POOR LEGIBILITY

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SITE INSPECTION

SUBMITTED TO: Rachel Loftin, Site Assessment Manager, EPA Region IX

PREPARED BY: Sheila Mackenzie, Environmental Health Specialist, Hawaii State Office of Hazard Evaluation and Emergency Response

THROUGH: Elizabeth Galvez, Acting Team Coordinator, HEER

DATE: September 1994

FACILITY: Flynn-Learner, 120 Sand Island Access Road, Honolulu, Hawaii

EPA ID#: HID984468363

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1.0 Introduction

The U.S. Environmental Protection Agency (EPA), Region IX, under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) has tasked the State of Hawaii Department of Health (DOH) to conduct a Site Inspection (SI) at the Flynn-Learner Property (Flynn-Learner) site in Honolulu, Hawaii.

The Flynn-Learner facility was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on May 4, 1992 (HID984468363). The site was entered into CERCLIS based on aerial photographs taken by EPA in 1985 showing heavy staining and information on the past uses of the site indicating a potential threat to public health and the environment.

A Preliminary Assessment (PA) report of the site was completed for the EPA by DOH on June 22, 1994. The purpose of the PA was to review existing information on the site and its environs to assess the threat(s), if any, posed to public health, welfare, or the environment, and to determine if further action under CERCLA/SARA is warranted.

After reviewing the PA, the EPA decided that further

investigation of the site would be necessary to more completely evaluate the site using EPA's Hazard Ranking System (HRS) criteria. The HRS assesses the relative threat associated with actual or potential releases of hazardous substances at the site. The HRS has been adopted by the EPA to help set priorities for further evaluation and eventual remediation of actual or potential hazardous substance releases. The HRS is the primary method of determining a site's eligibility for placement on the National Priorities List (NPL). The NPL identifies sites at which the EPA may conduct remedial response actions. This report summarizes the results of the site inspection of the Flynn-Learner site.

1.1 Apparent Problem

The apparent problems for this site appear to be:

* Known contaminated groundwater
* Known contaminated surface soils

On June 26, 1991, the Solid and Hazardous Waste Branch of the DOH was informed about the facility's immediate closure plan and that all scrap metals from the facility were being transported to the Hawaii Metal Recycling Company located at Campbell Industrial Park. Further, the company was going to conduct an Environmental Assessment for the site as part of the facility closure plan. It is indicated on an Uniform Hazardous Waste Manifest form that on June 1, 1992, 18,000 pounds of PCB contaminated (up to 160 ppm) soil was shipped out of Hawaii (reference 1).

Environmental investigations conducted by environmental consultants for the current tenant, Flynn-Learner, and a site visit by DOH personnel on March 9, 1994, indicate that the entire 132,000 ft^2 is littered with scrap metal debris (reference 2). At the south corner of the site are open excavation pits, where hydraulic lifts used to be located, with a layer of light colored oil on the surface of the ground water. Soil samples collected by the former tenant's environmental consultant indicate the soil to be contaminated with lead, cadmium, zinc, benzo(a)pyrene, and PCB's. Groundwater samples collected indicate levels above background for lead, cadmium, and zinc (reference 3).

2.0 Site Description

2.1 Location

The site is located on the island of Oahu, to the west of Honolulu, on a small peninsula of reclaimed land, at 120 Sand Island Access Road (Figure 1, Area Location Map, Figure 2, Site Location Map). The site is approximately 500 feet southeast of Keehi Lagoon and 2,500 feet east of Keehi Lagoon Beach Park. The geographic coordinates of the site are 21°19'37.294" latitude and 157°53'36.310" longitude.

The climate in the region consists of abundant sunshine, warm and relatively constant temperatures, with average temperatures in Honolulu varying daily between 16.7°C and 26.7°C in winter months

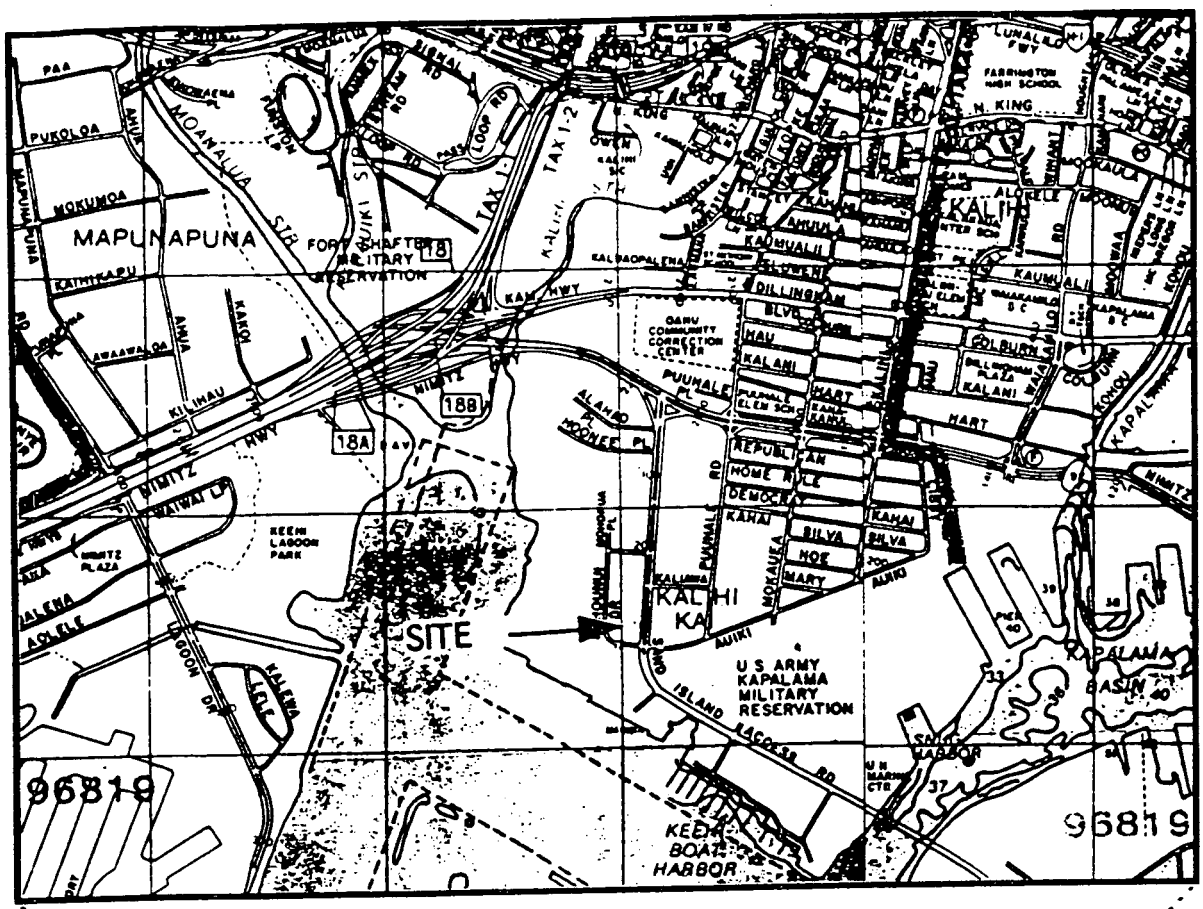
and 23.9°C and 31.7°C in the summer (reference 4). Rainfall in the area averages approximately 20 inches per year occurring primarily during the winter months and the 2-year, 24 hour rainfall is approximately 4 inches (reference 5). Northeasterly trades prevail in the Honolulu area, usually blowing from 10-15 miles per hour (reference 4).

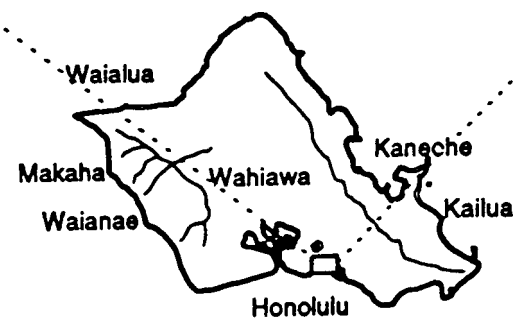
2.2 Site Layout (Figure 2, Site Layout Map)

The Flynn-Learner site is a flat 330 by 400 foot property that currently lies unused. The site contains two truck trailers, two mobile homes, and two vacant structures - a single-story 30 by 45 foot office building and a 40 by 135 foot shed. The site consists of fairly level and barren soil, a silty sand mixed with metal, glass and plastic debris. At the southwest corner of the property are excavation pits with standing ground water at about 7 feet below ground surface (bgs). The site is enclosed by a six foot chain link fence (reference 2). Former structures located at the site consist of an incinerator, metal shear equipment, a battery casing storage sump, and an engine block sump.

Commercial warehouses and light industrial businesses are the major land uses in the area. It is bounded on the north by Kilgo's company which is a large outlet for building/marine/hardware supplies. West of the facility is Pahounui Drive where the Ameron Cement facility is located and beyond that is Keehi Lagoon. Various retail industrial

FIGURE 1





PROJECT SITE

N

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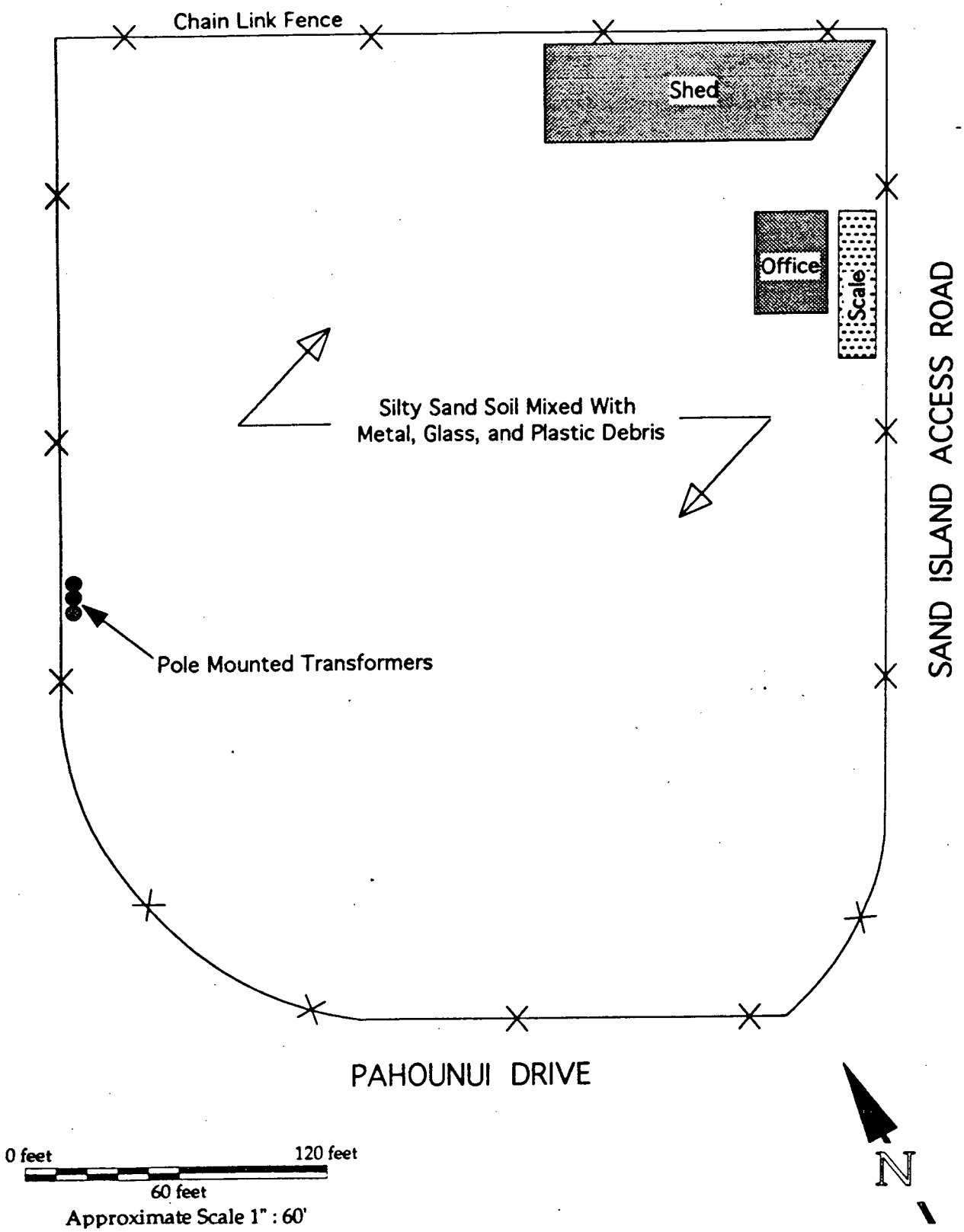
FIGURE 2


Chain Link Fence
Shed
Office
Scale
Silty Sand Soil Mixed With
Metal, Glass, and Plastic Debris
Pole Mounted Transformers
SAND ISLAND ACCESS ROAD
PAHOUNUI DRIVE
N
0 feet
120 feet
60 feet
Approximate Scale 1" : 60'

businesses are located to the east of the site across Sand IslandAccess Road. To the south is the Kapalama Military Reserve (reference 2).

2.3 Operational History

In 1951, the Samuel M. Damon Trust Estate signed a 40-year lease with Flynn-Learner. Historically, Flynn-Learner operated a permitted metal recycling facility on the site from 1951 to 1991. The site was used as a scrap metal recycling which processed discarded automobiles, "white goods" (i.e., household appliances, washing machines, refrigerators, etc.), and other items containing scrap metal into ferrous and non-ferrous metal products. The operations involved stripping apart the engine block, axle, drive shaft, radiator, batteries and tires from the automobiles. In addition, rejected transformers, capacitors, and underground storage tanks were also accepted.

The current tenant Flynn-Learner has a lease agreement with the property owner, Damon Trust Estate, to remain as lessee until December 31, 2028. Flynn-Learner has initiated environmental work at the site by having soil and water samples collected for analysis. The main constituents of concern found on-site were PCB's, lead, cadmium, and petroleum product. Approximately 14 cubic yards of PCB contaminated soil has been removed and disposed of on the mainland.

2.4 Regulatory Involvement

2.4.1 U.S. Environmental Protection Agency

The Flynn-Learner property is listed in Region IX's RCRA data base, dated February 9, 1994. as a small quantity generator (reference 6).

2.4.2 State of Hawaii Department of Health

DOH records indicate Flynn-Learner was permitted to operate a metal reclamation facility under the Solid Waste Management Permit of the Solid Waste Office, Hawaii State Department of Health. The inspection report of June 25, 1991, prepared by the Solid and Hazardous Waste Branch highlighted the Department's concern about observed oil contamination near the baler and shearing area. The inspection by the Office of Solid Waste found the facility to be contaminated with used motor oil and other automobile fluids (reference 7).

3.0 Investigative Efforts

3.1 Previous Sampling and Analysis

3.1.1 Soil Sampling

Soil samples were collected on site on six different occasions. Contamination of site soil was investigated and first reported in August of 1991, and further investigations occurred between August 1992 and March 1994. Maximum contaminant concentrations detected in the soil samples are as follows: 46 milligrams per kilogram (mg/kg) cadmium in boring B-13 at a depth of 3 feet below ground surface (bgs); 14,000 mg/kg lead in boring B-9 at a depth of 3 feet bgs; 14,000 mg/kg zinc in boring B-11 at a depth

of 5 feet bgs; 2.9 mg/kg benzo(a)pyrene in B-3 at a depth of 5 feet bgs; and 94 mg/kg PCB's in boring B-9 at a depth of 3 feet (reference 3).

In October of 1992, three soil samples were obtained from one boring to represent background levels for metals. Samples were taken at 2.5 foot, 4.5 foot, and 6.5 foot depths. Levels were below detection limits (non-detect) for cadmium, lead, and zinc. Other borings on the property provided background levels for benzo(a)pyrene and PCB's as samples analyzed were non-detect for these constituents (reference 8).

In February 1993, the area around B-9 was excavated to a depth of 5 feet bgs and 14 cubic yards of PCB contaminated soil was shipped to the mainland for disposal. Confirmatory sampling indicated a maximal residual concentration of PCB's at 12 mg/kg (reference 8).

On March 15, 1994, surface soils were collected and analyzed for lead. A maximum value of 5,000 mg/kg was obtained through analysis of the uncontained soils found directly on the surface of the site (reference 9).

3.1.2 Groundwater Sampling

Groundwater samples were collected on site on three occasions between August 1992 and July 1993. The maximum contaminant concentrations detected in the groundwater samples are as

follows: 25 milligrams per liter (mg/L) arsenic in B-11; 0.17 (mg/L) cadmium in B-10; 22 mg/L lead in B-6; and 54 mg/L zinc in B-10. These samples were collected from ground water encountered in four of the trenches dug to collect soil samples. Groundwater samples were not filtered prior to total metals analysis (reference 3).

In March of 1993, filtered water samples were collected from the groundwater standing in the same trenches mentioned above. These samples were analyzed for metals, and only arsenic and zinc were indicated at levels above detection limits (0.02 mg/L and 0.1 mg/L respectively) (reference 8).

In July of 1993, three monitoring wells were installed. Water from each well was analyzed for semi-volatile organics, including polynuclear aromatic hydrocarbons (PAH's) and benzene, toluene, ethylbenzene, and xylenes (BTEX). No PAH or BTEX was detected in any of the samples (reference 8).

3.2 EPA Sampling

No EPA-sponsored sampling has been conducted at, or is proposed for, the site because existing sampling data provide sufficient information to evaluate the site at this time.

4.0 Hazard Ranking System Factors

4.1 Sources of Contamination

Potential sources at the site due to past uses and observations

are (reference 2):

- Unknown quantities of scrap metal received at the facility while in use.
- Lead batteries on the grounds of the facility.
- PCB from transformer oil spills.
- Contaminated soil.

There is a direct observation of contamination at the site based upon soil samples collected and analyzed for potential constituents. Compounds found at levels above background consists of lead, cadmium, zinc, and PCB's as stated in section 3.1 of this report. In 1992 PCB contaminated soil was removed and shipped to the mainland (reference 1), however the most recent environmental investigation indicates that there is still PCB contaminated soil to a depth of five feet at the site (reference 8).

4.2 Groundwater Pathway

The groundwater pathway does not contribute significantly as a migration pathway as drinking water wells are located within two to three miles upgradient of the facility. Documented information indicates contamination of the upper caprock aquifer. The basal aquifer is located 600-800 feet bgs and is the principal source of drinking water in the area, however there is no evidence that the caprock and the basal aquifers are interconnected.

4.3 Surface Water Pathway

4.3.1 Hydrologic Setting

The topography at the site is nearly flat, but has a very slight slope (less than 1 percent) towards Keehi Lagoon (west). The site elevation varies between 5 and 7 feet above sea level and is located approximately 500 feet from Keehi Lagoon. The location of the site falls in an area determined to be outside the 500-year flood plain (reference 10). The 2 year, 24-hour rainfall for the site is approximately 4 inches (reference 5).

The site is approximately 500 feet upgradient of Keehi Lagoon, which then connects with the Reef Runway approximately a mile and a half from the site. Both Keehi Lagoon and the Reef Runway combine and become part of the Pacific Ocean about 2 miles downgradient of the site.

4.3.2 Surface Water Targets

Since the Pacific Ocean is approximately 500 feet from the site, a high likelihood exists for contaminated run-offs to enter the coastal waters. There are no drinking water intakes located within 15 downstream miles of the site. However, surface water bodies in the region are used for recreational and commercial fishing, recreational activities such as boating, and also habitats for threatened and endangered species. Approximately 10,753 pounds of marine life (fish, seaweed, etc.) were landed within 2 miles of the site. Within the 2 to 15 mile range, the data indicates that an additional 74,413 pounds of marine life were caught (reference 11). These represent the reported commercial catch data and do not include any recreational catch

data as they are not available.

Keehi Lagoon and the Reef Runway are two sensitive wetland areas located about 500 feet and 1.5 miles southwest respectively of the site. Keehi Lagoon encompasses an area of approximately 340.7 acres and the Reef Runway has an approximate area of 792.0 acres. Both wetlands are used as feeding and resting areas for the federally endangered Hawaiian Stilt (Himantopus mexicanus knudseni). Keehi Lagoon is also used by the Hawaiian Owl (Asio flammeus sandwichensis), which is listed by the State of Hawaii as endangered on Oahu (reference 12). The offshore waters of the Reef Runway and Keehi Lagoon (the Pacific Ocean) are also inhabited by the green sea turtle (Chelonia mydas), a federally listed endangered species (reference 13). Also, this area of the Pacific Ocean is habitat for the federally listed endangered species, the humpback whale (Megaptera novaeangliae) (reference 14).

4.3.3 Surface Water Pathway Conclusion

There are no surface water intakes for drinking water purposes within 15 miles downstream of the site. The site is in close proximity to Keehi Lagoon wetland which is inhabited by endangered species and high levels of surface soil contamination at the facility has been documented. However, there is no documentation of a release to the surface waters or sediments of Keehi Lagoon. It is unlikely that a release to Keehi Lagoon can be attributed to the facility because there are many facilities

surrounding the lagoon that could be alternative sources for contamination.

4.4 Soil Exposure and Air Pathway

The site currently is a relatively flat, empty lot surrounded by a six-foot chain link fence and located in an industrialized area. Northeasterly trade winds predominate about 75 to 85 percent of the time and vary 10 to 20 miles per hour. The soil is contaminated with lead, cadmium, and potentially with PCB's. The soil is uncontained, however there are no schools, residences, or daycare centers within 200 feet of the site. Directly adjacent to the site is a large retail store employing approximately 75 employees.

5.0 Emergency Response Considerations

The National Contingency Plan [40 CFR 300.415(b) (2)] authorizes the Environmental Protection Agency to consider emergency response actions at those sites which pose an imminent threat to human health or the environment. For the following reasons the site is being referred to Region IX's Emergency Response Section:

- The surface soils at approximately 75% of the two acre facility are contaminated with an average of 5,000 mg/kg of lead.
- No containment of the soil on site currently exists.
- Directly adjacent to the site is a large retail store employing approximately 75 people.

6.0 Summary

The Flynn-Learner Property at 120 Sand Island Access Road in Honolulu, is located in an industrial area. The site consists of approximately 132,000 square feet of flat, vacant land, with the exception of two empty above ground structures.

The site has been the subject of environmental investigations which indicate that the metal recycling activities at the site for the past 40 years have contaminated the shallow ground water and soil at the site. Contaminants of concern at the site that qualify as hazardous substances under CERCLA include lead and PCB's.

The Flynn-Learner Property was permitted to operate a metal reclamation facility under the Solid Waste Management Permit of the Solid Waste Office, Hawaii State Department of Health (DOH). An inspection in June of 1991 alerted DOH to possible contamination of hazardous substances on site.

The groundwater at the site does not contribute significantly as a migration pathway as drinking water wells are located 2-3 miles upgradient of the site. The caprock aquifer has been documented to have levels of cadmium, lead, and zinc and Keehi Lagoon is approximately 500 feet downgradient of the site. The Lagoon is a habitat for a federally endangered species and a state endangered species. The Lagoon is connected to the Pacific

Ocean, which is a habitat for two federally endangered species. The site is completely fenced and there are no schools, residences, or daycare centers within 200 feet of the site.

The pertinent Hazard Ranking System factors for the site are:

- Drinking water wells are located 2 to 3 miles upgradient of the site.
- A sensitive wetland, Keehi Lagoon, is located 500 feet downgradient of the site, and is a habitat for endangered species.
- No documentation exists to establish a release to the surface water or sediments of Keehi Lagoon.
- The site is located in an industrial area, is completely fenced, and no schools, residences, or daycare centers are located within 200 feet.

7.0 Decision Summary

REMEDIAL SITE ASSESSMENT DECISION - EPA REGION IX

Site Name: Flynn-Learner **EPA ID#:** HID984468363

Alias Site Names:

City: Honolulu **County or Parish:** Honolulu **State:** Hawaii

Refer to Report Dated: May 1994 **Report type:** Preliminary Assessment

Report developed by: Sheila Mackenzie

DECISION:

|✓| **1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:**

|✓| 1a. Site does not qualify for further remedial site assessment under CERCLA (Site Evaluation Accomplished - SEA)

| | 1b. Site may qualify for further action, but is deferred to: | | RCRA | | NRC

| | **2. Further Assessment Needed Under CERCLA:** 2a. (optional) Priority: | | Higher | | Lower

2b. Activity Type: | | PA | | SI | | ESI | | HRS evaluation

| | Other:

DISCUSSION/RATIONALE:

Although CERCLA site assessment work will not continue at this time, the site is being referred to EPA's Emergency Response Section because of elevated levels of lead (approx 5,000 mg/kg) in soil on-site.

Report Reviewed and Approved by: Signature: Date:

Site Decision Made by: Rachel Loftin Signature: Date: 9-30-94

EPA Form # 9100-3

APPENDIX A
Reference List

1. Uniform Hazardous Waste Manifest, June 1, 1992, Flynn-Learner, James C. Banigan.

2. State of Hawaii, Department of Health, HEER Office, Field Visit Report, March 9, 1994.

3. Cotton and Frazier Consultant's, Inc., "Flynn-Learner Sand Island Site Environmental Investigation Report", October 26, 1992.

4. Armstrong, R. Warick, 1983, "Atlas of Hawaii", Second Edition, Hawaii University Press, Honolulu, HI.

5. State of Hawaii Department of Natural Resources, "Rainfall Frequency Study for Oahu", Report R-73, Division of Water and Land Development, prepared by University of Hawaii Water Resources Center.

6. RCRA Notifiers List, Region IX, U.S. Environmental Protection Agency, February 9, 1994.

7. State of Hawaii, Department of Health, Offices of Solid Waste, Application for Solid Waste Management Permit, file on Flynn-Learner.

8. Cotton and Frazier Consultant's, Inc., "Risk Assessment Report for Flynn-Learner", October 22, 1993.

9. Cotton and Frazier Consultant's, Inc., Fax of Laboratory Results for Analysis of Onsite Surface Soils, March 21, 1994.

10. Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Rate Map City and County of Honolulu, Hawaii, Community Panel Number 150001 0115B, Map Revised Sept. 4, 1989.

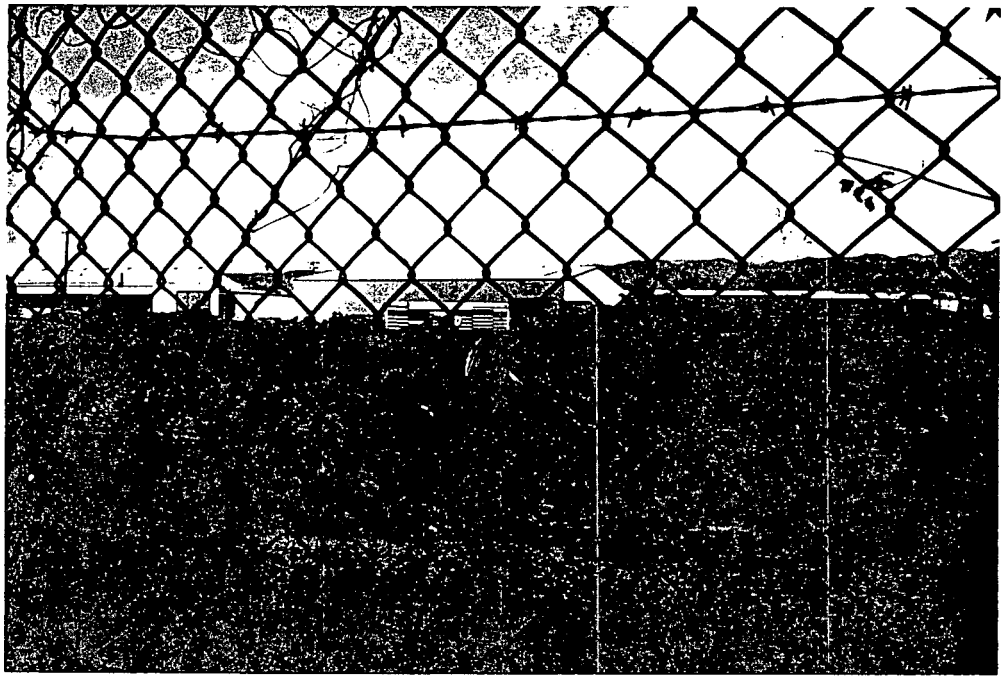
11. State of Hawaii Department of Land and Natural Resources, Division of Aquatic Resources, "Main Hawaiian Islands Commercial Marine Landings by Island, Calendar Year 1990".

12. Environmental Center, Water Resources Research Center, University of Hawaii at Manoa, "Ecologically Sensitive Wetlands on Oahu: Groundwater Protection Strategy for Hawaii", December 1989.

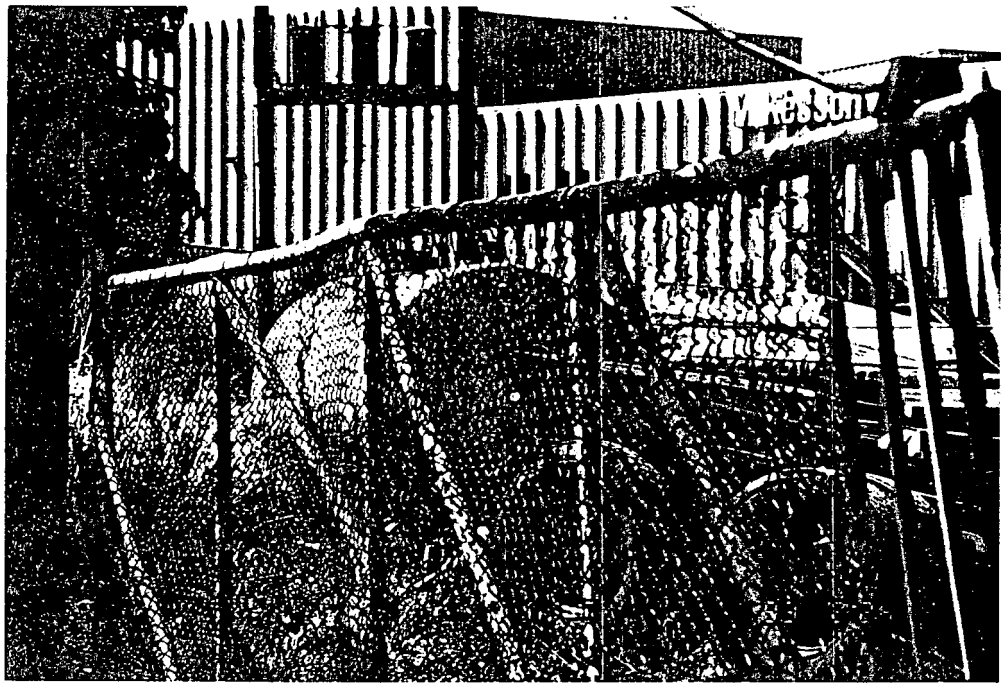
13. National Oceanic and Atmospheric Administration, "Species Profiles: Life Histories and Environmental Requirements of Coastal Vertebrates and Invertebrates, Pacific Ocean Region; Report 1: Green Turtle, Chelonia mydas", by R.G. Forsyth and G.H. Balazs, July 1989.

14. National Oceanic and Atmospheric Administration, "Species Profiles: Life Histories and Environmental Requirements of Coastal Vertebrates and Invertebrates, Pacific Ocean Region; Report 2: Humpback Whale, Megaptera novaeangliae", by E.T. Nitta and J.J. Naughton, November 1989.

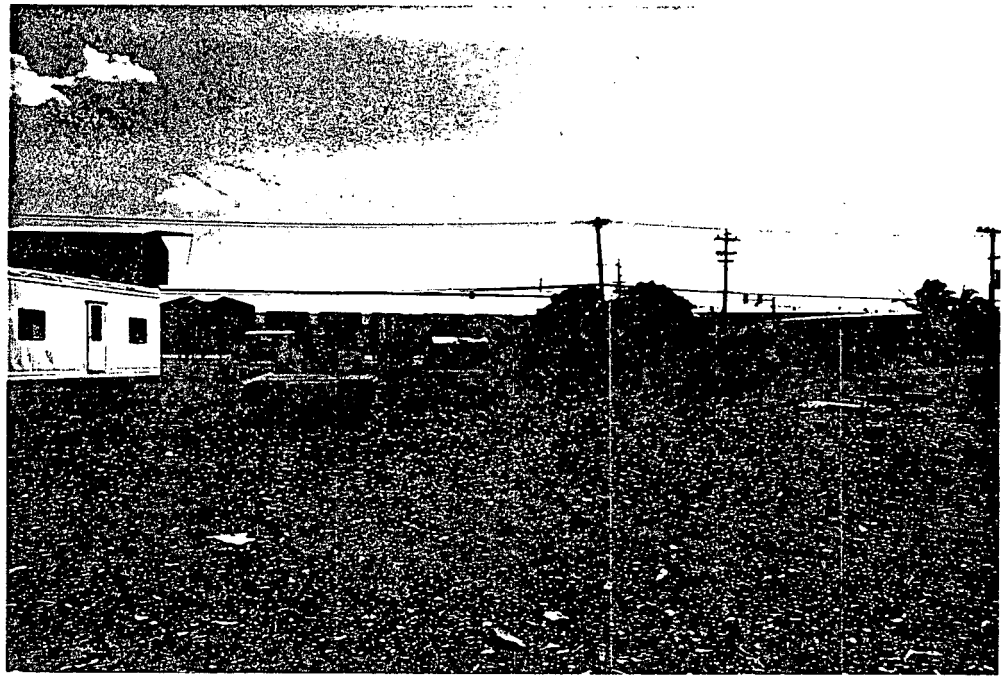
APPENDIX B
PHOTOGRAPHIC DOCUMENTATION



1. Excavation of PCB contaminated soil at the south corner of the site



2. Abandoned UST located along the southeast border of the site

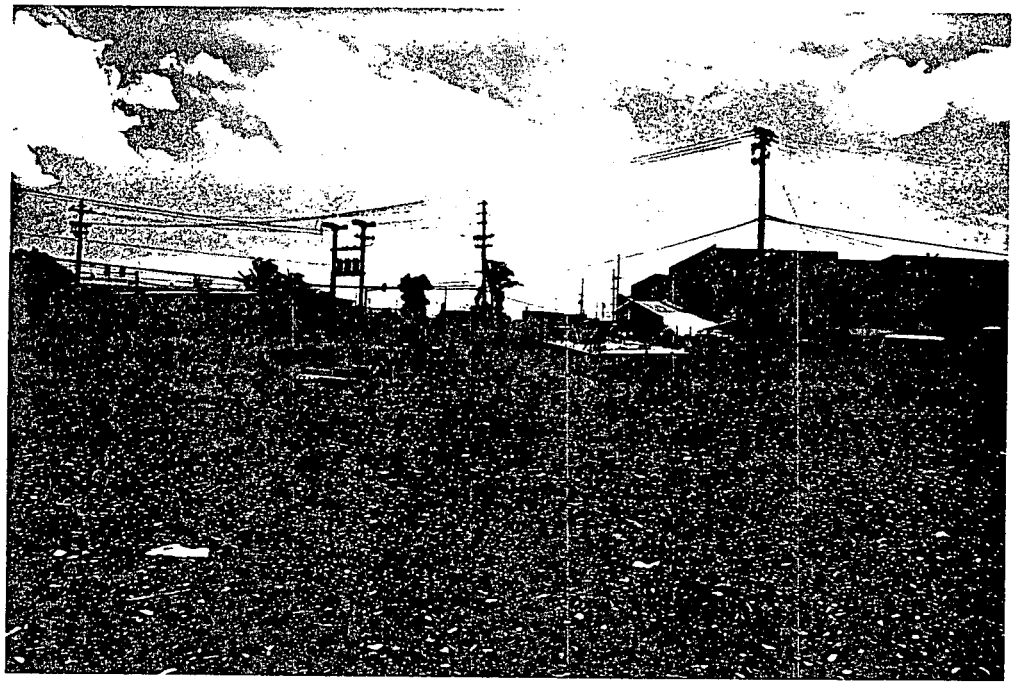


3. View of site looking to the southeast

4. View of site looking to the northwest

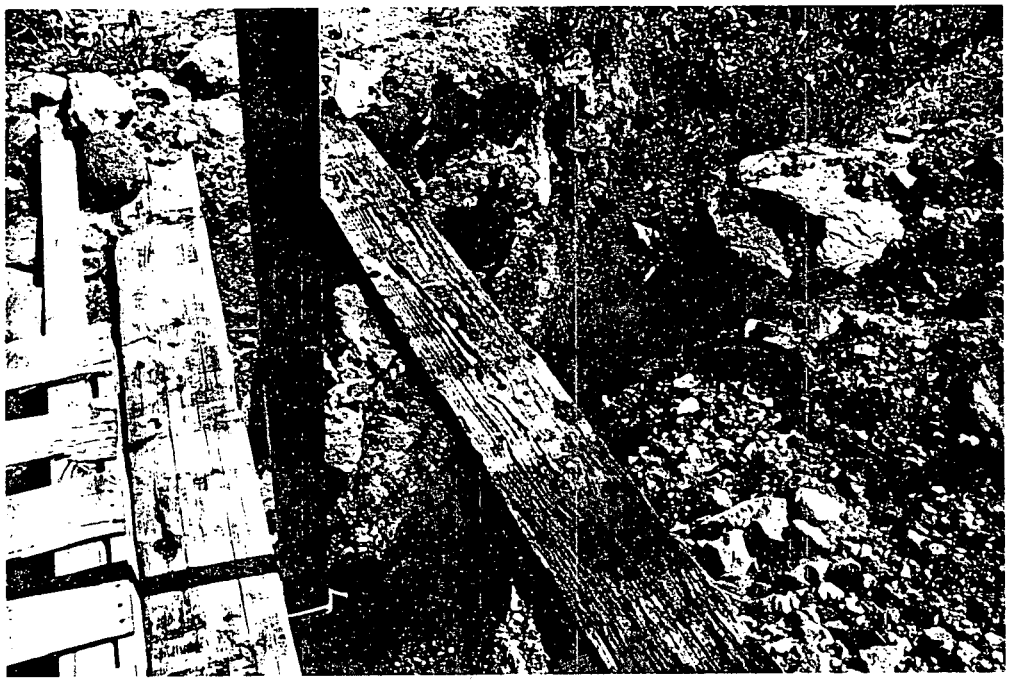
3. View of site looking to the southeast

4. View of site looking to the northwest



5. View of site looking to the south

6. View of site looking to the north (note scattered metal debris)



7. Excavation at south corner of site, floating product on groundwater

8. Another view of south corner excavation with floating product on groundwater

REFERENCE #1

→ Flynn - Leonard

HMR
HAWAII METAL RECYCLING CO.

91-056 HANUA STREET • CAMPBELL INDUSTRIAL PARK • EWA BEACH, HAWAII 96707 • PH: (808) 682-5810 • FAX (808) 682-0604

December 7, 1992

Ms. Prema Menon
Dept. of Health
HEER Program
Room 2503
5 Waterfront Plaza
Honolulu, Hawaii 96813

Dear Ms. Menon:

Pursuant to your request, attached please find a copy of the Uniform Hazardous Waste Manifest.

Sincerely,

James C. Banigan
General Manager

Please print or type. (Form designed for use on elite (pitch) typewriter.) 92182014

Form Approved. OMB No. 2050-0039. Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. 40CFRPAN176192112 — Manifest Document

2. Page 1 of 2 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: Flynn Learner c/o Hawaii Metal Recycling 91-056 Hanua ST. EWA Beach HI 96707

4. Generator's Phone (808) 682 5810 Attn: Jim B

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: Industrial Technology — 6. US EPA ID Number: VID982504706

C. State Transporter's ID

D. Transporter's Phone: 808 682 5855

7. Transporter 2 Company Name: Matson Navigation — 8. US EPA ID Number: CAD006912620

E. State Transporter's ID

F. Transporter's Phone: 808 848 1211

9. Designated Facility Name and Site Address: Envirosafe Services of Idaho, 10½ miles NW Grandview Missle Base Rd. Grandview Idaho — 10. US EPA ID Number: IDD073114654

G. State Facility's ID

H. Facility's Phone: 800 274 1516

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
001 a.	Hazardous substance solid (polychlorinated Biphenyls) ORM-E NA9188	RQ	009	CF	18000	P	NON-RCRA
002 b.	NON-RCRA, NON Hazardous waste Liquid		039	DM	01750	G	NON-RCRA
c.							
d.							

J. Additional Descriptions for Materials Listed Above

11-A - PCB contaminated soil & pebbles WPQ <160 PPM

11B - NON RCRA, NON TSCA waste Liquid & solid WPQ

K. Handling Codes for Wastes Listed Above

MATU 223378

15. Special Handling Instructions and Additional Information

ERG Book in Vehicle
ERG # 31
Wear protected clothing when Handling.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: JAMES C. BANIGAN — Signature: James C. Banigan — Month Day Year: 06 01 92

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: James P McAluney — Signature: James P. McAluney — Month Day Year: 06 01 92

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: NATHAN S. KIM — Signature: Nathan S. Kim — Month Day Year: 06 10 92

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: SARA REESE — Signature: Sara Reese — Month Day Year: 06 30 92

GENERATOR — TRANSPORTER — FACILITY

Style F15 REV-6 LABELMASTER, Div. of AMERICAN LABELMARK CO., CHICAGO, IL 60646

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete

ORIGINAL — RETURN TO GENERATOR

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator's US EPA ID No.: 40CFR Part 761 | Manifest Document: 92112

22. Page: 2

Information in the shaded areas is not required by Federal law.

23. Generator's Name: Flynn Learner c/o HPQR. 91-056 Hanua St. Ewa Beach HI 96707

[illegible] State Manifest Document Number

[illegible] State Generator's ID

24. Transporter 3 Company Name: Dart Trucking Co

25. US EPA ID Number: OHD009865825

[illegible] State Transporter's ID

[illegible] Transporter's Phone: 800 426-0895

26. Transporter ___ Company Name

27. US EPA ID Number

[illegible] State Transporter's ID

[illegible] Transporter's Phone

28. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM		29. Containers No.	Type	30. Total Quantity	31. Unit Wt/Vol	R. Waste No.
a.		See item 11-A					
b.		See item 11-B					
c.							
d.							
e.							
f.							
g.							
h.							
i.							

S. Additional Descriptions for Materials Listed Above: See item 11-5

T. Handling Codes for Wastes Listed Above

32. Special Handling Instructions and Additional Information

See item 15

33. Transporter 3 Acknowledgement of Receipt of Materials

Printed/Typed Name: DEAN E BECK | Signature: [signature] | Date: Month Day Year [illegible]

34. Transporter ___ Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

35. Discrepancy Indication Space

GENERATOR

TRANSPORTER

FACILITY

REFERENCE #2

FIELD VISIT REPORT

Site: Flynn-Learner EPA ID Number: HID984468363

Address: 120 Sand Island Access Road
Honolulu, Hawaii

Observations made by: Sheila Mackenzie

Site Representatives: Stuart Cotton, Cotton & Frazier Environmental Consultants
Mark Frazier, Cotton & Frazier Environmental Consultants

Field Visit Objectives: Gather information on site conditions, location, historical uses of the property and identify hazardous substances that may be stored or disposed of on site.

Summary of Activities and Observations:

A site visit was conducted at the Flynn-Learner property on March 9, 1994, at approximately 1:00 pm. The property is relatively flat, with areas of depression where rainwater will form puddles. The 132,000 ft^2 site is mostly vacant, with the exception of a small empty office building and shed, two mobile homes, a couple truck beds, and an abandoned underground storage tank. At the southwest end of the property are open excavation pits with standing groundwater approximately 6-7 feet below ground surface. Free floating petroleum product was observed on the surface of the groundwater. The surface soil was uniformally littered with bits and pieces of various metals.

The past history of the site was discussed, as well as the results of the environmental investigations. The main concern at the site appears to be high levels of lead in surface soils. There were PCB contaminated soils on site, however it has been excavated and disposed of on the mainland. The surrounding area is industrial, no residence in the immediate vicinity. The property is surrounded by a six foot chain-link fence and the only current on-site human exposures would be the occasional environmental investigator or property owners. There is a large retail store immediately adjacent to the site and Keehi Lagoon is approximately 200 feet to the west.

REFERENCE #3

COTTON and FRAZIER Consultants, Inc.
"Environmental Solutions"

FLYNN-LEARNER SAND ISLAND SITE ENVIRONMENTAL INVESTIGATION REPORT

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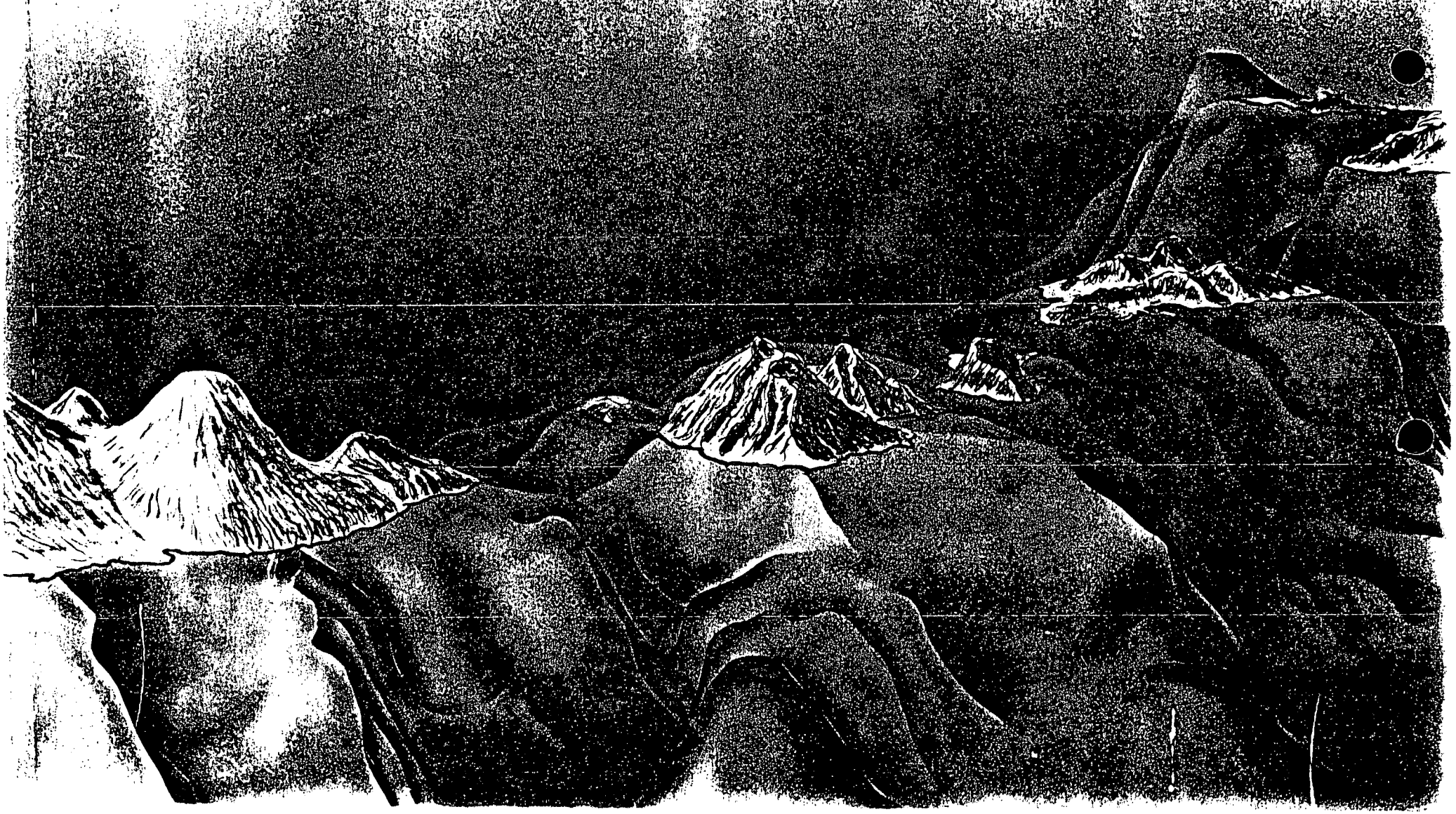
Appendix A. Analytical Lab Analysis

Appendix B. Field TLC Results

P.O. BOX 27126
Honolulu, Hawaii 96813
Phone (808) 599-1993
FAX (808) 599-1502

SECOND EDITION

Atlas of Hawaii



REFERENCE #4

REFERENCE #5

RAINFALL FREQUENCY STUDY FOR OAHU

Report R-73

State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Water and Land Development

Prepared by

UNIVERSITY OF HAWAII
Water Resources Research Center

Thomas W. Giambelluca
L. Stephen Lau
Yu-Si Fok
Thomas A. Schroeder

Honolulu, Hawaii
1984

US Army Corps of Engineers
Honolulu District

**** RCRA Notifiers List ****

Run 13.07.24 , 02/09/94

Data from the Region IX Hawaii Database.

This run used the following selection criteria (blank means all values accepted, except for facility types):

States:	HI	(Select 1 - 3 or all)
Counties:		(Select 1 - 4 or all)
ZIP Codes:		(Select 1 - 5 or all)
Facility:		(Select one or all)
Leg. district:		(Select one or all)

Select only facilities that accept CERCL wastes: N

Facility types: LQG: X SQG: X CEG: X
(X - selected) TSD: X Trans: X BBL: X REC: X

NOTE: '-N-' in the report indicates the facility notified for that activity but is not now engaged in that activity.

Sort:	State, Name, ID	(See below for sort choices)
TC Rule facilities:		(Waste codes D040 - D043)
Waste codes:		(Select 1 - 5 or all)
SIC Codes:		(Select 1 - 5 or all)
Part A Process Codes:		
Owner type:		(Select one or all)

Facilities which accept wastes from offsite:
Notification date range: from 010180 to 020994

Individual ID's selected (1 - 15)

LQG - Large quantity generator (more than 1000 kg per month)
SQG - Small quantity generator (100 - 1000 kg per month)
CEG - Limited quantity generator (less than 100 kg per month)
TSD - Treat, store, or disposal facility
Trans. - Transporter
BBL - Burner/blender
REC - Recycler

LIZ
Our new
RCRA database
mine

Sort choices:	Owner type choices:
1 - State, Name, ID	P - Private
2 - State, County, Name, ID	F - Federal
3 - State, ZIP, Name, ID	S - State
4 - State, Legislative District, ID	C - County
5 - Name, ID	M - Municipal
6 - ID Number	
7 - Notification date received (most recent first)	

Total number of handlers is 933

REFERENCE #6

REFERENCE 18

RCRA Notifiers List — Region IX Hawaii Database — Run 13.09.20 [illegible]

Facility/ID / Leg. Dist		Contact - Name	- Phone	Notif.Date	Facil. TSD	GEN	TRNS	Sec.	TSD
FIRESTONE HOLIDAY MART		ENVIRONMENTAL MANAGER	(808)946-5291	09/15/86	-	-N-	-	-	-
HID981577265	Facil.: 801 KAHEKA ST	HONOLULU	HI	96814 HONOLULU CO.					
	Mail: 801 KAHEKA ST	HONOLULU	HI	96814					
FIRST DEVELOPMENT INC		HITOSHI UCHINO	(808)545-1953	08/13/92	-	CEG	-	-	-
HID984466060	Facil.: 1777 KAPIOLANI BLVD	HONOLULU	HI	96814 HONOLULU CO.					
	Mail: 745 FORT ST HAWAII TWR	HONOLULU	HI	96813					
FKS RENTALS & SALES		ENVIRONMENTAL MANAGER	(808)836-2961	02/23/87	-	SQG	-	-	-
HID981639974	Facil.: 653 KAKOI ST	HONOLULU	HI	96819 HONOLULU CO.					
	Mail: 653 KAKOI ST	HONOLULU	HI	96819					
FLICK PEST CONTROL		ENVIRONMENTAL MANAGER	(808)836-1173	02/12/88	-	LQG	-	-	-
HID982323792	Facil.: 2629 WAI WAI LOOP	HONOLULU	HI	96819 HONOLULU CO.					
	Mail: 2629 WAI WAI LOOP	HONOLULU	HI	96819					
FLINT INK CORP CAL INK DIV.		ENVIRONMENTAL MANAGER	(808)538-6713	08/18/80	-	[illegible]	-	-	-
HID044845493	Facil.: 223 COOKE ST	HONOLULU	HI	96813 HONOLULU CO.					
	Mail: 223 COOKE ST	HONOLULU	HI	96813					
FLYNN LEARNER		JAMES BANIGAN	(808)682-5810	06/10/92	-	SQG	-	-	-
HID984468363	Facil.: 120 SAND ISLAND ACCESS RD	HONOLULU	HI	96819 HONOLULU CO.					
	Mail: 91 056 HANUA ST	EWA BEACH	HI	96707					
FONG CONSTRUCTION CO LTD		RODERICK FONG	(808)877-6501	07/07/93	-	SQG	-	-	-
HID984470021	Facil.: 237 DAIRY RD	KAHULUI	HI	967322963 MAUI CO.					
	Mail: 237 DAIRY RD	KAHULUI	HI	967322963					
FOSTER EQUIPMENT CO LTD		ROSALINE HORIUCHI	(808)839-7731	05/17/91	-	SQG	-	-	-
HID984466532	Facil.: 719 AHUA ST	HONOLULU	HI	96819 HONOLULU CO.					
	Mail: PO BOX 30188	HONOLULU	HI	96820					
FRANK'S KALIHI CHEVRON		ENVIRONMENTAL MANAGER	(808)847-0388	09/10/86	-	SQG	-	-	-
HID981655285	Facil.: 2160 N KING ST	HONOLULU	HI	96819 HONOLULU CO.					
	Mail: 2160 N KING ST	HONOLULU	HI	96819					
FRED L WALDRON LTD		ENVIRONMENTAL MANAGER	(808)682-2022	07/13/87	-	SQG	-	-	-
HIT982012387	Facil.: 91-254 OLAI ST	EWA BEACH	HI	96707 HONOLULU CO.					
	Mail: 91-254 OLAI ST	EWA BEACH	HI	96707					
FULLER O BRIEN PAINTS		KERRY KIYABU	(808)848-8001	09/27/93	-	CEG	-	-	-
HI0000005710	Facil.: 240 PUUHALE RD UNIT A	HONOLULU	HI	96819 HONOLULU CO.					
	Mail: 240 PUUHALE RD UNIT A	HONOLULU	HI	96819					
FULLER OBRIEN PAINTS		KERRY KIYABU	(808)537-6902	06/01/93	-	CEG	-	-	-
HID984469957	Facil.: 746 AUAHI ST	HONOLULU	HI	96813 HONOLULU CO.					
	Mail: 746 AUAHI ST	HONOLULU	HI	96813					
FUMISEAL INC		ENVIRONMENTAL MANAGER	(808)847-2611	03/06/81	-	-N-	TRNS	-	-
HID033183963	Facil.: 1301 MOONUI ST	HONOLULU	HI	96817 HONOLULU CO.					
	Mail: 1301 MOONUI ST	HONOLULU	HI	96817					

REFERENCE #7

FILE COPY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

April 2, 1985

Mr. Jan C.G. Van Hemert, Manager
Flynn-Learner
120 Sand Island Access Road
Honolulu, HI 96819

Application No. SW-000186

Dear Mr. Van Hemert:

Subject: Solid Waste Management Permit, SW-176186

In accordance with the provisions of Chapter 342, HRS, and Administrative Rules, Title 11, Chapter 58, entitled Solid Waste Management Control, the Department of Health hereby issues the enclosed Solid Waste Management Permit for the subject facility.

The permittee may appeal to the Director of Health any of the conditions of the issued permit. The appeal must be in writing and submitted to the Director within twenty (20) days after receipt of this letter.

Sincerely,

Shinji Soneda

SHINJI SONEDA, CHIEF
Environmental Protection and
Health Services Division

AD/st
Enclosures
cc: PIE

STATE OF HAWAII
DEPARTMENT OF HEALTH

SOLID WASTE MANAGEMENT PERMIT

IS HEREBY ISSUED TO

FLYNN-LEARNER
(Corporation, company, government agency, firm, etc.)

AUTHORIZING OPERATION

RECLAMATION FACILITY

WHICH IS LOCATED AT

120	SAND ISLAND ACCESS ROAD	HONOLULU	OAHU
(Number)	(Street)	(City)	(Island)

and which is subject to the State of Hawaii Administrative Rules, Title 11, Chapter 58, Solid Waste Management Control, and to all of the following special conditions:

PARTS I AND II

Acceptance of this permit constitutes an acknowledgement and agreement that the holder will comply with all Rules, Regulations, and Orders of the Department and the conditions precedent to the granting of this permit.

PERMIT NO. SW-176186 DATE ISSUED: 4/2/85 EXPIRATION DATE: April 1, 1990

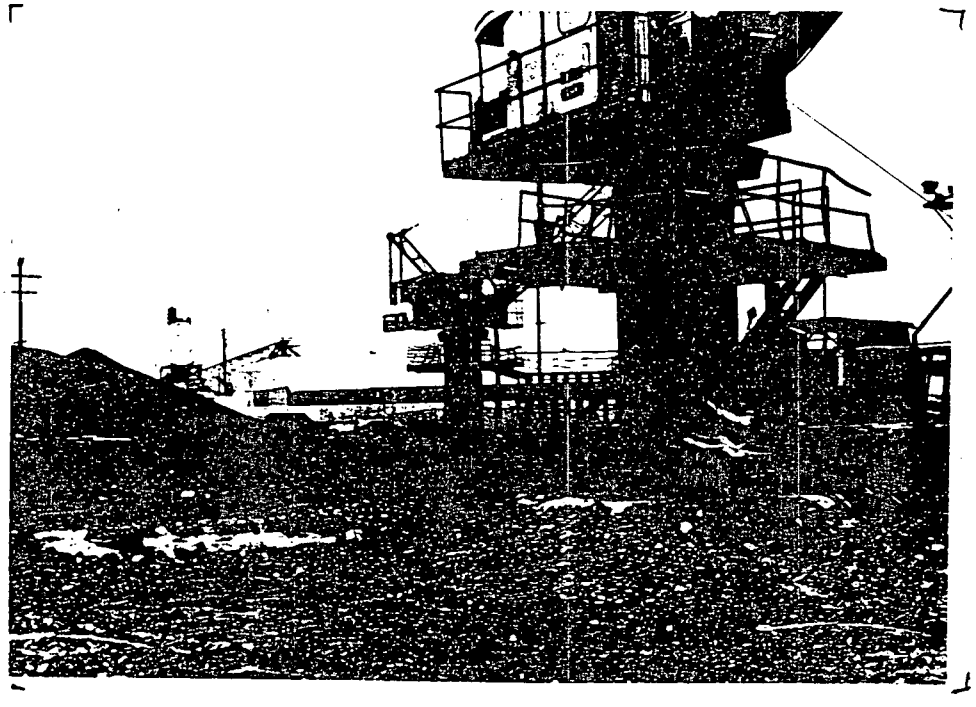
APPLICATION NO. SW-000186

BY _____
for DIRECTOR OF HEALTH

FORM SW-P-2 7/1/84

FACILITY Flynn-Learner Metal Recycler
LOCATION 120 Sand Island
PHOTO TAKEN BY J. Ruiz DATE Oct 8, 1991

Area cleaned of metals



INSPECTION NO: SW- 91-017

STATE DEPARTMENT OF HEALTH
SOLID AND HAZARDOUS WASTE BRANCH
FIVE WATER FRONT PLAZA, SUITE 250
500 ALA MOANA BOULEVARD
HONOLULU, HAWAII 96813

INSPECTION REPORT

FIRM NAME: Flynn-Learner **DATE:** June 25, 1991
MAILING ADDRESS: 120 Sand Island Road
SOURCE ADDRESS: Same
TELEPHONE: 845-2241
PERSON CONTACTED: Lawrence Kalilikane **TITLE:** Ass't Manager
REASON FOR INSPECTION:
ROUTINE: ( ) **COMPLIANCE SCHEDULE:** ( )
PERMIT REQUIREMENT: ( ) **VARIANCE CONDITION:** ( )
OTHER (X) **EXPLAIN:** Pre-closure.

OBSERVATION: On June 21, 1991 called Flynn-Learner company to find out if the facility was officially closing due to rumors of closure. Spoke with Ass't Manager, Lawrence Kalilikane and he claims that the facility is officially closing in the next 10 days. They are no longer accepting anything from the public and all scrap metal is being taken down to the new (Hawaii Metal Recycling Co.) Campbell Park Industrial facility. Questioned Mr. kalilikane if an environmental assessment of the site had been done and he was not aware. He said that Gary Chase will get in touch with the Department on the issue.

On June 26, 1991, spoke with Mr. Chase on the closure of the facility and he claims that they have stopped accepting materials from the public. They are presently clearing the site and all scrap metal removed to the new site. He also mentioned that an environmental assessment of the site will be made as soon as a contractor is hired. The company is in the bidding process for a contractor to perform the Environmental assessment. Mr. Chase will notify the department once a contractor is chosen and will keep the department informed. The department concern are the previous baler and the shearing area site due to potential oil contamination.

VIOLATION(S): ( ) **REGULATIONS: CHAPTER 11-58 SECTION 4**
( ) **COMPLIANCE SCHEDULE** ( ) **VARIANCE CONDITION**
( ) **OTHER:**
CAUSE OF VIOLATION: None
RECOMMENDATION: Keep the Department aware of the facility closure.
REFERRED TO: GS **DATE:** June 25,1991
REASON: Making aware of the facility closure.
FOLLOW-UP NEEDED: **YES** ( ) **WHEN:** August 91
NO (X) **WHY:**

Inspector
JOSE RUIZ

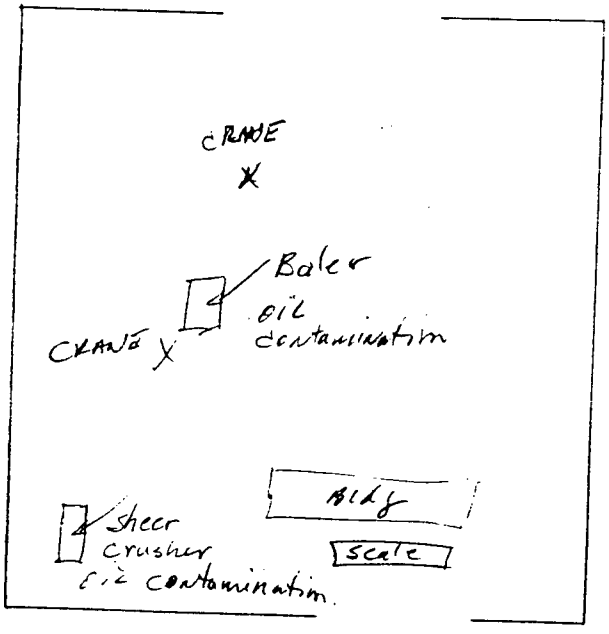
FACILITY FLYNN- LEARNER

LOCATION 120 SAND Island Rd.

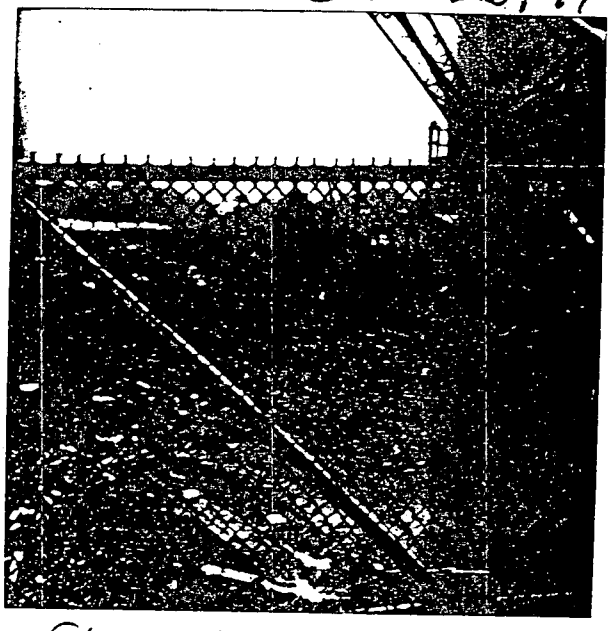
PHOTO TAKEN BY J. Ruiz DATE JUNE 25, 1991

JUNE 25 91

FLYNN- LEARNER
120 SAND Island
metal & dirt piles



JUNE 25, 91



FLYNN-LEARNER
120 Sand Island
metal & dirt being removed
site being cleaned

FACILITY FLYNN- LEARNER

LOCATION 120 SAND Island Rd.

PHOTO TAKEN BY J. Ruiz DATE JUN 25, 1991

JUNE 25, 91

FLYNN- LEARNER
120 SAND Island
metal scrap being removed
to new site & complete ind.

JUNE 25, 91

FLYNN- LEARNER
120 SAND Island
cleaning area - moved to
Industrial park

REFERENCE #8

Risk Assessment Report

For:
Flynn Learner
91-056 Hana Street
Ewa Beach, Hawaii 96707

Location:
120 Sand Island Access Road

October 22, 1993

CFC Job #93064

Cotton and Frazier
Consultants, Inc.

"Environmental Solutions"

P.O. BOX 27126
Honolulu, Hawaii 96827

PHONE (808) 599-1993
FAX (808) 599-1502

REFERENCE #9

COTTON and FRAZIER Consultants, Inc.
P.O. Box 27126 Honolulu, Hawaii 96827
Phone: (808) 599-1993 Fax: (808) 599-1502

FAX-MEMO

DATE: March 21, 1994

FAX NO: 596-4370

To : Vance Fong, HEER

From : Lee Cranmer

RE : Flynn-Leamer

We are transmitting 6 page (s), including this cover sheet. If you experience any difficulty with this transmission, please call (808) 599-1993.
Original copy _____ *will* be sent. Original copy X *will not* be sent.

COMMENTS:

Vance,

Attached are lab results of lead sampling of surface soils conducted March 15, 1994. Please review and call Stu at home tody with any comments. Stu's home number is 262-2728.

Thanks, Lee

SMITH-EMERY COMPANY
The Full Service Independent Testing Laboratory, Established 1904
781 East Washington Boulevard
P.O. Box 880550, Hunter's Point Shipyard Bldg. 114
5427 East La Palma Avenue
• Los Angeles, California 90021 • (213) 749-9411 • Fax (213) 746-7228
• San Francisco, California 94164 • (415) 330-9000 • Fax (415) 220-8020
• Anaheim, California 92807 • (714) 693-1026 • Fax (714) 693-1034

Cotton and Frazier Consultants
File# 72703
P.O. Box 27126
Honolulu, Hawaii 96827

03/18/94

Attn: W. Mark Frazier
808/599/1993

Project No. 98028
Flynn-Learner

Sample #: 4075142201
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 0855
Method: Submitted By Client

I.D.: Sample #28SC-1

CONSTITUENT	METHOD	RESULT	UNIT	MDL
Lead	EPA 3050/6010	5000	mg/kg	110 mg/kg

Sample #: 4075142302
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 0845
Method: Submitted By Client

I.D.: Sample #28SC-2

Lead	EPA 3050/6010	3500	mg/kg	110 mg/kg
Particle Size (Wet/Dry Sieve)		see attachment		

Sample #: 4075142303
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 0815
Method: Submitted By Client

I.D.: Sample #28SC-3

Lead	EPA 3050/6010	2500	mg/kg	110 mg/kg

ND = None Detected; MDL = Method Detection Limit

40751423

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• San Francisco, California 94188 • (415) 330-9000 • Fax (415) 330-9050
• Anaheim, California 92807 • (714) 695-1026 • Fax (714) 695-1034

Sample #: 4075142304
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 0902
Method: Submitted By Client

I.D.: Sample #28SC-4

CONSTITUENT	METHOD	RESULT	UNIT	MDL
Lead	EPA 3050/6010	3900	mg/kg	110 mg/kg

Sample #: 4075142305
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 0925
Method: Submitted By Client

I.D.: Sample #28SC-5

Lead	EPA 3050/6010	3900	mg/kg	110 mg/kg

Sample #: 4075142306
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 0940
Method: Submitted By Client

I.D.: Sample #28SC-6

Lead	EPA 3050/6010	3600	mg/kg	110 mg/kg
Particle Size (Wet/Dry Sieve)		See attachment		

Sample #: 4075142307
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 0955
Method: Submitted By Client

I.D.: Sample #28SC-7

Lead	EPA 3050/6010	2500	mg/kg	110 mg/kg

(ND - None Detected; MDL - Method Detection Limit)

4075142S

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• San Francisco, California 94188 • (415) 330-3000 • Fax (415) 330-3030
• Anaheim, California 92807 • (714) 693-1026 • Fax (714) 693-1024

Sample #: 4075142308
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 1130
Method: Submitted By Client

I.D.: Sample #28SC-8

CONSTITUENT	METHOD	RESULT	UNIT	MDL
Lead	EPA 3050/6010	4700	mg/kg	110 mg/kg

Sample #: 4075142309
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 1105
Method: Submitted By Client

I.D.: Sample #28SC-9

Lead	EPA 3050/6010	4300	mg/kg	110 mg/kg
Particle Size (Wet/Dry Sieve)		see attachment		

Sample #: 4075142310
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 1055
Method: Submitted By Client

I.D.: Sample #28SC-10

Lead	EPA 3050/6010	4800	mg/kg	110 mg/kg

Sample #: 4075142311
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 1005
Method: Submitted By Client

I.D.: Sample #28SC-11

Lead	EPA 3050/6010	4000	mg/kg	110 mg/kg
Particle Size (Wet/Dry Sieve)		see attachment		

ND = None Detected; MDL = Method Detection Limit

40751423

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5427 East La Palma Avenue • Anaheim, California 92807 • (714) 693-1826 • Fax: (714) 693-1054

Sample #: 4075142312
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 1045
Method: Submitted By Client

I.D.: Sample #28SC-12

CONSTITUENT	METHOD	RESULT	QUIT	MDL
Lead	EPA 3050/6010	5100 mg/kg		110 mg/kg

Sample #: 4075142313
Received: 03/16/94
Type: Soil

Collector: Client
Sampling Date & Time: 03/15/94, 1030
Method: Submitted By Client

I.D.: Sample #28SC-13

Lead	EPA 3050/6010	3700 mg/kg		110 mg/kg

Respectfully Submitted,

Maria H. Riddlemoser, Inorganic Supv.

ND = None Detected; MDL = Method Detection Limit

40751423

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Colton and Frazier Consultants, Inc.
Environmental Solutions
P.O. Box 27126
Honolulu, Hawaii 96827

Telephone: (808) 599-1993 FAX: (808) 599-1502

Chain of Custody Record/ Analysis Record

PROJECT NAME: FLYNN-LEARNER
LOCATION: SAND ISLAND JOB NUMBER: 98028
SAMPLER: JOHN P. RAU PROJECT MGR: W. MARK FRAZIER

SAMPLE #	LAB SAMPLE ID#	TIME COLLECTED	DATE COLLECTED	MATRIX: S=SOIL W=WATER A=AIR	CONTAINERS: 40 ml. VOA	1 L. Glass	Stainless Steel Ring	Brass Ring			Analysis Requested: Total Lead*	Wet/Dry Sieve Analysis								Hold for Further Analysis	RUSH (See Below)
28SC-1		0855	3/15/94	S			X				X										✓
28SC-2		0843	3/15/94	S			X				X	X									✓
28SC-3		0815	3/15/94	S			X				X										✓
28SC-4		0905	3/15/94	S			X				X										✓
28SC-5		0925	3/15/94	S			X				X										✓
28SC-6		0940	3/15/94	S			X				X	X									✓
28SC-7		0953	3/15/94	S			X				X										✓
28SC-8		1130	3/15/94	S			X				X										✓
28SC-9		1105	3/15/94	S			X				X	X									✓
28SC-10		1035	3/15/94	S			X				X										✓
28SC-11		1005	3/15/94	S			X				X	X									✓
28SC-12		1045	3/15/94	S			X				X										✓

Relinquished By/Sampler:	Relinquished By:	Relinquished By:	LABORATORY:
Signature: John P. Rau	Signature:	Signature:	Total # Containers:
Printed Name: John P. Rau	Printed Name:	Printed Name:	Samples Received Chilled? Yes No
Date/Time: 3-15-94 / 1430	Date/Time:	Date/Time:	Samples in good condition? Yes No

Received By	Received By	Received By:
Signature:	Signature:	Signature:
Printed Name: FEDERAL EXPRESS	Printed Name:	Printed Name:
Date/Time:	Date/Time:	Date/Time:

Special Handling
Turnaround: 24 hour 48 hour 72 hour Regular
Other

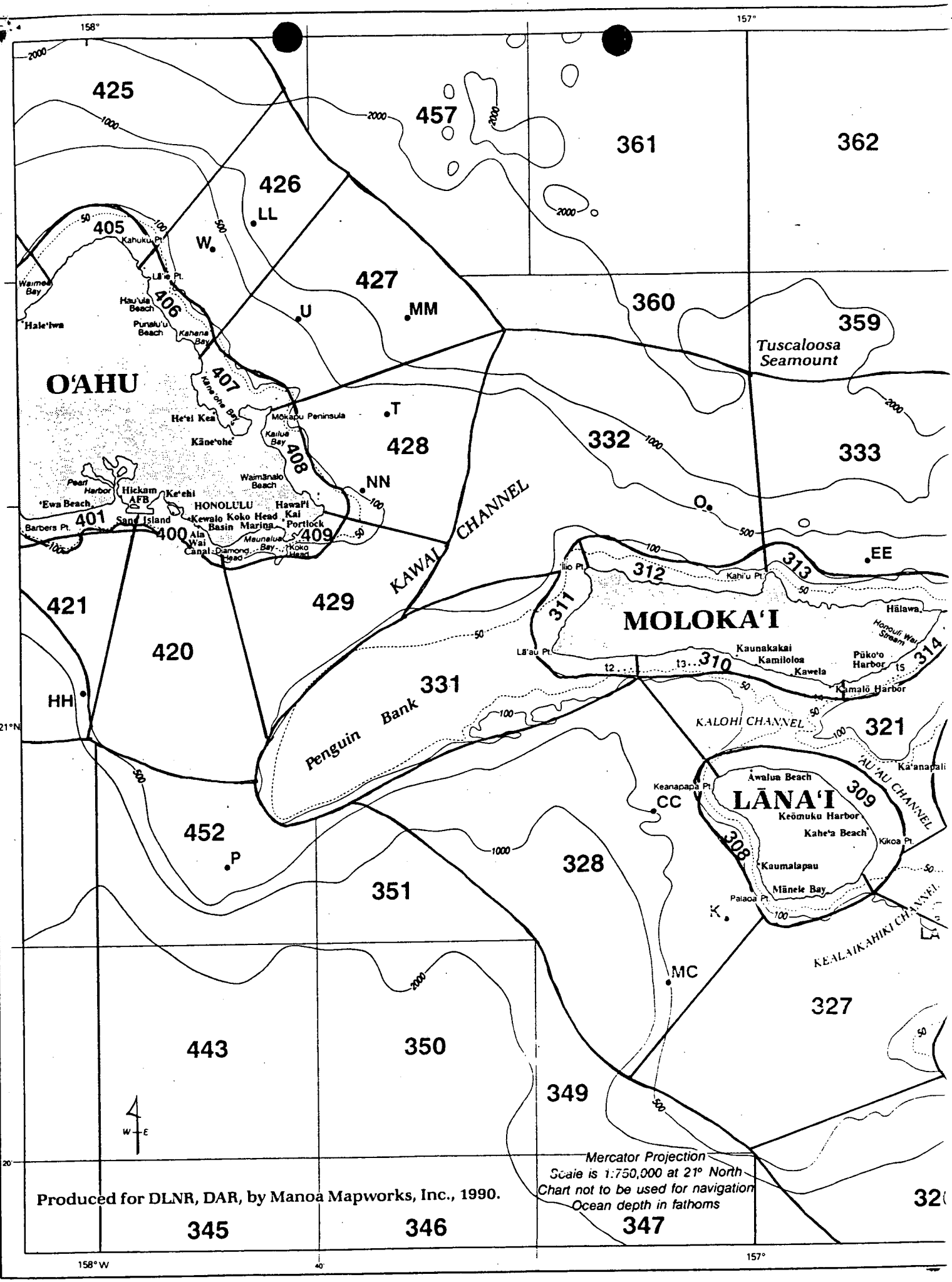
Comments:
*-Analisis for Total Lead will be conducted on soils that are 500 microns or less in size. Wet wash 500 micron fraction.

REFERENCE #11

COMMERCIAL MARINE LANDINGS, CATCHMENT AREA BY ISLAND
STATE OF HAWAII - CALENDAR YEAR 1980

ISLE OAHU

AREA	LB. CAUGHT SUM	LB. SOLD SUM	VALUE ($) SUM
400	10,753	9,978	22,247
401	83,834	76,150	133,165
402	29,260	28,647	59,863
403	89,735	85,527	165,409
404	46,015	39,333	98,158
405	17,396	10,533	18,649
406	11,293	10,718	25,502
407	13,760	11,145	22,841
408	11,649	10,111	18,369
409	27,381	27,076	69,456
420	74,413	65,379	147,004
421	331,976	316,109	463,898
422	195,641	188,464	439,117
423	543,053	506,609	1,047,363
424	73,716	65,937	159,907
425	105,399	101,033	205,595
426	88,979	87,306	168,904
427	220,685	214,719	413,163
428	31,831	29,304	66,660
429	27,142	25,832	90,289


O'AHU
MOLOKA'I
LĀNA'I
KAWAI CHANNEL
KALOHI CHANNEL
AU 'AU CHANNEL
KEALAIKAHIKI CHANNEL
Penguin Bank
Tuscaloosa Seamount
Kahuku Pt.
Lā'ie Pt.
Waimea Bay
Hau'ula Beach
Punalu'u Beach
Kahana Bay
'Hale'iwa
He'ei Kea
Kāne'ohe
Kāne'ohe Bay
Mōkapu Peninsula
Kailua Bay
Waimānalo Beach
Pearl Harbor
Hickam AFB
Ke'ehi
'Ewa Beach
Barbers Pt.
Sand Island
HONOLULU
Kewalo Basin
Koko Head Marina
Hawai'i Kai
Portlock
Ala Wai Canal
Diamond Head
Maunalua Bay
Koko Island
'Ilio Pt.
Kahi'u Pt.
Hālawa
Honouli Wai Stream
Lā'au Pt.
Kaunakakai
Kamiloloa
Kawela
Pūko'o Harbor
Kamalō Harbor
Keanapapa Pt.
Āwalua Beach
Keōmuku Harbor
Kahe'a Beach
Kikoa Pt.
Kaumalapau
Mānele Bay
Palaoa Pt.
Ka'anapali
425
457
361
362
426
405
427
360
359
406
332
333
407
428
408
429
421
420
331
401
400
409
313
312
311
310
314
321
309
308
328
452
351
327
443
350
349
345
346
347
LL
W
U
MM
T
NN
O
EE
HH
CC
P
K
MC
158°
157°
158° W
40'
21°N
20
Mercator Projection
Scale is 1:750,000 at 21° North
Chart not to be used for navigation
Ocean depth in fathoms
Produced for DLNR, DAR, by Manoa Mapworks, Inc., 1990.

REFERENCE #12

CN:0038

DRAFT

ECOLOGICALLY SENSITIVE WETLANDS ON O'AHU:

Groundwater Protection Strategy for Hawai'i

Jacquelin N. Miller
Steven S. Armann
Sonia S.C. Chan-Hui
Roseanne Sakamoto
Joanna Chiang

Technical Report No. 184

December 1989

Project Completion Report
for
Identification of Class I: Special Groundwaters
Highly Vulnerable to Contamination, O'ahu (Part 2)

Project No.: T-763

Principal Investigator: L. Stephen Lau

Project Period: 1 June 1986 to 30 November 1987

Funding Agency: Department of Health, State of Hawaii

ENVIRONMENTAL CENTER
Water Resources Research Center
University of Hawaii at Manoa
Honolulu, Hawaii 96822

Appendix A.3.1 Habitat Description of Ke'ehi Lagoon

Site:	Ke'ehi Lagoon	Lat.:	21°19'10"
Island:	O'ahu	Long.:	157°54'30"
Sector:	Honolulu, 01	El.:	20-40 ft
System:	Moanalua (04)	Approx. Area/Length:	340.7 acres

Site Description:

Ke'ehi Lagoon is located on the southern shore of the island of O'ahu, Hawaii. The lagoon is a product of planned alterations during WWII of a fringing coral reef lagoon. The lagoon today is approximately triangular in shape with the entrance to the lagoon extending east-west from Sand Island to Ahua Point (Bogost 1976).

This lagoon consists of tidal flats, shallow water, and small islands with a total area of about 450 acres on the leeward coast near the Honolulu International Airport. The area is presently used by stilts for feeding and resting. Management of the area as a sanctuary could enhance its value to stilts by preventing disturbance by people and dogs.

Ke'ehi Lagoon is a biologically very poor area in terms of species diversity and abundance of specimens. Animals characteristic of this region are, in addition to the micromolluscs, worms of various kinds living in the mud of the channels, and tubeworms living on dead coral (Harvey 1970).

Ke'ehi Lagoon is located on O'ahu's southern coastal plain, leeward of the Koolau mountain range. These leeward lowlands are characterized by abundant sunshine, the persistence of trade winds, equable day-to-day temperatures, and few severe storms.

Sensitivity Rating:		Ba12wm
Main Water Source:	B	Not Groundwater
Habitat:	a	Natural
Endangered Species:	1	Observed
Wetland Status:	2w	Wildlife Protected
Wetland Avifauna:	m	Migratory Fowl

Habitat Code:		2-1c-3-4-2-4-3-3
Water Source:	2	Other
Habitat Origin/Development:	1c	Natural/Pristine + Altered
Ecological Character:	3	Endangered Species + Migratory Birds
Present Activities:	4	Recreation
Social Significance:	2	Wildlife Protected
Physical Significance:	4	Neither Sediment Trap nor Flood Control
Wetland Type:	3	Coastal
Water Quality:	3	Marine (> 15,000 mg/l Cl^-)

Aquifer Code:		30104116
Island:	3	O'ahu
Sector:	01	Honolulu
Aquifer System:	04	Moanalua
Aquifer Type (Hydrology):	1	Basal

Aquifer Type (Hydrology):	1	Unconfined
Aquifer Type (Geology):	6	Sedimentary

Status Code:		23321
Development Stage:	2	Potential Use
Utility:	3	Neither Drinking nor Ecologically Important
Salinity:	3	Moderate (1,000-5,000 mg/l Cl^-)
Uniqueness:	2	Replaceable
Vulnerability to Contamination:	1	High

Aquifer Code:		30104121
Island:	3	O'ahu
Sector:	01	Honolulu
Aquifer System:	04	Moanalua
Aquifer Type (Hydrology):	1	Basal
Aquifer Type (Hydrology):	2	Confined
Aquifer Type (Geology):	1	Flank

Status Code:		11113
Development Stage:	1	Currently Used
Utility:	1	Drinking
Salinity:	1	Fresh (< 250 mg/l Cl^-)
Uniqueness:	1	Irreplaceable
Vulnerability to Contamination:	3	Low

U.S. Fish & Wildlife Service Wetland Code:
Marine/Intertidal/Unknown/Temporary Tidal/Euhaline/Tidal Irregularly Exposed (M2US2M)

Upland [Non-Wetland] (U)

Geology:
1. Alluvial sediments over limestone and coastal plain sediments

Soil Conservation Service, U.S. Dept. of Agriculture 1975:

Terrestrial Threatened or Endangered Plant(s):
No inventory available

Terrestrial Threatened or Endangered Animal(s):
Hawaiian Owl (*Asio flammeus sandwichensis*)
Hawaiian Stilt (*Himantopus mexicanus knudseni*)

Ke'ehi Lagoon--Continued

Terrestrial Plant(s):
- Sandbur (*Cenchrus echinatus L.*)
- Bermuda grass (*Cynodon dactylon (L.) Pers.*)
- Pluchea (*Pluchea x fosbergii Coop. and Gal.*)
- Mesquite (*Prosopis pallida (Humb. and Bonpl. ex Willd.) HBK.*)
- Portia tree (*Thespesia populnea (L.) Sol.*)

Aquatic Plant(s):
- Pickle-weed (*Batis maritima L.*)
- Oriental mangrove (*Bruguiera gymnorhiza Lam.*)
- Seashore paspalum (*Paspalum vaginatum Sw.*)
- Hairy fleabane (*Pluchea odorata (L.) Cass.*)
- Red mangrove (*Rhizophora mangle L.*)
- Sea purslane (*Sesuvium portulacastrum L.*)

Terrestrial Animal(s):
- Black-crowned Night-Heron (*Nycticorax nycticorax hoactli*)
- Brown Booby (*Sula leucogaster plotus*)
- Cattle Egret (*Bubulcus ibis*)
- Common Myna (*Acridotheres tristis*)
- House Finch (*Carpodacus mexicanus*)
- House Sparrow (*Passer domesticus*)
- Japanese White-eye (*Zosterops japonicus*)
- Northern Mockingbird (*Mimus polyglottos*)
- Pomarine Jaeger (*Stercorarius pomarinus*)
- Red-crested Cardinal (*Paroaria coronata*)
- Rock Dove (*Columba livia*)
- Spotted Dove (*Streptopelia chinensis*)
- Zebra Dove (*Geopelia striata*)

Aquatic Animal(s):
- Saddle Wrasse (*Thalassoma duperrey*)
- Belted Wrasse (*Stethojulis balteata*)
- Makimaki (*Arothron hispidus*)
- 'O'opu (*Vitraria clarescens Jordan and Evermann*)
- 'O'opu 'alamo'o (*Lentipes concolor*)
- 'O'opu nakea (*Awaous stamineus*)
- 'O'opu naniha (*Awaous genivittatus*)
- 'O'opu nopili (*Sicydium stimsonii*)
- Striped Mullet (*Mugil cephalus L.*)
- Bluespine Unicornfish (*Naso unicornis*)
- White Branded Surgeon (*Acanthurus leucopareius*)
- Surgeonfish (*Acanthurus sandvicensis*)

Hawaiian Surgeon (*Acanthurus dussumieri*)
Lemon Butterfly (*Chaetodon miliaris*)
Bluestripe Butterfly (*Chaetodon fremblii*)
Rectangular Triggerfish (*Rhinecanthus rectangulus*)
Painted Triggerfish (*Rhinecanthus aculeatus*)
Hammerhead Shark (*Sphyrna lewini*)
Eagle Ray (*Aetobatus narinari*)
Brown Sting Ray (*Dasyatis hawaiiensis*)

Migratory Animal(s):
Lesser Golden-Plover (*Pluvialis dominica (fulva)*)
Ruddy Turnstone (*Arenaria interpres*)
Sanderling (*Calidris alba*)
Wandering Tattler (*Heteroscelus incanus*)

Freshwater Origin:
1. Surface runoff, combined flood flow and base flow springs of basal water
2. Sediments

Comments:
27% of Kalihi Stream channel is altered and is diverted in one area. Moanalua Stream channel is altered for 35% of its length.

References:
Bogost, M.S. 1976. Revised Environmental Impact Statement for the proposed disposal of solid waste bales in Ke'ehi Lagoon and the coastal waters of O'ahu. Prepared for Department of Public Works, City and County of Honolulu. 53 p. plus app.

Harvey, G.W. 1970. Ke'ehi Lagoon ecological survey. Oceanic Institute, Makapu'u Ocean Center. 197 p.

Hall, D.H. 1970. Use of agricultural chemicals and factors contributing to their transport to estuaries in Hawaii. Technical report no. 30, Water Resources Research Center, University of Hawaii, Honolulu. 44 p.

State of Hawaii, Office of Environmental Quality Control. 1971. Report on Ke'ehi Lagoon and Waikiki Beach water quality. 30 p. plus app.

Bathen, K.H. 1970. The circulation in Ke'ehi Lagoon, O'ahu, Hawaii, during July and August, 1968. Technical report no. 17, Hawaii Institute of Marine Biology, University of Hawaii, Honolulu. 26 p. plus maps.

U.S. Fish and Wildlife Service. 1985. Recovery plan for the Hawaiian Waterbirds. Prepared for U.S. Fish and Wildlife Service, Portland, Oregon. 99 p.

Timbol, A.S., and Maciolek, J.A. 1978. Stream channel modification in Hawaii. Part A: Statewide inventory of streams, habitat factors and associated biota. Prepared for U.S. Fish and Wildlife Service, U.S. Department of the Interior. 157 p.

Berger, A.J. 1971. Ke'ehi Lagoon bird survey. Department of Zoology, University of Hawaii, Honolulu, Hawaii. 32 p.

Appendix A.3.3 Habitat Description of Reef Runway

Site:	Reef Runway	Lat.:	21°18'40"
Island:	O'ahu	Long.:	157°56'00"
Sector:	Honolulu, 01	El.:	20-40 ft
System:	Moanalua (04)	Approx. Area/Length:	792.0 acres

Site Description:

This is a coastal wetland which surrounds the fringe area of the reef runway.

Sensitivity Rating:		Bb2m
Main Water Source:	B	Not Groundwater
Habitat:	b	Artificial
Wetland Avifauna:	2m	Migratory Fowl
Habitat Code:		2-2-2-5-5-4-3-3
Water Source:	2	Other
Habitat Origin/Development:	2	Artificial
Ecological Character:	2	Migratory Birds
Present Activities:	5	Neither Agriculture, Aquaculture, nor Recreation
Social Significance:	5	Neither Historic nor Wildlife Protected
Physical Significance:	4	Neither Sediment Trap nor Flood Control
Wetland Type:	3	Coastal
Water Quality:	3	Marine (> 15,000 mg/l Cl^-)
Aquifer Code:		30104116
Island:	3	O'ahu
Sector:	01	Honolulu
Aquifer System:	04	Moanalua
Aquifer Type (Hydrology):	1	Basal
Aquifer Type (Hydrology):	1	Unconfined
Aquifer Type (Geology):	6	Sedimentary
Status Code:		23321
Development Stage:	2	Potential Use
Utility:	3	Neither Drinking nor Ecologically Important
Salinity:	3	Moderate (1,000-5,000 mg/l Cl^-)
Uniqueness:	2	Replaceable
Vulnerability to Contamination:	1	High
Aquifer Code:		30104121
Island:	3	O'ahu
Sector:	01	Honolulu
Aquifer System:	04	Moanalua
Aquifer Type (Hydrology):	1	Basal

Reef Runway--Continued

Aquifer Type (Hydrology):	2	Confined
Aquifer Type (Geology):	1	Flank

Status Code: 11113

Development Stage:	1	Currently Used
Utility:	1	Drinking
Salinity:	1	Fresh (< 250 mg/l Cl^-)
Uniqueness:	1	Irreplaceable
Vulnerability to Contamination:	3	Low

U.S. Fish & Wildlife Service Wetland Code:
Upland [Non-Wetland] (U)

Geology:

Soil Conservation Service, U.S. Dept. of Agriculture 1975:
FL (Fill land mixed)

Terrestrial Threatened or Endangered Plant(s):
No inventory available

Terrestrial Threatened or Endangered Animal(s):
Hawaiian Stilt (*Himantopus mexicanus knudseni*)

Terrestrial Plant(s):
No inventory available

Aquatic Plant(s):
No inventory available

Terrestrial Animal(s):
No inventory available

Aquatic Animal(s):
No inventory available

Migratory Animal(s):
Lesser Golden-Plover (*Pluvialis dominica (fulva)*)

Freshwater Origin:

Comments:

Reef Runway--Continued

References:

U.S. Fish and Wildlife Service. 1985. Recovery plan for the Hawaiian Waterbirds. Prepared for U.S. Fish and Wildlife Service, Portland, Oregon. 99 p.

REFERENCE #13

ENVIRONMENTAL IMPACT
RESEARCH PROGRAM

TECHNICAL REPORT EL-89-10

SPECIES PROFILES: LIFE HISTORIES AND ENVIRONMENTAL REQUIREMENTS OF COASTAL VERTEBRATES AND INVERTEBRATES PACIFIC OCEAN REGION

Report 1

GREEN TURTLE, *Chelonia mydas*

by

Robert G. Forsyth, George H. Balazs

Southwest Fisheries Center Honolulu Laboratory
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
Honolulu, Hawaii 96822-2396

July 1989
Report 1 of a Series

Approved For Public Release; Distribution Unlimited

Prepared for DEPARTMENT OF THE ARMY
US Army Corps of Engineers
Washington, DC 20314-1000

Monitored by Environmental Laboratory
US Army Engineer Waterways Experiment Station
PO Box 631, Vicksburg, Mississippi 39181-0631

US Army Corps of Engineers

REFERENCE #14

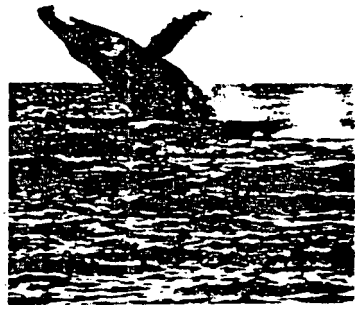
ENVIRONMENTAL IMPACT RESEARCH PROGRAM

TECHNICAL REPORT EL-89-10

SPECIES PROFILES: LIFE HISTORIES AND ENVIRONMENTAL REQUIREMENTS OF COASTAL VERTEBRATES AND INVERTEBRATES PACIFIC OCEAN REGION

Report 2

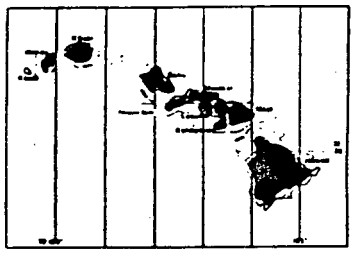
HUMPBACK WHALE, *MEGAPTERA NOVAEANGLIAE*

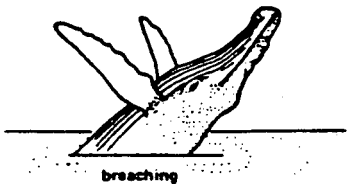


by

Eugene T. Nitta, John J. Naughton

Southwest Region
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
Honolulu, Hawaii 96822-2396





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