>	0

3. *If you think this is a bad idea, should we eliminate the 15-foot noise wall as an alternative to reduce airport noise?*

	All Responses Received		Residents along Airport Boundary	
	Number	Percent	Number	Percent
<i>Yes</i>	28	61%	12	52%
<i>No</i>	0	0%	0	0%
<i>No opinion at this time</i>	9	20%	5	22%

Other ideas for noise mitigation mentioned/favored for further discussion (number of responses shown in parentheses):

- Use of quieter jets by air carriers (7)
- Runway relocation (4)
- Airport relocation (4)
- Sound attenuation/air conditioning for residences (2)
- Resident relocation (2)
- Implement mandatory flight curfews after 10 p.m.
- Creation of a noise ordinance, as done in mainland cities

5.4 KEAUKAHA COMMUNITY MEETING: NOVEMBER 21, 2001

With the cooperation of the Community Association, DOT-A returned to Keaukaha to present the findings of the noise wall survey at a community meeting on November 21, 2001. The meeting handouts included the meeting agenda, results of the survey as shown above, a figure showing the distribution of noise contours in the Keaukaha area for the year 2005 (see Figure 5-1), a figure showing the distribution of noise contours with the construction of the noise wall for the year 2005 (see Figure 5-2), and a comment form.

DOT-A staff explained that the survey results clearly expressed the community's rejection of the noise wall as a method of noise mitigation, and, that the noise wall would thus be eliminated from further consideration.

Remaining recommendations for noise mitigation included in the NCP report were briefly reviewed:

- Designation of Runway 8-26 as the preferred runway
- Designation of curfews for the use of Runway 3-21
- Designation of approach and departure paths that minimize noise impacts
- Minimization of military training operations at Hilo International Airport
- Provision of sound attenuation treatments for homes subjected to high noise levels

A list of other ideas for noise mitigation suggested by survey participants was included at the bottom of the handout summarizing the survey results. The suggestions were addressed as follows:

- *Use of quieter jets by air carriers:*
Congress granted a waiver to airlines based in Hawaii. Therefore, Hawaiian and Aloha are not required to use the quieter Stage III aircraft. Aloha will eventually switch to Stage III jets, but this is not likely to occur until it becomes infeasible to operate their existing aircraft.
- *Runway relocation:*
Moving the runway will not help lessen the extent of noise contours. The noise contours would simply shift along with the runway to affect other areas of Hilo.
- *Airport relocation:*
Moving the Airport would be the best solution to the noise problem in Keaukaha. However, this option is not feasible due to the extremely large amount of funding required.
- *Sound attenuation/air conditioning for residences*
The installation of air conditioning involves the retrofitting of doors, windows, roofs, and the use of double-wall construction. These techniques can be implemented to attenuate the sound experienced within the home to an acceptable level.
- *Resident relocation:*
In the very high noise level areas of 75 DNL, the sound treatment of homes cannot produce sound levels that are low enough to be considered acceptable. It is more effective to relocate the residents that live within the highest noise contour.
- *Creation of a noise ordinance, as done in mainland cities:*
A city noise ordinance cannot be enforced due to FAA jurisdiction over aircraft in flight.

Comments from the Keaukaha Community were offered during the question and discussion period. The following issues were prevalent during the discussion:

Runway 3-21 Noise Issues Resulting from Runway 8-26 Maintenance

Residents stated that the current noise levels in the Keaukaha area are different from the noise levels described on the maps due to the closure of Runway 8-26 for resurfacing activities. As the use of Runway 3-21 will increase during periods when weather conditions or maintenance activities prohibit the use of Runway 8-26, the

community felt that the noise levels during these periods should be addressed in the EA. Figures 5-3, 5-4, and 5-5 describe the noise levels generated during a typical departure event from Runway 8, Runway 3, and Runway 21, respectively. The noise contours here represent Sound Exposure Levels (SEL) rather than DNL, as the figures show the noise generated by a single event, the departure of a jet from a specific runway, rather than the average daily noise levels generated by all air traffic at the Airport.

During Runway 3-21 departures and landings, the Keaukaha residences near the end of Runway 21 are exposed to higher noise levels, relative to levels normally experienced during the use of Runway 8-26, which is the preferred runway. DOT-A tries to minimize the use of Runway 3-21, however, the increase in noise levels near the end of Runway 21 will occur in the future during periods when Runway 8-26 is closed for maintenance purposes, or when weather conditions dictate the use of Runway 3-21.

Relocation of Lessees Within the 75-DNL:

Questions were raised regarding how the relocation of lessees within the 75 DNL would be carried out and whether the vacated lot could later be leased to someone else. Relocation efforts would be accomplished through the purchase or acquisition of land elsewhere in Hilo by DOT-A. The land would then be transferred to DHHL via a land exchange. The resident would be provided with a house and a lot comparable to their current home. It is possible that relocation could be implemented without transfer of the land from DHHL jurisdiction, however, restrictions would need to be placed on its use. The lot could be used as an agricultural lot without a residence or as park space. In this way, the land could still serve to benefit the Keaukaha community.

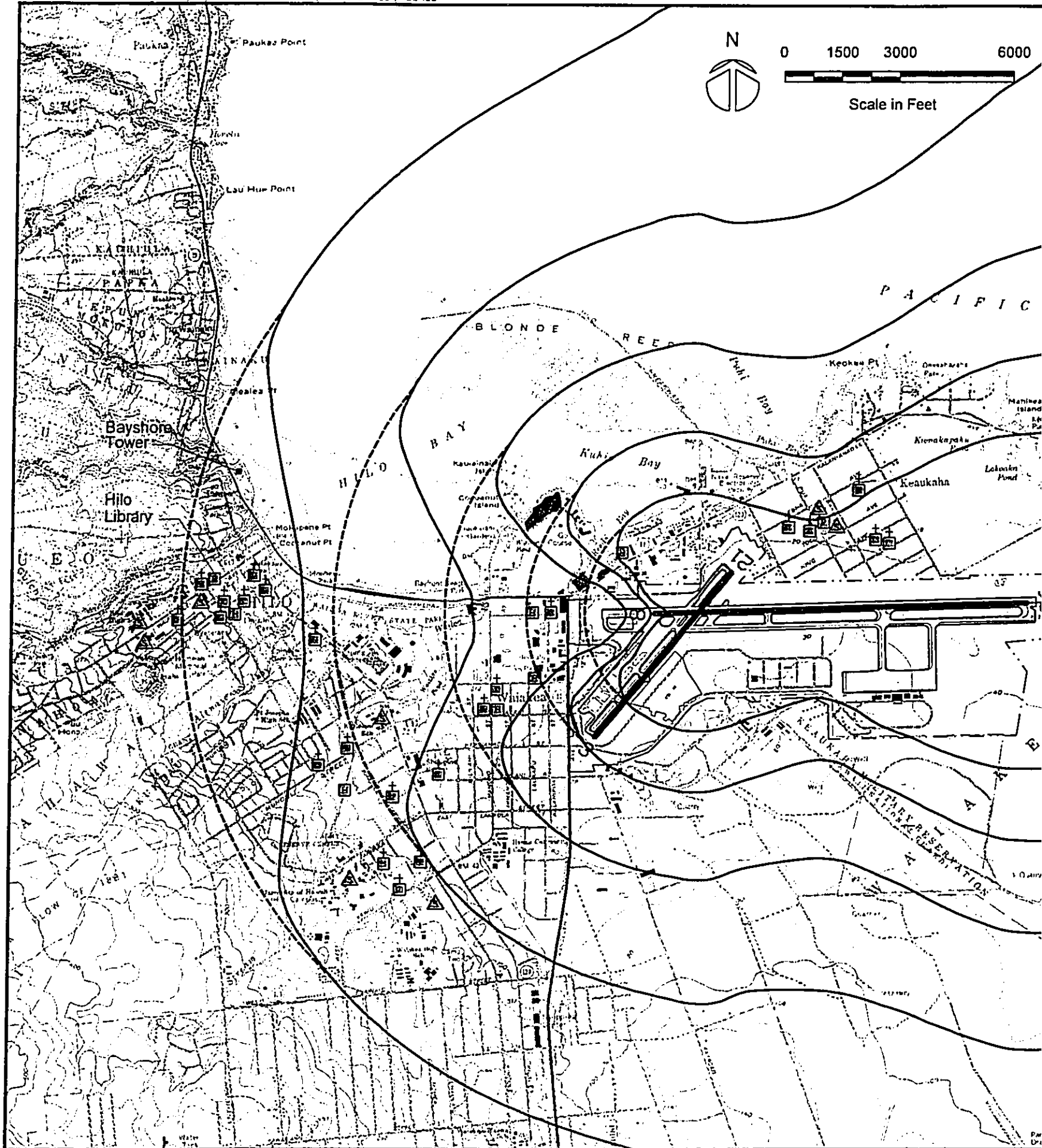
Sound Attenuation Treatment of Homes:

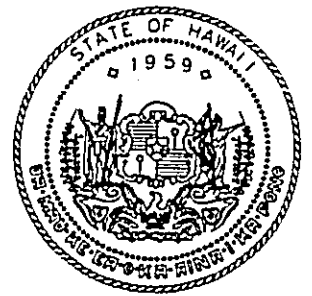
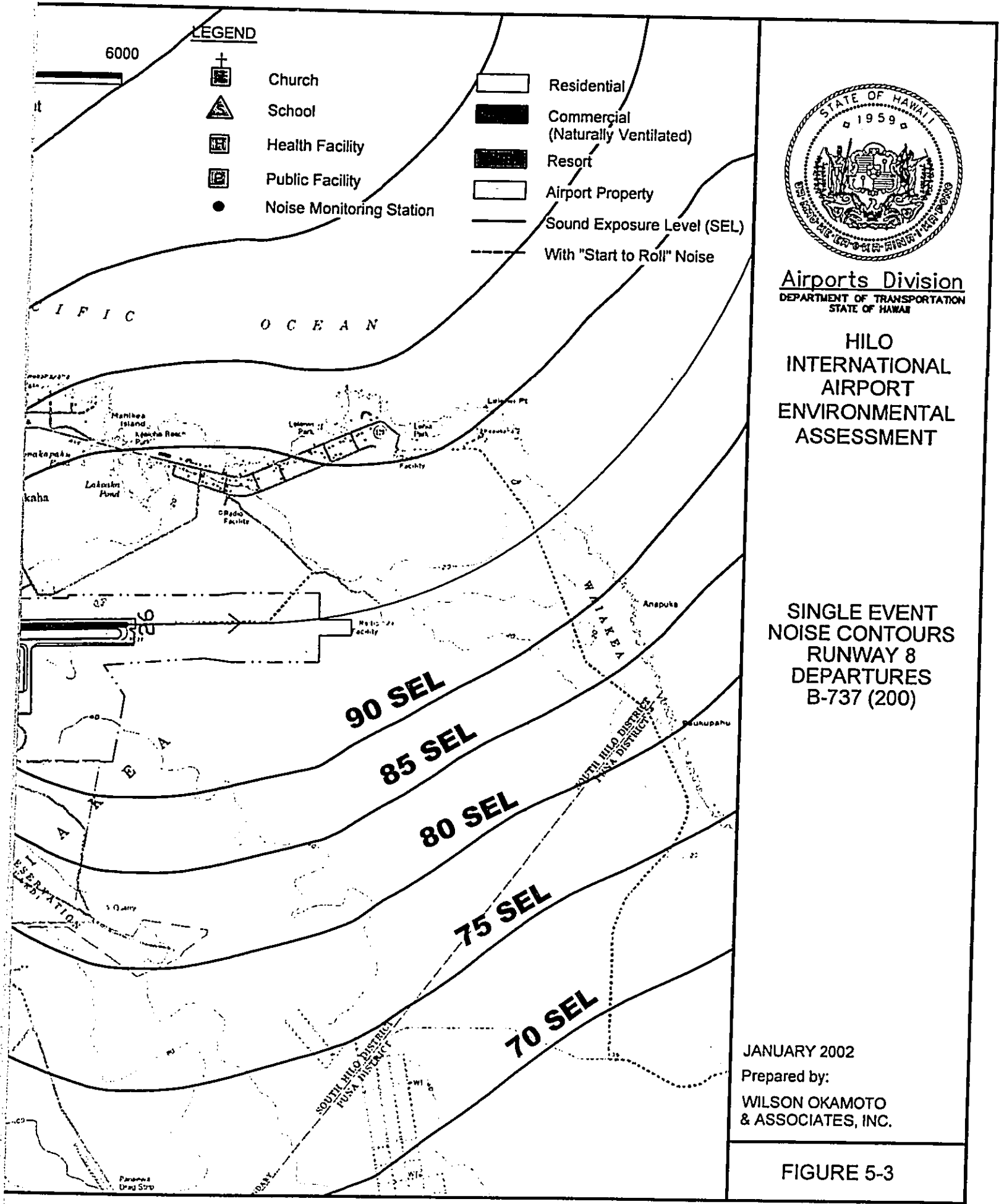
The possibility of sound treatment of homes was discussed in further detail as to how sound attenuation would be carried out. The initial step would be to measure noise levels at the existing structure before the renovations are designed. This would ensure that the proper level of attenuation is applied and constructed. The design and construction of the improvements must be in compliance with specific guidelines in order to receive funding from the FAA. If a homeowner is planning to renovate their home already, arrangements can be made whereby the State would reimburse the homeowner for the cost of improvements if the design meets the guidelines for proper sound attenuation. A pilot program can be coordinated where those who elect to participate would be first to receive sound treatment; the community and DOT-A would have to devise a fair method by which to choose the homes to participate in the program.

The next step in pursuing a noise attenuation program is to secure funding. After the terrorist events of September 11, 2001, DOT-A's budget for capital improvements was cut in order to fund projects related to airport safety and security. The sound attenuation treatment of homes is considered to be a compliance-related project, and therefore, there is presently no funding available. A pilot program can be incorporated into the high-priority list of projects, and funding can thereby be secured, but DOT-A cannot yet provide the Keaukaha community with a specific timetable or budget constraints. As for funding for the sound treatment of homes beyond the pilot program, FAA approval of funding for any Noise Compatibility Program is contingent upon the existence of community support of the program. The community needs to endorse the selected method to prove that the program merits FAA funding. Therefore, the budget for the program will be larger with more community members supporting the program.

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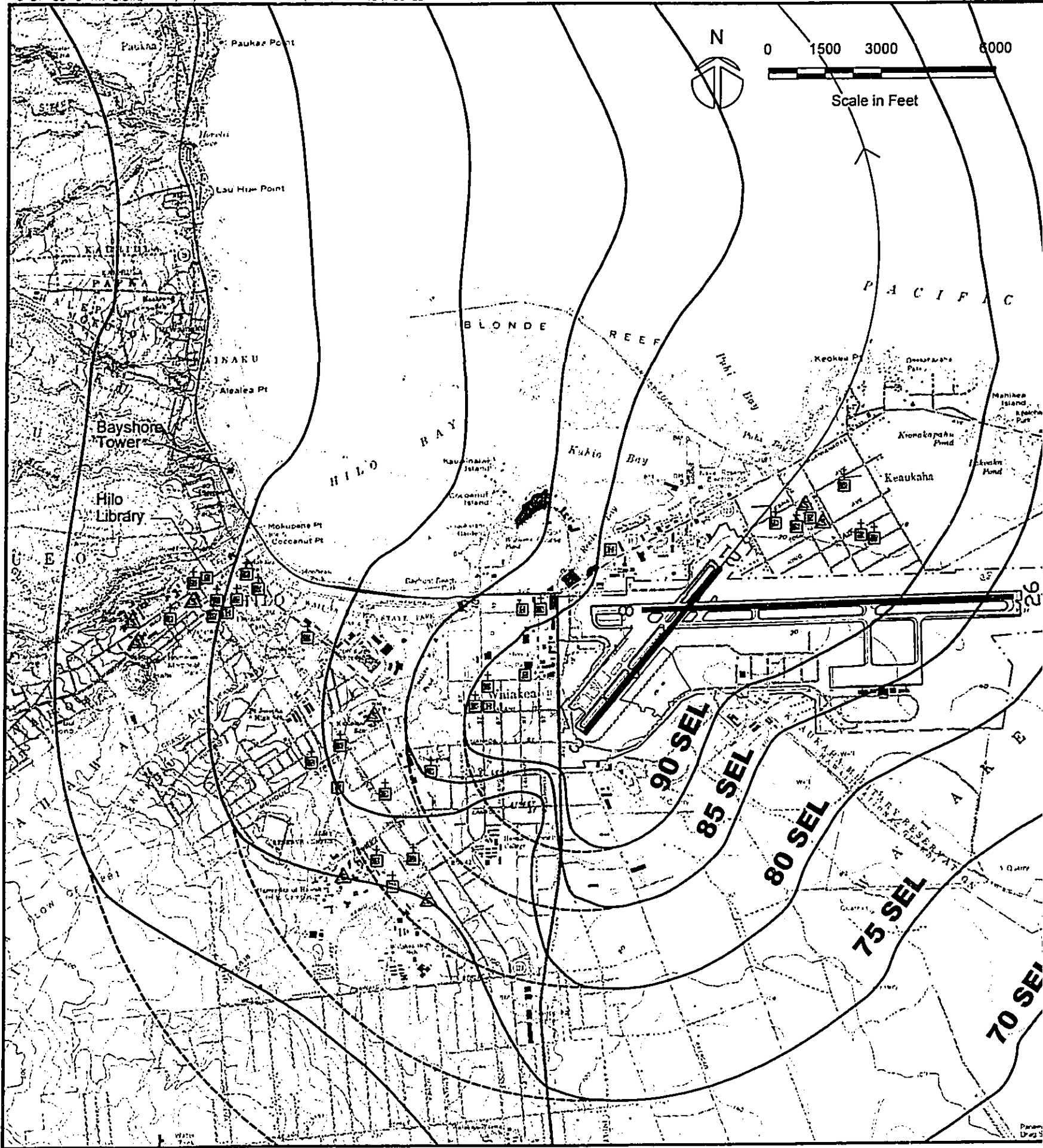
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RUNWAY 8
DEPARTURES
B-737 (200)

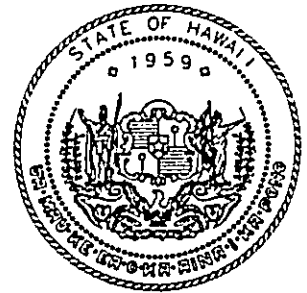
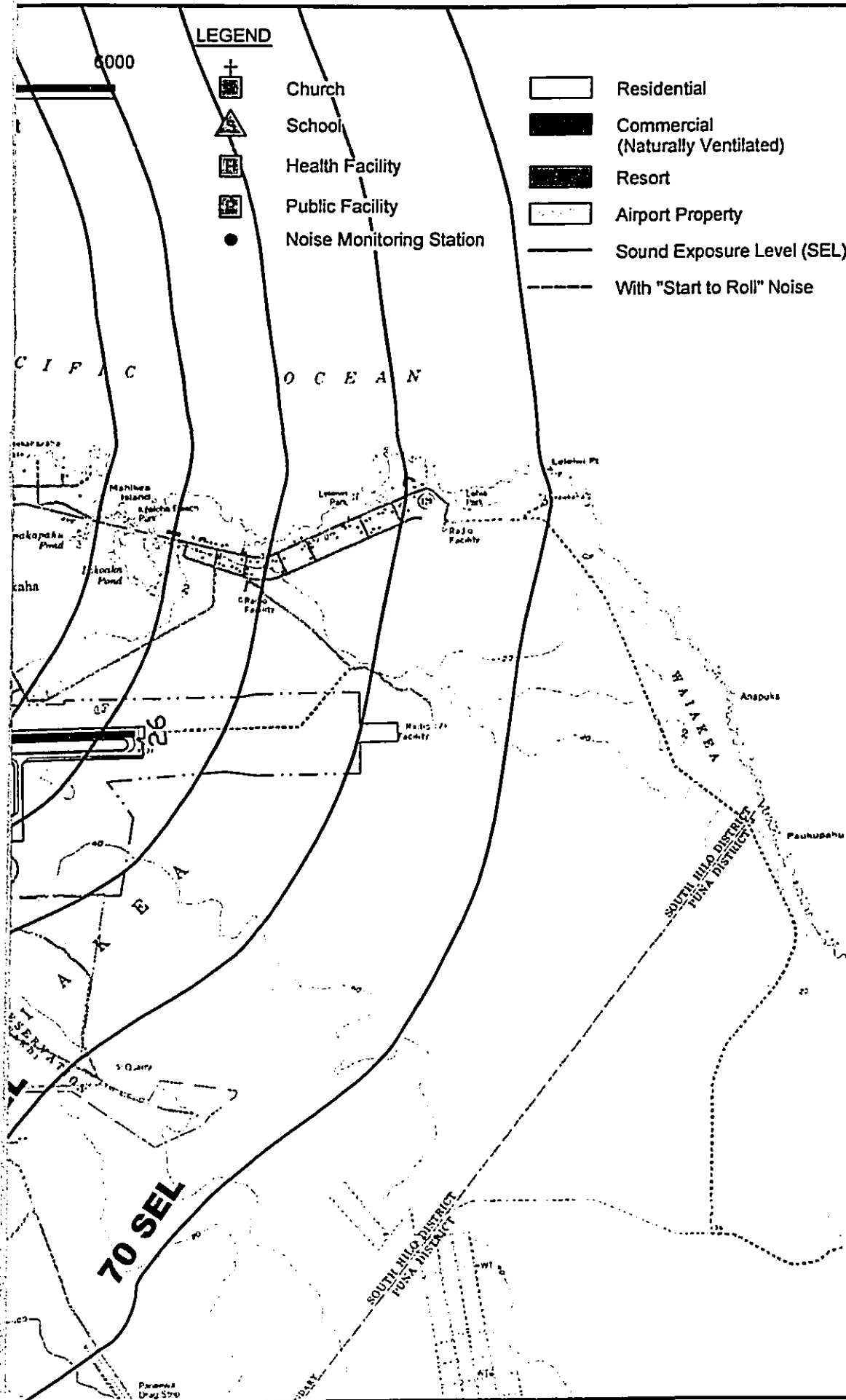
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FIGURE 5-3

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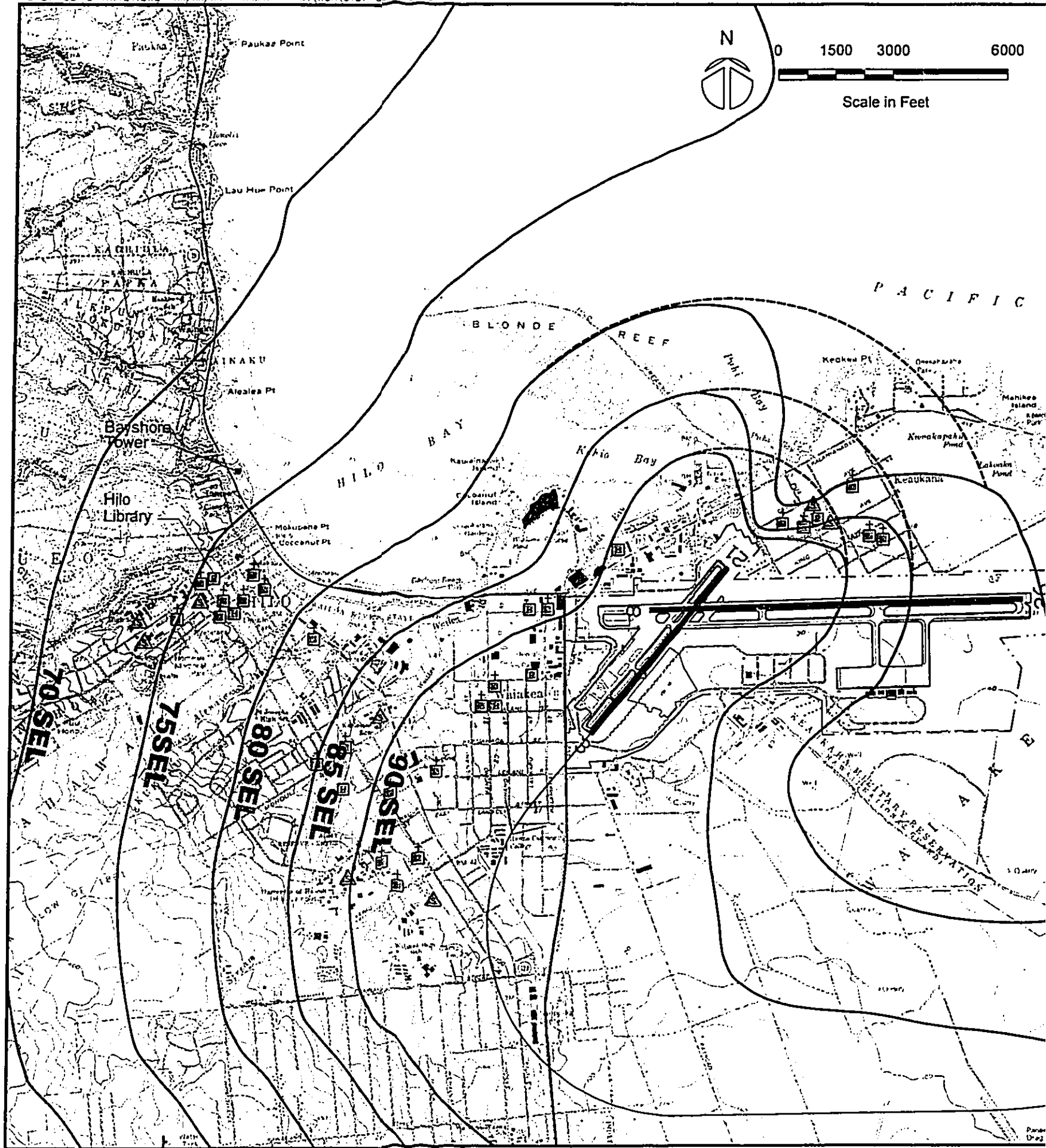
**SINGLE EVENT
NOISE CONTOURS
RUNWAY 3
DEPARTURES
B-737 (200)**

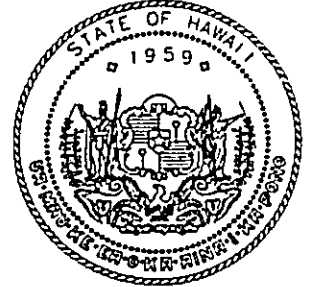
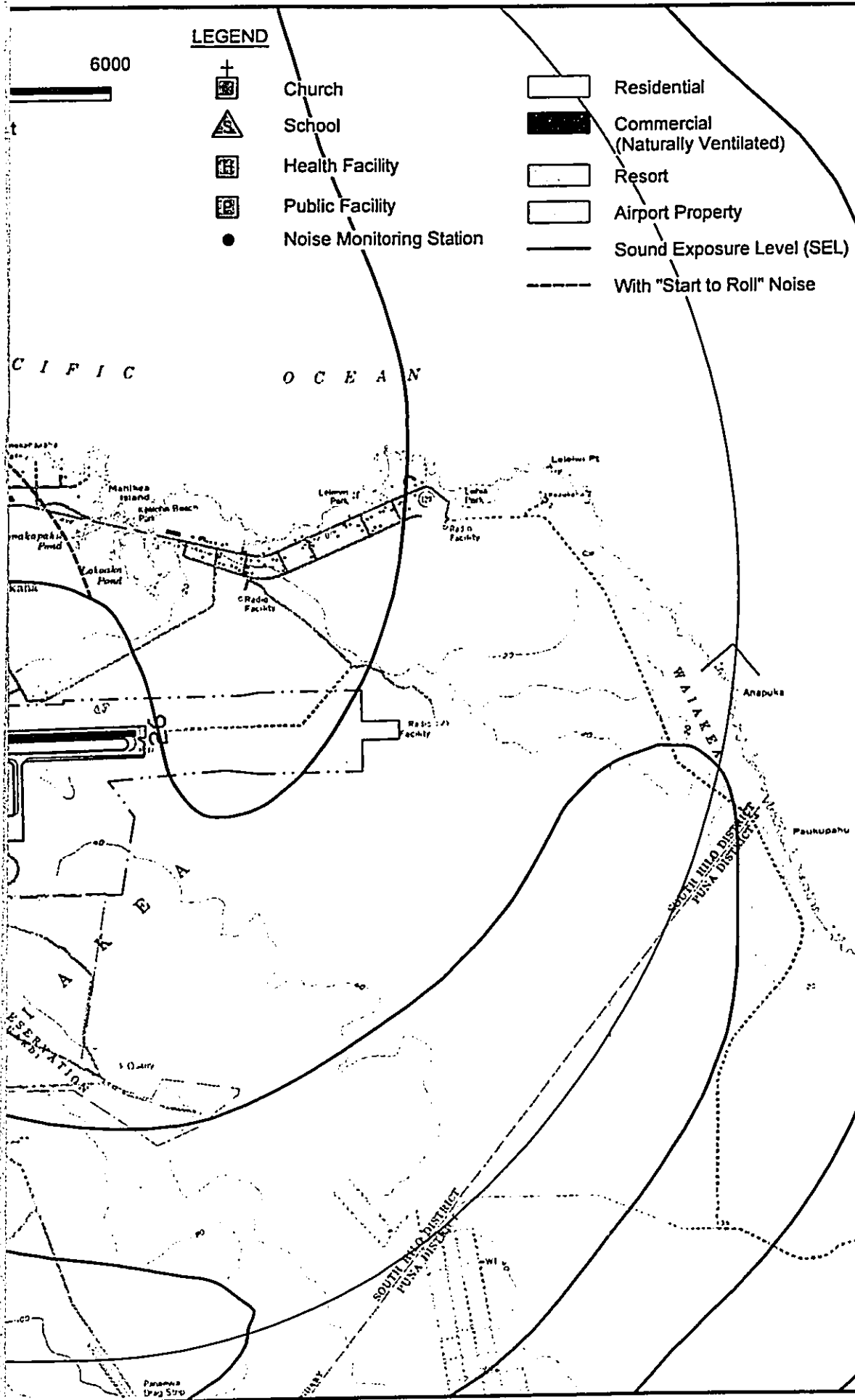
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FIGURE 5-4

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SINGLE EVENT
NOISE CONTOURS
RUNWAY 21
DEPARTURES
B-737 (200)

JANUARY 2002

Prepared by:

WILSON OKAMOTO
& ASSOCIATES, INC.

FIGURE 5-5

The meeting concluded with the announcement of the formation of a community-airport group to help sustain communication efforts between DOT-A and Keaukaha residents. The group will include community members and DOT-A staff in Hilo. DOT-A is continuing to determine the feasibility and extent of a program for the sound attenuation treatment of homes. The other options for noise mitigation that remain under consideration include the purchase of aviation easements and the relocation of residents from within the 75 DNL contour.

SECTION 6
ALTERNATIVES TO THE PROPOSED ACTION

6. ALTERNATIVES TO THE PROPOSED ACTION

6.1 CARGO FACILITY

6.1.1 No-Action Alternative

Under the No-Action alternative, the air cargo facilities at Hilo International Airport would remain in the old terminal area and the current inefficiencies would continue with the transfer of goods between inspection points in the main passenger terminal and cargo operations northeast of the runways. Many buildings and support facilities are deteriorated and would require replacement. Infrastructure, including sewer, drainage, and apron areas require improvements. The No-Action alternative would preclude the realization of all long-term benefits to the businesses that provide and utilize air cargo services at the Airport, as well as benefits to customers and the greater community of Hilo and the County of Hawaii.

The No-Action alternative would also preclude all other short- and long-term beneficial and adverse physical, environmental and socio-economic impacts described in this EA.

6.1.2 Alternative Cargo Sites Considered

Alternatives to the siting of the proposed hold cargo facility were explored as part of the preliminary design work for the cargo facility. In addition to the selected site located northwest of the existing commuter terminal, four other sites were considered as follows:

1. East of the commuter terminal, in line with the passenger terminal
This site has similar advantages with the proposed site, being located in the same general area and differing mainly in site development layout. The proposed site has slightly greater expansion potential and flexibility, and utilizes existing cargo apron more efficiently. There are no adverse environmental effects with this alternative. Sewer and water connection points are also conveniently located near this site, and storm water could be discharged to an existing drainage ditch adjacent to the site.

2. Airport industrial area just north of the FAA Air Traffic Control Tower
This site was considered attractive due to the space available for the cargo facility and two aircraft parking spaces in front of the facility. A water connection point is located nearby, and vehicles going to and from the facility would not need to travel around the terminal access loop road in order to access the facility. The site was eliminated because it would require the construction of a new apron and taxiway, as well as the installation of a new wastewater pump station with a force main or the installation of a septic tank/leaching field system. Drywells would also need to be installed. There are no adverse environmental effects with this alternative.

3. East of the passenger terminal

This site was also attractive due to the conveniently located sewer and water line connection points. However, site development costs would be greater due to the undeveloped nature of the site and substantial grading that would be required to relocate an open channel and create an embankment. This site would also require cargo traffic to travel along the terminal loop road, increasing the already congested access road to the passenger terminal.

4. Old terminal area

The old terminal area also has conveniently located water connection points, and does not require vehicular traffic to use the terminal loop. However, this site would continue to have the same inefficiencies for cargo operations which require additional transport to and from the passenger terminal area. The site also require additional installation of drywells for drainage and a wastewater pump station or a septic tank and leaching field.

6.2 HELICOPTER OPERATIONS

6.2.1 No-Action Alternative

The No-Action alternative for the heliport facility would be inconsistent with the recommendations of the Statewide Airport System Plan and the Hilo International Airport Master Plan. Helicopter operator's ticket counters would continue to be located in the west end of the passenger terminal building and in the commuter/air taxi terminal. Operators would continue using the west end of the air carrier apron for helicopter parking, takeoffs, and landings, and safety concerns regarding the close proximity of helicopters on the current parking apron would remain unresolved. The existing heliport's 11 helicopter pads are occupied and the lack of space for expansion would continue to hinder operators' plans to acquire additional helicopters in the future. Also, the existing lack of a sheltered waiting area for passengers would continue to be an issue.

The No-Action alternative would also preclude all other short- and long-term beneficial and adverse physical, environmental and socio-economic impacts described in this EA.

6.2.2 Alternative Sites Considered

In addition to the proposed site at the southwest corner of the Airport near the entrance, three other sites were examined on the Airport for relocating the existing heliport, which will be displaced by the proposed hold cargo facility. Meetings were held with helicopter operators to discuss these and other candidate sites to review the advantages and disadvantages of each alternative. These alternative sites are described and evaluated as follows:

1. North of the FAA Air Traffic Control Tower and State DOT-Airports Maintenance Baseyard: This site has the advantages of providing a good separation of fixed wing aircraft and helicopter operations. There would be a

clear line-of-sight from the FAA Air Traffic Control Tower enabling full control of operations. The site is proximate to utilities, and an access road and ample land are available for the development of lease lots as well as for future expansion. One disadvantage from the operators' standpoint is decreased visibility of the helicopter operations from the main Airport road for potential customers. The placement of helicopter operations in this area could also restrict future uses, especially fixed-wing aircraft related uses.

2. Reuse old terminal area (or demolish buildings and provide lease lots): Helicopter operators have expressed concerns regarding the remoteness of this site from the main Airport area and difficulty for customers to find and access the site. The old terminal area would also have the potential for conflicts with fixed wing aircraft, especially if general aviation uses remain in the old terminal area. Facilities in the old terminal area are in poor condition and are within the current building restriction line and therefore cannot be extended toward the airfield.
3. Undeveloped area east of the passenger terminal: The apron area at the east end of the passenger terminal has been designated through the cargo design process as the interim site for the relocation of helicopter operations. Development of a permanent site could be pursued in the undeveloped area east of the apron. However, this area has operational and safety concerns cited by FAA air traffic control tower personnel and helicopter operators due to the concentration and mix of fixed wing passenger and air cargo aircraft and helicopter traffic on the passenger terminal apron and surrounding airspace.

6.3 GENERAL AVIATION IMPROVEMENTS

6.3.1 No-Action Alternative

The No-Action alternative for the general aviation improvements would be inconsistent with the recommendations of the Statewide Airport System Plan and the Hilo International Airport Master Plan. The existing general aviation facilities at Hilo International Airport are insufficient to accommodate the existing number of aircraft and increasing level of aircraft operations. The current deficiencies, including the lack of hangar space, aircraft tie downs, and lease lots, would continue to exist under the No-Action alternative. Existing general aviation support facilities are very limited; infrastructure improvements and improvements to the aircraft parking apron are needed, as well as an aircraft wash rack.

The No-Action alternative would also preclude all other short- and long-term beneficial and adverse physical, environmental and socio-economic impacts described in this EA.

6.3.2 Alternatives

For general aviation facilities, lease lots, hangar space and tiedowns should be provided, including hangar space for 32 aircraft to accommodate projected demand. An aircraft parking apron with an area of 104,000 square feet should be provided for 26 based and itinerant aircraft parking spaces. Several options were explored for the siting of permanent general aviation facilities at the Airport:

- 1) relocate to the southwest corner of the Airport on presently undeveloped land
- 2) remain at the old terminal in the general area of their present operations
- 3) relocate to the southwest end of the old terminal

The undeveloped southwest corner of the Airport would have the highest development costs due to the lack of infrastructure service to the area. The location of general aviation operations southwest of the old terminal area could enable some reuse of existing buildings and the development of hangar and support facilities. Development in the old terminal area would facilitate development due to existing infrastructure and space availability with the relocation of cargo operations to the main terminal area.

6.4 PARKING IMPROVEMENTS

6.4.1 No-Action Alternative

The No-Action alternative for the parking improvements would be inconsistent with the recommendations of the Statewide Airport System Plan and the Hilo International Airport Master Plan. Parking lot modifications which include the expansion of parking facilities to accommodate future needs and reorientation of the vehicular circulation within the parking lot have been explored with the intent of further improving the efficiency of vehicular movements. Additional parking stall requirements over the planning period include 100 public, 90 employee, and 100 rental car stalls. The current parking facilities are inadequate for future demand projections, and the No-Action alternative would not allow for the improvement of circulation patterns or capacity.

The No-Action alternative would also preclude all other short- and long-term beneficial and adverse physical, environmental and socio-economic impacts described in this EA.

6.5 DOT-A BASEYARD IMPROVEMENTS

6.5.1 No-Action Alternative

The No-Action alternative for the DOT-A baseyard improvements would be inconsistent with the recommendations of the Statewide Airport System Plan and the Hilo International Airport Master Plan. Under this alternative, the DOT-A maintenance baseyard facilities would continue to be in need of upgrade and expansion to support the current level of airport operations.

The No-Action alternative would also preclude all other short- and long-term beneficial and adverse physical, environmental and socio-economic impacts described in this EA.

6.6 NOISE MITIGATION

6.6.1 No-Action Alternative

The No-Action alternative for noise mitigation would be inconsistent with the recommendations of the Statewide Airport System Plan and the Hilo International Airport Master Plan. Noise levels generated by Airport activities are an ongoing concern, as there are residential areas in the immediate vicinity of the Airport. The No-Action alternative would allow residents and businesses currently affected by high noise levels to continue to be exposed to such noise levels without abatement. Specifically, the No-Action alternative would be contrary to the Department of Transportation's efforts to foster a positive relationship with the Keaukaha community.

The No-Action alternative would also preclude all other short- and long-term beneficial and adverse physical, environmental and socio-economic impacts described in this EA.

6.6.2 15-Foot Noise Barrier Alternative

The FAR Part 150 Noise Compatibility Program report outlines options for noise mitigation, including sound-attenuation improvements to nearby residences and the construction of a 15-foot sound attenuation wall between the Airport and the Keaukaha Tract I residential subdivision to reduce the number of noise impacted structures. It was recommended that the continuous barrier be constructed of relatively dense and stiff materials to withstand wind loads and to attenuate aircraft noise levels.

The wall was included among the airport improvements listed for the proposed project during the pre-assessment consultation phase of this Environmental Assessment (EA). However, follow up consultation with the Keaukaha community resulted in the elimination of the sound attenuation wall as a recommended means of noise mitigation. Substantial concerns and opposition to the wall relative to views, aesthetics, wind impedance, and effectiveness were expressed at two community meetings, as well as through written comments and correspondence received by the DOT-A. Community sentiments against the construction of the wall were also expressed during door-to-door interviews of lessees that reside along the Airport boundary and through a questionnaire mailed to lessees within the area that experiences higher noise levels. Thus, DOT-A will not pursue the construction of the noise wall, and dialogue with the Keaukaha community concerning airport noise issues will continue separate from the proposed improvements included in this EA.

6.7 LAND ACQUISITIONS AND AVIGATION EASEMENTS

6.7.1 No-Action Alternative

The No-Action alternative for land acquisitions and the attainment of the avigation easement would be inconsistent with the recommendations of the County of Hawaii General Plan, the Statewide Airport System Plan, and the Hilo International Airport Master Plan. Under this alternative, the Airport would remain in noncompliance with Federal Aviation Administration (FAA) safety regulations for areas near the end of runways. The regulations state that certain areas located beyond the Airport property line should be included in a clear zone referred to as the Runway Protection Zone (RPZ). These areas have been noted for acquisition. Acquisition of lands within the runway object free area portion of the Airport runway protection zones is recommended to meet minimum FAA safety requirements. Additionally, land is needed in this area to reduce penetrations of the runway safety area and runway object free area by the Airport service road around the end of the runway.

The No-Action alternative would also preclude all other short- and long-term beneficial and adverse physical, environmental and socio-economic impacts described in this EA.

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**SECTION 7
REQUIRED PERMITS AND APPROVALS**

7. REQUIRED PERMITS AND APPROVALS

The following is a list of permits and approvals that may be required prior to the construction of the proposed improvements:

- National Pollutant Discharge Elimination System (NPDES) Storm Water Construction
- Erosion Control Plan

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**SECTION 8
ANTICIPATED DETERMINATION OF FONSI**

8. DETERMINATION OF FONSI

The proposed project involves the construction of the following improvements at Hilo International Airport in Hilo, Hawaii:

1. Development of a new hold cargo facility northwest of the main passenger terminal complex, including associated roadway, vehicular parking, infrastructure, and aircraft parking apron improvements;
2. Relocation of helicopter operations to the southwest corner of the Airport, including the development of lease lots, operational areas, and infrastructure;
3. General aviation facilities, including an aircraft parking apron, a new T-hangar, wash rack, aircraft tie-downs, and lease lots in the Old Terminal Area;
4. Expansion of public and employee parking areas;
5. Expansion of the DOT-A maintenance baseyard;
6. Noise mitigation projects, including sound attenuation for nearby residences and a 15-foot noise barrier between the Airport and the Keaukaha residential subdivision;
7. Acquisition of the triangular area between Kanoalehua Avenue and Runway 3, acquisition of a small area southwest of Runway 3 and west of Kanoalehua Avenue, and acquisition of a small area immediately northeast of Runway 21 for runway protection zone areas;
8. Acquisition of an aviation easement for the Runway 3 runway protection zone area.

Potential impacts of the proposed project have been evaluated in accordance with the significance criteria of Section 11-200-12 of the State of Hawaii Department of Health Administrative Rules. Discussion of the project's conformance to the significance criteria is presented as follows:

- (1) *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;*

The proposed project is not anticipated to involve any construction activity that may lead to a loss or destruction of any natural or cultural resource. There is little potential for encountering such resources, as most of the area within the site has already been graded and landscaped for the existing Hilo International Airport facilities.

- (2) *Curtails the range of beneficial uses of the environment;*

The proposed project will not curtail the beneficial uses of the environment. Use of the project site for the proposed improvements would be consistent with its current use as part of the Hilo International Airport.

- (3) *Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;*

The proposed project is not in conflict with the long-term environmental policies, goals, and guidelines of the State of Hawaii. As presented earlier in Section 4, the project's potential adverse impacts are associated only with the short-term construction-related activities, and such impacts can be mitigated through adherence to standard construction mitigation practices.

- (4) *Substantially affects the economic or social welfare of the community or state;*

The proposed project will have no adverse effects on the economy or social welfare of the City of Hilo or the County of Hawaii. Long-term social and economic benefits will manifest through the availability of timely, cost-effective air cargo transport of goods to and from market, improved visitor tour service as a result of the proposed helicopter and general aviation facilities, improved DOT-A baseyard support capacity, improved airport parking, noise mitigation efforts, and improved airport safety through compliance with FAA standards.

- (5) *Substantially affects public health;*

The proposed project will properly serve the people of Hilo and Hawaii County by enhancing the facilities on which the community relies for receipt of perishable food items and shipment of local products. Noise mitigation efforts and revised helicopter ingress and egress routes will also benefit communities currently exposed to high levels of Airport noise. Airport safety will also be improved through the attainment of aviation easements and land acquisitions.

- (6) *Involves substantial secondary impacts, such as population changes or effects on public facilities;*

No adverse secondary impacts are anticipated as a result of the construction activities or long-term operation of the proposed project. The proposed improvements are in concert with the recommendations of applicable sections of the County of Hawaii General Plan, the Statewide Airport System Plan, and the Hilo International Airport Master Plan, as stated in Section 5.

- (7) *Involves a substantial degradation of environmental quality;*

Construction activities associated with the proposed project are anticipated to result in negligible short-term impacts to noise, air-quality, and traffic in the immediate vicinity. With the incorporation of the recommended mitigation measures during the construction period, the project will not result in degradation of environmental quality.

- (8) *Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;*

No cumulative effects are anticipated, inasmuch as the proposed project involves the redevelopment of a site in a manner consistent with its current use as an airport.

- (9) *Substantially affects a rare, threatened, or endangered species, or its habitat;*

There are no known, threatened, or endangered species of flora, fauna, or associated habitats located on the project site that could be adversely affected by the construction and operation of the proposed project.

- (10) *Detrimentially affects air or water quality or ambient noise levels;*

Operation of construction equipment would temporarily elevate ambient noise levels and concentrations of dust and exhaust emissions in the vicinity of the project site. The project is consistent with the recommendations of the Hilo International Airport Noise Compatibility Program.

- (11) *Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;*

The project is located within Zone X, areas designated to be outside the 500-year flood plain. The proposed improvements will be constructed to comply with County of Hawaii building codes, and the drainage improvements described in Section 4 will minimize any potential of localized flooding.

- (12) *Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or,*

The proposed project will alter the visual setting by adding the cargo facility at the west end of the existing air carrier apron and a new T-hangar near the Old Terminal. The new structures, however, will comply with all applicable development standards of the existing zoning and will not affect scenic views.

- (13) *Requires substantial energy consumption.*

Construction and operation of the project will not require substantial increases in energy consumption.

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**SECTION 9
CONSULTATION**

9. CONSULTATION

9.1 PRE-ASSESSMENT CONSULTATION

The following agencies, elected officials and organizations were consulted during the preparation of the Draft EA. Of the 17 parties that formally replied during the pre-assessment period, some had no comments (✓) while others provided substantive comments (✓✓). All written comments are reproduced herein.

Federal Agencies

- ✓ U.S. Army Corps of Engineers
- ✓✓ U.S. Customs Service
- U.S. Department of Agriculture, Animal and Plant Health Inspection Service
- U.S. Department of Transportation, Federal Aviation Administration
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service

State Agencies

- ✓✓ Department of Agriculture
- Department of Business, Economic Development and Tourism (DBEDT)
- Office of Planning
- Department of Defense (DOD), Hawaii Air National Guard
- DOD Hawaii Army National Guard, State Army Aviation Office
- ✓✓ Department of Hawaiian Home Lands
- Department of Health (DOH)
- ✓✓ DOH Office of Environmental Quality Control
- ✓ Department of Land and Natural Resources (DLNR)
- DLNR Historic Preservation Division
- DLNR Land Division
- Department of Transportation
- ✓✓ Office of Hawaiian Affairs
- University of Hawaii at Manoa, Environmental Center

County Agencies

- ✓✓ Department of Public Works
- Department of Research and Development
- ✓✓ Department of Water Supply
- ✓✓ Planning Department

Elected Officials

- State Senator David Matsuura
- State Representative Jerry L. Chang
- Hawaii County Councilman Aaron Chung

Other Interested Parties

- ✓✓ Above It All
- Airlines Committee of Hawaii
- Air-Flo Express, Inc.
- Airborne Freight Corporation
- Aloha Airlines, Inc.
- Century Aviation
- Commodity Forwarders
- Federal Express Corporation
- General Aviation Council of Hawaii
- Hawaii Airline Liaison Office
- Hawaii Agriculture Industry
- Hawaii Flight Academy
- Hawaii Orchid Air
- Hawaiian Airlines, Inc.
- Helicopter Consultants of Maui, dba Blue Hawaiian Helicopters
- Island Hoppers
- K & S Helicopters, Inc.
- Kamehameha Schools
- ✓✓ Keaukaha Community Association
- Leslie B. Ito, dba Air Freight Specialist
- Murrayair Ltd.
- Safari Aviation, Inc.
- Sierra Club, Hawaii Chapter
- Sunshine Helicopters
- Tropical Helicopters
- ✓✓ Volcano Helicopters

Individuals

- ✓✓ Jacob S. Kiko, Jr.
- Allen Tim Sing
- Ann Paulino
- Francine Y. Lee Etal., Yap Mew Kong Trust
- ✓✓ Genesis Lee Loy
- ✓✓ Reid Y. Furutani Etal., Able Electric, Inc.
- Diane Uyeda
- ✓✓ Hayato Okino Etal.
- Albert Koizumi Etal.
- Janice M. Oshiro Hwang Etal.

9.2 DRAFT EA CONSULTATION

Copies of the Draft EA were sent to the agencies, organizations, and individuals listed below, with a request for their comments on the project. A total of seven (7) comment letters were received. Of those who formally replied, all provided comments (✓✓). All written comments and responses are reproduced herein.

Federal Agencies

- ✓✓ U.S. Army Corps of Engineers
- U.S. Customs Service
- U.S. Department of Agriculture, Animal and Plant Health Inspection Service
- U.S. Department of Transportation, Federal Aviation Administration
- U.S. Fish and Wildlife Service

State Agencies

- Department of Agriculture
- Department of Business, Economic Development and Tourism (DBEDT)
 - Office of Planning
- Department of Defense (DOD), Hawaii Air National Guard
- DOD Hawaii Army National Guard, State Army Aviation Office
- Department of Hawaiian Home Lands
- ✓✓ Department of Health (DOH)
- ✓✓ DOH Office of Environmental Quality Control
- Department of Land and Natural Resources (DLNR)
 - DLNR Historic Preservation Division
- ✓✓ DLNR Land Division
- Department of Transportation
- Hilo Public Library
- Keauau Public and School Library
- Laupahoehoe Public and School Library
- ✓✓ Office of Hawaiian Affairs
- University of Hawaii at Manoa, Environmental Center

County Agencies

- Department of Public Works
- Department of Research and Development
- Department of Water Supply
- Planning Department

Elected Officials

- State Senator David Matsuura
- State Representative Jerry L. Chang
- Hawaii County Councilman Aaron Chung

Other Interested Parties

- ✓✓ Above It All
- ✓✓ Airlines Committee of Hawaii
- Air-Flo Express, Inc.
- Airborne Freight Corporation
- Century Aviation
- Commodity Forwarders
- Federal Express Corporation
- General Aviation Council of Hawaii
- Hawaii Airline Liaison Office
- Hawaii Agriculture Industry
- Hawaii Flight Academy
- Hawaii Orchid Air
- Helicopter Consultants of Maui, dba Blue Hawaiian Helicopters
- Island Hoppers
- Kamehameha Schools
- Keaukaha Community Association
- Leslie B. Ito, dba Air Freight Specialist
- Murrayair Ltd.
- Safari Aviation, Inc.
- Sierra Club, Hawaii Chapter
- Sunshine Helicopters
- Tropical Helicopters
- Volcano Helicopters

**COMMENT AND RESPONSE LETTERS
FROM THE PRE-ENVIRONMENTAL ASSESSMENT
CONSULTATION**



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96824-5440

MEMO TO
ATTENTION OF

July 12, 2001

Civil Works Technical Branch

Mr. Jerry M. Matsuda, Airports Administrator
Department of Transportation
Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819

Dear Mr. Matsuda:

Thank you for the opportunity to review and comment on the Pre-Assessment Consultation for Various Projects at the Hilo International Airport, Hilo, Hawaii. Due to the broad base of projects being proposed for the existing airport, an evaluation could not be completed at this time. We will provide site specific information as plans for each project are developed in the future. However, any work performed within the 100-year floodplain will have to adhere to the requirements of the Federal Emergency Management Agency. Additionally, the need for a Department of the Army permit will be provided on a project-by-project basis.

If you require additional information, please feel free to contact Ms. Jessale Dobinichick of our Civil Works Technical Branch staff at (808) 438-8876.

Sincerely,

James Pennaz
James Pennaz, P.E.
Chief, Civil Works
Technical Branch

BERNARD J. CAVETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1480

MEMO REPLY REFER TO

AIR-P
02.0254

August 5, 2002

Mr. James Pennaz, P.E.
Chief, Civil Works Technical Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96828-3440

Dear Mr. Pennaz:

Subject: Pre-Assessment Consultation
Hilo International Airport Environmental Assessment
State Project No. AH1011-03

Thank you for your letter regarding the subject Environmental Assessment (EA). We will continue to work closely with your department in the event that a Department of the Army permit is required.

We appreciate your interest and participation in the environmental review process. Your letter will be included in the forthcoming Draft EA. Please contact Ms. Lynn Becomes, Planner, at 838-8811, to clarify any questions you may have.

Sincerely,

Devin T. King

ROY K. SAKATA
Acting Airports Administrator

✓ c: Wilson Okamoto & Associates, Rodney Funakoshi

BENJAMIN J. CAYetano
GOVERNOR

BRANK MAJALI
DIRECTOR
DEPUTY DIRECTORS
JEAN L. OSHTA
JACQUELYN URASAKI



U.S. Customs Service
Pacific Tower, Suite 2500
1001 Bishop Street
Honolulu, HI 96813

Mr. Jerry M. Matsuda, P.E.
Airports Administrator
400 Rogers Blvd., Suite 700
Honolulu, HI 96819

Dear Mr. Matsuda:

This is in response to your letter of June 28, 2001, in which you requested comments regarding the environmental assessment for the improvement projects at the Hilo International Airport.

The U.S. Customs Service has no comments to offer regarding the environmental assessment.

However, we do note that one of the projects being planned is a General Aviation Facility. It is requested that Customs be included in any future planning meetings for this facility. At the Hilo International Airport, Customs is currently processing approximately 30 direct foreign arrivals of general aviation aircraft each year. It is anticipated that this number will continue to increase in the coming years.

It is essential that the General Aviation Facility include an appropriate facility for the federal inspectional agencies. Processing of documents for the aircraft as well as, inspection of the crew, passengers and their baggage and cargo is a requirement for both arrival and departure procedures.

We are looking forward to meeting with your staff and the facility contractors to assist in the planning process.

The U.S. Customs point of contact for this matter is Assistant Port Director Harley J. Carter. Telephone # 808-522-8080 Ext. 143.

Sincerely,

Nat H. Aycox
Port Director

TRADITION

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SERVICE

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HONOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 ROGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819



August 5, 2002

WEEKLY REFER TO
AIR-P
02.0262

Mr. Nat H. Aycox, Port Director
U.S. Customs Service
Pacific Tower, Suite 2500
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Aycox:

Subject: Pre-Assessment Consultation
Hilo International Airport Environmental Assessment
State Project No. AH1011-03

Thank you for your letter regarding the subject Environmental Assessment (EA). Your comment regarding the future planning of the General Aviation Facility is acknowledged and we intend to coordinate with your agency, general aviation operators, and other appropriate parties to assist in the planning process.

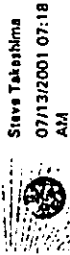
We appreciate your interest and participation in the environmental review process. Your letter will be included in the forthcoming Draft EA. Please contact Ms. Lynn Becones, Planner, at 838-8811, to clarify any questions you may have.

Sincerely,

ROY K. SAKATA
Acting Airports Administrator

cc: Wilson Okamoto & Associates, Rodney Funakoshi

Hang Lilo, No Ke Ala Aloha
Working Together to Provide Gateways of Aloha



Steve Takashima
07/13/2001 07:18 AM
To: Lynn Beconesi/AIR/HIDOT
cc: Lynn Beconesi/AIR/HIDOT
Subject: Re: Pre-Assessment Consultation - Hilo Int'l Airport Environmental Assessment

----- Forwarded by Steve Takashima/AIR/HIDOT on 07/13/2001 07:19 AM -----



Kevin_B_Foster@rl.fws.gov
07/12/2001 04:29 PM
To: Jerry Matauda@exec.state.hi.us
cc: Ben_Schlapak@exec.state.hi.us, Dennis_Higa@exec.state.hi.us, Kevin_B_Foster@rl.fws.gov (96825), Marilet_Zablan@rl.fws.gov, Michael_Molina@rl.fws.gov, Steve_Takashima@exec.state.hi.us
Subject: Re: Pre-Assessment Consultation - Hilo Int'l Airport Environmental Assessment

Jerry,

Thanks. It appears that not all of my last sentence made it...I just want to add that Newell's Shearwater and the Hawaiian dark rumped petrel, federally listed species, that may occur in the vicinity of the proposed project.

Aloha,

Kevin B. Foster
U.S. Fish and Wildlife Service
300 Ala Moana Blvd., Rm J-122
Honolulu, Hawaii 96850
Telephone 808/541-3441
Fax 808/541-3470
Email kevin_b_foster@fws.gov

Jerry_Matauda@exec.state.hi.us
07/12/2001 04:29 PM
To: Kevin_B_Foster@rl.fws.gov (96825)

cc: Marilet_Zablan@rl.fws.gov, Ben_Schlapak@exec.state.hi.us, Steve_Takashima@exec.state.hi.us, Dennis_Higa@exec.state.hi.us

Subject: Pre-Assessment Consultation - Environmental Assessment

This is in response to your e-mail. Ben Schlapak will follow-up on your request. Aloha!!!

Kevin_B_Foster@rl.fws.gov
07/12/2001 03:15 PM
To: Jerry_Matauda@exec.state.hi.us
cc: Marilet_Zablan@rl.fws.gov, Michael_Molina@rl.fws.gov
Subject: Pre-Assessment Consultation - Hilo Int'l Airport Environmental Assessment

Jerry,

Per our telephone conversation (July 12, 2001), I would appreciate it if you could mail to us a copy of the subject draft ZA when it becomes available. We are interested in reviewing this project for potential impacts to federally listed species that may occur in the vicinity of the proposed project site. These species may include the Hawaiian hoary bat

Kevin B. Foster
U.S. Fish and Wildlife Service
300 Ala Moana Blvd., Rm J-122
Honolulu, Hawaii 96850
Telephone 808/541-3441
Fax 808/541-3470
Email kevin_b_foster@fws.gov

BENJAMIN J. CAYetano
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 ROCKETT BOULEVARD, SUITE 200
HONOLULU, HAWAII 96819-1880

BRANKI MOJALI
DIRECTOR
DEPUTY DIRECTORS
JAMES L. COOPER
JUDITH V. URASIMSKI

WORK NUMBER
AIR-P
02.0257

August 7, 2002

Mr. Kevin B. Foster
U.S. Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

Dear Mr. Foster:

Subject: Pre-Assessment Consultation
Hilo International Airport Environmental Assessment
State Project No. AH1011-03

Thank you for your e-mail message regarding the subject Environmental Assessment (EA). The presence of the federally listed species of Newell's Shearwater and the Hawaiian dark rumped petrel will be documented in the forthcoming EA.

We appreciate your interest and participation in the environmental review process. Your comment will be included in the Draft EA. Please contact Ms. Lynn Becones, Planner, at 838-8811, to clarify any questions you may have.

Sincerely,

Don T. Hays

ROY K. SAKATA
Acting Airports Administrator

c: Wilson Okamoto & Associates, Rodney Funakoshi

BRIAN K. MINA
DIRECTOR
DEPUTY DIRECTORS
JEAN L. OSMIA
JADRIE Y. URASAKI

WHERE REFER TO
AIR-P
02.0265



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

August 8, 2002

BENJAMIN J. CAVETANO
GOVERNOR

JAMES J. NAKATANI
Chairman, Board of Agriculture
LETITIA H. UTEHARA
Deputy to the Chairman
Haring Aiea, HI
P.O. Box 72159
Honolulu, Hawaii 96272-2159
Fax: (808) 973-9613



State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 South King Street
Honolulu, Hawaii 96814-2512

July 25, 2001

BENJAMIN J. CAVETANO
Governor

To: Jerry M. Matsuda, Administrator
Airports Division
Department of Transportation

From: James J. Nakatani, Chairperson
Board of Agriculture

Subject: Environmental Assessment
Hilo International Airport Improvements
State Project: AH1011-03
TMK: 2-1-12: por. 9
2-1-20: 14, 40, 41
2-2-37: 41
2-2-35: 68-73

Thank you for the opportunity to comment on the subject improvements. One concern of the Hawaii Farm Bureau Federation's Commodity Action Group is that the hold cargo facility be designed to readily accommodate the storage needs of different crops without requiring expensive alterations. Likewise, the Plant Quarantine inspection program may have some recommendations regarding the specific location, layout, and improvements that would support the efficient and cost-effective inspection of air cargo.

Should you have any questions, please contact Earl Yamamoto at 973-9466.

c: Melvin Enriques, Supervisor, Hilo Plant Quarantine Branch
Hawaii Farm Bureau Federation

HAWAIIANA 901



TO: JAMES J. NAKATANI, CHAIRPERSON
BOARD OF AGRICULTURE
FROM: BRIAN K. MINA
DIRECTOR OF TRANSPORTATION
SUBJECT: PRE-ASSESSMENT CONSULTATION
HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT
STATE PROJECT NO. AH1011-03

Thank you for your letter regarding the subject Environmental Assessment (EA). Your letter noted that the Hawaii Farm Bureau Federation's Commodity Action Group would like the hold cargo facility to be designed to readily accommodate the storage needs of different crops without requiring expensive alterations. We have worked with air cargo operators and freight forwarders from the pre-design phase of the project through the present to ensure that the marshalling areas and utility improvements will effectively support the tenant spaces.

You also commented that the Plant Quarantine inspection program may have recommendations regarding the design of a space to support the efficient and cost-effective inspection of air cargo. The State Department of Agriculture, most notably the Plant Quarantine Branch, has been involved in the design of the space designated for agency use. The recommendations made by your Department have been incorporated into the design.

We appreciate your interest and participation in the environmental review process. Your letter will be included in the forthcoming Draft EA. Please contact Ms. Lynn Decones, Planner, at 838-8811, to clarify any questions you may have.

c: Wilson Okamoto & Associates, Rodney Funakoshi



STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOMELANDS
P.O. BOX 1879
HONOLULU, HAWAII 96805

ARNOLD C. SOON
CHAIRMAN
ASSESSMENT COMMISSION
JOSEPH K. M. YAMAGUCHI
DEPUTY TO THE CHAIRMAN

Mr. Jerry M. Matsuda
July 26, 2001
Page 2

July 26, 2001

To: Jerry M. Matsuda, Airports Administrator
Department of Transportation (AIR-P)

From: Darrell Yagodich, Administrator
Planning Office

Subject: Pre-Assessment Consultation
Hilo International Airport Environmental Assessment
State Project No. AH1011-03
Tax Map Key: 2-1-12:9 (por; 2-1-20:14, 40, 41;
2-2-37:41; 2-2-35:68-073)

Thank you for the environmental assessment project summary for various improvements proposed for the Hilo Airport. The improvements and actions described appear to reflect the first phase of developments proposed in the Hilo International Airport Master Plan which was completed last year by the Department of Transportation (DOT).

As we stated during consultations for that project, the Department of Hawaiian Home Lands (DHHL) views the incompatibility between airport operations and the adjacent residential communities as a health and safety issue. The DHHL wants to see reductions of current adverse impacts on existing community facilities and individual households before any more development occurs at the airport.

What is the status of actions to eliminate excessive noise impacts within buildings at Keaukaha Elementary School? When will relief from excessive aircraft noise be offered to the 230 Keaukaha Tract-1 homes that would be exposed to noise greater than 60 DNL?

Following are DHHL comments in response to specific items in your Project Summary for the environmental assessment (EA).

1. Hold Cargo Facility

We are concerned more about the increased aircraft and ground traffic that would result after construction of this new facility.

Would cargo flights increase? How many and what types of aircraft; how noisy would they be; anticipated times of landings and takeoffs? Which runways would be used? Explain necessity for any flights during night hours.

Would vehicular traffic entering and leaving the airport increase? How many and what types of vehicles; anticipated times when they would add to local traffic? Will the 150 parking and loading stalls that will be added be adequate to handle the traffic?

2. Helicopter Facilities

Describe current and anticipated helicopter operators and the purposes for their activities. Discuss how helicopter flights will change due to relocation to the new facilities.

Would helicopter flights increase? How many and what types of aircraft; how noisy would they be; anticipated times of landings and takeoffs? Would adjusted flight paths go over residential areas not overflown under current operations? Will there be any helicopter flights during night hours?

3. General Aviation Facilities

Improvements to the seven-acre site near the Old Terminal are proposed to include water, wastewater, drainage, electrical and communications to support future growth of general aviation. The DHHL is evaluating future use of its adjacent 11.685-acre parcel (TMK 2-1-12:70) and would like to coordinate planning for future access and utility services. Please share any plans for adjusting access, roadways, and fencing.

The nature of general aviation operations should also be described in terms of the frequency, intensity and timing of aircraft noise and fume impacts on the adjoining neighborhoods.

Mr. Jerry M. Matsuda
July 26, 2001
Page 3

4. Parking

Access and adequate circulation and parking are of interest to all users of the Airport. Are new alternative routes being considered for accessing the Airport?

5. DOT-A Baseyard Expansion

No specific comment.

6. Noise Mitigation

Appropriate timing of specific projects recommended in the Airport Master Plan is critical. We believe that relief should come first to those in the community most adversely impacted by excessive aircraft noise and fumes before spending money on airport capital improvements. The airport is responsible for all adverse impacts that spill over into the community. All cumulative impacts should be addressed; i.e., if acoustical insulation is necessitated, the DOT should also cover the costs for air conditioning and increased electric bills.

From past public meetings, the DOT is aware that the proposed 15-foot high sound attenuation barrier (which it proposes to be continuous and more than one mile long) is not popular with many local residents because it would be an obstacle to evacuation from shoreline areas during tsunami alerts, and would degrade trade winds and views. Rejection of this proposal by the community does not relieve DOT of responsibility for pursuing other mitigation approaches.

7. Land Acquisitions and Avigation Easements

The DOT perspective for satisfying FAA requirements for land acquisitions or easements must also consider the needs and concerns of current owners and occupiers of the targeted lands. The lots adjacent to the NE end of Runway 21 proposed for acquisition through a land exchange with DHHL are currently under residential homestead leases. (Tax Map Key 2-1-20:14, 40, 41) Asking people to relocate from their homes is a serious matter; the DOT should be timely, empathetic and generous in its

Mr. Jerry M. Matsuda
July 25, 2001
Page 4

direct negotiations with households they see a need to displace. In seeking land exchanges, the well-being and satisfaction of homestead families is a primary concern of the DHHL and its executive board, the Hawaiian Homes Commission. Has the DOT identified suitable areas for relocating households?

Adverse impacts from airport operations on the utility and value of all Hawaiian home lands is also a concern.

8. Land Use Designations

While current State and County of Hawaii land use designations allow for airport uses of the airport property, "conditional zoning" may be sought to regulate and control adverse impacts that spill over onto neighboring properties. The use of this regulatory method should be considered as an alternative in the EA and its impacts, positive and negative, analyzed and discussed.

9. Anticipated Impacts

A Finding of No Significant Impact (FONSI) for this project should not be considered because the proposed changes do not reduce and may compound existing excessive impacts that are adverse to both human health and safety. Noise abatement and mitigation measures similar to what is in the current proposal were presented back in 1992, but nothing significant has happened since. Existing adverse impacts should be mitigated before any new development is initiated within the airport.

Noise and air quality impacts should be actually measured rather than "estimated."

Please provide us with the draft environmental assessment, and request that copies also be sent to the Keaukaha Community Association and households identified for possible relocation. We look forward to consultations relative to Title VI Environmental Justice requirements of the Civil Rights Act and project eligibility for federal funding.

If you have any questions regarding our comments, please feel free to call me at 586-3836, or Joe Chu at 587-6421.

BEULAH J. CAVETANO
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 ROOFGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1600

August 10, 2001

DEANER MUKAI
DIRECTOR
SCOTT OKAMOTO
CLEMENS OKAMOTO
JACQUELYN CRACIUN

NIPEPEY REFER TO

AIR-P
01.0477

TO: DARRELL YAGODICH, ADMINISTRATOR
DEPARTMENT OF HAWAIIAN HOME LANDS

FROM: JERRY M. MATSUDA, P.E. *Jerry M. Matsuda*
AIRPORTS ADMINISTRATOR

SUBJECT: PRE-ASSESSMENT CONSULTATION, HILO INTERNATIONAL AIRPORT
ENVIRONMENTAL ASSESSMENT, HILO, HAWAII

Thank you for your letter of July 26, 2001, regarding the subject Environmental Assessment (EA). We offer the following in response to your comments:

1. Hold Cargo Facility - The proposed hold cargo facility is not expected to generate increased cargo operations as the facility is essentially a relocation and consolidation of facilities currently located elsewhere on the Airport. Responses to your specific questions will be provided in the forthcoming Draft EA.
2. Helicopter Facilities - As with the cargo facility, the new helicopter facility is a relocation of existing operations. Responses to your specific questions will be addressed in the forthcoming Draft EA.
3. General Aviation Facilities - We intend to coordinate future infrastructure improvements in the Old Terminal Area with your department and other agencies having land holdings in the area.
4. Parking - An additional access road to the Airport is being planned by the County through the Puaikoa Street extension, as indicated on the current General Plan Facilities Map.
5. DOT-A Baseyard Expansion - No response required.

*Hono Eke Aia Ke Alo Alo
Working Together to Provide Gateway of Aloha*

Darrell Yagodich
August 10, 2001
Page 2

AIR-P
01.0477

6. Noise Mitigation - Your concerns are acknowledged and will be addressed as much as possible. For your information, the noise attenuation project for Keaukaha School is scheduled for bid by December 2001, with completion of improvements by October 2002. For residential sound attenuation, no set schedule for improvements has been established. The Federal Aviation Administration (FAA) approval of the Noise Compatibility Program is expected by October 2001, after which we can then pursue Federal funding for mitigation measures in continuing consultation with the Keaukaha community.

7. Land Acquisitions and Avigation Easements - There remains a need to acquire certain lands within the Runway Protection Zone. However, in light of concerns which have been raised, we have reevaluated our land acquisition program and will proceed only with the concurrence of the homeowner or at such time that the land otherwise becomes available.

8. Land Use Designations - We are not aware of any "conditional zoning" provision in the County of Hawaii Zoning Code; however, we will address the thrust of this comment in the forthcoming Draft EA.

9. Anticipated Impacts - The proposed improvements do not result in any increased impacts, which cannot be adequately mitigated. Relative to Title VI Environmental Justice requirements, consultation with the Keaukaha Community has been initiated with a meeting scheduled for Wednesday, August 15, 2001, 6:30 p.m. at the Keaukaha School. Copies of the Draft EA will be provided to the Keaukaha Community Association and your office.

We appreciate your comments and will endeavor to address your concerns. Please contact Lynn Becones, Planner, at (808) 838-8811, to clarify any questions you may have.

c: ✓ Wilson Okamoto & Associates (R. Funakoshi)
Federal Aviation Administration (D. Wehhouse)

BENJAMIN J. CAJETANO
GOVERNOR



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
225 SOUTH BERKELEY STREET
HONOLULU, HAWAII 96813
TELEPHONE (808) 551-6115
FACSIMILE (808) 551-6116

BENJAMIN J. CAJETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
859 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BRIAN K. MINAIAI
DIRECTOR
DEPUTY DIRECTORS
JEAN L. OSHTA
JADWIE Y. LUKASIAW

BY REPLY REFER TO
AIR-P
02-0263

July 24, 2001

Mr. Brian Minaiai, Director
State Department of Transportation
859 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Minaiai:

Subject: Pre-Assessment Consultation for Hilo International Airport
State Project #AH1011-03

Thank you for the opportunity to review and comment on the subject project. We have the following comments.

1. The expected increase in cargo activity and other airport activity will intensify the likelihood that alien pest species will enter the island of Hawaii. Please review the existing alien species prevention plan for Hilo Airport and design and implement a plan to prevent the entry of unwanted alien species. A description of the alien species prevention plan should be included in the environmental assessment.
2. Please evaluate the visual impacts of the proposed noise barrier.
3. Please describe the number of bird strikes associated with Hilo Airport and describe mitigation measures to minimize future incidents.
4. Please describe the relationship between the airport expansion and growth in Hilo and its surrounding area.
5. The environmental assessment should include the demand forecasts for passengers, cargo and aircraft and landings for Hilo Airport.
6. Please refer to the Kahului Airport EIS as a guide for preparing the environmental assessment.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Genevieve Salmonson
Director

August 9, 2002

RECEIVED
AUG 22 2002

WILSON OKAMOTO & ASSOC., INC.

TO: GENEVIEVE SALMONSON, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: BRIAN K. MINAIAI
DIRECTOR OF TRANSPORTATION

SUBJECT: PRE-ASSESSMENT CONSULTATION
HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT
STATE PROJECT NO. AH1011-03

Thank you for your letter in response to our pre-assessment consultation regarding the subject Environmental Assessment (EA).

Your concerns will be addressed in the forthcoming Draft EA. Generally, the proposed actions do not constitute an expansion of the Airport. Facilities supporting the hold cargo and helicopter operations are being relocated to improve efficiencies and reduce on-airport conflicts.

Regarding the potential for alien species, we would note that current and planned overseas air cargo activities at Hilo International Airport consist of outbound air cargo only.

We appreciate your interest and participation in the environmental review process. Your letter will be included in the forthcoming Draft EA. Please contact Ms. Lynn Becones, Planner, at (808) 838-8811 to clarify any questions you may have.

c: Wilson Okamoto & Associates, Inc., Rodney Funakoshi



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

LAND DIVISION
P.O. BOX 871
HONOLULU, HAWAII 96813

July 26, 2001

LOG1134/789

LD/NAV

Ref: HILOINTAIRPORT.RCM

State of Hawaii
Department of Transportation
Airports Division
Mr. Jerry M. Matsuda, P.E.
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880

Dear Mr. Matsuda:

SUBJECT: Pre-Assessment Consultation for Hilo International Airport State of Hawaii Department of Transportation Project No.: AH1011-03 - TMK: 3rd/2-1-12; portion of 9: 2-1-20: 14, 40, 41; 2-2-37: 41 and 2-2-35: 68-73, Island of Hawaii, Hawaii

Thank you for including us in the Pre-Assessment Consultation for the Hilo International Airport State of Hawaii Department of Transportation Project No.: AH1011-03.

Copies of your letter and other documents covering the proposed matter were distributed to our Department's Divisions of Aquatic Resources, Forestry and Wildlife, State Parks, Boating and Ocean Recreation, Historic Preservation, Commission on Water Resource Management and Land Division's Hawaii District Land Office, Engineering Branch & Planning and Technical Services Branch for their review and comment.

The Department has no comment to offer at this time. Should you have any questions, please free to contact Nicholas A. Vaccaro of our Land Division Support Services Branch at 808-587-0438.

Very truly yours,

HARRY M. YADA
Acting Administrator

C: Hawaii District Land Office

AQUATIC LIFE DEVELOPMENT PROGRAM
LAND DIVISION
LAND RESOURCE PLANNING AND REGULATION
CONSERVATION AND RESTORATION
RECREATION AND TOURISM
STATE PARKS
ENGINEERING
PLANNING AND TECHNICAL SERVICES
HISTORIC PRESERVATION
LAND DIVISION
STATE OF HAWAII
LAND RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Land Division
Honolulu, Hawaii

July 18, 2001

LD/NAV

Ref.: HILOINTAIRPORT-DOTAH1011-03

Suspense Date: 7/26/01

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
 Ma Ala Hele Trails
XXX Division of State Parks
XXX Division of Boating and Ocean Recreation
XXX Historic Preservation Division
XXX Commission on Water Resource Management
 Land Division Branches of:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Hawaii District Land Office
 Shoreline Processing Services

FROM: Harry M. Yada, Acting Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for Hilo International Airport State of Hawaii Department of Transportation Project No.: AH1011-03 - TMK: 3rd/ 2-1-12; por 9:2-1-20: 14, 40, 41; 2 - 2-37: 41 and 2-2-35: 68 - 73, Hawaii

Please review the attached document and submit your comments (if any) on Division letterhead within the time requested above. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

We have no comments. Comments attached.

Signed:
Date: 7/23/01

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Land Division
Honolulu, Hawaii

July 18, 2001

LD/NAV
Ref.: HILOINTAIRPORT-DOTAH1011-03 Suspend Date: 7/26/01

MEMORANDUM:

XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
 Na Ala Hele Trails
XXX Division of State Parks
XXX Division of Boating and Ocean Recreation
XXX Historic Preservation Division
XXX Commission on Water Resource Management
 Land Division Branches of:
 XXX Planning and Technical Services
 XXX Engineering Branch
 XXX Hawaii District Land Office
 Shoreline Processing Services

FROM: Harry M. Yada, Acting Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for Hilo International Airport
State of Hawaii Department of Transportation Project No.:
AH1011-03 - TMK: 3⁰/ 2-1-12: por 9:2-1-20: 14, 40, 41; 2 -
2-37: 41 and 2-2-35: 68 - 73, Hawaii

Please review the attached document and submit your comments (if any) on Division letterhead within the time requested above. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

We have no comments. Comments attached.

Signed: *[Signature]*

Date: 7/20/01

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Land Division
Honolulu, Hawaii

July 18, 2001

LD/NAV
Ref.: HILOINTAIRPORT-DOTAH1011-03 Suspend Date: 7/26/01

MEMORANDUM:

XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
 Na Ala Hele Trails
XXX Division of State Parks
XXX Division of Boating and Ocean Recreation
XXX Historic Preservation Division
XXX Commission on Water Resource Management
 Land Division Branches of:
 XXX Planning and Technical Services
 XXX Engineering Branch
 XXX Hawaii District Land Office
 Shoreline Processing Services

FROM: Harry M. Yada, Acting Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for Hilo International Airport
State of Hawaii Department of Transportation Project No.:
AH1011-03 - TMK: 3⁰/ 2-1-12: por 9:2-1-20: 14, 40, 41; 2 -
2-37: 41 and 2-2-35: 68 - 73, Hawaii

Please review the attached document and submit your comments (if any) on Division letterhead within the time requested above. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

We have no comments. Comments attached.

Signed: *[Signature]*

Date: 7-19-01

BENJAMIN J. CAYETANO
Governor



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 ROGERS ROAD, SUITE 700
HONOLULU, HAWAII 96819-1860

August 5, 2002

BRIAN K. MUSAJI
DIRECTOR
DEPUTY DIRECTORS
JEAN L. OSMITA
JADNEY URASAM

BY PERNY REFER TO

AIR-P
02.0255

**DLNR-LAND DIVISION
ENGINEERING BRANCH**

COMMENTS

The proposed project site, according to FEMA Community-Panel Nos. 155166 0880 C and 155166 0885 C, is located in Zone X. This is an area determined to be outside the 500-year flood plain.

HiloAirportmpr_PreEASolicitation_com_H4

TO: DIERDRE MAMIYA, ADMINISTRATOR
LAND DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

FROM: ROY K. SAKATA
ACTING AIRPORTS ADMINISTRATOR

SUBJECT: PRE-ASSESSMENT CONSULTATION
HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT
STATE PROJECT NO. AH1011-03

Thank you for your letter regarding the subject Environmental Assessment (EA). It is acknowledged that the project sites are outside the 500-year flood plain.

We appreciate your interest and participation in the environmental review process. Your letter will be included in the forthcoming Draft EA. Please contact Ms. Lynn Becones, Planner, at 838-8811, to clarify any questions you may have.

✓ c: Wilson Okamoto & Associates, Rodney Funakoshi



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPOLIANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

July 26, 2001

Mr. Jerry M. Matsuda, P.E.
Airports Administrator
Department of Transportation
Airports Division
400 Rodgers Boulevard - Suite 700
Honolulu, HI 96819

Subject: Pre-Assessment Consultation - Hilo International Airport Environmental
Assessment - State Project No. AH1011-03

Dear Mr. Matsuda:

That you for the opportunity to comment on the above referenced project. The project consists of significant improvements at the Hilo International Airport. The Office of Hawaiian Affairs has the following concerns:

The use of Federal funds requires your agency to comply with the Federal National Environmental Protection (NEPA) guidelines, and with Section 106 of the National Historic Preservation Act (NHPA)

Under NEPA you are required to assess the cumulative environmental impacts of the project and provide mitigation measures to preserve important historic, cultural and natural aspects of our heritage.

Under Section 106 of NHPA, you must assess the effect of your proposed improvements on the culture and on the traditional and customary practices in the area. A request for a Formal NHPA 106 Consultation must be made to our office in order to trigger a Section 106 Consultation. Please address your request to:

Attn: Request for Section 106 Consultation
Administrator
Office of Hawaiian Affairs
711 Kapiolani Blvd. Ste 500
Honolulu, HI 96813

Mr. Jerry M. Matsuda, P.E.
July 26, 2001
Page Two

We are in agreement with the Department of Hawaiian Home Lands (DHHL) that the reductions of current adverse impacts on existing community facilities, households and individuals should be a high priority. Testing for both air quality and excessive noise impacts should be initiated immediately. The use of "estimates" is not appropriate. Baseline data must be gathered and reviewed to assess those actual impacts on the community and individual households, schools and other public facilities. The baseline data can also be used to measure any mitigation activities that would be implemented.

It is noted that expansion plans include the need to acquire several residential homestead lots. Asking people to relocate is a serious matter. DOT and DHHL should work together in timely, sympathetic and generous manner in direct negotiations with the homeowners. Every effort should be made to place them within their existing community.

There are a number of community concerns that have been raised. There is strong support for testing the hearing for the children at Keaukaha School. Further, there is community support for insulation and air-conditioning of the school so that minimum noise standards will be met and instruction will not be disrupted. The community has major reservations regarding the proposed 15-foot high sound attenuation barrier to be constructed between the airport and Keaukaha Tract 1. They note that this will obscure their view, reduce the flow of air and would block the major tsunami evacuation route. Other concerns include increased traffic, possible change of flight patterns and increases in noise and air pollution. We suggest you conduct further discussions with residents and the community on these issues as soon as possible.

In summary, OHA views the incompatibility between airport operations and the adjacent residential communities as a health and safety issue. Reductions of current adverse impacts on existing community facilities and individual households should be the highest priority. The community should be kept informed and have the opportunity to provide input as you address mitigation measures.

If you have further questions, please contact Jerry B. Norris at 594-1847.

Sincerely,

Colin C. Kippen, Jr.
Deputy Administrator

cc OHA Board of Trustees
Ron Mun, Acting Administrator
Ululani Sherlock, Hilo CAC

BENJAMIN J. CAVETANO
GOVERNOR




STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
669 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

BRIANNE UHAI
DIRECTOR
DEPUTY DIRECTORS
JEAN L. COBETH
JUSTICE Y. UOJISAKI

WHEN REFERRED TO
AIR-P
02.02.58

August 9, 2002

TO: COLIN C. KIPPEN, JR., DEPUTY ADMINISTRATOR
OFFICE OF HAWAIIAN AFFAIRS

FROM: ROY K. SAKATA 
ACTING AIRPORTS ADMINISTRATOR

SUBJECT: PRE-ASSESSMENT CONSULTATION
HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT
STATE PROJECT NO. AH1011-03

Thank you for your letter regarding the subject Environmental Assessment (EA).

The Federal Aviation Administration has reviewed the proposed actions and informed us the proposed actions do not require an assessment pursuant to the National Environmental Protection Act. Section 106, consultation will be pursued if determined to be needed.

Notwithstanding, we have undertaken a thorough evaluation of the potential environmental and historical/cultural impacts of the proposed action, including studies addressing the impacts of air quality, noise, traffic, flora and fauna, archaeological, and cultural resources. Archaeological and cultural impact assessment studies will be included in the forthcoming Draft EA.

In response to your concerns and those raised from the Department of Hawaiian Home Lands (DHHL), we have also consulted further with the Keaukaha residential community to seek their input. As a result of a survey and two community meetings held in August and November 2001, we have eliminated the proposed recommendation for a noise barrier wall. We will also not be undertaking any forced relocation of residents from the high noise areas, and will continue to maintain a continuing dialogue with DHHL and the Keaukaha community as we develop the EA.

We appreciate your interest and participation in the environmental review process. Your letter will be included in the forthcoming Draft EA. Please contact Ms. Lynn Becones, Planner, at 838-8811, to clarify any questions you may have.

c: Wilson Okamoto & Associates, Inc., Rodney Funakoshi

Ltr. to DOT
July 18, 2001
Page 2 of 2

Dennis K. W. Lee
Director



County of Hawaii
DEPARTMENT OF PUBLIC WORKS
25 Airport Street, Room 302 - Hilo, Hawaii 96720-4257
(808) 961-4331 - Fax (808) 961-4433


Herry Kim
Asst.

July 18, 2001

Jerry M. Matsuda, P.E.
Airports Administrator
Department of Transportation
Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880

6. We also suggest that the Aloha Airlines and Hawaiian Airlines terminals be separated. We noticed that additional space is available on the other end of the airport terminal. Separating the airlines will improve the vehicular traffic conflicts on the arrival and departure pickup areas.

Should there be any questions concerning this matter, please feel free to contact Mr. Casey Yanagihara in our Engineering Division at (808)961-8327.


Galen M. Kuba, Division Chief
Engineering Division

eky

SUBJECT: PRE-ASSESSMENT CONSULTATION
HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT
TMK: 3 / 2-1-12: 09 por.; 2-1-20: 14, 40, & 41; 2-2-37: 41; and 2-2-35: 68-73

We acknowledge receipt of your letter concerning the subject matter, and provide you with our comments as follows:

1. Any building construction shall conform to all requirements of code and statutes of the County of Hawaii.
2. All development generated runoff shall be disposed on site and shall not be directed toward any adjacent properties.
3. All earthwork and grading shall be in conformance with Chapter 10, Erosion and Sediment Control, of the Hawaii County Code.
4. The subject properties are found within Flood Zone "X", according to the Flood Insurance Rate Map dated September 16, 1988.
5. We suggest that the exit to the existing parking be relocated to the westerly outboard end of the parking. This will avoid the existing traffic conflicts with the arrival and departure traffic.

BENJAMIN CASTELLANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
420 RODGERS BOULEVARD, SUITE 170
HONOLULU, HAWAII 96819-1700

BRANKI UHAKA
DIRECTOR
DEPUTY DIRECTORS
JERRY OSHITA
JADNEY UHAKAMA

BY REFERENCE TO

AIR-P
02.0256

Mr. Ben Ishii
August 7, 2002
Page 2

AIR-P
02.0256

5. Plans to relocate the parking lot exit from the east end to the west end of the terminal loop are being developed. Modifications to the parking lot circulation will allow vehicles to enter and exit the parking area without entering the terminal loop traffic.

6. Aloha Airlines and Hawaiian Airlines will be operating out of separate areas after the completion of the current renovation of passenger loading areas and baggage claim areas. Hawaiian Airlines will use gates 3, 4, and 5, and Aloha Airlines will operate from gates 6, 7, and 8. The separation of air carriers will ease vehicular congestion along the terminal loop.

We appreciate your interest and participation in the environmental review process. Your letter will be included in the forthcoming Draft EA. Please contact Ms. Lynn Becones, Planner, at (808) 838-8811, to clarify any questions you may have.

Sincerely,

Don T. Ito

ROY K. SAKATA
Acting Airports Administrator

c: Wilson Okamoto & Associates, Inc., Rodney Funakoshi

Mr. Ben Ishii
Division Chief
County of Hawaii
Department of Public Works
Engineering Division
Aupuni Center
101 Pauahi Street, Suite 7
Hilo, Hawaii 96720

Dear Mr. Ishii:

Subject: Pre-Assessment Consultation
Hilo International Airport Environmental Assessment
State Project No. AH1011-03

Thank you for your letter regarding the subject Environmental Assessment (EA). Your comments are addressed as follows:

1. New structures will conform to all requirements of code and statutes of the County of Hawaii. Plans will be submitted to your Department for review upon completion of design.
2. Runoff generated by the proposed improvements will be disposed of within the Airport property and will not be directed toward adjacent properties. Drainage improvements will be discussed in the forthcoming Draft EA.
3. Grading and grubbing activities will be performed in conformance with Chapter 10, Erosion and Sediment Control, of the Hawaii County Code. The contractor will provide a Best Management Practices (BMP) plan prior to the start of construction to address erosion control measures.
4. It is acknowledged that according to the Flood Insurance Rate Map of September 16, 1988, the project sites are located within Flood Zone "X".

Hana Lili No Ke Ala Alike
Working Together to Provide Safe and Sound



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
 345 KEKUAHA STREET, SUITE 20 • HILO, HAWAII 96720
 TELEPHONE 18081 961-8050 • FAX 18081 961-8557

July 26, 2001

Mr. Jerry M. Matsuda, P.E.
 Airports Administrator
 Department of Transportation
 Airports Division
 400 Rodgers Boulevard, Suite 700
 Honolulu, HI 96819

PRE-ASSESSMENT CONSULTATION
 HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT
 STATE PROJECT NO. AH1011-03
 TAX MAP KEY: 2-1-012; FOR 2-1-20:14, 40, 41; 2-2-37:41; AND 2-2-35:68-73

We have reviewed the subject document and our comments are as follows.

Water availability conditions for the Hilo water system are such that there is water for the proposed project areas. Specific details on the water improvements for the project areas should be provided. Details should include water requirements for domestic uses, irrigation, and fire protection. Water service will be subject to compliance with the Department's Rules and Regulations and Water System Standards. Please refer to the following table regarding existing services for each parcel.

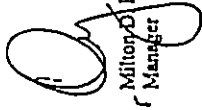
Tax Map Key:	Service: Yes or No	Location of Service
2-1-012-par. 9 (Parking Exp.)	Yes	12" Waterline fronting the Airport Terminal
2-1-012-par. 9 (All Others)	No	
2-1-020:014	Yes	6" Waterline in Kauhane Ave.
2-1-020:040	Yes	6" Waterline in Kauhane Ave.
2-1-020:041	Yes	6" Waterline in Desha Ave.
2-2-037:041	No	
2-2-035:068	Yes	4" Waterline in Kanoelohua Ave.
2-2-035:069	Yes	4" Waterline in Kanoelohua Ave.
2-2-035:070	Yes	4" Waterline in Kanoelohua Ave.
2-2-035:071	Yes	4" Waterline in Kanoelohua Ave.
2-2-035:072	Yes	4" Waterline in Kanoelohua Ave.
2-2-035:073	Yes	4" Waterline in Kanoelohua Ave.

J.M.S. L.....

Mr. Jerry M. Matsuda, P.E.
 Page 2
 July 26, 2001

You may contact the Water Resources and Planning Branch at 961-8070 for additional information on the location of the Department's waterlines and meter/service lateral sizes for existing services or if there are any questions.

Sincerely yours,


 Jerry M. Matsuda, P.E.
 Manager

SHK:jb

BEVILACQUA J. CAVETANO
Governor



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
430 ROGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1880

BRIAN K. MAHAU
DIRECTOR
DEPUTY DIRECTORS
JEANIL OSHITA
JACQUELYN URASAKI

EX-101-111111

AIR-P
02.0261

August 6, 2002

Mr. Milton D. Pavao, P.E.
Manager
County of Hawaii
Department of Water Supply
345 Kekuaaoa Street, Suite 20
Hilo, Hawaii 96720

Dear Mr. Pavao:

Subject: Pre-Assessment Consultation
Hilo International Airport Environmental Assessment
State Project No. AH1011-03

Thank you for your letter regarding the subject Environmental Assessment (EA) indicating that the Hilo water system can accommodate the water needs of the proposed Airport improvements. Your comment regarding the submittal of specific details on water system improvements is acknowledged. Plans will be submitted to the Department of Water Supply for review upon completion of design.

We appreciate your interest and participation in the environmental review process. Your letter will be included in the Draft EA. Please contact Ms. Lynn Becomes, Planner, at 838-8811 to clarify any questions you may have.

Sincerely,

Don T. Hiy

ROY K. SAKATA
Acting Airports Administrator

✓ c: Wilson Okamoto & Associates, Inc., Rodney Funakoshi

Harry Kim
Mayor



County of Hawaii

PLANNING DEPARTMENT
25 Airport Street, Room 109 • Hilo, Hawaii 96720-4353
(808) 941-4338 • Fax: (808) 941-4332


Christopher J. Yuen
Director

Roy R. Takemoto
Deputy Director

Mr. Jerry M. Matsuda
State Department of Transportation Airports Division
Page 2
July 18, 2001

If you have any questions, please call Phyllis Fujimoto or Earl Lucero of this department at 961-8288.

Sincerely,


CHRISTOPHER YUEN
Planning Director

PF:eps
P:\ep\m606\ch\j\j\2001\FEA.01-07.doc

Enclosure

cc: Long Range Planning

July 18, 2001

Mr. Jerry M. Matsuda
State Department of Transportation Airports Division
400 Rodgers Blvd, Suite 700
Honolulu, HI 96819

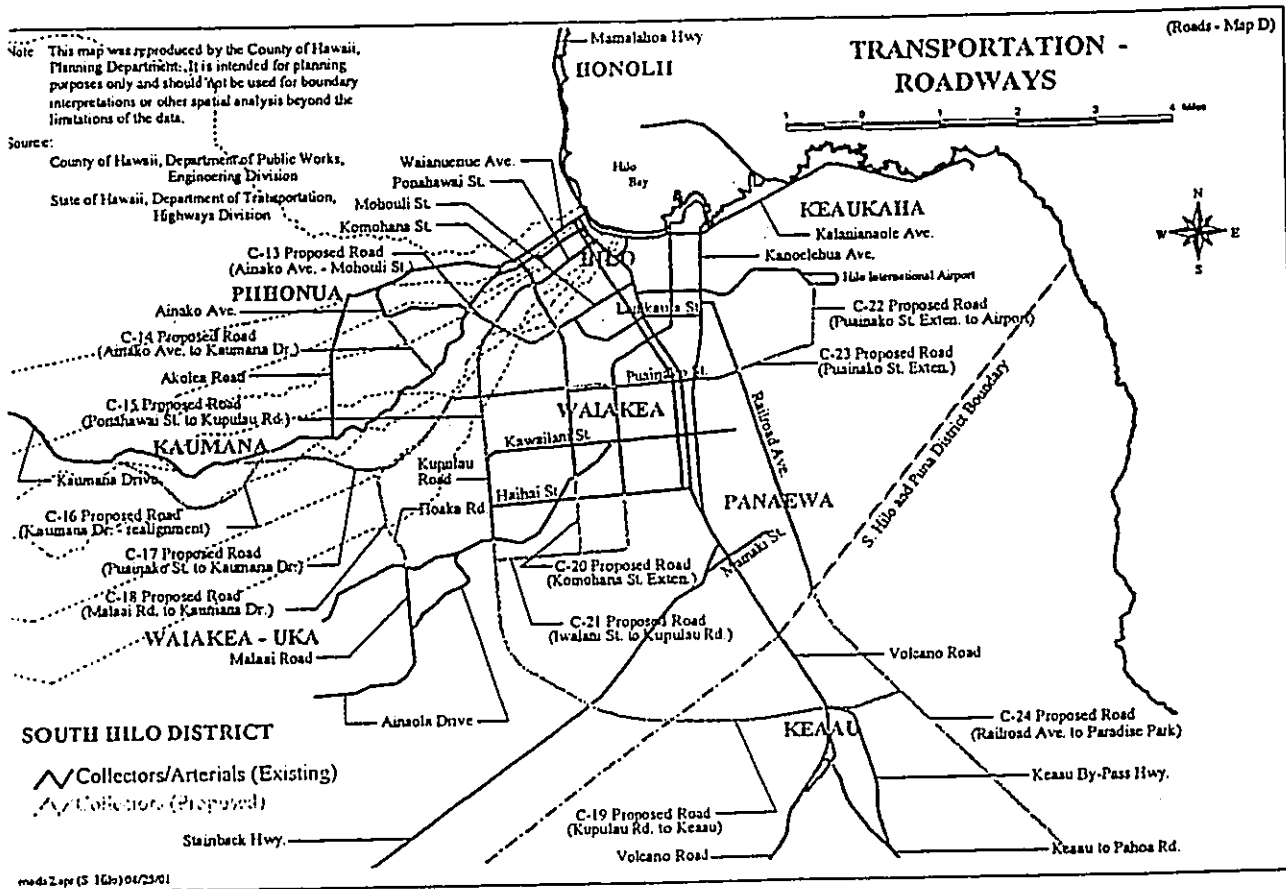
Dear Mr. Matsuda,

Pre-assessment Consultation for various projects at the Hilo International Airport
TMK: 2-1-12: 9; 2-1-20: 14, 40, 41; 2-2-37: 41; 2-2-35: 68 - 73

This is to acknowledge receipt of your letter dated June 28, 2001 requesting comments regarding the preparation of an Environmental Assessment (EA) for various improvements at the Hilo International Airport. The EA is being prepared pursuant to Chapter 343, Hawaii Revised Statutes and Title 11, Chapter 200, Hawaii Administrative Rules, as the proposed improvements include the use of State lands and funds.

We concur with your letter that the County zoning for the Hilo International Airport (TMK: 2-1-12: 9) is Limited Industrial (ML-20). Portions of the proposed land acquisitions and avigation easement (TMK Nos: 2-1-20: 14, 40 & 41 owned by the Department of Hawaiian Home Lands, and 2-2-37: 41) are zoned Single Family Residential RS-10. TMK Nos.: 2-2-35: 68 - 73 are privately owned. Parcels 68, 70, 71 and 73 are zoned Open, Parcel 69 is zoned Limited Industrial (ML-20) and Parcel 72 is zoned Limited Industrial (ML-10).

The General Plan Land Use Pattern Allocation Guide (LUPAG) Map designation for the airport area is Industrial, and portions of the area sited for the proposed land acquisitions and easements are designated Low and Medium Density Urban. For your information, there is a proposed alternate collector road from the Hilo International Airport to Puainako Street (Puainako Street Extension) indicated on the current General Plan Facilities Map. Please note that prior to construction, Plan Approval will be required from this department for all new structures.



BEULAHUJI CAVETANO
GOVERNOR



BRIAN K. MINAII
DIRECTOR
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

PLEASE REFER TO

AIR-P
02.0264

August 9, 2002

Mr. Christopher Yuen
County of Hawaii
Planning Department
Aupuni Center
101 Puuahi Street, Suite 3
Hilo, Hawaii 96720

Dear Mr. Yuen:

Subject: Pre-Assessment Consultation
Hilo International Airport Environmental Assessment
State Project No. AH1011-03

Thank you for your letter regarding the subject Environmental Assessment (EA). The County zoning designations of the project sites, as described in your letter, will be documented in the forthcoming EA. The information provided regarding zoning and the proposed alternate collector road from the Airport to Puainako Street shown on the County General Plan Land Use Pattern Allocation Guide Map are appreciated. Plans for new structures will be submitted to the Planning Department for review upon completion of design.

We appreciate your interest and participation in the environmental review process. Your letter will be included in the forthcoming Draft EA. Please contact Ms. Lynn Becones, Planner, at (808) 838-8811 to clarify any questions you may have.

Very truly yours,

Handwritten signature of Brian K. Minaai in black ink.

BRIAN K. MINAII
Director of Transportation

c: Wilson Okamoto & Associates, Inc., Rodney Funakoshi

Above it all

BENJAMIN J. CAVETIARO
GOVERNOR



BRIAN F. MARIAS
DIRECTOR
DEPUTY DIRECTORS
CLEMENS OKAMOTO
JONKEY OKAMOTO

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

BY REPLY REFER TO:
AIR-P
01.0449

July 9, 2001

Jerry Matsuda
Airports Division, DOT
400 Rodgers Blvd, Suite 700
Honolulu, HI 96819

July 31, 2001

Mr. Phil Auldridge
Above It All
Gate 29 Hilo Airport
Hilo, Hawaii 96720

Dear Mr. Matsuda:

We are in receipt of your letter dated June 28, 2001, discussing proposed plans for capital improvement projects at Hilo Airport. As one of the longest continuously operating general aviation companies at Hilo Airport, we are excited about the prospect of expanded facilities.

Since three of the properties which we occupy at Hilo Airport appear to fall within the boundaries of the proposed GA expansion, we are understandably concerned about what transition plans will be in effect to assure uninterrupted operation of ours, and other companies currently using this area. Although we are a small company, we have provided jobs for over 20 Big Island residents continuously since 1986. An even short-term interruption in our business operations would most certainly force the permanent closure of our business, with resultant loss of jobs.

It is our hope that assessment of this project consider impact to existing businesses, as well as environment and other concerns, since, after all, without viable operating businesses, there will be no need for new facilities.

I would appreciate a written response to my comment, discussing how the department intends to address the issues I have raised.

Sincerely,

Phil Auldridge
Phil Auldridge
President

KONA AIRPORT • KAUAI-KONA, HI
HAWAII: GATE 29 HILo AIRPORT • HILo, HI 96720

PHONE: (808) 769-2000
FAX: (808) 331-2079

Dear Mr. Auldridge:
Subject: Hilo International Airport Environmental Assessment
Pre-Assessment Consultation
State Project No. AH1011-03

Thank you for your letter of July 9, 2001, in response to our pre-assessment consultation. Your expression of support for the proposed improvements at Hilo International Airport is appreciated.

Presently, we are still in the preliminary planning stages for the proposed improvements to general aviation facilities. Once we proceed into the design phase with more specific plans and a timetable for construction, affected tenants will be contacted and relocation discussions initiated with the Hawaii District Manager and our Property Management section.

I have directed our environmental consultant to contact you at this time so that we may better understand and plan for your concerns as we proceed with implementation. We also intend to provide you with a copy of the forthcoming Draft Environmental Assessment.

If you should have any further questions, please contact Ben Schlapak, Head Planning Engineer, at (808) 838-8821.

Sincerely,

Jerry M. Matsuda
JERRY M. MATSUDA, P.E.
Airports Administrator

c: Wilson Okamoto & Associates (R. Funakoshi)
Federal Aviation Administration (D. Welhouse)

Here Literally. We're All Alike
Working Together to Provide Gateway of Aloha

KEAUKAHA COMMUNITY ASSOCIATION
260 KING AVE. HILO, HAWAII 96720
(808) 961-5707

August 20, 2001

Mr. Jerry Matsuda, Airports Administrator
State of Hawaii
DOT-AIRPORT DIVISION (AIR)
400 Rogers Blvd., Suite 700
Honolulu, Hawaii 96819-1880

Re: Comments to Pre-Environmental Assessment and Mitigation Measures for the
Keaukaha Community.

Dear Mr. Matsuda,

I am Patrick L. Kahawaiola'a, a native Hawaiian as defined under the HHCA,
1920, as amended, July 9, 1921 and the current president of the Keaukaha Community
Association.

I, as president of this native Hawaiian community, have a distinct responsibility to
address the serious concerns of this native Hawaiian community, which the record is
clear, has given so much in the past to the success of the Hilo International Airport and
the general public. I will not belabor that point and will try to dwell on the subject matter
at hand, which was at the heart of the August 15, 2001 meeting held in Keaukaha:

It was overwhelming that the community believes the mitigation measure of the
15-foot noise wall is totally unacceptable.

Land exchanges are also unrealistic, based on no information as to where the
"new" lands are located and if the land exchange is only to accommodate the runway
protection zone (rpz), it is unacceptable.

The fact that "no funding" is in place and specific amounts could not be given,
insofar as how much will be spent on a particular home, was unavailable, so residents
may be able to reach an objective conclusion. Show ballpark figures.

Although the studies and survey are supposedly all completed, the issues of
health and safety for our residents are not being addressed, except by comments such
as, "non exist". We'd like to see the breakdown of these studies. What would happen in

1

KEAUKAHA COMMUNITY ASSOCIATION
260 KING AVE, HILO, HAWAII 96720
(808) 961-5707

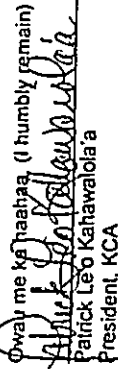
community, as a sound attenuator, presently the consensus is because of the high cost
of electricity, that measure at present is not acceptable, however no one addressed if air
conditioning on a voluntary basis was a viable alternative.

At the first meeting held in this community, the Mayor of Hawaii County,
presented testimony that he believed the State of Hawaii in its Airports Division was
doing a disservice to the native Hawaiians and that the airport should be moved. This
matter should be addressed in your EA, as a basis that a complete EIS would not be
necessary.

One extremely positive note which must be addressed and that is the perception
that the consultants use of a cultural resource person to review the effects of cultural
disruptions may help to dispel a total disregard to native Hawaiians as a viable partner
in this endeavor to reach an amicable resolution to this complex and noisy issue. There
are several hula halau (schools) in the community that the na haumana (students)
suffers the impact of aircraft noise in the na kumu (teachers) trying to perpetuate our
culture the hula

So, in summary, the Keaukaha community association, wishes not to foreclose
on any future dialog with the DOT-Airports Division and in fact based on the
representation from Mr. Dennis Higa, they will be back and at the present time the
aforementioned concerns needs to be addressed in the EA and more dialog, without the
possibility of having to sign away one's rights guaranteed under the constitutions, to life
liberty and the pursuit happiness. Please consider this as a negative response to your
Pre-EA, however with room for improvement and more dialog in the future.

owai me ka haaha'a, (I humbly remain)


Patrick Leo Kahawaiola'a
President, KCA

cc:
Linda DelaCruz

3

BENJAMIN J. CAYetano
GOVERNOR

ERNEST J. MANN
DIRECTOR
DEPUTY DIRECTORS
JEAN L. OSMITA
JUDITH V. BRASLAW



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
420 ROGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96813-1890

44-REPLY REFER TO

AIR-P
02.0259

August 9, 2002

Mr. Patrick L. Kahawaiolaa
President
Keaukaha Community Association
260 King Avenue
Hilo, Hawaii 96720

Dear Mr. Kahawaiolaa:

Subject: Pre-Assessment Consultation
Hilo International Airport Environmental Assessment
State Project No. AH1011-03

Thank you for your letter regarding the subject Environmental Assessment (EA). We are currently preparing the Draft EA for the proposed improvements.

We appreciate your comments and have endeavored to listen to the concerns expressed by residents in the Keaukaha community. Our August and November 2001 meetings in your community were very productive in giving us a better understanding of your views.

As a result of these meetings, we have eliminated the proposed noise wall as a recommendation to be pursued. Noise attenuation of residential structures in the 60+ DNL contours will continue to be a focus of our efforts to mitigate noise impacts in your community. We hope to fund shortly a noise attenuation project that will include ongoing consultation with the affected area residents.

As you have requested, the forthcoming Draft EA will include the technical studies and cultural resources assessment, including discussions of health and safety issues and the alternative of relocating the Airport.

We look forward to continuing dialogue and discussions with the residents of Keaukaha community in our efforts to improve the compatibility of our airport operations.

Hana Lila Ii Ke Ala Aikaha
Walking Together to Provide Gateways of Aloha

Mr. Patrick L. Kahawaiolaa
August 9, 2002
Page 2

AIR-P
02.0259

We appreciate your interest and participation in the environmental review process. Your letter will be included in the forthcoming Draft EA. Please contact Ms. Lynn Becones, Planner, at (808) 838-8811 to clarify any questions you may have.

Sincerely,

ROY K. SAKATA
Acting Airports Administrator

c: Wilson Okamoto & Associates, Inc., Rodney Funakoshi

Pre-Assessment Consultation
Hilo International Airport

VOLCANO HELICOPTERS
1655 Makaloa Street, #2700
Honolulu, HI, 96814

PH: 808/949-1722
Fax: 808/955-5915

faxLETTER: 726/2001

Mr. Jerry M. Matsuda, PE
Airports Administrator
Department of Transportation
Airports Division
400 Rodgers Blvd, Suite 700
Honolulu, HI, 96819

Fax: 808/838-8751, Page 1 of 5

Subject: Reply to AIR-P-01.0351
Pre-Assessment Consultation
Hilo International Airport Environmental Assessment
State Project No. AH1011-03

Dear Mr. Matsuda:

This letter acknowledges receipt of your letter dated June 28, 2001 which invited comments on the subject project. Volcano Helicopters thank you for the opportunity to present comments.

On the elements of the planned improvements to the Hilo International Airport which are collectively described by "Hilo International Airport, Master Plan", Volcano Helicopters submit the attached letter as its comments. The letter is dated July 14, 2001, addressed to Mr. Jerry Matsuda, PE, and subject titled, "Hilo International Airport, Helicopter Master Plan, State Project No. AH1011-03".

Regarding the impact of the plan on the micro and macro environment, Volcano Helicopters has one comment.

AIRPORT OPERATING HOURS.

The airport is located close to residential areas and flight patterns overfly them. Numerous US airports with similar conditions have eventually been closed or restricted by curfew. Such decisions were imposed although the airports were declared as reasonable by numerical acoustical studies. It is observed that airport planning should be proactive on noise to avoid future costly lawsuits. Public opinion when fueled by the impression of being ignored, often develops into an

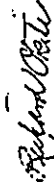
Pre-Assessment Consultation
Hilo International Airport

uncompromising adversary. Consequently, planning should consider curfew hours during the night (sleeping).

If there are questions or the needs for additional information, please call 949-1722.

Again, Thank you.

Very truly yours,
Volcano Helicopters



Richard Okita, P.E.
Its Business Manager

Attachment: Hilo International Airport
Helicopter Master Plan
Reply to: AIR-P, 01.0306

BEJUANALI CAWETANG
CONTINUED



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 FORDERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1800

August 9, 2002

BRANKI UNIAI
DIRECTOR
DEPUTY DIRECTORS
JEAN L. GARYA
JUDY Y. LUKASIK

PLEASE REFER TO

AIR-P
02.0260

Mr. Richard Okita P.E.
August 9, 2002
Page 2

AIR-P
02.0260

We appreciate your interest and participation in the environmental review process. Your letter will be included in the forthcoming Draft EA. Please contact Ms. Lynn Becones, Planner, at (808) 838-8811 to clarify any questions you may have.

Sincerely,

ROY K. SAKATA
Acting Airports Administrator

c: Wilson Okamoto & Associates, Inc., Rodney Funakoshi

Mr. Richard Okita, P.E.
Business Manager
Volcano Helicopters
1655 Makaloa Street, #2700
Honolulu, Hawaii 96814

Dear Mr. Okita:

Subject: Pre-Assessment Consultation
Hilo International Airport Environmental Assessment
State Project No. AH1011-03

Thank you for your letter regarding the subject Environmental Assessment (EA). Your letter notes the attachment of a letter previously submitted to the Department of Transportation, Airports Division, dated July 14, 2001, commenting on the update of the Hilo International Airport Master Plan. It is acknowledged that you are submitting the same comments as they may apply to the proposed improvements to be included in the forthcoming Draft EA.

Regarding your comment on Airport operating hours, existing noise levels in the residential areas near the airport are a known problem. For your information, the noise attenuation project for Keaukaha School is expected to be completed by the end of this year. The schedule for residential sound attenuation has not been established, although funding is being pursued for mitigation measures. Consultation with the Keaukaha Community was initiated with meetings held in August and November 2001 and is expected to continue as the sound attenuation program progresses.

Jacob S. Kiko Jr.
66 Desha Avenue.
Hilo, Hawaii 96720.
July 23, 2001

Mr. Jerry m. Matsuda, P.E.
Airports Administrator
Dept. of Transportation
Airports Division.

Dear Sir,

Why build a sound barrier after all these years? We have lived in Keaukaha for 24 years and have become immune to the deafening sounds of airplanes. All people who have lived in Keaukaha for some time now, somehow have learned to put up with the noise. The school children and my teacher who has taught at Keaukaha for more than a school year don't even bat an eye when an airplane flies overhead. At home and at school, conversation automatically stops when an airplane flies overhead and then starts again after it's passed. What about the air conditioning promised to the school. How many more years will it take until action is taken?

When will you know for sure about the lands in Keaukaha that are proposed for acquisition? Over two years ago my family took in my sister-in-law who is bed bound with Parkinson's disease. Therefore, for the past two years our home have been under major reconstruction. We have gotten rid of some of the carpet and have re-tiled for wheelchair access, we remodeled the bathroom and shower for handicap access, and I had my family room enclosed so it could become a bigger bedroom for my sister-in-law. While we were at it, my wife wanted new kitchen cabinets and counter tops. We are now currently building a patio outside of the kitchen for more space. Should we continue building our patio? Will all this be taken away from us and destroyed?

The land I have in Keaukaha and the home I've build on it is important to me and my family. We've worked hard for what we have and continue to do so. It's our home. It's our life. How can you say that no significant impacts are anticipated from the construction or operation of the proposed improvements? If your land and home was suddenly wanted to be destroyed to build something else, wouldn't that impact you significantly?

Let us know what is going on as soon as possible and if we have any choices here. Is there any other proposals? What about building it towards escape road or King's Landing? Can routes of plane travel be changed instead? What's the research on the percentage of noise level that will be lessened by this sound barrier? When is all this supposed to happen?

Jacob S. Kiko, Jr.

BENJAMIN J. CATYANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 ROOSEVELT BOULEVARD, SUITE 700
HONOLULU, HAWAII 96813-1800

August 22, 2001

Mr. Jacob S. Kiko, Jr.
66 Desha Avenue
Hilo, Hawaii 96720

Dear Mr. Kiko:

Subject: Pre-Assessment Consultation
Hilo International Airport
Environmental Assessment, Hilo, Hawaii

Thank you for your letter of July 23, 2001, regarding the subject Environmental Assessment (EA).

With respect to the noise issues you have raised, we recently completed the Federal Aviation Regulation (FAR) Part 150 Noise Compatibility Program to identify land use incompatibilities and to recommend noise mitigation measures. Federal Aviation Administration approval of the program is expected by October 2001, at which time the program elements will become eligible for federal funding. The proposed sound barrier and noise attenuation for residences were part of the recommendations from the program, which are intended to be implemented on a voluntary basis. As such, the recommendations will be pursued only with the support of the Keaukaha Tract I residents.

The Keaukaha School Noise Attenuation Project is presently in design and is expected to be bid for construction by December 2001, with completion of improvements by October 2002.

Regarding the proposed land acquisition, there remains a need to acquire certain lands, including your property, which are situated within the Runway Protection Zone (generally 1,700 feet off the runway ends). However, in light of concerns such as yours which have been raised, we have reevaluated our land acquisition program. Our policy in this area will now be to proceed with acquisition only with the concurrence of the homeowner, or at such time that the land otherwise becomes available. As such, no action will be taken now or in the near future to displace you from your residence.

Hana Lila, Nu Ke Alo Alo
Working Together to Provide Gateway of Aloha

BRUNO K. UHAMA
DIRECTOR
DEPUTY DIRECTORS
GLENN H. OKAMOTO
JUDNEY Y. UHASAI

REPLY REFER TO
AIR-P
01.0487

Mr. Jacob S. Kiko, Jr.
August 22, 2001
Page 2

AIR-P
01.0487

If you wish to obtain further information on the basis, alternatives, and recommendations developed for the noise assessment study, a copy of the Noise Compatibility Program Report will be made available to you. Please contact Ms. Lynn Becones, Planner, at (808) 838-8811 if you have any further questions or wish to obtain a copy of this report.

Thank you for apprising us of your concerns.

Sincerely,

Jerry M. Matsuda
JERRY M. MATSUDA, P.E.
Airports Administrator

c: /Wilson Okamoto & Associates (R. Funakoshi)
Federal Aviation Administration (D. Welhouse)

1777

HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT KEAUKAHA COMMUNITY MEETING August 15, 2001

Name: GENESIS LEE LOY
Agency/Organization: KALALEI HAWAII - JUDGE KAHANI ISLANDS &
Address: KAPUNA COASTAL KAHANI ISLANDS
510 AVONUE RD
HILO HI 96720

I offer the following comments with respect to the Hilo International Airport Environmental Assessment:

My birth date is Sept 21, 1919 and on a 82 year old age I have seen and been subjected to changes in the activities relating to Hawaiian Homestead in the Kaunakakai and Hanalei. The Hilo Airport was the first order of business when Kaunakakai Homestead was established in the 1900's. It made sense to have an airport close to the day. The townsmen of 1916 and 1960 conversations with the Hilo Airport then the Hilo Airport for this reason. The need into the Hilo in 1947.

Hilo needed a power plant. How to get it? Hilo of course. It was our immediate neighbor and we moved to Pahoa in 1986. The mayor said: "It's a clean environment, the water is safe to drink!"

(include additional sheets as necessary) Please return to the State of Hawaii Department of Transportation, Airports Division by August 31, 2001.

Hilo needed an international airport. Potential for tourism was great. How to get it? Free land. Hilo next to present airport. County planning commission held hearings. No EIS required. Several officials that promised to handle all matters when times of year. Cost to the airport were required to move. Those who remained are having the noise pollution from our local airport. Proposal of 8-15-01. And the international carriers are going elsewhere on mt. Hilo. To get there... we find that we were not receiving any benefit from the first resource. Some flights to the airport were against the wishes of the commissioners of DPHL. And... otherwise general that the third time the national guard was called and there was a confrontation. The order of 7:00 for effect went in. Need to take rifles were discarded. Repeating... finally the idea of compliance. Hilo included. The county and DPHL Commission were spread out and exchange. The terms of the usage of DPHL with the island of Hawaii (Hilo and Waimea) and total 200 acres for 23 acres of business. Hilo at the airport. Hilo...

and the DDKA are the beneficiaries of the land/crap. This ordeal lasted almost 10 years in the 1960's and to this day no E's and recognition of resources under and adjacent to the airport ever been acknowledged.

In the 70's he led to the business and heavy industry close to the airport and island. The place again was Kaulaha all the residents protesting Kaulaha Kaulaha to Andrews, and going inland to back was the plan, to move them elsewhere completed actions to the state attorney General stopped the fraud.

To alleviate the need for industry and the DDKA (minimizers) opened the Waialeale Industrial Complex of business. This was in the 70's and the trend continues. In the 1980's Prince Kuhio Plaza in the 1990's Wal-Mart, Target, both have the good fortune of AKA but not the values the went back to 1980's. The power treatment again. But more residences and hotels and condominiums a better and bigger plant is needed. But it's not to the digests. Of course to get there you have to use the roads of Kaulaha presently being used at the time.

plant its essia for ingress, and egress to the access by going thru AKA land road cut the clasher arguments. the native can now access the power line. I do not believe an E's was made there is no record treatment of affluent at the time a do nothing to break the pipes, and Kaulaha again swims in 'crap'.

of recent abuse, a number of families living a lifestyle of fishing ^{growing} and leisure were evicted from central lands next to beaches adjacent to the wharf. The land was then for a short time years a good appearance for tourism on the boat was needed. And the local paper also suggested the native living the same lifestyle at AKA 20 miles land should be prevented from undeveloped AKA.

And I offer the following to the EAS proposal of Aug 15, 2001 for the Hilo Airport

1. The site proposals outlined on pages 2 and 3 "to support the future growth and development for the general aviation community" is not identified nor the development. Why is this?
 - a. if the (that runway is to expand for more landings and takeoffs, we object. An EIS is needed.
 - b. the density of residential for Rose increase by 25% within the past 5 years.
 - c. the draft EIS does not justify why further development is needed to increase dangers and hazards of an airport airport out for a new noise mitigation comments.
 - d. the draft EIS noise compatibility does not address the increased density of people in Kaunakakai, Hana, and Hilo. Hilo
2. The draft EAS does not consider the increased dangers of aircraft crashes to humans community of Hilo, the Hilo water and support facilities of gas and oil applicants why?
3. The draft EIS does not address the effect of noise to intercept and disrupt conditions, school, church, services, and workshops Hana, Uluwahi, n. H. & Conmanon.

and other normal and cultural gatherings in Kaunakakai. Why is this also not addressed for noise mitigation?

5. And as the environmental impacts and gatherings begin to occur normally and frequently in Kaunakakai for special and spiritual gatherings why do we have to complain about the noise of aircraft? Because we complain, an EIS is the minimum we demand.
6. Another contributing factor to airport EAS not addressed is the practice landings of military and commercial aircraft. Why are we subjected to this kind of exposure in community? What are the DOT do to eliminate this potential danger and increase by how many?
7. Are there plans in the future to increase the deployment of armed forces for training at Pohakuloa? Will be about it!! And move the airport towards Hana.

Elected to Kaunakakai Com. Assoc. Genevieve Sedo
 Hilo, HI 96700
 Catholic Church: Quinn Ave



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 ROGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1860

September 17, 2001

Ms. Genesis Lee Loy
510 Auwae Road
Hilo, Hawaii 96720

Dear Ms. Lee Loy:

Subject: Hilo International Airport
Pre-Assessment Consultation
Environmental Assessment
State Project No. AH1011-03

Thank you for your letter of August 30, 2001, and for sharing your heartfelt sentiments regarding the history of development in the vicinity of Keaukaha. We offer the following in response to your numbered questions. As an initial point of clarification, however, the handout on which your letter is based constitutes a summary of the improvements and impacts. The Draft Environmental Assessment (EA) is under preparation and is forthcoming.

1. General aviation improvements are limited to that described in the Project Summary handout, i.e., a new T-hangar building, an aircraft wash rack, aircraft tie-downs, apron improvements, lease lots, and infrastructure improvements. Presently, there is a lack of hangar space in the immediate area of general aviation aircraft and very limited support facilities.
2. The Part 150 Noise Compatibility Program Report, a copy of which can be made available to you if you wish, does incorporate the increased density and development in present-day Keaukaha.
3. There is no increased danger from the proposed improvements, as no major expansion of facilities is proposed. Primarily, the improvements consist of relocation of existing uses and improved facilities to support present operations.
4. The Part 150 Noise Compatibility Program Report does fully document the noise impacts and will be summarized in the forthcoming Draft EA.

*Hono Like Ke Ala Aloha
Working Together to Provide Gateway of Aloha*

BRANKI ARIANA
DIRECTOR
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 ROGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1860

REPLY REFER TO
AIR-P
01.0550

Ms. Genesis Lee Loy
September 17, 2001
Page 2

AIR-P
01.0550

5. The Draft EA will identify noise mitigation measures, which have been recommended, and we anticipate ongoing consultation with the Keaukaha community to address your concerns with the noise situation.

6. As recommended by the Noise Compatibility Program Report, our Department intends to conduct periodic informational meetings with all military users of Hilo International to remind them of the noise sensitivity of the Airport, including the overall suitability of Kona International and Lihue Airports as alternatives to Hilo International Airport in meeting their training requirements.

7. We are not aware of any specific plans to increase the deployment of armed forces for training at Pohakuloa Training Area. We have briefly explored relocation of the Airport further south towards Puna, but this is not a viable option since the noise contours will shift, exposing different areas to incompatible noise levels. Relocation out of Hilo would also be cost-prohibitive with relocation costs estimated from \$1B to \$2B dollars.

Notwithstanding the above, please be assured that we intend to fully coordinate our efforts with the Keaukaha community and the Department of Hawaiian Home Lands, which shares many of your concerns regarding the impacts of our airport operations.

Again, I appreciate your advising us of your concerns. Please contact Lynn Becones, planner, at (808) 838-8811, if we can be of any further service to you at this time.

Sincerely,

JERRY M. MATSUDA, P.E.
Airports Administrator

c: Wilson Okamoto & Associates (R. Funakoshi)
Federal Aviation Administration (D. Wehhouse)

BEULAH J. CATELANO
GOVERNOR

SPIN & UNAMI
SECTION
DEPUTY DIRECTOR
CLEVELAND OKAMOTO
JUDITH Y. UHIZUMI



RECEIVED
AUG 16 2001

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1820

WARRANT REFER TO

AIR-P
01.0462

August 6, 2001

ABLE ELECTRIC, INC.
567 KANOELEHUA AVE.
HILO, HAWAII 96720
PHONE (808)961-3759 FAX (808)961-3750

July 23, 2001

State of Hawaii
Department of Transportation
Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, HI 96819 (fax 838-8751)

Attention: Mr. Jerry Matsuda, P.E.

Subject: Pre-Assessment Consultation letter AIR-P 01.0351 dated 06-28-01

Gentlemen:

We have received your letter and are aware that we would be affected by the proposed land acquisitions, as we occupy property that is scheduled to be acquired by the State (Tax Map Key: 2-2-35:69).

Since this will directly affect our electrical contracting business, we would like to have a better idea approximately when we will be involved, how the acquisition will be carried out, what kind of assistance will be provided for relocation, whether comparable properties will be available to us, etc. We have made a considerable investment in this ideally situated property and buildings and are very concerned about the future of our business.

Very truly yours,

Reid Fumitani
President

Mr. Reid Fumitani
President
Able Electric, Inc.
567 Kanoelehua Avenue
Hilo, Hawaii 96720

Dear Mr. Fumitani:

Subject: Pre-Assessment Consultation
Hilo International Airport

Thank you for your letter of July 23, 2001, in response to our pre-assessment consultation. Your concerns regarding the timing and procedures for land acquisitions relative to your business operation are certainly understandable.

At this time, we have neither the available funding nor a specific timeframe for the acquisition. Based on our current plans, however, we anticipate that some land acquisition may occur in approximately five years.

Once funding becomes available and a specific schedule is determined, affected landowners and tenants will be contacted and discussions initiated with our Land Acquisition Section. Procedures typically include a title search, appraisal, offer and acceptance. Options for relocation assistance will also be provided at this time.

We will endeavor to keep you informed of our plans regarding acquisition as they affect your property. If you should have any further questions, please contact Lynn Becones, Planner, at (808) 838-8811.

Sincerely,

JERRY M. MATSUDA, P.E.
Airports Administrator

c: Wilson Okamoto & Associates (R. Funakoshi)
Federal Aviation Administration (D. Welhouse)

BENJAMIN CAVETANO
DIRECTOR



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

OLIVIA K. SHIMADA
DIRECTOR
DEPUTY DIRECTOR
GLENN M. OKINO
JUDITH V. URASAKI

IN REPLY REFER TO:
AIR-P
01-0488

Glenn M. Okino
113 Akiohala Place
Kailua, HI 96734

July 25, 2001

Mr. Jerry M. Matsuda
Airports Administrator
Department of Transportation
Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, HI 96819-1880

RE: HILO INTERNATIONAL AIRPORT ENVIRONMENTAL ASSESSMENT
STATE PROJECT NO.: AH1011-03

Dear Sir

On behalf of my father, Hayato Okino, I am responding to your letter. My father is 89 years old and lives by himself at 545 Kanoelehua Avenue. He has lived there for fifty-one years. It is his wish to spend the remaining years of his life living in that house.

At this juncture in his life, it would pose an enormous impact both emotionally and financially should he be forced to give up his home. Furthermore, your letter states that this project is scheduled for the year 2002 which is just 5 months away. It is not logistically or financially possible for him to make the necessary arrangements in such a short time. He will certainly require more time and advance notification.

Due to his age and being legally blind, he has difficulties with written correspondence. It is therefore requested that copies of any correspondence sent to him be also mailed to me. My address is as follows:

Glenn M. Okino
113 Akiohala Place
Kailua, HI 96734

I thank you very much for your time and consideration. Please feel free to call me should there be any questions. I can be reached at 295-6888.

Sincerely

Glenn M. Okino

Glenn M. Okino

Mr. Glenn Okino
113 Akiohala Place
Kailua, Hawaii 96734

Dear Mr. Okino:

Subject: Pre-Assessment Consultation
Hilo International Airport
Environmental Assessment, Hilo, Hawaii

Thank you for your letter of July 25, 2001, regarding the subject Environmental Assessment (EA).

Regarding the proposed land acquisition, there remains a need to acquire certain lands including your father's property, which are situated within the Runway Protection Zone (generally 1,700 feet off the runway ends). However, in light of concerns such as yours which have been raised, we have reevaluated our land acquisition program. Our policy in this area will now be to proceed with acquisition only with the concurrence of the homeowner or at such time that the land otherwise becomes available. As such, no action will be taken now or in the near future to displace your father from his residence.

Thank you for apprising us of your concerns. Please contact Lynn Becones, Planner, at (808) 838-8811 if you have any further questions.

Sincerely,

Jerry M. Matsuda

JERRY M. MATSUDA, P.E.
Airports Administrator

c: Wilson Okamoto & Associates (R. Funakoshi)
Federal Aviation Administration (D. Welhouse)

Please Use Air Mail
Honolulu, Telephone in Honolulu, Contact at Aloha

**COMMENT AND RESPONSE LETTERS
FROM THE DRAFT ENVIRONMENTAL ASSESSMENT
REVIEW PERIOD**



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

November 19, 2003

Regulatory Branch

Mr. Roy K. Sakata
Acting Airports Administrator
Airports Division, Hawaii Department of Transportation
Honolulu International Airport
400 Rodgers Boulevard, Suite 700
Honolulu, HI 96819-1880

Dear Mr. Sakata:

This responds to your request for written comments on a draft Environmental Assessment (dEA) which addresses activities proposed for improvements at the Hilo International Airport, Hawaii Island (TMK 2-1-12).

Our records indicate that waters of the United States, as represented by perennial or intermittent streams and wetlands do not occur within the proposed project areas. It also appears that other special aquatic sites such as anchialine ponds are not present. The dEA should state in appropriate sections that there is no potential for navigable waters of the U.S. to be impacted by construction of project structures and associated ground disturbing activities within the proposed improvement areas. Therefore, it is determined that a Department of Army (DA) permit for Section 404 activities of the Clean Water Act will not be required for the proposed improvements at Hilo International Airport.

Thank you for your consideration of potential impacts to the aquatic environment in the Waioa watershed. Please contact Mr. Farley Watanabe of my staff at 438-7701, or facsimile 438-4060, if you have any questions or need additional information. Please refer to File Number 200300143 in any future correspondence with us.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

LINDA LITTLE
CORRECTOR



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

January 24, 2003

Mr. George P. Young, P.E.
Regulatory Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Department of the Army
Fort Shafter, Hawaii 96858-5440

Dear Mr. Young:

Subject: Hilo International Airport
Draft Environmental Assessment
State Project No. AH1011-03

Thank you for your letter of November 19, 2003, stating that your records indicate that there are no perennial or intermittent streams, wetlands, or other special aquatic sites within the project area. As requested, the Final Environmental Assessment will state that there is no potential for navigable waters of the U.S. to be impacted by the proposed improvements.

We appreciate your interest and participation in the environmental review process. Your letter, together with this response, will be included in the forthcoming Final Environmental Assessment. If you need further information, please contact Ms. Lynn Becones, Planner, at (808) 838-8811.

Sincerely,

DAVIS K. YOGI
Airports Administrator

c: Wilson Okamoto and Associates (R. Funakoshi)

ROBERT K. BARAGA
DIRECTOR
Acting Deputy Director
CLAREN K. OKUNO

IN REPLY REFER TO:
AIR-P
03.0027



LOCAL OFFICE
GOVERNMENT OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96813-3378

January 21, 2003

CHESTER L. FURUKO, M.D.
DIRECTOR OF HEALTH

By: _____
Title: _____

02-297/epo

Mr. Roy K. Sakata, Acting Airports Administrator
January 21, 2003
Page 2

mixtures of herbicides should be used up and sprayed according to directions to prevent potential hazardous waste from being stored in the sprayer. The proposed mechanics service pit will potentially have solvents, degreasers, paints, and used oil. All of these chemicals have a potential for becoming hazardous wastes when used.

Best management practices and compliance with hazardous waste generation, storage and disposal should be addressed in the facility's plans.

If there are any questions, please contact Jack Richardson of the Underground Storage Tank Division, or Grace Simmons of the Hazardous Waste Division, at (808) 586-4226.

Environmental Planning Office (EPO)

This project is located in the Waioala River/Hilo Bay watershed. Waioala River and Hilo Bay are currently listed under section 303(d) of the Clean Water Act as being impaired by nutrients and turbidity. The impaired status of these waters requires that the Department of Health establish Total Maximum Daily Loads (TMDLs) suggesting how much the existing pollutant loads should be reduced in order to attain water quality standards in the river and coastal waters.

Although these TMDLs are yet to be established and implemented, a first step in achieving TMDL objectives would be to prevent any project-related increases in pollutant loads. The Draft Environmental Assessment (DEA) suggests that since the airport does not have a drainage system that diverts runoff into State water waters, no indirect or cumulative impacts to the quality of surface water bodies are anticipated as a result of the construction and operation of the proposed airport improvements (p. 3-5). The DEA also suggests that no indirect or cumulative impacts to the quality of ground water are anticipated (p. 3-6). These suggestions would be more persuasive if the following are addressed:

1. According to the DEA, an open drainage channel along the western edge of the project both conveys and dissipates runoff (p. 3-52). We suggest that the end points and flow characteristics of this channel be specified to support the determination that runoff is not diverted into State waters, even during extreme runoff events;
2. We suggest that hydrologic connections between underlying groundwater and nearby surface water (Waioala River, Hilo Bay, and Kaunakaha shoreline) be analyzed to determine if runoff water and wastewater from the project site that percolates into the Hilo Aquifer System may eventually flow into these surface water bodies. If so, we suggest that the quantity and quality of this runoff water and wastewater, before and after its percolation into the aquifer, be characterized; and
3. Even without hydrologic connections between groundwater and surface water, determination of no significant or cumulative impacts to the quality of ground water (p. 3-6) seem contingent upon characterizing existing groundwater quality and the quantity and quality of project-related runoff water and wastewater, before and after its percolation into the aquifer.

Mr. Roy K. Sakata, Acting Airports Administrator
Department of Transportation, Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880

Dear Mr. Sakata:

Subject: Draft Environmental Assessment (DEA)
Hilo International Airport Improvements
State Project No. AH1011-02, Hilo District, Hawaii
Tax Map Key: 2-1-012: 009 (por)

Thank you for the opportunity to review and comment on the subject proposal. The DEA was routed to the various branches of the Environmental Health Administration. We have the following comments:

Solid and Hazardous Waste Branch (SHWB)

Underground Storage Tanks

The Solid and Hazardous Waste Branch, Underground Storage Tank Section has numerous files for underground storage tanks at the Hilo International Airport. The SHWB has made the Underground Storage Tank/Leaking Underground Storage Tank database for Hawaii available on the Internet at <http://www.state.hi.us/health/eh/shwb>, and on a 3.5" floppy disk in Microsoft Excel format. These files allow for searches by street address, facility name, city, etc. This version is also available through e-mail.

To order either the disk for \$3.00 or the e-mail version free of charge, please submit a Request to Access a Government Record form specifying: UST/LUST database on 3.5" disk (or e-mail), and attention to the UST Section. The latest copy of the RCRA List can also be obtained by contacting the SHWB.

Hazardous Waste

Please be aware that herbicide storage and mixing sheds may generate hazardous waste in the form of unused mixtures or old and unused herbicides. Best management practices should be

Mr. Roy K. Sakata, Acting Airports Administrator
January 21, 2003
Page 3

A TMDL technical study of water quality in Waioa River is scheduled to begin next year. We encourage the Department of Transportation, Airports Division to participate in the TMDL process and suggest that they consult with the Department of Health Clean Water Branch (Engineering Section) to discuss how water pollution control permitting may be linked with TMDL implementation.

If you have any questions about these comments or the Total Maximum Daily Load program, please contact David Penn at (808) 586-4337.

Safe Drinking Water Branch (SDWB)

Injection wells used for the subsurface disposal of wastewater, sewage effluent, or surface runoff are subject to environmental regulation and permitting under Hawaii Administrative Rules, Title 11, chapter 23, titled Underground Injection Control (UIC). The Department of Health's approval must be first obtained before any injection well construction commences. An UIC permit must be issued before any injection well operation occurs.

Authorization to use an injection well is granted when a UIC permit is issued to the injection well facility. The UIC permit contains discharge and operation limitations, monitoring and reporting requirements, and other facility management and operational conditions. A completed UIC permit application form is needed to apply for a UIC permit. A UIC permit can have a valid duration of up to five years. Permit renewal is needed to keep an expiring permit valid for another term.


If you have any questions, please contact Chauncey Hew at (808) 586-4273.

Wastewater Branch (WWB)

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We reserve the right to review the detailed wastewater plans for conformance to applicable rules.

If you have any questions, please contact the Wastewater Branch at (808) 586-4294.

Sincerely,


JUNE F. HARRIGAN-LUM, MANAGER
Environmental Planning Office

cc: SHWB
EPO
SDWB
WWB

LIRICA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880

February 14, 2003

ROONEY K. HARADA
DIRECTOR

Acting Deputy Director
GLENN H. OOKOTO

REFERENCE TO
AIR-P
03.00661

TO: JUNE F. HARRIGAN-LUM, MANAGER
ENVIRONMENTAL PLANNING OFFICE
DEPARTMENT OF HEALTH

FROM: DAVIS K. YOGI
AIRPORTS ADMINISTRATOR

SUBJECT: HILO INTERNATIONAL AIRPORT
DRAFT ENVIRONMENTAL ASSESSMENT
STATE PROJECT NO. AH1011-03

Thank you for your letter of January 21, 2003, regarding the subject Draft Environmental Assessment. We offer the following in response to your comments.

Solid and Hazardous Waste Branch

Thank you for apprising us of your database for underground storage tanks (UST) at Hilo International Airport. We are aware that our proposed maintenance facilities will contain flammable and hazardous materials with the potential for hazardous waste generation. As recommended, we will employ Best Management Practices in the design, construction and operation of these facilities to properly store, contain and otherwise prevent the release of hazardous materials.

Environmental Planning Office

Although we have not undertaken a characterization or analysis of ground water flow as suggested, we believe the proposed improvements will improve Total Maximum Daily Loads (TMDL) to coastal receiving waters and assist in the reduction of pollutants. The present cargo facilities in the old airport area are closer to the coast and use cesspools and dry wells to discharge wastewater and stormwater. The proposed relocated cargo facilities will be further

inland and a sewer system will convey wastewater to the County of Hawaii Wastewater Treatment Plant. Stormwater will sheetflow over grassed areas and through a grassed swale as opposed to the dry wells currently used. The proposed helicopter facilities will also employ connections to existing wastewater systems.

We would be pleased to participate in the forthcoming TMDL process to contribute to your discussions as well as learn how we may improve our operations relative to your pollutant reduction objectives.

Safe Drinking Water Branch

We acknowledge the need and will obtain an Underground Injection Control permit for the subsurface disposal of wastewater or storm water, should the proposed improvements require such facilities.

Wastewater Branch

Should the proposed improvements require individual wastewater systems, we will consult with the Wastewater Branch for conformance with applicable rules.

We appreciate your interest and participation in the environmental review process. If you have any questions, please contact Ms. Lynn Becones, Planner, at (808) 838-8811.

c: Wilson Okamoto & Associates (R. Funakoshi)

RODNEY K. HARAGA
DIRECTOR
Acting Deputy Director
GLENN H. OHSUMOTO

EMERGENCY REFERENCE TO
AIR-P
03.0057



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

February 13, 2003

TO: GENEVIEVE SALMONSON, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: RODNEY K. HARAGA
DIRECTOR OF TRANSPORTATION

SUBJECT: HILO INTERNATIONAL AIRPORT
DRAFT ENVIRONMENTAL ASSESSMENT
STATE PROJECT NO. AH10111-03

Thank you for your letter dated December 9, 2002, regarding the subject Draft Environmental Assessment (EA). We offer the following in response to your comments.

Alien Species Mitigation Efforts

We are aware of the potential threat that alien flora and fauna pose to our island's ecosystem. However, since the risk of alien species introduction is influenced primarily by flight origin and frequency and the proposed improvements will have no effect on these factors, we do not believe that the proposed improvements will affect the risk of alien species introduction to our islands. We would note in this regard that there are no inbound overseas flights at Hilo either existing or planned. In addition, programs presently conducted by the State Department of Agriculture and U.S. Department of Agriculture to detect alien species will not be affected by the proposed improvements.

LINDA LIMBLE
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
210 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

December 9, 2002

Mr. Roy Sakata
Airports Division, Department of Transportation, State of Hawaii
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819

Mr. Rodney Funakoshi
Wilson Okamoto & Associates, Inc
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Messrs. Sakata and Funakoshi:

The Office of Environmental Quality Control has reviewed the October 2002, draft environmental assessment for Hilo International Airport and offers the following comments for your consideration and response.

1. **ALIEN SPECIES MITIGATION EFFORTS.** In section 3.7 and section 3.8, the draft environmental assessment describes impacts to plants and animals on site. In the environmental assessment, please describe what efforts will be undertaken at the improved airport to mitigate the spread of undesirable alien plant and animal species from cargo arriving in Hilo from domestic and international flights.
2. **CULTURAL IMPACT CLARIFICATIONS.** Section 3.12.7 notes that "[I]f the proposed improvements will have minimal negative cultural impact upon native Hawaiian cultural resources, beliefs and practices, as the development of existing airport facilities and boundaries has already eliminated any cultural resources within the area." [Emphasis and italics supplied]. The office is puzzled to what the preceding sentence means since the cultural description clearly shows that the hula groves still exist (page 3-35), and that portion of the Panaea forest not destroyed by airport construction appears to be intact (page 3-34). Also, fishing near the coastline fronting the airport is not addressed. How many people still fish in areas fronting the airport? Please clarify these items, and include an assessment of impacts to these cultural resources which may arise from the project as proposed.
3. **SUSTAINABLE BUILDING GUIDELINES, USE OF NATIVE PLANTS, AND GLASSPANEL.** We respectfully refer you to our website at <http://www.state.hi.us/health/eoq/index.html> for guidance documents on sustainable building and the use of native plants in landscaping. Also, please plan to use glasspanel aggregate for proposed paving at the project site.

Thank you for the opportunity to comment. If there are any questions, please call Leslie Segundo of my staff at (808) 586-4185.

Sincerely,

Genevieve Salmonson
GENEVIEVE SALMONSON
Director

Cultural Impact Clarifications

1. Hala Groves: The Cultural Impact Assessment identifies that practitioners use the hala groves on airport property, including the site identified as the Proposed Helicopter Facility, and recommends that practitioners should be permitted to gather from these hala trees through a right-of-entry policy with the airport (page 35 of the Cultural Impact Assessment).
2. Pana'ewa Forest: While portions of Pana'ewa Forest may remain undeveloped, the forest is not considered intact in either size, shape or biodiversity. Due to development in the Hilo area, the size of Pana'ewa Forest has been reduced, the forest is no longer contiguous being separated by pockets of residential, industrial and commercial development, and alien species now make up a considerable portion of the forest ecosystem. The Cultural Impact Assessment identifies that prior to the development of the airport, traditional accessways connected the Keaukaha community with Pana'ewa Forest. The development of the Airport, however, eliminated these traditional accessways and eliminated that portion of Pana'ewa Forest that was utilized by the Keaukaha community (page 35 of the Cultural Impact Assessment).
3. Fishing: The Cultural Impact Assessment identifies that all types of fishing and ocean and shoreline gathering activities and practices occurred and continue to occur in the Keaukaha, Waiakea region (page 30 of the Cultural Impact Assessment). During the interviews one informant commented that when Runway 3-21 is used, low flight patterns cause vibrations and noise, which may affect the marine life including dolphins, turtles, whales and other animals. The loud noise and vibrations also impacts the fishponds along the coast. Additionally, residue from airplanes flying overhead and airport activity deposited on the ocean and fishponds may also harm marine life (Page 4 of 5 of Garmon & Kanahele Summary - Cultural Impact Assessment Appendix A). While this concern is related to existing airport activities, it was not a concern related to the proposed project. No concerns or impacts from the proposed project on access to the shoreline or on fishing and ocean and shoreline gathering activities were identified.

Sustainable Building Guidelines, Use of Native Plants, and Glassphalt

Appropriate sustainable building techniques such as use of energy- and water-conserving fixtures and maximizing daylighting will be incorporated into the design of the proposed improvements. As required by Hawaii Revised Statutes (HRS) Chapter 103D-408, native or culturally significant plants will be used where appropriate. Finally, paving material with the required recycled glass content as specified in HRS 103D-407 will be used for required roadway improvements.

We appreciate your interest and participation in the environmental review process. Your letter, together with this response, will be included in the forthcoming Final EA. If you have any questions, please contact Ms. Lynn Becones, Planner, at (808) 838-8811.

c: Wilson Okamoto and Associates (R. Funakoshi)
FAA-ADO (S. Wong)



STATE OF HAWAII
 DEPARTMENT OF LAND AND NATURAL RESOURCES
 LAND DIVISION
 P.O. BOX 511
 HONOLULU, HAWAII 96813

ADULT RESOURCES
 INFORMATION AND
 RESOURCES DIVISION
 151 PUNCHBOWL STREET
 HONOLULU, HAWAII 96813
 PHONE: (808) 587-0164
 FAX: (808) 587-0140

December 6, 2002
 LD-NAV
 L-4013/3638/3526/3463/3632

Roy K. Sakata, Acting Airports Administrator
 Department of Transportation, Airports Division
 Honolulu International Airport
 400 Rodgers Boulevard, Suite 700
 Honolulu, Hawaii 96819-1880

Dear Mr. Sakata:

SUBJECT: Review: Draft Environmental Assessment AH1011-03
 Project: Hilo International Airport Improvements
 THK: 3rd/ 2-1-012: Portion of 009

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA).

A copy of the DEA covering the subject matter was distributed to the following Department of Land and Natural Resources' Divisions for their review and comment:

- Division of Aquatic Resources
- Division of Forestry and Wildlife
- Division of State Parks
- Division of Boating and Ocean Recreation
- Engineering Division
- Commission on Water Resource Management
- Land Division Planning and Technical Services
- Land Division Hawaii District Land Office

Attached herewith is a copy of the Division of Forestry and Wildlife, Engineering Division and Hawaii District Land Office comments.

Based on the attached responses, the Department of Land and Natural Resources has no other comment to offer on the subject matter.

If the Land Division receives additional comments, they will be forwarded to your office at that time. Should you have any questions, please contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0384.

Very truly yours,

Dierdre S. Mamiya
 DIERDRE S. MAMIYA
 Administrator

C: HDLO

Division of Forestry & Wildlife

151 Punchbowl Street, Rm. 315 • Honolulu, HI 96813 • (808) 587-0164 • Fax: (808) 587-0140

November 18, 2002

MEMORANDUM

TO: Nick Vaccaro, Land Agent
 Land Division

THRU: Dierdre S. Mamiya, Administrator
 Land Division

FROM: Michael G. Buck, Administrator
 Division of Forestry and Wildlife *Paul Gony*

SUBJECT: Draft Environmental Assessment, Hilo International Airport Project
 No. AH1011-03, Hilo, Hawaii, TMK: (3) 2-1-12: por. 9.

DOFAW has reviewed the subject document and we provide the following comments for your consideration. We will comment on the indirect impacts these infrastructure additions to the Hilo International Airport will have on the island. In previous airport expansions, we requested that DOT mitigate the threat of pest and/or invasive species introductions to that island. Back in 1994, nearly 80 percent of alien species intercepted at Hawaii's borders arrived by aircraft as cargo, in passenger baggage, or as hitchhikers on the aircraft alone. A number of major farm, forest, and health pests are currently restricted to one or a few islands in the state. Because of this threat i.e. banana poka, tuncellosis, papaya ring-spot virus, miconia etc, we request that an invasive species mitigation plan be added and incorporated into the Hilo International Airport master plan. For additional information on invasive species problems in Hawaii, please see (www.conservationhawaii.org/silent/action/ngay.html). Please call Ms. Mindy Wilkinson, DOFAW Invasive Species Coordinator at 587-0164, if you have questions to our review. Thank you for the opportunity to comment on this project.

C: Hilo DOFAW Branch
 Ms. Mindy Wilkinson, DOFAW Administration



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809

CLEMENT S. COLMAGLIAS
COMMISSIONER
BOARD OF LAND AND NATURAL RESOURCES
ERIC T. HIRANO
DEPUTY DIRECTOR
LAND DIVISION
LARELL E. NELSON
DEPUTY DIRECTOR FOR
CONSERVATION AND RECREATION
MANAGEMENT
ADRIANNE S. WILSON
DEPUTY DIRECTOR FOR
CONSERVATION AND RECREATION
MANAGEMENT
DEBBIE L. WILSON
DEPUTY DIRECTOR FOR
CONSERVATION AND RECREATION
MANAGEMENT
LAND DIVISION
STATE PARKS

L-4013
Suspense Date: 12/5/02
NOV 13 2002

MEMORANDUM

TO: Division of Aquatic Resources
 Division of Forestry & Wildlife
 Na Ala Hele Trails
 Division of State Parks
 Division of Boating & Ocean Recreation
 Commission on Water Resource Management

Land Division Branches:
 Planning & Technical Services
 Engineering Branch
 Hilo District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division *Chalen*

SUBJECT: Draft environmental assessment, Hilo International Airport Project No. AH1011-03, Hilo, Hawaii, tax map key (3) 2-1-12; portion 9

Please review the attached document covering the subject matter and submit your comments (if any) on Division letterhead signed and dated within the time requested above. Should you need more time to review the subject matter, please contact Nick Vacarro at Ext. 7-0438.

**Note: One (1) copy of the document is available for review in the Land Division Office, Room 220. Sign out slips are available at the counter for those who wish to review the document for a 24-hour period.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments. Thank you.

() We have no comments. (X) Comments are attached.

Signed: *Eric T. Hirano*
Date: *11/13/02*

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/NAV
Ref.: SLU02-001.CMT

COMMENTS

In addition to our previous comments that have been addressed on Coastal Hazards of page 4-9, of the Draft Environmental Assessment, please provide the water demands and calculations to Planning Branch, Engineering Division of the Department of Land and Natural Resources so that the water demands can be included in the State Water Projects Plan Update.

Should you have any questions, please call Mr. Andrew Monden of the Planning Branch at 587-0229.

Signed: *Eric T. Hirano*
ERIC T. HIRANO, CHIEF ENGINEER
Date: *11/27/02*

SHULANN J. CANTANO
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P.O. Box 621
HONOLULU, HAWAII 96809

CILBERT S. COLON-ALCALAN
DIRECTOR
ERIC T. JUNG
DEPUTY DIRECTOR
LORIEL T. BISHOP
DEPUTY DIRECTOR

AGRICULTURE
WATER RESOURCES
CONSERVATION AND RECREATION
PLANNING
CONSTRUCTION AND MAINTENANCE
LAND AND NATURAL RESOURCES
STATE PARKS

November 26, 2002

TO: Charlene E. Unoki, Acting Assistant Administrator
FROM: Harry M. Yada, District Land Agent *[Signature]*

SUBJECT: Draft Environmental Assessment, Hilo International Airport Project No. AH1011-03, Hilo, Hawaii, Tax Map Key: (3) 2-1-12; various

represented by the subject State owned parcel should not be unjustifiably restricted by impractical concerns over an RPZ that is already compromised by more significant factors that cannot be mitigated.

Land Division is currently proceeding with a rezoning of the subject 2.8 acre parcel from its current residential zoning to an light industrial/commercial zoning. The parcel has attracted significant interest in the past for potential industrial/commercial uses but has always been stifled by the need to rezone and DOT-A's issues over the RPZ. Land Division would consider encumbering the property with an avigation easement provided the slope and plane of such an easement reflected the existing improvements within the Kanoelohua Avenue and Kekuanaoa Street intersection. Additionally, such an avigation easement should take into consideration the location of the actual end of the runway that has been previously displaced and therefore extends the RPZ further from the limits of the airport boundary than necessary. In event the required avigation easement unreasonably restricts the development of the parcel, DOT-A should pay fair market compensation for the easement from its special funds, as it would for the same easement over private property.

Pursuant to your circulation for comments on the subject project, the Hawaii District Land Office has the following comments:

The proposed "Land Acquisition" referred to in the document identifies a parcel of State land (TMK: 3/2-2-37:41) consisting of approximately 2.8 acres for acquisition. Given the current FAA policies with regard to any lands set aside to the Department of Transportation, Airports Division, and the collection of rents for non-airport uses, any further dispositions of State lands to DOT, Airports Division will not be considered. There is no distinction of the subject State owned parcel from the balance of the 10+ acres identified as "Proposed Avigation Easement" area. Therefore, the subject parcel should not be selectively identified for acquisition solely based on ownership. Due to the foregoing, Land Division will not concur to any acquisition of this parcel by DOT-A.

The justification for acquisition is even further diminished due to the location of Kanoelohua Avenue, a recently widened 5 lane divided State highway located between the end of the runway and the subject State owned parcel. The intersection of Kanoelohua Avenue and Kekuanaoa Street located between the end of the runway and the subject State owned parcel contains traffic signal and street light improvements that are far greater impacts to the RPZ than any 1 or 2 story structure that may be constructed on the State parcel. The subject intersection serves as the main ingress and egress to the airport. As a result, DOT-A's own roadway and user traffic is a major contributor to the concentration of cars and people in the RPZ zone. The proposed funds for land and avigation acquisition may be better spent towards the relocation of the access to the airport, removing its own roadway and users from the RPZ. The revenue potential

BERNARD J. CAVETTANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

P.O. Box 621
HONOLULU, HAWAII 96809

NOV 13 2002

L-4013
Suspense Date: 12/5/02

MEMORANDUM

TO: Division of Aquatic Resources
 Division of Forestry & Wildlife
 Na Ala Hele Trails
 Division of State Parks
 Division of Boating & Ocean Recreation
 Commission on Water Resource Management

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft environmental assessment, Hilo International Airport Project No. AH1011-03, Hilo, Hawaii, tax map key (3) 2-1-12:portion 9

Please review the attached document covering the subject matter and submit your comments (if any) on Division letterhead signed and dated within the time requested above. Should you need more time to review the subject matter, please contact Nick Vacarro at Ext. 7-0438.

**Note: One (1) copy of the document is available for review in the Land Division Office, Room 220. Sign out slips are available at the counter for those who wish to review the document for a 24-hour period.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments. Thank you.

() We have no comments.

Signed: *Charlene E. Unoki*
Date: 11/20/02

() Comments are attached.

BERNARD J. CAVETTANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

P.O. Box 621
HONOLULU, HAWAII 96809

NOV 13 2002

L-4013
Suspense Date: 12/5/02

MEMORANDUM

TO: Division of Aquatic Resources
 Division of Forestry & Wildlife
 Na Ala Hele Trails
 Division of State Parks
 Division of Boating & Ocean Recreation
 Commission on Water Resource Management

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft environmental assessment, Hilo International Airport Project No. AH1011-03, Hilo, Hawaii, tax map key (3) 2-1-12:portion 9

Please review the attached document covering the subject matter and submit your comments (if any) on Division letterhead signed and dated within the time requested above. Should you need more time to review the subject matter, please contact Nick Vacarro at Ext. 7-0438.

**Note: One (1) copy of the document is available for review in the Land Division Office, Room 220. Sign out slips are available at the counter for those who wish to review the document for a 24-hour period.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments. Thank you.

() We have no comments.

Signed: *Charlene E. Unoki*
Date: 11/19/02

() Comments are attached.

GILBERT S. COLMAN-AGUIAR
COMMISSIONER
BOARD OF LAND AND NATURAL RESOURCES

ERIC T. HIRANO
DEPUTY DIRECTOR
LAND DIVISION

LINDEL T. HOSHINO
COMMISSIONER
BOARD OF LAND AND NATURAL RESOURCES
ERIC T. HIRANO
DEPUTY DIRECTOR
LAND DIVISION
LINDSEY M. HARRIS
COMMISSIONER
BOARD OF LAND AND NATURAL RESOURCES
ERIC T. HIRANO
DEPUTY DIRECTOR
LAND DIVISION
LINDSEY M. HARRIS
COMMISSIONER
BOARD OF LAND AND NATURAL RESOURCES
ERIC T. HIRANO
DEPUTY DIRECTOR
LAND DIVISION

LINDA LINGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96818-1880

February 7, 2003

RODNEY K. HARAGA
DIRECTOR

AIRPORTS DIVISION
GLENN OKAMOTO

WE REPLY REFER TO

AIR-P
03.0056

DIERDRE S. MAMIYA
February 7, 2003
Page 2

AIR-P
03.0056

Engineering Division

As requested, water demand and calculations for the proposed improvements will be provided to the DLNR Engineering Division Planning Branch when they become available for inclusion in the State Water Projects Plan Update.

Land Division Hawaii District Land Office

Your concerns and preference for easements as opposed to acquisition are acknowledged. Our policy, however, is to seek acquisition to gain direct control over lands within the Runway Protection Zone wherever possible. State ownership of lands should facilitate the transfer or exchange of such lands, and we proceeded on that basis to identify the referenced parcel (TMK (3) 2-2-37: 4) for acquisition. As you are aware, the exchange of Airport lands has been undertaken elsewhere among State agencies such that we should not rule out such actions at this time. Should we be unable to acquire the subject parcel, we will pursue obtaining an appropriate aviation easement.

TO: DIERDRE S. MAMIYA, ADMINISTRATOR
LAND DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

FROM: DAVIS K. YOGI
AIRPORTS ADMINISTRATOR

SUBJECT: HILO INTERNATIONAL AIRPORT
DRAFT ENVIRONMENTAL ASSESSMENT
STATE PROJECT NO. AH1011-03

Thank you for your letter dated December 13, 2002, regarding the subject Draft Environmental Assessment (EA). The following is our response to your comments.

Division of Forestry and Wildlife

The Department of Transportation, Airports Division, is aware of the potential threat that alien flora and fauna pose to our island's ecosystem. However, we do not feel that an invasive species mitigation plan for the proposed improvements is warranted since the risk of alien species introduction is influenced primarily by flight origin and frequency and the proposed improvements will have no effect on these factors. Moreover, there are no inbound overseas flights at Hilo, either existing or planned. Therefore, the proposed improvements are not anticipated to affect the risk of alien species introduction to the State.

In addition, programs presently conducted by the State Department of Agriculture and U.S. Department of Agriculture to detect alien species will not be affected by the proposed improvements.

We appreciate your interest and participation in the environmental review process. Your letter, together with this response, will be included in the forthcoming Final EA. If you have any questions, please contact Ms. Lynn Decones, Planner, at (808) 838-8811.

c: Wilson Okamoto and Associates (R. Funakoshi)



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPOLANI BLVD, SUITE 500
HONOLULU, HAWAII 96813

HRD02/181R

December 17, 2002

Mr. Roy K. Sakala
Acting Airports Administrator
Department of Transportation
Honolulu International Airport
400 Rodgers Boulevard - Suite 700
Honolulu, HI 96819-1880

SUBJECT: HILLO INTERNATIONAL AIRPORT - DRAFT
ENVIRONMENTAL ASSESSMENT

Dear Mr. Sakala:

Thank you for the opportunity to review the above referenced Draft Environmental Assessment which allows for expansion of the Hilo International Airport.

The Office of Hawaiian Affairs (OHA) recognizes that the DOT has increased its efforts to communicate with the Keaukaha community and has a better understanding of their concerns. However, many of the issues raised in our earlier correspondence of July 26, 2001 have not been resolved.

OHA views the incompatibility between airport operations and the adjacent residential community as a health, safety and social issue which is addressed by the Adverse Effects section of the DOT Environmental Justice Guidelines. As such, reductions of current adverse impacts on existing community facilities and individual households should be DOT's highest priority as they plan for this runway expansion. The community should be kept informed and have ample opportunity to provide continuing input as you address mitigation measures. OHA offers the following specific comments:

The noise issues remain unresolved. Specifically, the DOT maintains that it will continue consultation regarding sound proofing and installation of air conditioning of the

possible relocation of residents away from the "high noise zones". However, the costs of installing air conditioners and subsequent increases in monthly electrical costs have not been addressed. Additionally, relocation does not appear to be acceptable to the local community and conflicts with DOT's Adverse Effects definition cited in the U.S. Department of Transportation's Environmental Justice Guidelines. Adverse noise and air quality impacts for schools and other public facilities in the area have not been addressed.

The DOT has not resolved how it will accommodate required FAA runway protection zones. This is even more important now that the condemnation of DPHL housing near the airport has been reconsidered. Will the runway be resited?

OHA believes 106 consultations are implicated for the Iauahala grove and for archaeological sites in the vicinity of the proposed expansion. OHA reminds the DOT and the FAA that even though actions may be categorically exempt under the National Environmental Protection Act (NEPA), they are not necessarily exempt under the National Historic Protection Act (NHHPA), which requires a 106 consultation for all federal undertakings affecting historic or traditional cultural properties. To initiate a 106 consultation with the Office of Hawaiian Affairs please send a written request for a 106 consultation to:

Administrator
Office of Hawaiian Affairs
711 Kapiolani Blvd, Ste 500
Honolulu, HI 96813
Attn: 106 Consultation

OHA is concerned that although the DOT has made good-faith efforts to accommodate community concerns, it has not finished its community outreach efforts, nor addressed all of its legal requirements in consult with affected parties. OHA believes that a FONSI for this project should be denied and an Environmental Impact Statement should be required.

If you have further questions please contact Jerry Norris at 594-1847 or e-mail him at jerrynt@oha.org.

Sincerely,

Ernest Kimoto
Acting Director
Hawaiian Rights Division

C: Hilo CRC

LINDA LIAGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
420 ROOFGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-1800
February 4, 2003

ROCHELLE K. KAMOGA
DIRECTOR
ASST. DEPUTY DIRECTOR
CLARENCE M. GIBBERTO

REPLY REFER TO
AIR-P
03.0040

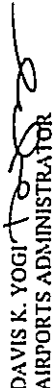
Mr. Clyde Namuo
February 4, 2003
Page 2

AIR-P
03.0041

We appreciate your interest and participation in the environmental review process. Your letter, together with this response, will be included in the forthcoming Final Environmental Assessment. If you need any further information, please contact Ms. Lynn Becones at (808) 838-8811.

c: Wilson Okamoto and Associates (R. Funakoshi)

TO: CLYDE NAMUO, ADMINISTRATOR
OFFICE OF HAWAIIAN AFFAIRS

FROM: DAVIS K. YOGI 
AIRPORTS ADMINISTRATOR

SUBJECT: HILO INTERNATIONAL AIRPORT
DRAFT ENVIRONMENTAL ASSESSMENT
STATE PROJECT NO. AH1011-03

Thank you for your letter commenting on the subject project. As requested, we will continue to keep the Keaukaha community informed of the airport improvements and will work with the Department of Hawaiian Home Lands and homeowners on a case-by-case basis to resolve airport-related noise impacts. However, we do want to correct a reference in your letter to "runway expansion," as no expansion of any runway is planned as part of the proposed improvements.

Regarding the impacts from noise and air quality, we believe that we have explored all available and reasonable measures for mitigation. As such, the most we can do is to have options available to individual homeowners and they can then decide to accept or pursue any of the proposed measures.

Regarding incompatible uses within the runway protection zone, we have re-evaluated our land acquisition program and our current policy is to acquire only at such time that the land becomes available.

A letter initiating a Section 106 consultation will be sent to your department, as requested.

AIRLINES COMMITTEE OF HAWAII



Honolulu International Airport
300 Rodgers Blvd., #62
Honolulu, Hawaii 96819-1832
Phone (808) 838-0011
Fax (808) 838-0231

December 13, 2002

Mr. Davis Yogi
Airports Administrator
Department of Transportation
Airports Division
Honolulu International Airport
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880

Re: Draft Environmental Assessment
Hilo International Airport
State Project No. AH1011-03

Dear Mr. Yogi:

The ACH is in receipt of the Draft Environmental Assessment for the Hilo International Airport (reference State Letter AIR-P 02.0427).

We are pleased that many of our earlier comments have been addressed, and continue to offer the following suggestions. Note that the following ACH comments regarding the Draft Environmental Assessment do not necessarily represent a commitment by the ACH to undertake the subject projects at Hilo International Airport:

- **Helicopter Facilities** – Suggest that the report clarify that the DOT-A's helicopter project will provide basic infrastructure for lease lots, but the tenants will be responsible for all other development (such as passenger lounges, office and hangar facilities, and auto parking). In addition, an unresolved issue in the Master Plan is the compatibility of the helipads (and helicopter operations) with the fixed wing aircraft operations associated with the relatively new T-Hangar (Building 414) adjacent to the site. The ACH continues to consider the "Old Terminal Area" a very viable site for helicopter facilities once the various cargo operations have been relocated to the new site.
- **Auto Parking** – Suggest that the report clarify that the needed parking lot expansion would be within the loop formed by the terminal access road rather than to the east of the existing parking lot as illustrated in the Draft Environmental Assessment. This will allow the needed flexibility to allow the project to respond to particular site conditions. While the ACH agrees with the need to address certain merge conditions associated with the terminal loop roadway, the ACH disagrees with the specific terminal loop development plan included in the Master Plan, and does not support the inclusion of those specific Master Plan improvements in the Draft Environmental Assessment.

Mr. Davis Yogi
December 13, 2002
Page 2

- **Land Acquisitions and Avigation Easements** – As stated in the Master Planning process, the ACH supports the acquisition of an avigation easement only for (and does not support the acquisition of) the land west of Kanoalehua Avenue on the extended centerline of Runway 03. Because the land is separated from the Airport proper by Kanoalehua Avenue, its acquisition is unnecessary as avigation easements provide the necessary protections for the approach to Runway 03.

In addition, as stated in the Master Planning process, the ACH does not support the acquisition of the entire 2.2-acre 6-parcel site west of the Runway 03 threshold. While not resolved in the Master Planning process, a combination of easements and acquisitions may provide a better option with less disruption of private land ownership patterns.

Thank you for the opportunity to review and comment on the draft materials. Please do not hesitate to contact this office if you have questions or comments.
Sincerely,


John L. Thatcher

LINDA LINGGLE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819-1880

February 6, 2003

RODNEY K. HARAGA
DIRECTOR

Acting Deputy Director
GLENN V. OHSOTO

REPLY REFER TO

AIR-P
03.0053

Mr. John Thatcher
Executive Director
Airlines Committee of Hawaii
Honolulu International Airport
300 Rodgers Boulevard, #62
Honolulu, Hawaii 96819-1832

Dear Mr. Thatcher:

Subject: Hilo International Airport
Draft Environmental Assessment
State Project No. AH1011-03

Thank you for your letter regarding the subject Draft Environmental Assessment (EA). We offer the following in response to your comments.

Helicopter Facilities: As suggested, the Final EA will be revised to reflect that basic infrastructure will be provided to the lease lots, but that tenants will be responsible for their facilities development. Potential conflicts with the nearby T-hangar will also be noted.

Auto Parking: The parking lot expansion area will be modified to provide the Airport with flexibility in developing additional stalls.

Land Acquisition and Aviation Easements: Your concerns and preference for easements as opposed to acquisition are acknowledged. Our intention is to pursue aviation easements for properties in the runway protection zone or acquisition should such properties become available.

Mr. John Thatcher
February 6, 2003
Page 2

AIR-P
03.0053

We appreciate your interest and participation in the environmental review process. Your letter, together with this response, will be included in the forthcoming Final EA. If you have any questions, please contact Ms. Lynn Becones, Planner, at (808) 838-8811.

Sincerely,

DAVIS K. YOGI
AIRPORTS ADMINISTRATOR

c: Wilson Okamoto & Associates (R. Funakoshi)
FAA-ADO (S. Wong)

LINDA LINGLE
GOVERNOR



ROBERT K. BARRACA
DIRECTOR

Acting Deputy Director
CLAUDE W. OCHS

December 8, 2002
R.R. 2, Box 4852
Palhoa, HI 96778

Mr. Roy Sakata
Department of Transportation
Airports Division
400 Rodgers Blvd., Suite 700
Honolulu, HI 96819

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
400 RODGERS BOULEVARD, SUITE 700
HONOLULU, HAWAII 96819-7000

January 24, 2003

REPLY REFER TO:
AIR-P
03.0026

Dear Mr. Sakata,

I would like to urge you not to accept the proposed Hilo International Airport Master Plan draft Environmental Assessment.

Our state legislators created specific laws that explain how government meetings must be conducted to ensure that the public is involved in planning decisions. Yet the state Department of Transportation, in conjunction with Wilson Okamoto & Associates, completely ignored these requirements. And the result is exactly what the laws were designed to prevent - a plan devised behind closed doors that benefits a select few while ignoring the problems of the citizens who live in the immediate area of the airport.

This issue avoided by this draft assessment are multitude, and the suggestions presented are unacceptable to the people of the Island of Hawaii.

Please understand that I will continue to ask the Office of Information Practices to investigate the irregularities associated with the creation of this document, and I will assist in any lawsuits filed against the state DOT should this ill-conceived plan be accepted as it has been presented. I feel that it is essential that you extend the hearing process so that the concerns of the people living near the airport can be heard and dealt with.

Aloha,

John Carse

Mr. John Carse
R.R. 2, Box 4852
Palhoa, Hawaii 96778

Dear Mr. Carse:

Subject: Hilo International Airport
Draft Environmental Assessment
State Project No. AH1011-03

Thank you for your letter of December 8, 2002, commenting on the subject project. We wish to assure you that public input was viewed as an essential component for preparation of the Hilo International Airport Master Plan. The Department of Transportation, Airports Division, will endeavor to keep the community apprised prior to construction of the proposed improvements and will continue to work with residents of the Keaukaha community to resolve noise impacts.

We appreciate your interest and participation in the environmental review process. Your letter, together with this response, will be included in the forthcoming Final Environmental Assessment. If you need further information, please contact Ms. Lynn Becones, Planner, at (808) 838-8811.

Sincerely,

DAVIS K. YOGI
Airports Administrator

cc: W. Okamoto & Associates, OEQC

c: Wilson Okamoto and Associates (R. Funakoshi)

BENJAMIN J. CAYTEPANO
CHIEF CLERK

WALTER HIRAO
LIEUTENANT GOVERNOR



STATE OF HAWAII
OFFICE OF THE LIEUTENANT GOVERNOR
OFFICE OF INFORMATION PRACTICES
NO. 1 CAPITOL DISTRICT BUILDING
250 SOUTH HOTEL STREET, SUITE 107
HONOLULU, HAWAII 96813
TELEPHONE 808-586-1400 FAX 808-586-1412

NOI'AI KANEMOTO CHAIR
DIRECTOR

April 10, 2001

Mr. John Carse
Aviation Nuisance and Sound
Abatement Committee Community
Representative
R.R.2 Box 4852
Pahoa, Hawaii 96778

Re: Request for Assistance

Dear Mr. Carse:

This letter is regarding your March 16, 2000, request that the Office of Information Practices investigate the Department of Transportation's alleged failure to provide proper public notice pursuant to Hawaii Revised Statutes section 92-7 (1995). My name is Georgia Fligg and this case has been reassigned to me. At this time, I request that you provide me with the name of the board or commission that called the March 16, 2000, public meeting.

Thank you for your patience and assistance in this matter. If you have any question please do not hesitate to contact me in Honolulu at 586-1400.

Sincerely,

Georgia L. Fligg
Staff Attorney

GLF: ran

April 24, 2001
R.R. 2, Box 4852
Pahoa, HI 96778

Ms. Georgia L. Fligg
Staff Attorney
Office of Information Practices
No. 1 Capitol District Building
250 South Hotel Street, Suite 107
Honolulu, HI 97813

Dear Ms. Fligg,

Thank you very much for your letter regarding my concerns about the illegal meetings that were held by the state Department of Transportation. The last of this series of meetings was held in November of 2000, with disastrous results (please see the enclosed article). None of the community's many, many concerns were addressed in any way. I have already begun preparing a lawsuit to present to U.S. Circuit Court, but maybe now we can avoid that.

The enclosed public notice shows that it is the state DOT that organized these meetings. As you can see, no agendas were available for the public to inspect. And the packets of information handed out at the door did not conform with the plans presented by the committee members. Apparently the changes had been made at a meeting held the previous day.

The Technical Advisory Committee Meetings that were always held secretly before the announced public meetings are another concern I would appreciate you addressing. These meetings, which were paid for with taxpayer money, included members of the county, state and federal governments as well private citizens in the aviation industry. No members of the community-at-large were allowed to attend these meetings although public policy was discussed and decisions regarding the airport were reached. Attached is the summary minutes of the March 20, 2000 meeting as well as a list of all the meetings that the DOT held illegally regarding the Hilo International Master Plan.

Although it is very difficult to obtain a copy, would you please look at the minutes and comments concerning the final Public Information Meeting held on November 28, 2000 that are contained in the FAR Part 150 Noise Compatibility Program for Hilo Airport? Then you will be able to see how much damage these illegal meetings had on the Hawaiian Homestead Community of Keaukaha.

Please let me know if I can be of any further assistance to you. I can't tell you how much those of us who will be suffering for the next twenty years as a result of these meetings appreciate your concern with this matter.

Aloha,

John Carse

6157-01
March 16, 2000

SUMMARY MINUTES
TECHNICAL ADVISORY COMMITTEE MEETING NO. 4
HILO INTERNATIONAL AIRPORT MASTER PLAN AND
NOISE COMPATIBILITY PROGRAM UPDATE

Date: March 16, 2000
Place: Airport District Manager's Conference Room, Hilo International Airport
Attendance: See Attached Sheet

- 1) The meeting was convened at 2:08 p.m. by Mr. Stephen Takashima, DOT-Airports Division. This is the fourth meeting of the Technical Advisory Committee for the Hilo International Airport Master Plan Update and the FAR Part 150 Noise Compatibility Study.
- 2) Introductions were made of those present at the meeting.
- 3) Mr. Rodney Funakoshi, Wilson Okamoto & Associates, presented an overview of the Draft Master Plan and Noise Compatibility Program. He described the objectives for the 20-year planning horizon, and covered the schedule for the Master Plan and Noise Compatibility Program. A summary of the Draft Master Plan was presented, as well as an overview of the noise study and the recommended noise abatement and land use plan.
- 4) The floor was opened for discussion (Consultant and DOT-A responses are in italics).
- 5) Mr. Bob Roschill asked if the cost of relocating the FAA ASR had been examined, since the NAVAID, with its required clearance zone, encroaches upon the Kamehameha Schools property. He pointed out that the DOT has been aware, for well over two years, of Kamehameha Schools' plans for that piece of property, and that there is no agreement allowing the use of the area for the ASR.

The relocation of the ASR is the responsibility of the FAA, rather than the State DOT, because it is FAA equipment. The State DOT has asked the FAA to provide us with information as to what protection measures are required for both the ASR and the VORTAC. The FAA is probably not aware of plans made by Kamehameha Schools, and unfortunately the FAA representative could not be present at this meeting. (It was later confirmed that the ASR does not encroach on property owned by Kamehameha Schools, formerly Bishop Estate.

MINUTES OF TECHNICAL ADVISORY COMMITTEE AND
PUBLIC INFORMATIONAL MEETINGS

<u>Page</u>	
D-1	Technical Advisory Committee Meeting No. 1, December 3, 1998
D-10	Public Information Meeting No. 1, December 3, 1998
D-17	Technical Advisory Committee Meeting No. 2, May 27, 1999
D-26	Public Information Meeting No. 2, May 27, 1999
D-33	Technical Advisory Committee Meeting No. 3, October 6, 1999
D-41	Technical Advisory Committee Meeting No. 4, March 16, 2000
D-50	Public Information Meeting No. 3, March 16, 2000
D-54	Keaukaha Community Meeting, July 19, 2000

**SECTION 10
REFERENCES**

10. REFERENCES

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APPENDIX A
BOTANICAL SURVEY REPORT

BOTANICAL SURVEY REPORT FOR THE PROPOSED HILO AIRPORT
IMPROVEMENTS SITES

TABLE OF CONTENTS

INTRODUCTION.....1
METHODS.....1
BOTANICAL HISTORY OF THE AREA.....1
RESULTS.....2
ENDANGERED SPECIES.....5
SPECIES LIST.....6
BIBLIOGRAPHY.....13

FOR
WISLON OKAMOTO AND ASSOCIATES
1907 SOUTH BERETAINIA STREET, SUITE 400
HONOLULU, HAWAII 96826

BY
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JULY 2001

INTRODUCTION

The botanical survey of the proposed Hilo Airport Master Plan Improvements required the examination of four parcels of land off the airport proper. Together the four parcels consisted of approximately fifty eight acres of land. At this time these parcels are heavily over grown or in forest. Site 1, the location of the proposed helicopter facility and Site 2, the proposed location of the expanded base yard, were once home of a military base. Site 3, the area needed to expand the cargo apron, is east of the airport fence. This site is heavily forested and contains some native vegetation. Site 4, the proposed parking lot enlargement area is located just south of the existing parking lot. The vegetation types found on each site will be described and a single attached species list will contain the names of all plant taxa encountered during these surveys.

METHODS

Access to the vegetation of all the parcels was gained by way of existing roads, trails and forays by a two person team using the walk through method. Data were collected to describe the major vegetation types of each parcel and to prepare a list of all plant species found on all of the sites and most importantly to determine if any proposed listed threatened or endangered plant species are present on any of the parcels.

BOTANICAL HISTORY OF THE AREA

Since 1973 there have been two Environmental Impact Statements (EIS) for Proposed projects on and around the Hilo International Airport. In the 1973 EIS prepared by the Federal Aviation Administration (FAA) for the New Passenger Terminal General Lyman Field, Hilo, Hawaii it was stated that the "US Department of the Interior has indicated that the vegetation at the proposed terminal site is that of low-growing rain

forest comparable to the expanse of undeveloped land south of the existing airport. This forest is composed largely of rapid-growing, short lived vegetation". Twelve plant species are listed that make up the vegetation of the site.

A somewhat newer document is the 1988 Westac Services EIS for a "Hawaii Commodities Irradiation Facility". This project consisted of three sites near the existing airport. Site A was described as "mowed lawn surrounded by chain-linked fences and a few shrubby species occur on the face of the fence terrace where the rocky surface is exposed." Site B was described as "grassy lawn with scattered trees." The lawn was said to be composed of "mixed grass species". And finally Site C was described as about "one half covered by broomsedge and molasses grass. The other half supports an open woodland of weedy, fast-growing Melochia trees". The complete survey report is appended to this EIS.

Neither report mentions the presence of large numbers of native Hawaiian plants or of proposed, listed threatened, or endangered species in this area.

RESULTS

Site 1, the proposed helicopter facility location, is composed of approximately twenty acres of land. It lies between the junction of Kekuaaoa Street and the airport fence. There are three vegetation types on this site. Dense Forest is found where Site 1 abuts Kekuaaoa Street. Here a mix of mostly introduced trees reach a height of from 50 to 75 feet. There are hala (*Pandanus tectorius* S. Parkinson ex Z), gun powder (*Trema orientalis* Blume), Sins (*Albizia lebeck* (L.) Benth), bingabing (*Macaranga mappa* (L.) Mull. Arg.),

Melochia umbellata (Houtt.) Stapf, and octopus trees (*Schefflera actinophylla* (Endl.) Harms.). In addition fruit trees such as mango, avocado, strawberry guava, and yellow guava (*Psidium guajava* L.) indicate that the area was once landscaped. Several native 'ohia' trees *Metrosideros polymorpha* Gaud.) also persist in the area. This forest is very dense and the understory is scant and consists of guava, bingabing, and hala seedlings. The Dense Forest is approximately 300 feet deep.

There are two additional vegetation types on this site. Along the airport fence can be found Open Grassland. Between the Open Grassland and Dense Forest is Transition Zone vegetation. The Open Grassland vegetation and the Transition Zone vegetation are kept trimmed by airport management to ensure good visibility for airplane and helicopter pilots.

The Transition Zone vegetation is mostly molasses grass (*Melinis minutiflora* P. Reauv.) with scattered patches of Guinea grass (*Panicum maximum* Jacq.) and yellow guava, bingabing, Melochia umbalata, and gun powder tree saplings coming in. There are a good many weedy herbs found in this area. Among them are Bidens alba, sensitive plant (*Mimosa pudica* L.), and *Crotalaria assamica* Benth. The Transition Zone is approximately 200 feet wide and runs the length of Site 1.

Open Grassland vegetation abuts the airport fence and is approximately 100 feet wide. Here the dominant species is molasses grass with prominent patches of Guinea grass. *Crotalaria assamica*, *Crocosmia x crocomiiflora* (Lemoine ex E. Morr.) N.E. Brown, white oyster plant (*Justicia betonica* L.), sensitive plant (*Mimosa pudica* L.) are all to be found among many others. A few seedlings of gun powder tree, bingabing, and Melochia persist. All the vegetation of the Open Grassland is under 10 feet in height.

Site 2, the proposed location of the expanded base yard, is also made up of approximately 20 acres of land. It too lies between the airport fence and Keduanaoa Street. It is bounded on the west by the Hawaii National Guard Station and on the east by the central post office. Two vegetation types are found on Site 2, Scrub Forest and Open Grassland. Scrub Forest parallels Kekuanaoa Street and covers about one half of Site 2. Open Grassland parallels the airport fence and covers the remaining half of Site 2. Both Scrub Forest and Open Grassland are dissected by old military roads and both contain left over concrete building foundations.

The Scrub Forest is made up of a variety of introduced trees and large shrubs, all 15 to 20 feet in height. There are gun powder, bingabing, Melochia, hala, strawberry and yellow guava, and fiddlewood trees (*Citharexylum caudatum* L.). *Lantana camara* L., koa haole (*Leucaena leucocephala* (Lam.) de Wit), *Melastoma candidum* D. Don., and *Tetrastylis bicolor* (Mill.) Cogn. are a few of the large shrubs found in the area. The ground layer is made up of molasses grass, *Dissotis rotundifolia* (Sm.) Triana, sensitive plant, Wedelia, Bamboo orchid (*Arundina graminifolia* (D. Don) Hochr., and many, many others.

The Open Grassland is maintained as low stature vegetation by airport management for visibility. The dominant in this area is molasses grass with some patches of Guinea grass present. Strawberry and yellow guava, and Melochia seedlings are coming in. There is also a small patch of banana (*Musa x paradisiaca* L.) to be found along the airport fence.

Site 3, the proposed Cargo Apron Expansion Area, is located just east of the passenger terminal and consists of approximately seven acres of land. Two vegetation

types are to be found on this site, Introduced Weed Tree Forest and Bamboo Orchid/Broomsedge Grassland. Introduced Weed Tree Forest forms a broad band of almost impenetrable forest along the north, south, and western edge of the study site. The species composition of this forest is fairly narrow and consists of Melochia, gun powder, ironwood (*Casuarina equisetifolia* L.), bingabing, and hala trees. Once past the edge effects the forest is fairly open and the understory consists of seedlings and saplings of the above mentioned trees plus some strawberry guava and shoebutton ardisia (*Ardisia elliptica* Thunb.).

In the central part of this site is found a broad open area vegetated by Bamboo Orchid/Broomsedge Grassland. Here the vegetation is three to six feet in height and consists of Bamboo orchid and broomsedge (*Andropogon bicornis* L.) with scattered Lantana and Melastoma bushes and ironwood, Melochia, hala, and bingabing seedlings and saplings coming in.

Site 4, the Proposed Parking Expansion Site, is located south of the existing public parking area and is made up of approximately seven acres of land. One vegetation type is found on this site, Introduced Weed Tree Forest. The vegetation of this site is very dense and is composed of gun powder, Melochia, bingabing, and hala trees. The understory is very scant and is mostly seedlings and saplings of the above mentioned trees.

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) are known from near the Hilo International Airport and none were found during this survey.

SPECIES LIST OF THE PLANTS FOUND ON FOUR PROPOSED HILO AIRPORT MASTER PLAN IMPROVEMENTS SITE

This species list contains the names of all plant taxa found on all four study areas that are part of the Hilo Airport Master plan. The plant families have been arranged alphabetically 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 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 of the plant.
3. The Hawaiian name or the most widely used common name of the plant.
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 and 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.
 - Abundant = plants found in large numbers on all sites.

This species list is the result of an extensive survey of this site during the hot, dry season (July 2001) 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

IRIDACEAE – Iris Family

**Crocasmia x crocosmiliflora* N.E. Brown Occasional

MUSACEAE – Banana Family

Musa x paradisiaca L. Banana Locally abundant

ORCHIDACEAE – Orchid Family

**Arundina graminifolia* (D. Don) Hochr. Bamboo orchid Common

PANDANACEAE – Screw pine Family

Pandanus tectorius S. Parkinson ex Z Hala Common

POACEAE – Grass Family

**Andropogon bicornis* L. Broomsedge Locally abundant

**Andropogon virginicus* L. Yellow bluestem Locally abundant

**Cynodon dactylon* (L.) Pers. Bermuda grass Common

**Digitaria ciliaris* (Retz.) Koeler Henry's crabgrass Common

**Digitaria violascens* Link. Smooth crabgrass Locally abundant

**Fragrostis unioloides* (Retz.) Nees ex Steud. Wiregrass Locally abundant

**Eleusine indica* (L.) Gaertn. Molasses grass Abundant

**Melinis minutiflora* P. Beauv. Guinea grass Common

**Panicum maximum* Jacq. Torpedo grass Locally abundant

**Panicum repens* L. Hilo grass Abundant

**Paspalum conjugatum* Berg. Panama grass Occasional

**Paspalum fimbriatum* Kunth Rice grass Occasional

**Paspalum scrobiculatum* L. Kikuyu grass Uncommon

**Pennisetum clandestinum* Chiov. Yellow foxtail Locally abundant

**Setaria gracilis* Kunth Palmgrass Occasional

**Setaria palmifolia* (J. König) Steff. Natal redtop Common

**Rhynchosyris repens* (Willd.) Hubb. Indian dropseed Common

**Sporobolus diander* (Retz.) P. Beauv. Indian dropseed Common

DICOTYLEDONS

ACANTHACEAE – Acanthus Family

**Justicia betonica* L. White shrimp plant Occasional

**Thunbergia fragrans* Roxb. White Thunbergia Common

Scientific Name Common Name Abundance

FERNS AND FERN ALLIES

POLYPODIACEAE - Common Fern Family

Christella dentata (Forssk.) Brownsey & Jermy Locally abundant

**Dryopteris dentata* (Forssk.) C. Chr. Oak fern locally abundant

**Nephrolepis cordifolia* (L.) Presl. Sword fern Common

**Nephrolepis exaltata* (L.) Schott. Sword fern Common

**Pityrogramma calamelanos* (L.) Link. Silver fern Uncommon

Pleopeltis thunbergiana Kaulf. Laua'e Occasional

**Polypodium scolopendrium* Burm. F. Moa Locally abundant

Psilotum nudum L. Common

MONOCOTYLEDONS

AGAVACEAE – Agave Family

**Cordyline fruticosa* (L.) A. Chev. Ti Occasional

ARACEAE – Arum Family

**Epipremnum pinnatum* (L.) Engl. Taro vine Locally abundant

**Monstera deliciosa* Liebm. Monstera Uncommon

ARECACEAE - Palm Family

**Cocos nucifera* L. Coconut palm Occasional

COMMELINACEAE - Spiderwort Family

**Commelina diffusa* N. L. Burm. Honohono Occasional

CYPERACEAE – Sedge Family

**Cyperus rotundus* L. Nut grass Common

**Fimbristylis dichotoma* (L.) Vahl. Tail fringe rush Common

Machaerina angustifolia (Gaud.) T. Koyama 'Uki Uncommon

Pycreus polystachyos (Rottb.) P. Beauv. Occasional

HELICONIACEAE – Heliconia Family

**Heliconia* sp. False bird of paradise Locally abundant

Scientific Name Common Name Abundance
 CECROPIACEAE – Cecropia Family

**Cecropia obtusifolia* Bertol. Trumpet tree Common

CONVOLVULACEAE – Morning glory Family

**Ipomoea indica* (J. Burm.) Merr. Kosi'awa Occasional
 **Merremia tuberosa* (L.) Rendle. Woodrose Occasional

CUSCUTACEAE – Dodder Family

Cuscuta sandwichiana Choisy Kauna'oa Abundant

EUPHORBIACEAE – Spurge Family

Aleurites moluccana (L.) Willd. Kukui Occasional
 **Chamaesyce hirta* (L.) Millsp. Hairy spurge Common
 **Chamaesyce hypericifolia* (L.) Millsp. Graceful spurge Occasional
 **Chamaesyce prostrata* (Aiton) Small. Prostrate spurge Occasional
 **Macaranga mappa* (L.) Mull. Arg. Bingabing Abundant
 **Ptychanthus debilis* Klitn ex Willd. Ninun Uncommon
 **Ricinus communis* L. Castor bean Occasional

FABACEAE – Bean Family

**Ahizia lebeck* (L.) Benth Sinis tree Uncommon
 **Canavalia cathartica* Thouars Maunaloa vine Uncommon
 **Chamaecrista nictitans* (L.) Moench Partridge pea Common
 **Crotalaria pallida* Aiton Smooth rattlepod Locally abundant
 **Desmodium incanum* DC Spanish clover Occasional
 **Desmodium triflorum* (L.) DC Florida beggarweed Occasional
 **Glycyne wightii* (Wight & Arnott) Verde. Glycyne Locally abundant
 **Indigofera suffruticosa* Mill. Indigo Occasional
 **Leucaena leucocephala* (Lam.) de Wit Koa haole Common
 **Macropitium atropurpureum* (DC) Urb. Cowpea Locally abundant
 **Medicago lupulina* L. Black medick Occasional
 **Mimosa pudica* L. Sensitive plant Abundant

LAMIACEAE – Mint Family

**Hypis pectinata* (L.) Poit. Comb hyptis Common

Scientific Name Common Name Abundance

ANACARDIACEAE – Mango Family

**Mangifera indica* L. Mango Uncommon
 **Schinus terebinthifolius* Raddi Christmas berry Occasional

APOCYNACEAE – Dog Bane Family

**Allamanda cathartica* L. Allamanda Uncommon

ARALIACEAE – Ginseng - Family

**Schefflera actinophylla* (Endl.) Harms Octopus tree Uncommon

ASTERACEAE – Sunflower Family

**Ageratum conyzoides* L. Occasional
 **Bidens alba* (L.) DC Abundant
 **Bidens cynapiifolia* Kunth Locally abundant
 **Emilia sonchifolia* (L.) DC Occasional
 **Erechtites hieracifolia* (L.) Raf. ex DC Uncommon
 **Pluchea symphytifolia* (Mill.) Gillis Occasional
 **Wedelia trilobata* (L.) Hitchc. Abundant

BALSAMINACEAE – touch-me-not Family

**Impatiens walterana* J. D. Hook. Busy Lizzy Locally abundant

BIGNONIACEAE – Bignonia Family

**Spathodea campanulata* P. Beauv. African tulip tree Occasional

BUDDLEIACEAE – butterfly Bush Family

**Buddleia asiatica* Lour. Dog tail Uncommon

CARICACEAE – Papaya Family

**Carica papaya* L. Papaya Uncommon

CASUARINACEAE – She-oak Family

**Casuarina equisetifolia* L. Ironwood Common

Scientific Name	Common Name	Abundance	Scientific Name	Common Name	Abundance
LAURACEAE – Laurel Family			RUBIACEAE – Coffee Family		
• <i>Persea americana</i> Mill.	Alligator pear	Uncommon	• <i>Hedyotis biflora</i> (L.) Lam.		Uncommon
MALVACEAE – Mallow Family			• <i>Paederia foetida</i> L.	Maile pilau	Locally abundant
• <i>Malvastrum coromandelianum</i> (L.) Garcke	False mallow	Occasional	• <i>Spermatocoe assurgens</i> Ruiz & Pav.	Buttonweed	Uncommon
• <i>Sida rhombifolia</i> L.		Occasional	SOLANACEAE – Nightshade Family		
• <i>Sida spinosa</i> L.	Prickly sida	Occasional	• <i>Solanum americanum</i> Mill.	Popolo	Uncommon
MELASTOMATACEAE – Melastoma Family			STERCULIACEAE Cacao Family		
• <i>Clidemia hirta</i> (L.) D. Don	Koster's curse	Occasional	• <i>Waltheria indica</i> L.	'Uhaloa	Common
• <i>Dissoites rotundifolia</i> (Sm.) Triana		Abundant	• <i>Melochia umbellata</i> (Houtt.) Stapf.		Abundant
• <i>Melastoma candidum</i> D. Don.		Common	Ulmaceae – Elm Family		
• <i>Tetrazygia bicolor</i> (Mill.) Cogn.		Uncommon	• <i>Trema orientalis</i> (L.) Blume	Gun powder	Abundant
MORACEAE – Fig Family			VERBENACEAE – Verbena Family		
• <i>Ficus microcarpa</i> L. fil.	Chinese banyan	Uncommon	• <i>Citharexylum caudatum</i> L.		Uncommon
MYRSINACEAE – Myrsine Family			• <i>Lantana camara</i> L.	Lantana	Occasional
• <i>Ardisia elliptica</i> Thunb.	Shoebutton ardisia	Locally abundant	• <i>Stachytarpheta dichotoma</i> (Ruiz & Pav.) Vahl	Owi	Common
MYRTACEAE – Myrtle Family					
• <i>Metrosideros polymorpha</i> Gaud.	'Ohi'a	Occasional			
• <i>Psidium cattleianum</i> Sabine	Strawberry guava	Abundant			
• <i>Psidium guajava</i> L.	Common guava	Abundant			
• <i>Syzygium cumini</i> (L.) Skeels	Java plum	Occasional			
PASSIFLORACEAE – Passion Flower Family					
• <i>Passiflora edulis</i> Sims	Passion fruit	Uncommon			
• <i>Passiflora foetida</i> L.	Love-in-a-mist	Common			
• <i>Passiflora</i> sp.		Occasional			
POLYGALACEAE – Milkwort Family					
• <i>Polygala paniculata</i> L.		Locally abundant			

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**APPENDIX B
FAUNAL SURVEY**

DRAFT

A Survey of Avian and Mammalian Species
Hilo International Airport Improvement Project
South Hilo District, Hawai'i

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August 2001

Table of Contents

<i>Table of Contents</i>	2
<i>Introduction</i>	3
<i>Project and Site Descriptions</i>	3
<i>Mammalian Survey Methods</i>	4
<i>Avian Survey Methods</i>	6
<i>Mammalian Survey Results</i>	6
<i>Avian Survey Results</i>	6
<i>Discussion</i>	8
<i>Recommendations</i>	10
<i>Literature Cited</i>	11

Figures

<i>Figure 1. Site Map</i>	4
---------------------------------	---

Tables

<i>Table 1. Avian Species Detected During Station Counts</i> <i>Hilo International Airport Improvement Project Sites</i>	7
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Introduction

This report summarizes the findings of a three-day ornithological and mammalian survey of six sites totaling approximately 64 acres, located within the existing boundaries of the Hilo International Airport (TMK: (2)-1-012-009 portions), as well as an additional three sites totaling approximately 17 acres, located immediately adjacent to the airport boundary (Figure 1). Fieldwork was conducted from July 22nd through 24th, 2001.

The primary purpose of the survey was to determine if there were any federally listed endangered, threatened, proposed, or candidate avian or mammalian species on, or in the immediate vicinity of, the proposed project sites. In addition, we were asked to assess the probability of any use of these sites by listed species, given the habitat the sites currently provide.

Avian phylogenetic order and nomenclature follows *The American Ornithologist's Union Check-list of North American Birds*, 7th Edition (American Ornithologists' Union 1998), and the 42nd supplement to *Check-list of North American Birds* (American Ornithologists' Union 2000). Scientific names for mammals follow *Mammals in Hawaii* (Tomich 1986). Plant names follow *Mammal of the Flowering Plants of Hawaii* (Wagner et al. 1990). Place names follow *Place names of Hawaii* (Pukui et al. 1974).

Project and Site Descriptions

The State of Hawai'i Department of Transportation, Airports Division is proposing to construct various improvements at the Hilo International Airport. Proposed improvements are briefly described below; the numbers used in the list correspond to the numbers in the legend on Figure 1.

1. Development of a new cargo facility, to be located northwest of the existing passenger-terminal complex, including associated roadway (s), vehicular parking, general infrastructure, and improvements to the aircraft parking apron.
2. Relocation of helicopter operations to the southwest corner of the airport, including the development of lease lots, operational areas, and associate infrastructure.
3. Construction of General aviation facilities, including an aircraft parking apron, a new T-hanger, wash rack, aircraft tie-downs, and the development of lease lots in the old terminal area.
4. Expansion of the public and employee parking areas.
5. Expansion of the DOT-A maintenance base yard.
6. Implementation of noise-mitigation projects, including sound attenuation for nearby residences and a 15-foot noise barrier between the airport and the Keaukaha residential subdivision.

7. Acquisition of three parcels of land located adjacent to Runways 3, and 21, but located outside of the current airport boundary, for use as runway protection zones.
8. Acquisition of an aviation easement for the Runway 3, runway protection zone area.

The project sites encompasses approximately 81 acres located in Waiākea *ahupua'a*, South Hilo District, Island of Hawai'i. The areas surveyed slope gently downward from south to north, from an elevation of approximately 45 feet above mean sea level (ASL), to approximately 20 feet ASL (USGS 1996). The first six projects described above are located on sites within the existing boundaries of the Hilo International Airport. The four parcels identified for acquisition or easement, in items 7 and 8, are located immediately adjacent to the airport boundaries (Figure 1). The terrain within the project sites is composed of a mix of pahoehoe and a'ā lava flows formed by Mauna Loa during the late Holocene Epoch. The flows were deposited between 750 and 1,500 years ago (USGS 1981; Wolfe and Morris 1996).

With the exception of site number 2, the vegetation on the sites located within the current airport boundaries is intensely managed. These predominately grassy areas are dominated by alien (introduced to Hawai'i by humans) grasses. There are ornamental plantings on several of these grassy areas. Grasses within these sites are closely mowed, and on several sites, herbicides have been used to control vegetation. Site number 2, on the side of the parcel facing the runway, is not currently mowed or otherwise controlled. The perimeter of this site fronting Kekuanaoa Street is mowed, and the pandanus, or *hala* (*Pandanus tectorius*), fronting the street has been trimmed recently. The vegetation on the various parcels described as sites 7 and 8, is a mix of predominately alien grasses and weedy species. The triangular site located southwest of Runway 3, Site number 7, contains a mix of ornamental and fruit trees and numerous alien grasses and weedy species of (Figure 1).

Mammalian Survey Methods

In an effort to detect the presence of endangered Hawaiian hoary bats (*Lasiurus cinereus semotus*), or '*ope'ope'a*', as it is known in Hawaiian, two stationary, remote bat-census stations were deployed on each of two nights (Figure 1). Broadband AnaBat II ultrasonic bat detectors coupled to voice activated cassette recorders and remote timing devices were used to detect bat vocalizations. Following techniques developed by Krusic et al. (1996), the units were calibrated using a pet ultrasonic flea collar. In addition, visual scans were made for bats on two evenings, during crepuscular periods.

All other observations of mammalian species were of an incidental nature. With the exception of the Hawaiian hoary bat, all terrestrial mammals found on the island of Hawai'i are alien species. Most are ubiquitous; no trapping program was proposed or undertaken to quantify the use of the study site by alien mammalian species. The survey of mammals other than bats was limited to visual and auditory detection, coupled with

observation of scat, tracks, and other animal sign. A running tally was kept of all vertebrate species observed and heard within the project sites.

Avian Survey Methods

Ten count stations were established within the project sites (Figure 1). Six-minute unlimited distance counts were made at each station (Reynolds et al. 1980). Counts were conducted once at each station. Field observations were made with the aid of Leitz 10 X 42 binoculars and by listening for vocalizations. Counts were concentrated between 8:00 a.m. and 1:00 a.m., the peak of daily bird activity. An additional two hours were spent on site during the evenings of the 22nd and 23rd of July, 2001, in an attempt to detect nocturnally flying seabirds and owls overflying the area. Time not spent counting was used to search the sites and the surrounding area for species and habitats not detected during count sessions.

Mammalian Survey Results

Endangered Hawaiian hoary bats were seen on both nights, and a total of six were observed during the survey. None of the bats was detected by the ultrasonic bat detectors; all were, rather, recorded visually. At least three separate animals were seen foraging close to the existing passenger terminal, and on the night of the 22nd, one was seen foraging close to lights in the parking lot, south of the terminal complex. On the 23rd, at least two animals were observed foraging over the swimming pool and old terminal complex and site number 3 (Figure 1). During daylight hours, the only mammalian species seen within the project area was the small Indian mongoose (*Herpestes a. auripunctatus*). We did record within the project area sign and scat of three other mammalian species: domestic dog (*Canis f. familiaris*), cat (*Felis catus*) and pig (*Sus scrofa*). All of these introduced mammalian species are deleterious to avian populations.

Avian Survey Results

Eleven avian species, representing nine separate families, were recorded during station counts (Table 1). All species recorded are alien to Hawai'i. No species listed as endangered, threatened, proposed, or as a candidate for listing under either the U.S. Fish and Wildlife Service (USFWS) or the State of Hawai'i's endangered species programs was recorded at any of the sites within the proposed development and improvement project area. (Federal Register 1999a, 1999b, 2001; DLNR 1986).

Avian diversity and densities were relatively low. Two species, Common Myna (*Acridotheres tristis*) and House Finch (*Carpodacus mexicanus frontalis*) accounted for 62% of the total of all birds recorded during station counts. An average of 50 birds was recorded per station count.

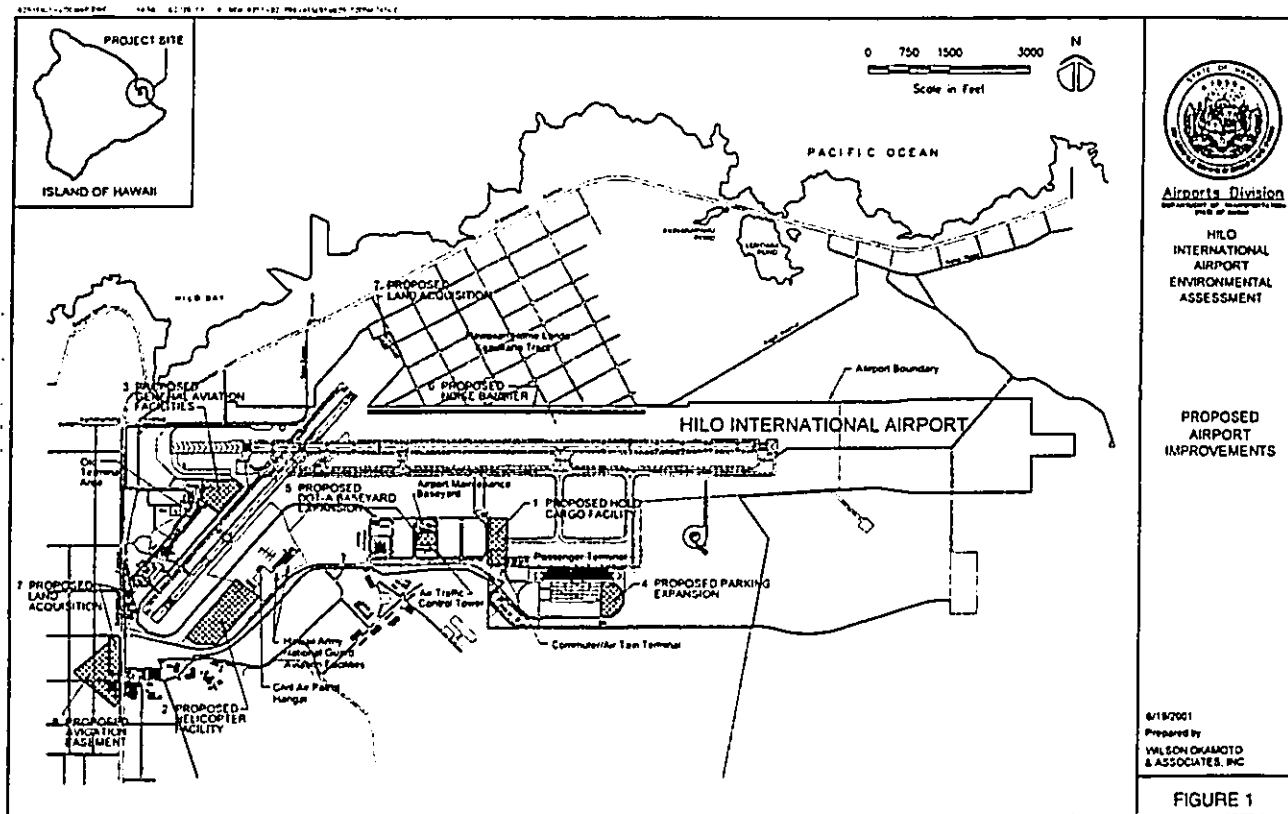


Table 1

Avian Species Detected During Station Counts Hilo International Airport		ST	RA
Common Name	Scientific Name		
PHEASANTS & ALLIES - Phasianidae			
Red Junglefowl	<i>Gallus gallus</i>	D	0.30
PIGEONS & DOVES - Columbidae			
Rock Dove	<i>Columba livia</i>	A	0.70
Spotted Dove	<i>Sireptopelia chinensis</i>	A	1.30
Zebra Dove	<i>Geopelia striata</i>	A	5.30
BABBLERS - Timaliidae			
Hwamei	<i>Garrulax canorus</i>	A	0.50
SILVEREYES - Zosteropidae			
Japanese White-Eye	<i>Zosterops japonicus</i>	A	4.20
STARLINGS - Sturnidae			
Common Myna	<i>Acridotheres tristis</i>	A	14.10
CARDULINE FINCHIES & ALLIES - Fringillidae			
House Finch	<i>Carpodacus mexicanus frontalis</i>	A	16.90
SALTATORS, CARDINALS & ALLIES - Cardinalidae			
Northern Cardinal	<i>Cardinalis cardinalis</i>	A	1.90
OLD WORLD SPARROWS - Passeridae			
House Sparrow	<i>Passer d. domesticus</i>	A	1.80
WAXBILLS & ALLIES - Estrifridae			
Nutmeg Mannikin	<i>Lonchura punctulata topela</i>	A	3.30

KEY TO TABLE 1

- ST Status
- D Domestic Species
- A Alien Species
- RA Relative Abundance: Number of birds divided by the number of count stations (10)

Discussion

A one-time survey cannot provide a total picture of the wildlife using any given area. Certain species will not be detected for one reason or another. Seasonal variations in populations, coupled with seasonal availability and use of resources, will cause different use patterns throughout a year and, in fact, over a number of years.

The findings of the mammalian survey are consistent with the results of other recent surveys conducted within the lowland areas of South Hilo (David 1996, 1998a, 1998b, 1998c, 2001). The detection of the endangered Hawaiian hoary bat within the airport complex was not unexpected. This species is regularly seen in and around Hilo, as well as along the coastline from Puna to North Hilo (David 1992, 1995, 1996, 1997, 1998a, 1998b, 1998c, 1999a, 1999b, 2000; Cooper et al. 1995; Menard 2001). Tim Ohashi, of the USDA, APHIS Wildlife Services, also reports having seen bats within the terminal complex area in the recent past, and recounted that bats are regularly seen foraging in and around the parking lot on the south side of the terminal complex (T. Ohashi, pers. comm.).

Unlike nocturnally flying seabirds, which often collide with man-made structures, bats are uniquely adapted to avoid collision with obstacles, man-made and natural. They navigate and locate their prey using ultrasonic echolocation, which is sensitive enough to allow them to locate and capture small volant insects at night.

Although no live rodents were detected during the course of this survey, it is likely that roof rats (*Rattus r. rattus*), Norway rats (*Rattus norvegicus*), European house mice (*Mus domesticus*) and possibly Polynesian rats (*Rattus exulans hawaiiensis*) use various resources found within the project sites. Without conducting a trapping program, it is difficult to assess the population densities of these often hard-to-see mammals.

The findings of the avian survey are consistent with the findings of other recent surveys conducted within the lowland areas of South Hilo (David 1996, 1998a, 1998b, 1998c, 2001). The 11 alien avian species detected during station counts are species that one would expect to record within highly disturbed lowland areas in the South Hilo District. Many of the more than 80 species of migratory and extralimital avian species that have been recorded in Hawai'i between the months of September and May can be expected to use resources within several of the study-area sites (Pyle et al. 1988; David 1991b; Pyle 1992, 1997). The most commonly encountered of these migratory species are Pacific Golden-Plover (*Pluvialis fulva*), Ruddy Turnstone (*Arenaria interpres*), and Wandering Tattler (*Heterosceclus incanous*).

Although we did not record Cattle Egrets (*Bubulcus ibis*) at any of the sites surveyed, they are regularly seen within the airport grounds. This is a species that is of concern as a

Bird Airstrike Hazard. There are Cattle Egret roosting areas located north of the airport, adjacent to Kalaniana'ole Avenue at both Kionakapahu and Lokoaka Ponds (Figure 1). Additionally, egrets regularly use resources within the Wailoa River State Park, which is located due west of the airport. As recently as April 2001, observers counted 279 egrets at Lokoaka Pond (Ohashi 2001).

It is also possible that small numbers of the endangered endemic Hawaiian subspecies of the Dark-rumped Petrel (*Pterodroma phaeopygia sandwichensis*), or *ua'u*, and the threatened Newell's Shearwater (*Puffinus auricularis newelli*), or *'a'o*, overfly the airport and its environs between the months of May and October (Banko 1980a, 1980b; Harrison 1990).

Dark-rumped Petrels were formerly common on the Island of Hawai'i (Wilson and Evans 1890-1899). This pelagic seabird reportedly nested in large numbers on the slopes of Mauna Loa and in the saddle area between Mauna Loa and Mauna Kea (Henshaw 1902), as well as at the mid to high elevations of Mount Hualalai. It has, within recent historic times, been reduced to relict breeding colonies located at high elevations on Mauna Loa and, possibly, Mount Hualalai (Banko 1980; Cooper and David 1995; Cooper et al. 1995; David, Unpublished Field Notes 1986-1995, 1999; Harrison 1990; Banko et al. 2001).

Newell's Shearwaters were formerly common on the Island of Hawai'i (Wilson and Evans 1890-1899). This species breeds on Kaua'i, Hawai'i and Moloka'i in extremely small numbers. Newell's Shearwater populations have dropped precipitously since the 1880s (Banko 1980b, Day and Cooper, in press). This pelagic species nests high in the mountains in burrows excavated under thick vegetation, especially *uluhe* fern (*Dicranopteris linearis*). There are numerous records of this species having been seen, heard, or collected in and close to Hilo (Banko 1980a; Conant 1980; David, pers. obs.; Kepler et al. 1979)

The primary cause of mortality in both these species is thought to be predation by alien mammalian species at the nesting colonies (Cooper and Day 1995; Day and Cooper 1998; Ainley et al. 2001). Collision with utility structures is considered to be the second most significant cause of mortality of these seabird species in Hawai'i. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds often collide with manmade structures, and if they are not killed outright, the dazed or injured birds are easy targets of opportunity for feral mammals (Ainley et al. 1995, 1997, 2001; Cooper and Day 1995, 1998; Day and Cooper 1997). There is no suitable nesting habitat within the project sites for either of these listed pelagic seabird species.

The principal potential impact that development of the project site poses to Dark-rumped Petrels and Newell's Shearwaters is the increased threat that birds will be downed

after becoming disoriented by new exterior lighting that may be required in conjunction with the one or more of the proposed improvements.

Recommendations

To reduce the possibility that the nocturnally flying Dark-rumped Petrels and Newell's Shearwaters may be disoriented by external lights and collide with man-made structures, it is recommended that any external lighting planned within the proposed improvements be shielded (Reed et al. 1985). This mitigation would minimize the threat of disorientation and downing of Dark-rumped Petrels, and Newell's Shearwaters, and at the same time comply with the County of Hawai'i's current planning policy, which recommends the shielding of exterior lights. The shielding allows less ambient glare than unshielded lighting, and thereby causes less "light pollution," which interferes with viewing at the astronomical observatories on Mauna Kea.

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APPENDIX C
AIR QUALITY IMPACT REPORT

AIR QUALITY IMPACT REPORT (AQIR)

HILO INTERNATIONAL AIRPORT
MASTER PLAN PHASES I & II)
HILO, HAWAII

14 December 2001

PREPARED FOR:

Wilson Okamoto & Associates, Inc.

and

State of Hawaii
Department of Transportation
Airports Division

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION..... 1

2. REGULATORY REQUIREMENTS..... 3

 2.1 Emission Regulations..... 3

 2.2 Air Quality Standards..... 4

3. EXISTING AIR QUALITY..... 6

 3.1 Department of Health Monitoring..... 6

 3.2 Onsite Carbon Monoxide Sampling..... 6

4. CLIMATE & SURFACE WINDS..... 8

 4.1 Climate..... 8

 4.2 Surface Winds..... 8

5. SHORT-TERM IMPACTS..... 8

 5.1 Onsite Impacts..... 8

 5.2 Offsite Impacts..... 14

6. AIR QUALITY IMPACT ANALYSIS..... 14

 6.1 Emissions and Dispersion Modeling System (EDMS)..... 14

 6.2 Highway Intersections..... 23

7. RECOMMENDATIONS AND CONCLUSIONS..... 25

 7.1 Short-Term Impacts..... 25

 7.2 Long-Term Impacts..... 25

REFERENCES

J. W. MORROW

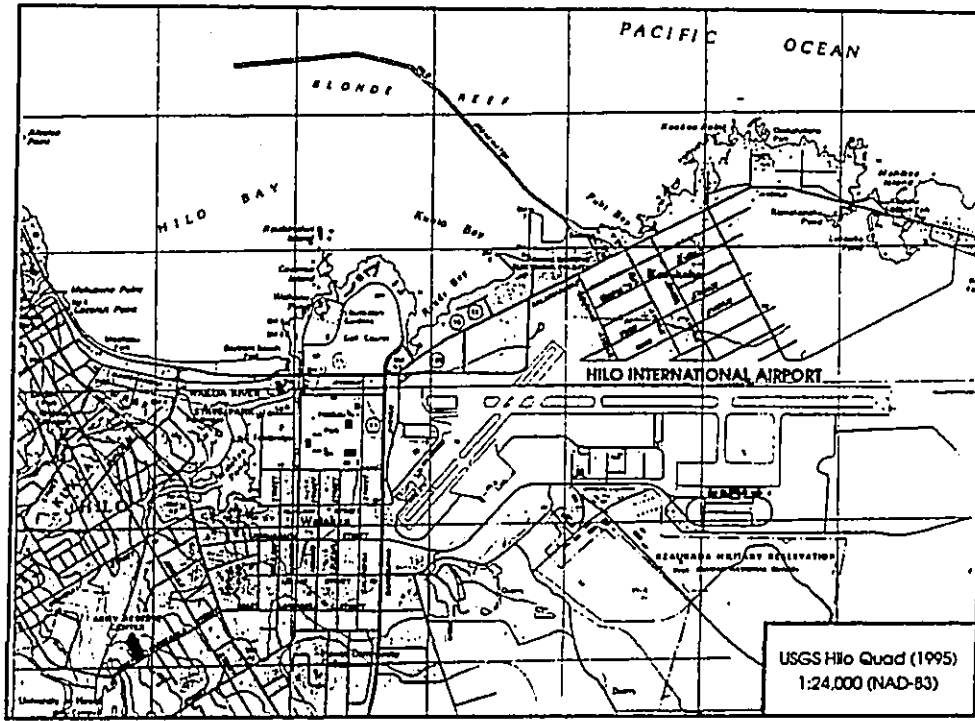
LIST OF TABLES

<u>NUMBER</u>	<u>TITLE</u>
1	Summary of State of Hawaii and Federal Ambient Air Quality Standards
2	Air Quality Data - Department of Health Monitoring Sites, 2000
3	Climatic Normals, Means and Extremes, Hilo, Hawaii and Honolulu, Oahu
4	Annual Joint Frequency Distribution of Wind Speed and Direction Hilo International Airport
5	Current and Forecast Aircraft Operations, Hilo International Airport, 2000 - 2010
6	Aircraft Hourly Operational Profile, Hilo International Airport
7	Aircraft Daily Operational Profile, Hilo International Airport
8	Aircraft Monthly Operational Profile, Hilo International Airport
9	Motor Vehicle Hourly Operational Profile, Hilo International Airport
10	Annual Emissions Estimates, Hilo International Airport, 2001 - 2010
11	EDMS Dispersion Modeling Results, Hilo International Airport, 2001 - 2010

LIST OF FIGURES

<u>NUMBER</u>	<u>TITLE</u>
1	Project Location
2	A.M. Peak Hour Conditions, Airport Access Road at the Passenger Terminal, 24 August 2001
3	P.M. Peak Hour Conditions, Airport Access Road at the Passenger Terminal, 24 August 2001
4	Annual Frequency Distribution of Wind Direction, Hilo International Airport (1992)
5	EDMS Receptor Locations
6	Estimates of Maximum 1- and 8-Hour Carbon Monoxide Concentrations: Kaneoheh Avenue at Kekuaaoa Street, Peak Traffic Hours, 2001-2010

FIGURE 1
PROJECT LOCATION



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I. INTRODUCTION

In order to accommodate projected demand for airport operations and facilities requirements, the State of Hawaii Department of Transportation, Airports Division is proposing a number of improvements to the existing Hilo International Airport which is located on the east side of the town of Hilo on the island of Hawaii (Figure 1). Implementation of these improvements is proposed to occur in three phases, the first two of which are to be completed by the year 2010 and which are the subject of this report. Major elements of those first two phases include:

Phase I (2000 - 2005)

- acquisition of lands for aviation easements and runway protection zones
- implementation of noise mitigation measures including a 15-foot noise barrier
- construction of a new air cargo facility northwest of the existing passenger terminal
- construction of a new heliport southwest of the Hawaii National Guard facility
- upgrade of general aviation facilities including a new T-hangar and parking apron
- expansion of public and employee parking facilities
- paving of the emergency access road to Runway 26 and extension of perimeter fencing

Phase II (2005 - 2010)

- continuation of noise mitigation measures at residences and public facilities
- continuation of general aviation area upgrades
- continuation of expansion of passenger terminal parking area
- continue of extension of perimeter fencing

The purpose of this report is to assess the air quality impacts of the proposed improvements and the projected aviation demand which necessitated them. The airport can be considered an "indirect source" of air pollution as defined in the federal Clean Air Act (CAA) since its primary association with air quality is its inherent attraction for mobile sources, i.e., motor vehicles and aircraft. Much of the focus of this analysis, therefore, is on the project's ability to generate surface and air traffic and the resultant impact on air quality. For comparative purposes, air quality impact was evaluated for existing (2001) and future (2010) conditions.

Finally, during construction of the various new facilities air pollutant emissions will be generated onsite and offsite due to vehicular movement, grading, concrete and asphalt batching, and general dust-generating construction activities. These impacts have also been addressed.

J. W. MORROW

Under Title II of the CAA, EPA is also authorized to regulate fuels and fuel additives. One of the most dramatic effects of this program in the past two decades was the removal of lead compounds (primarily tetraethyl lead) from gasoline.⁷ Ambient lead levels have dropped sharply in most urban areas and lead monitoring data bear this out for Hawaii as well.⁸

2.1.2.2 Aircraft. Part B of CAA Title II provides the statutory basis for EPA's regulation of aircraft and aircraft engines. The rules address both in-use and new aircraft engines and focus on gas turbine engines which by definition include turboprop, turbopump, and turbojet aircraft engines. In the early years (1970s and 1980s), efforts focused on particulate matter measured as visible smoke, i.e., smoke number ("SN") and fuel "dumping" or "venting". Initial efforts to control gaseous emissions, i.e., hydrocarbons (HC), oxides of nitrogen (NOx) and carbon monoxide (CO) were delayed by debate and litigation. Existing rules prohibit fuel venting by new or in-use aircraft, establish smoke (SN) standards for new and in-use gas turbines, and impose specific numeric emission standards for HC, NOx, and CO for new gas turbines.^{9, 10, 11}

2.2 Air Quality Standards

A summary of State of Hawaii and national ambient air quality standards (NAAQS) is presented in Table 1.¹² Note that Hawaii's standards are not divided into primary and secondary standards as are the federal standards.

Primary standards are intended to protect public health with an adequate margin of safety while secondary standards are intended to protect public welfare through the prevention of damage to soils, water, vegetation, man-made materials, animals, wildlife, visibility, climate, and economic values.¹⁴

In the case of the principal mobile source pollutants (carbon monoxide (CO), nitrogen dioxide (NO₂), and ozone (O₃)), there are only primary standards which, in effect, serve as secondary standards as well. Some of Hawaii's standards (CO, NO₂, and O₃) are clearly more stringent than their federal counterparts. The short-term standards, i.e., those with averaging times less than annual, may be exceeded once per year just as is the case with the NAAQS.

Until 1983, there was also a hydrocarbons standard which was based on the precursor role hydrocarbons play in the formation of photochemical oxidants rather than any unique toxicological effect they had at ambient levels. Primarily because of this lack of direct health effects, the hydrocarbons standard was formally eliminated in January 1983.¹⁵

The U.S. Environmental Protection Agency (EPA) is mandated by Congress to periodically review and re-evaluate the federal standards in light of new research findings.¹⁶ The latest review resulted in the addition of new 8-hour ozone standards and 24-hour and annual PM_{2.5} standards.^{17, 18} The new standards, however, were challenged in court and while they may be found in the most recent edition of the Code of Federal Regulations (July 1, 2001), their full implementation and enforcement remains uncertain due to the unresolved litigation.^{19, 20, 21}

The carbon monoxide (CO), sulfur dioxide (SO₂), and nitrogen dioxide (NO₂) standards have also been reviewed in recent years pursuant to CAA §109, but no new standards have been promulgated.

2. REGULATORY REQUIREMENTS

2.1 Emissions Regulations

Emissions control regulations pertinent to an airport would be primarily those relating to aircraft, motor vehicles, and fuel storage. Since the federal Clean Air Act has seriously limited or pre-empted the authority of states to regulate the first two, there are only limited opportunities for states to promulgate their own rules. The following sections summarize state and federal emissions rules pertinent to the Hilo International Airport.

2.1.1 State Requirements. The State of Hawaii regulates motor vehicle emissions only to the extent of prohibiting visible emissions from gasoline-powered vehicles and placing a 5-second time limit on visible smoke from diesel-powered vehicles while they are on the road. The rules also place restrictions on engine idling while parked, which, in the case of the airport, would apply primarily to buses, vans, and taxis. Engine idling during loading or unloading of passengers is limited to not more than three (3) minutes.¹

There are also specific requirements for storage of volatile organic compounds (VOC) such as liquid fuels. Storage tanks with a capacity greater than 40,000 gallons and containing fuels with a true vapor pressure equal to or greater than 1.5 pounds per square inch absolute (psia), must be pressurized to prevent vapor loss or be equipped with a floating roof, vapor recovery system or other control equipment of equal efficiency. Underground storage tanks are exempt from this requirement if their total annual throughput is less than twice the volume of the tank.

Any new VOC storage tank of more than 250-gallon capacity must be equipped with a permanent submerged fill pipe, be pressurized, or be equipped with a vapor recovery system to prevent vapor or gas emissions to the air.²

Fuel storage tanks are also subject to air permitting requirements if they have a capacity greater than 40,000 gallons or if they are subject to any requirement under CAA §111 (new source performance standards) or §112 (hazardous air pollutants).³

2.1.2 Federal Requirements

2.1.2.1 Motor Vehicles. Pursuant to Title II of the CAA, the EPA has promulgated emissions standards for new motor vehicles and new motor vehicle engines.⁴ The primary strategy of the program is to impose progressively more stringent standards on new vehicles so that over time the older, higher emitting vehicles are removed from the total fleet by normal attrition leaving an increasing fraction of the fleet to be the newer, lower emitting vehicles. This strategy works provided that the percentage decrease in total automotive emissions is not offset by the percentage increase in total number of vehicles. When all new and in-use vehicles meet the existing emission standards, and the vehicle population continues to grow, then it is time to impose more stringent standards in order to avoid an upward trend in emissions.