U.S. Army Corps
Of Engineers
Honolulu District

Public Notice of Application for Individual Permit

Regulatory Branch
Building 230, Ft. Shafter
Honolulu, HI 96858-5440

PUBLIC NOTICE DATE: September 1, 2006

EXPIRATION DATE: October 2, 2006

REFERENCE NUMBER: POH-2005-493

WATERWAY NAME: Niuhelewai Stream, Kalihi, Oahu Island

Interested parties are hereby notified that an application has been received for a Department of the Army permit for certain work in waters of the United States as described below and shown on the attached plans and figures.

1. **APPLICANT:** Department of Design & Construction, City 7 County of Honolulu, 650 South King Street, 11th Floor, Honolulu, HI, 96813

2. **AGENT:** Austin Tsutsumi & Associates, Inc., 501 Sumner Street, Suite 521, Honolulu, HI 96817

3. **APPLICABLE STATUTORY AUTHORITIES:** Section 404 of the Clean Water Act (33 U.S.C. 1344).

4. **LOCATION OF THE PROPOSED ACTIVITY:** Niuhelewai Stream, between Naio and Aupuni Streets, Kalihi, Oahu.

5. **PROJECT PURPOSE AND DESCRIPTION:**

The purpose of the proposed project is to convert the unlined bed and banks of Niuhelewai Stream at this location to a lined concrete channel. The proposed portion of the restoration in jurisdictional waters of the United States is intended to prevent streambank erosion.

The proposed improvement project consists of four major activities: 1) excavation of about 1,130 cubic yards of soil, gravels and boulders within a 12,800 square foot area,

2) discharge about: 762 cubic yards of gravel for the new channel, retaining walls, access ramp and miscellaneous areas plus 675 cubic yards of reinforced concrete for the new channel, retaining walls and access ramp, and about 17 cubic yards for an appurtenant cement rubble masonry wall, 3) temporary placement of about 5 cubic yards or gravel-filled bags for temporary diversion of stream flows during construction, and (4) access during construction by construction machinery.

Activity 1 will involve the sequential site grading and excavation for the new lined channel and retaining walls as shown in Attachment 8.

Activity 2 will involve the discharge of gravels and reinforced concrete. A typical cross-section of the finished lined channel is shown at Attachment 4. The approximate combined finished volume of fill. is about 1,120 cubic yards.

Activity 3 will involve the sequential diversion of streamflow in 4 phases for the placement of the new lined channel about 250 feet long as shown at Plate 8.

Construction is expected to take up to 8 months.

6. IMPACTS OF PROPOSED ACTIVITIES IF AUTHORIZED:

The proposed activity would permanently convert about 250 linear feet of unlined streambed and bank to a reinforced concrete drainage way. Use of this area by the general public would be restricted during construction through the placement of appropriate safety devices, structures, and signage. Water quality downstream is expected to improve after construction, primarily as a result of the removal of available sediments, gravels and boulders from the drainage way. The water quality of the receiving tidal waters open downstream to the public is also expected to be improved as a result of streambed hardening. Water quality monitoring during construction and operation of the proposed project will be conducted.

Short term impacts include temporary disruption to water recreation activities in the vicinity of the lagoon, and increased noise and traffic and temporary degradation to the downstream debris basin water quality during construction operations. This notice has been sent to private residences immediately adjacent to the proposed project area affording them the opportunity to comment (Attachment 3).

Aquatic biota inhabiting the debris basin, or attached to the existing boulder beds may be destroyed, displaced, or otherwise affected. The applicant has submitted a report titled "...Compensatory Mitigation Plan..." which proposes that no compensatory mitigation for the permanent conversion of the drainageway from an unlined state to reinforced concrete should be required (Attachment 10).

7. IMPACT ON HISTORIC PROPERTIES:

The areas of direct and indirect impact from construction and subsequent storm water flow will not impact any historic properties listed, or eligible for listing, on the Hawaii and National Registers of Historic Places. Existing ground surfaces within the project area have been surveyed and are unlikely to contain *in situ* Native Hawaiian cultural properties.

This notice has been sent to the State Historic Preservation Officer, the State Office of Hawaiian Affairs, and Hui Malama I Na Kupuna. Any comments they have regarding historic properties and cultural resources will be considered before a final decision is made on the DA permit.

8. IMPACT ON ENDANGERED SPECIES:

Invertebrate fauna, such as damselflies, a federally listed threatened species, may occur in the intermittent pools of water. There is no indication that the current locations for the discharges of fill and the subsequent modified passage of stormwaters to the downstream debris retention pond will result in loss of habitat. No significant impacts to federally listed species are therefore expected from the proposed project.

This notice has been sent to the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. Any comments they have on endangered or threatened species, or threatened critical habitat, will be considered before a final decision is made on the permit.

9. OTHER GOVERNMENT AUTHORIZATIONS/CERTIFICATIONS:

Prior to the issuance of the Department of Army permit, the applicant is required to obtain a Section 401 Water Quality Certification, or waiver thereof, from the State Department of Health, Clean Water Branch and a Coastal Zone Management (CZM) Program consistency determination, or waiver from the Office of Planning before the DA permit is valid. The requirements for a CZM consistency statement and accompanying information are available for public review at the Department of Business, Economic Development & Tourism, Office of Planning, CZM Program Office, 235 S. Beretania Street, 6th Floor, Honolulu, HI. 96813. Comments on the consistency statement should be submitted in writing to the Department of Business, Economic Development & Tourism, Office of Planning, CZM Program Office, P.O. Box 2359, Honolulu, HI 96804 no later than 30 days from the date of this notice.

Other State and local approvals required include a Stream Channel Alteration Permit (SCAP) from the State Department of Land and Natural Resources, a National Pollution Discharge Elimination System (NPDES) permit, NPDES Stormwater Construction Permit and Community Noise Control Permit from the State Department of Health, and a Grading, Grubbing, Excavation & Stockpiling Permit, and Building Permit from the City and County of Honolulu Department of Planning and Permitting.

10. EVALUATION FACTORS:

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof. Among these are conservation, economics, aesthetics, general environmental concerns, wetlands, historic values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

11. COMMENTS AND INQUIRIES:

The U.S. Army Corps of Engineers (USACE) is soliciting comments from the public, Federal, State and local agencies and officials, native Hawaiian groups and individuals and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the USACE to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Interested parties may submit in writing any comments that they have on issuance of a permit for the proposed activity. Comments on the described work, with the reference number, should reach this office no later than the expiration date of this Public Notice to become part of the record and be considered in the decision. Please contact Farley K. Watanabe at 808-438-7701 if further information is desired concerning this notice. Electronic comments by e-mail can be posted at CEPOH-EC-R@usace.army.mil. Facsimile comments can be sent to 808-438-4060.

It is Corps of Engineers policy that any objections will be forwarded to the applicant for comment or rebuttal before the objection is resolved. If the objecting party so requests, all personal information will be deleted from the forwarded letter, or the objections will be sent in paraphrased, summary form.

12. REQUEST FOR PUBLIC HEARING:

Any person may request, in writing, within 30 days from the date of this notice that a public hearing be held to consider issuance of a permit for the proposed project. Requests for public hearing must specifically state the reasons for holding a public hearing.

Attachments:

Attachment 1. General Location Map
Attachment 2. Watershed Boundary Map.
Attachment 3. Location of Adjacent Private Landowners
Attachment 4. Typical Cross Section of Proposed Reinforced Concrete Drainage Way
Attachment 5. Plan View of Proposed Reinforced Concrete Drainage Way.
Attachment 6. Channel Profile, North Wall
Attachment 7. Channel Profile, South Wall
Attachment 8. Proposed Demolition and Erosion Control Map
Attachment 9. Photgraphs Looking Upstream and Downstream
Attachment 10. Statement for No Compensatory Mitigation

Vicinity Map "Honolulu" USGS Quad

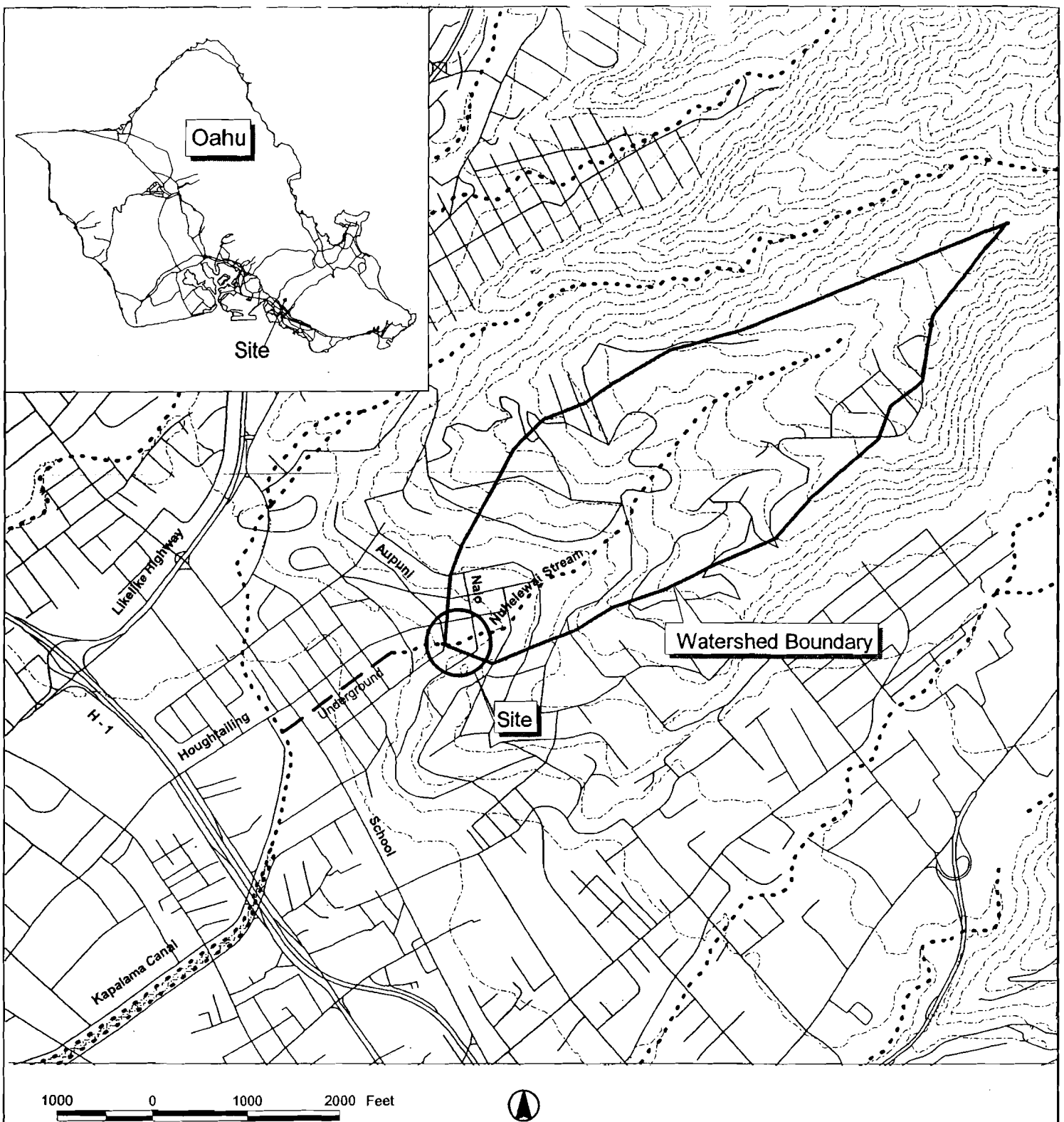
Adapted from GIS data:

City and County of Honolulu

Prepared by: E. Dashiell, AICP, Environmental Planning Services

File No. POH-2005-493
Drainage Way Conversion
TMK 1-6-017: 04; Kalihi, Oahu Island

Attachment 1. General location map



Location Map

Adapted from GIS data:

City and County of Honolulu

Prepared by: E. Dashiell, AICP, Environmental Planning Services

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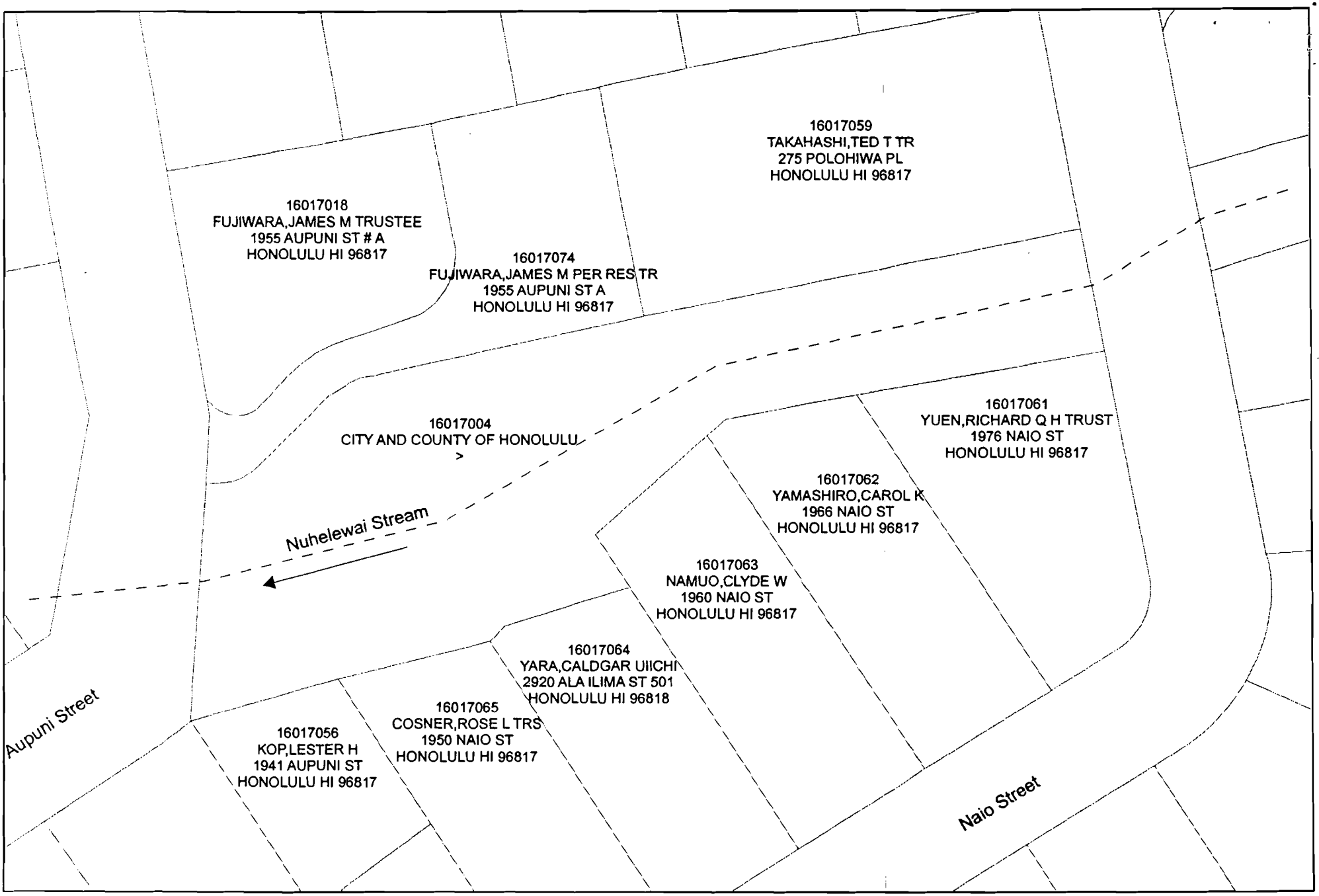
Attachment 2. Watershed Boundary Map



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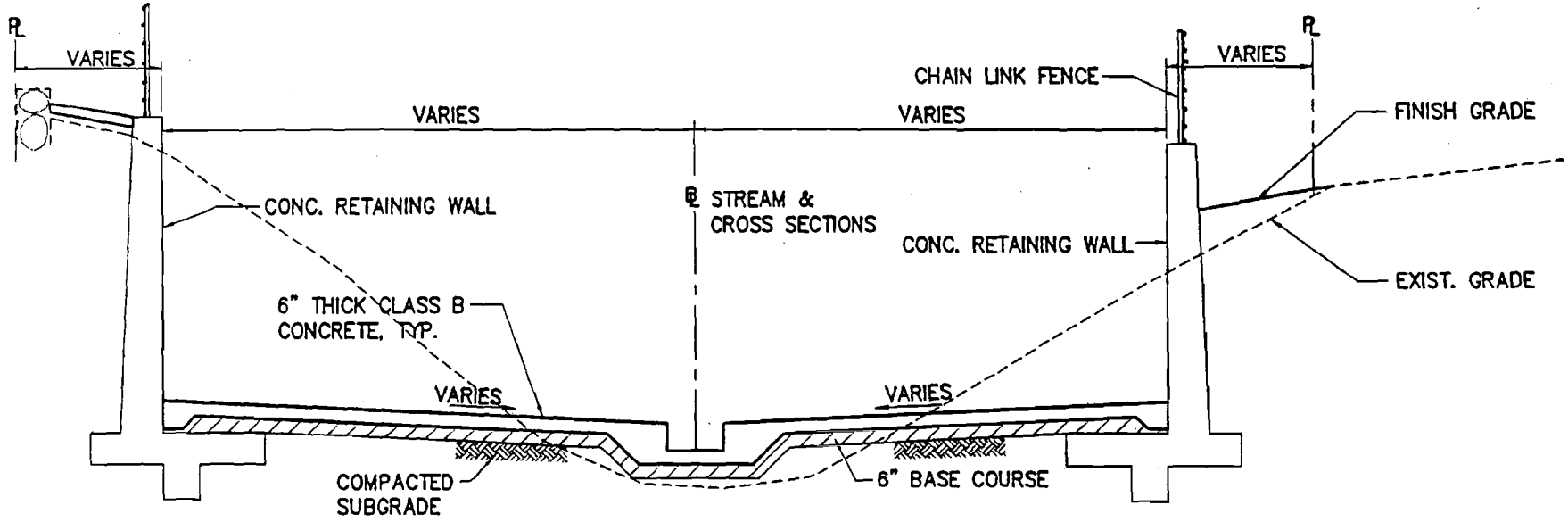
Drainage Way Conversion
TMK 1-6-017: 04; Kalihi, Oahu Island

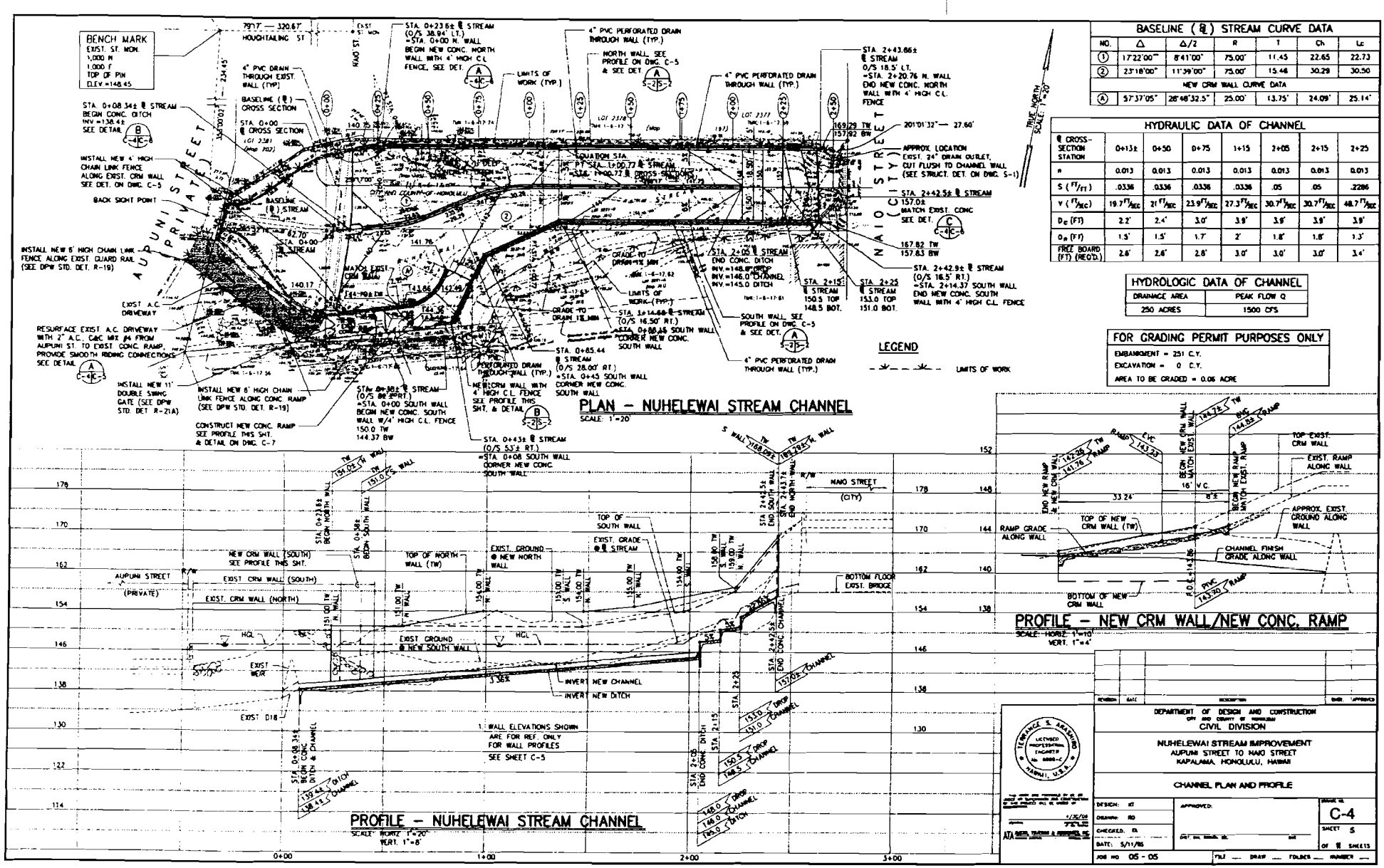
Attachment 3. Adjacent Property Ownership Map



TYPICAL CHANNEL SECTION

File No. POH-2005-493
Drainage Way Conversion
TMK 1-6-017: 04; Kalihi, Oahu Island

Attachment 4. Typical Channel Cross Section View



BASELINE (℄) STREAM CURVE DATA

NO.	Δ	Δ/2	R	T	Ch	Lc
①	17°22'00"	8°41'00"	75.00'	11.45	22.65	22.73
②	23°18'00"	11°39'00"	75.00'	15.46	30.29	30.50
NEW CRM WALL CURVE DATA						
Ⓐ	57°37'05"	28°48'32.5"	25.00'	13.75'	24.09'	25.14'

HYDRAULIC DATA OF CHANNEL

℄ CROSS-SECTION STATION	0+13±	0+50	0+75	1+15	2+05	2+15	2+25
n	0.013	0.013	0.013	0.013	0.013	0.013	0.013
S (FT/FT)	.0336	.0336	.0336	.0336	.05	.05	.2286
V (FT/SEC)	19.7 FT/SEC	21 FT/SEC	23.9 FT/SEC	27.3 FT/SEC	30.7 FT/SEC	30.7 FT/SEC	48.7 FT/SEC
D_C (FT)	2.2'	2.4'	3.0'	3.9'	3.8'	3.8'	3.8'
D_R (FT)	1.5'	1.5'	1.7'	2'	1.8'	1.8'	1.3'
FREE BOARD (FT) (REQ'D.)	2.6'	2.6'	2.8'	3.0'	3.0'	3.0'	3.4'

HYDROLOGIC DATA OF CHANNEL

DRAINAGE AREA	PEAK FLOW Q
250 ACRES	1500 CFS

FOR GRADING PERMIT PURPOSES ONLY

EMBANKMENT = 251 C.Y.
EXCAVATION = 0 C.Y.
AREA TO BE GRADED = 0.06 ACRE

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
CIVIL DIVISION

NUHELEWAI STREAM IMPROVEMENT
AUPUNI STREET TO NAKO STREET
KAPALAMA, HONOLULU, HAWAII

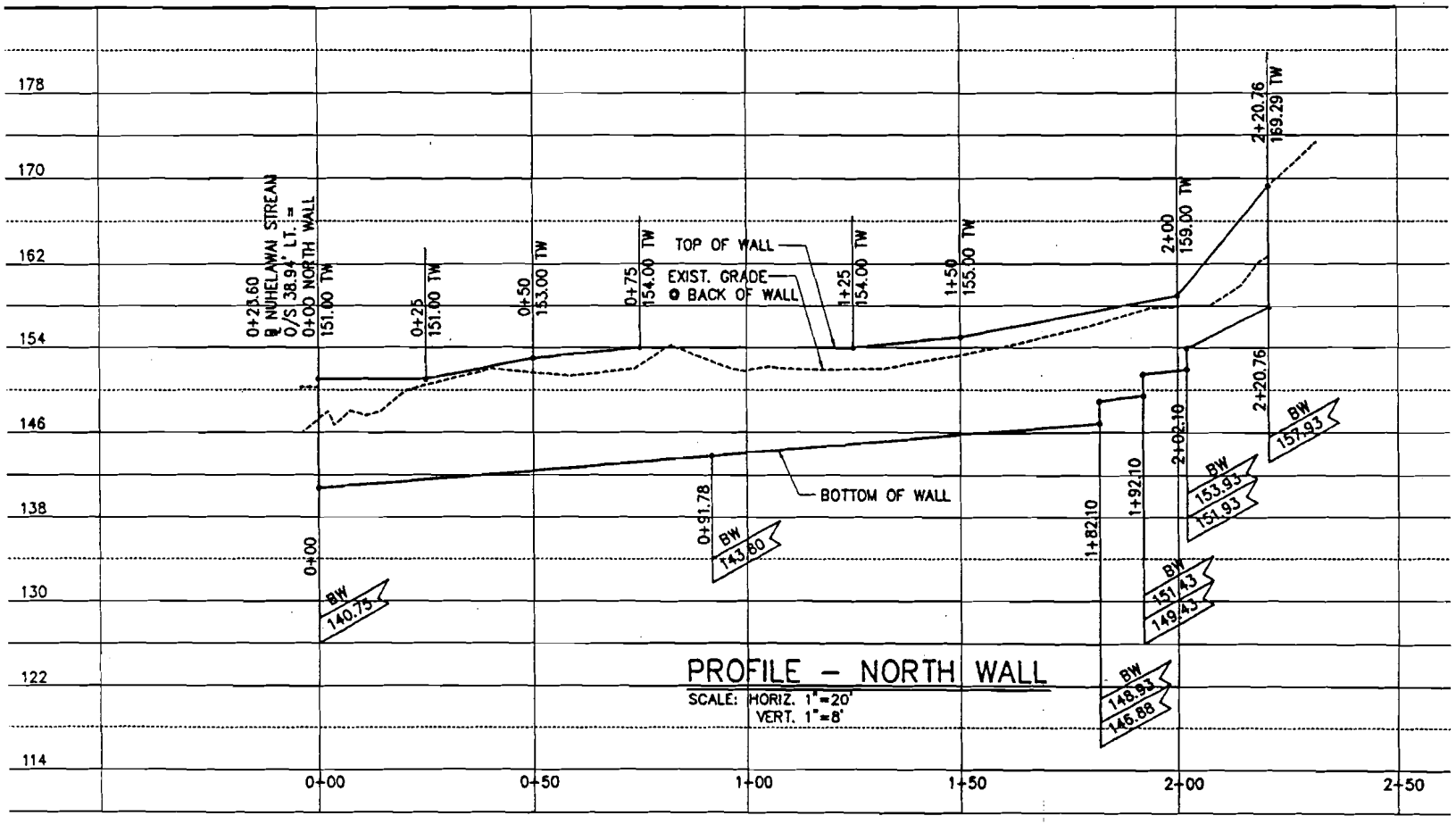
CHANNEL PLAN AND PROFILE

TERRANCE S. ARASHIRO
LICENSED PROFESSIONAL ENGINEER
No. 6888-C
HAWAII, U.S.A.

DESIGN: KT
DRAWN: RD
CHECKED: TA
DATE: 5/11/05
APPROVED:
DRAWING NO. C-4
SHEET 5 OF 11 SHEETS
JOB NO. 05 - 05

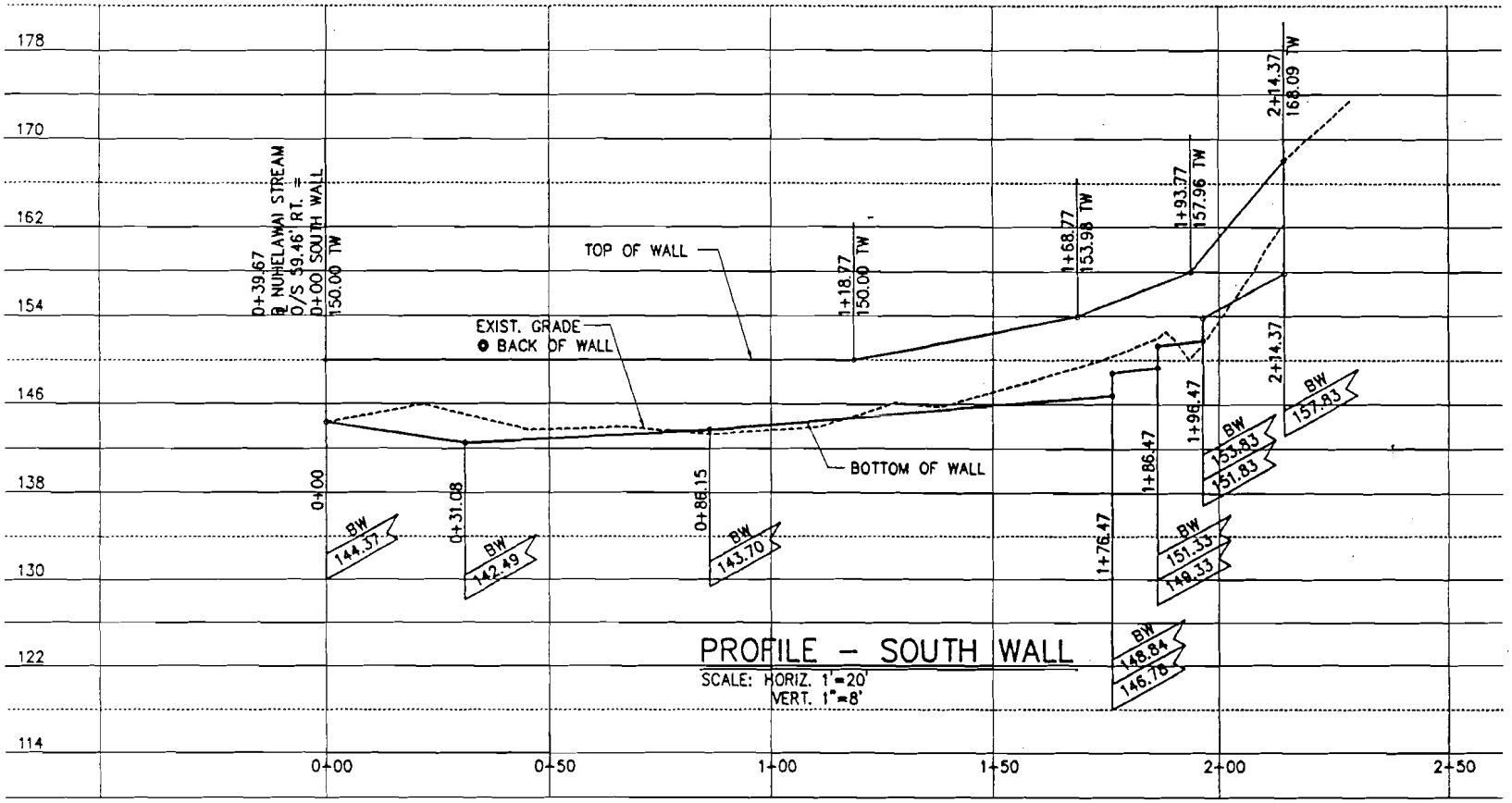
File No. POH-2005-493
Drainage Way Conversion
TMK 1-6-017: 04; Kalihi, Oahu Island

Attachment 5. Channel Plan & Profile



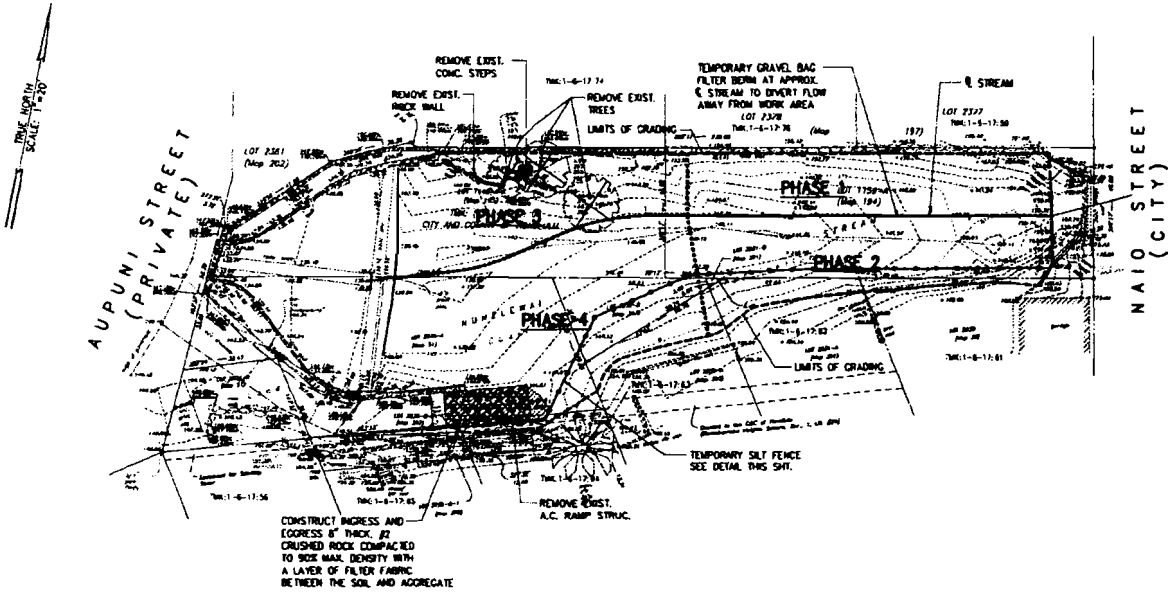
File No. POH-2005-493
Drainage Way Conversion
TMK 1-6-017: 04; Kalihi, Oahu Island

Attachment 6. Channel Profile, North Wall



File No. POH-2005-493
Drainage Way Conversion
TMK 1-6-017: 04; Kalihi, Oahu Island

Attachment 7. Channel Profile, South Wall

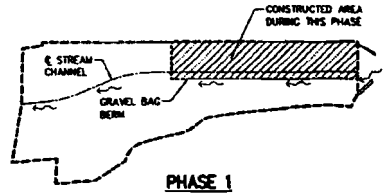


DEMOLITION AND EROSION CONTROL PLAN

SCALE: 1"=20'

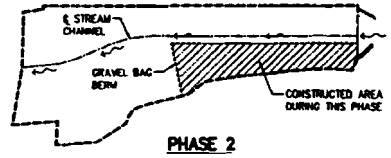
PHASE 1

THE NORTHEAST PORTION OF THE PROJECT WILL BE CONSTRUCTED. THE EXISTING STREAM FLOW WILL BE DIVERTED AS SHOWN.



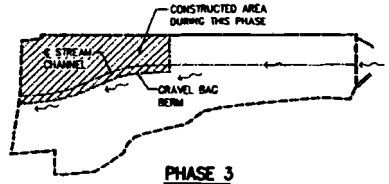
PHASE 2

THE SOUTHEAST PORTION OF THE PROJECT WILL BE CONSTRUCTED. THE EXISTING STREAM FLOW WILL BE DIVERTED AS SHOWN.



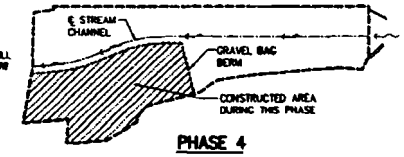
PHASE 3

THE NORTHWEST PORTION OF THE PROJECT WILL BE CONSTRUCTED. THE EXISTING STREAM FLOW WILL BE DIVERTED AS SHOWN. THE EXISTING STREAM FLOW WILL NEED TO BE PUMPED OVER THE EXISTING WEIR, OR THE CHANNEL SECTION NEAREST TO THE OUTFLOW PIPE MAY BE CONSTRUCTED FIRST. IF THIS IS DONE, A SMALL ALTERATION TO THE GRAVEL BERM WOULD ALLOW THE FLOW TO PROCEED THROUGH THE EXISTING 18" DRAIN PIPE THAT RUNS THROUGH THE WEIR.



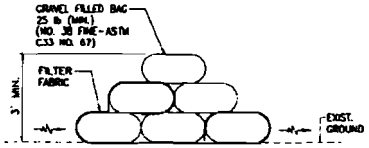
PHASE 4

THE SOUTHWEST PORTION OF THE PROJECT WILL BE CONSTRUCTED. THE EXISTING STREAM FLOW WILL BE DIVERTED AS SHOWN.



BEST MANAGEMENT PRACTICES (BMP) NOTES

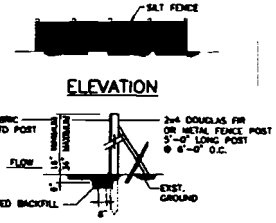
1. THE CONTRACTOR SHALL SUBMIT PLANS TO DEPARTMENT OF HEALTH (DOH) - CLEAN WATER BRANCH FOR REVIEW AND APPROVAL FOR ALL WORK WITHIN THE STREAM. THE PLANS SHALL SHOW METHOD OF CONSTRUCTION, BEST MANAGEMENT PRACTICES (BMP), AND A WATER QUALITY MONITORING PLAN. NO WORK WITHIN THE STREAM SHALL BEGIN UNTIL THE CONTRACTOR'S PLANS ARE APPROVED BY DOH - CLEAN WATER BRANCH.
2. CONTRACTOR SHALL CONSTRUCT ALL WORK WITHIN THE STREAM INCREMENTALLY TO ALLOW RUNOFF TO FLOW DURING INCLEMENT WEATHER
3. CONSTRUCTION WORK SHALL NOT BE PERFORMED IN THE STREAM DURING PERIODS OF HEAVY RAINFALL OR WHEN THE FORECASTS CALLS FOR INCLEMENT WEATHER.
4. THE CONTRACTOR MAY USE TEMPORARY GRAVEL BAG BERMS (SEE DET. ON THIS SHT.) TO PROTECT THE WORK AREAS WITHIN THE STREAM. THE PROTECTION DEVICES SHALL BE INSPECTED AT THE BEGINNING AND END OF EACH WORKING DAY. IF REPAIRS ARE NECESSARY, CONSTRUCTION ACTIVITIES WITHIN THE STREAM SHALL CEASE UNTIL THE PROTECTION DEVICES ARE REPAIRED AND IN GOOD WORKING ORDER.
5. THE CONTRACTOR SHALL ADHERE TO ALL THE REQUIREMENTS IN THE SPECIAL PROVISIONS & OF THE APPLICABLE PERMITS FOR THE SUBJECT PROJECT, INCLUDING THE WATER QUALITY CERTIFICATION (401 PERMIT), THE DEPT. OF THE ARMY (404) PERMIT, THE STREAM CHANNEL ALTERATION (SCAP) PERMIT, AND COASTAL ZONE MANAGEMENT (CZM) PERMIT.
6. ALL COSTS FOR STOCKPILING, DRYING, HANDLING, HAULING, AND DISPOSAL OF THE EXCAVATED MATERIAL AT A LANDFILL OR OTHER APPROVED DISPOSAL SITE SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
7. ALL COSTS FOR DEWATERING, INCLUDING HANDLING, HAULING, TREATMENT, AND DISPOSAL, SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
8. INSTALL TEMPORARY CRUSHED ROCK INGRESS/EGRESS TO CONSTRUCTION SITE.
9. GRAVEL SHALL BE CLEAN ROCK AND IMPORTED FROM QUARRY SITE



SECTION "A-A"

TEMPORARY GRAVEL BAG BERM DETAIL

NOT TO SCALE



NOTES:
FILTER FABRIC SHALL BE A PERVIOUS SHEET OF POLYPROPYLENE, NYLON, POLYESTER OR ETHYLENE YARN WITH UV INHIBITORS AND STABILIZERS.

TEMPORARY SILT FENCE DETAIL

NOT TO SCALE

NUMBER	DATE	DESCRIPTION	CHKD.	APPROVED

TERRANCE S. ARASHIRO
LICENSED PROFESSIONAL ENGINEER
No. 8888-C
HONOLULU, U.S.A.

4/29/05

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
CIVIL DIVISION

NUHELEWAI STREAM IMPROVEMENT
AUPUNI STREET TO NAIO STREET
KAPALAMA, HONOLULU, HAWAII

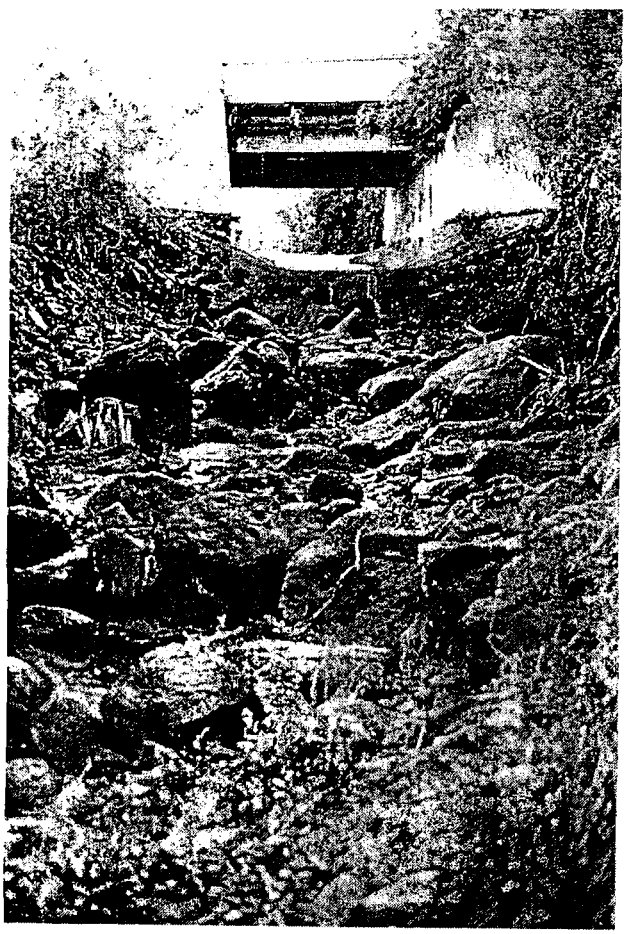
DEMOLITION AND EROSION CONTROL PLAN AND DETAILS

DESIGN: KT	APPROVED:	DRAWING NO. C-3
DRAWN: RA		SHEET 4
CHECKED: TA		OF 11 SHEETS
DATE: 5/11/05	DEPT. OF DESIGN AND CONSTR. DIR. DATE	
JOB NO. 05 - 05	FILE ___ DRAW ___ FOLDER ___ NUMBER ___	

File No. POH-2005-493
Drainage Way Conversion
TMK 1-6-017: 04; Kalihi, Oahu Island

Attachment 8. Demolition & Erosion Control Plan

Attachment 9a. View downstream From Naio Street



Attachment 9b. View upstream to Naio Street

D R A F T
Nuhelewai Stream Improvements
City and County of Honolulu
COMPENSATORY MITIGATION PLAN
May 23, 2006
Eugene P. Dashiell, AICP
Environmental Planning Services
Honolulu

Conclusion:

Compensatory mitigation is not required because the stream cannot support aquatic life for more than short periods during rainfall and runoff and the aquatic habitat values are very limited at the site for the following reasons: a) stream flow in the project area is intermittent with only rainfall as the source; and b) the stream is no longer a natural feature with extensive channel wall and bottom hardening both up and downstream of the proposed project and the channel is underground for most of the downstream reach

Project Description:

The purpose of the proposed project is to stabilize eroding streambanks for an approximate length of 250 feet. Erosion has undermined an existing garage and residential property and other structures are at risk. The existing unlined stream channel would be with reinforced concrete with a slight v-shaped bottom which includes a small "pilot" channel. This segment of the stream is the only unlined and unhardened segment in the developed residential area.

Discussion:

The following paragraphs follow the format of the Corps of Engineers Regulatory Guidance Letter (No. 02-2, December 24, 2002) related to the subject of compensatory mitigation and the Corps regulatory program.

GENERAL CONSIDERATIONS

A. **Watershed Approach**. Nuhelewai Stream is listed as an intermittent tributary of Kapalama Stream which is a perennial and continuously flowing stream. The Nuhelewai watershed (Figures 1, 2 and 3) upstream of the proposed project is approximately 250 acres between Kamehameha School campus and Alewa Heights, most of which is vegetated, undeveloped, steeply sloped and susceptible to erosion. Nuhelewai stream is intermittent and depends strictly on rainfall for the presence or absence of water. The stream has no USGS HUC (Hydrological Unit Code) and is ungaged. The stream is a tributary of Kapalama, with State perennial stream ID no. 3-3-10. The stream length to the highest elevation of the watershed from the project site is approximately 7,300 feet. Immediately upstream of the project site, an 1,100 foot segment of the stream is comprised of an open channel hardened (concrete invert and grouted rock walls) box culvert through the developed urban area. The stream above this hardened segment is natural channel. Downstream of the proposed project is a 1,000 foot segment of open channel hardened box culvert which then goes underground for 1,400 feet to discharge into Kapalama Stream.

B. **Consistency and Compatibility** – Draft and Final Environmental Assessments per Hawaii Revised Statutes were prepared, published and circulated for public review. No comments were received concerning the presence of or the potential for loss of, aquatic habitat nor were any cultural or traditional uses identified.

C. **Impacts and Compensation** – There are no wetlands involved. There exists only very limited aquatic resources because the stream is intermittent and the downstream and upstream segments are totally hardened. There is no requirement for compensatory mitigation in this situation.

D. **Measuring Impacts and Compensatory Mitigation** – The attached biological report (Attachment) describes the existing condition following heavy rainfall and runoff in recent months. Approximately 204 square feet of pool habitat (Photographs) was observed but these pools are expected to dry up during the dry season. Approximately 8.6 square feet of stream riffle habitat was observed at the lowest elevation of the project site, and the source of flow appears to be from water perched within the sediments of the stream bed after the recent heavy rains and it is likely that most or this entire source will also dry up during the dry season. Essentially, pools of water remain in the stream bottom after a freshet and these pools gradually dry up due to natural evaporation and infiltration. During this field inspection, several dried-up pools with dead fish were observed. Eventually, all pools will dry up during the dry summer months. Three species of aquatic biota were observed. The most frequent was the Mexican mollie, an exotic, which has been established because of disposal of aquaria fish into streams. Next most frequent were tadpoles of *Bufo marinus*, a common toad throughout Hawaii and also an exotic. Interestingly, the third specie was a native `o`opu which most likely arrived at the project site by moving upstream from Kapalama Stream during the recent runoff events. This specie of `o`opu can be found in many urban stream in metropolitan Honolulu and it is not listed, threatened or endangered.

E. **Wetland Project Types** – There are no wetlands at the project site.

F. **Preservation Credit** – The City and County of Honolulu could be given credit because of their participation in other environmental restoration projects such as the Ala Wai Canal Watershed Ecosystem Restoration Project and the Central Oahu Watershed Project (and other projects not listed here), which are joint efforts of the U.S. Army Corps of Engineers, the State of Hawaii and the City and County of Honolulu. However, because the City and County of Honolulu is engaged, and has participated in many stream preservation activities including a broad range of on-site, off-site, in-kind and out-of-kind mitigation actions, consideration of assigning a preservation credit would more appropriately be done directly with the Corps of Engineers and the City because the extent of such credits would very significant, and would need to apply to future actions throughout the Island of Oahu.

G. **On-site and Off-site Mitigation** – Mitigation is not required or proposed because of the limited value of this stream segment. However, the City and County of Honolulu is involved in preservation, see (F, above) and such efforts should be

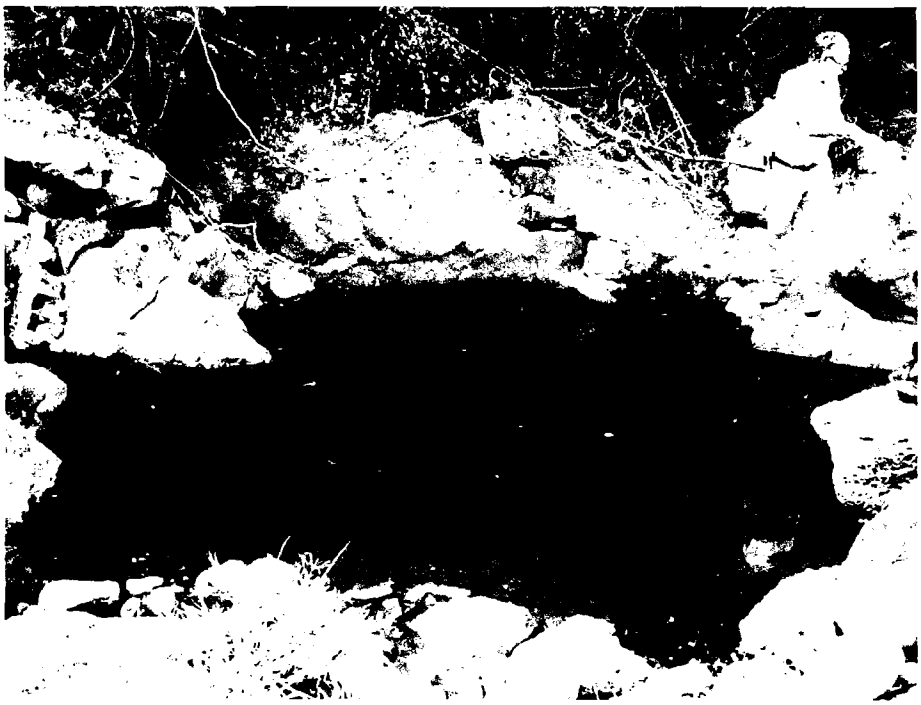
considered eventually as a "bank" of mitigation activities if and when the Corps requires mitigation for any projects of the City and County of Honolulu.

H. **In-kind and Out-of-kind Mitigation** – Mitigation is not required. However, the City and County of Honolulu is involved in preservation, see (F, above) and such efforts should be considered eventually as a "bank" of both in-kind and out-of-kind mitigation activities if and when the Corps requires mitigation for any projects of the City and County of Honolulu.

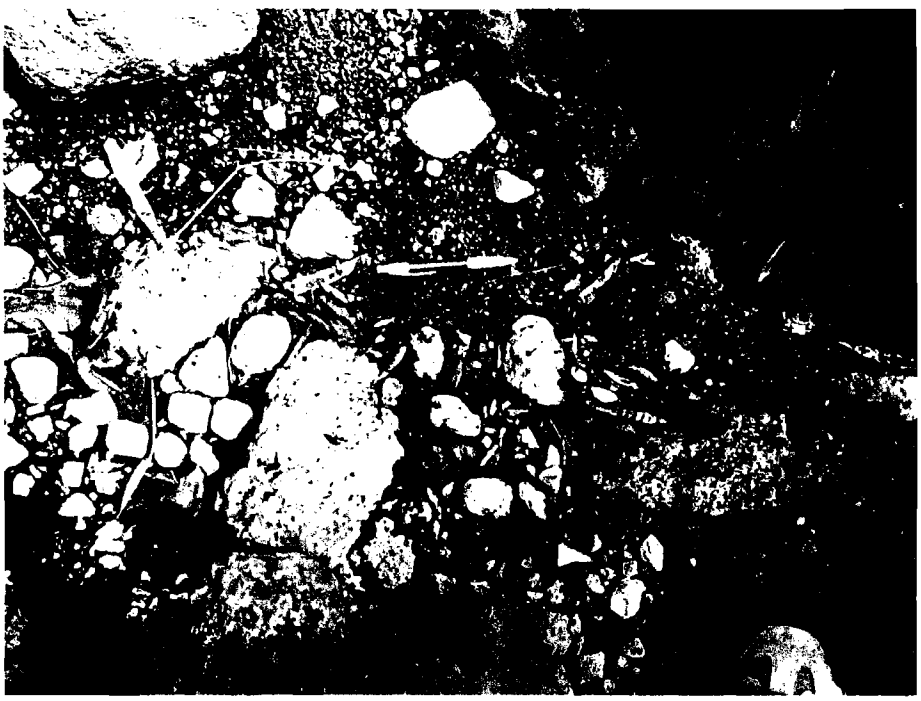
I. **Buffers** – Mitigation is not required. Most of the watershed above the project site is undeveloped and vegetated and will remain so because of its designation under the Hawaii State Land Use Law as a "Conservation District", a status unlikely to ever be changed due to the steep slopes in that area.

J. **Compensatory Mitigation Alternatives** – Mitigation is not required. However, the City and County of Honolulu is involved in preservation, see (F, above) and such efforts should be considered eventually as a "bank" of mitigation activities if and when the Corps requires mitigation for any projects of the City and County of Honolulu.

K. **Public Review** – A draft and final Environmental Assessment have been completed under Hawaii Revised Statutes and no agency, group or member of the public asserted that this project site has aquatic resources nor did they request mitigation. Recently, severe rainstorms and runoff-events have further eroded public and private lands within the project area and at least one private garage is near collapse and the adjacent home is endangered as well as the lives of residents. The need for this project has been discussed at Neighborhood Board meetings. Homeowners, a City Council member and a Representative to the State Legislature have all recently requested that this project be implemented because of the threat to public safety and property from the eroding stream banks.



1. Larger pool, approx. 129 square feet by 3 feet deep.



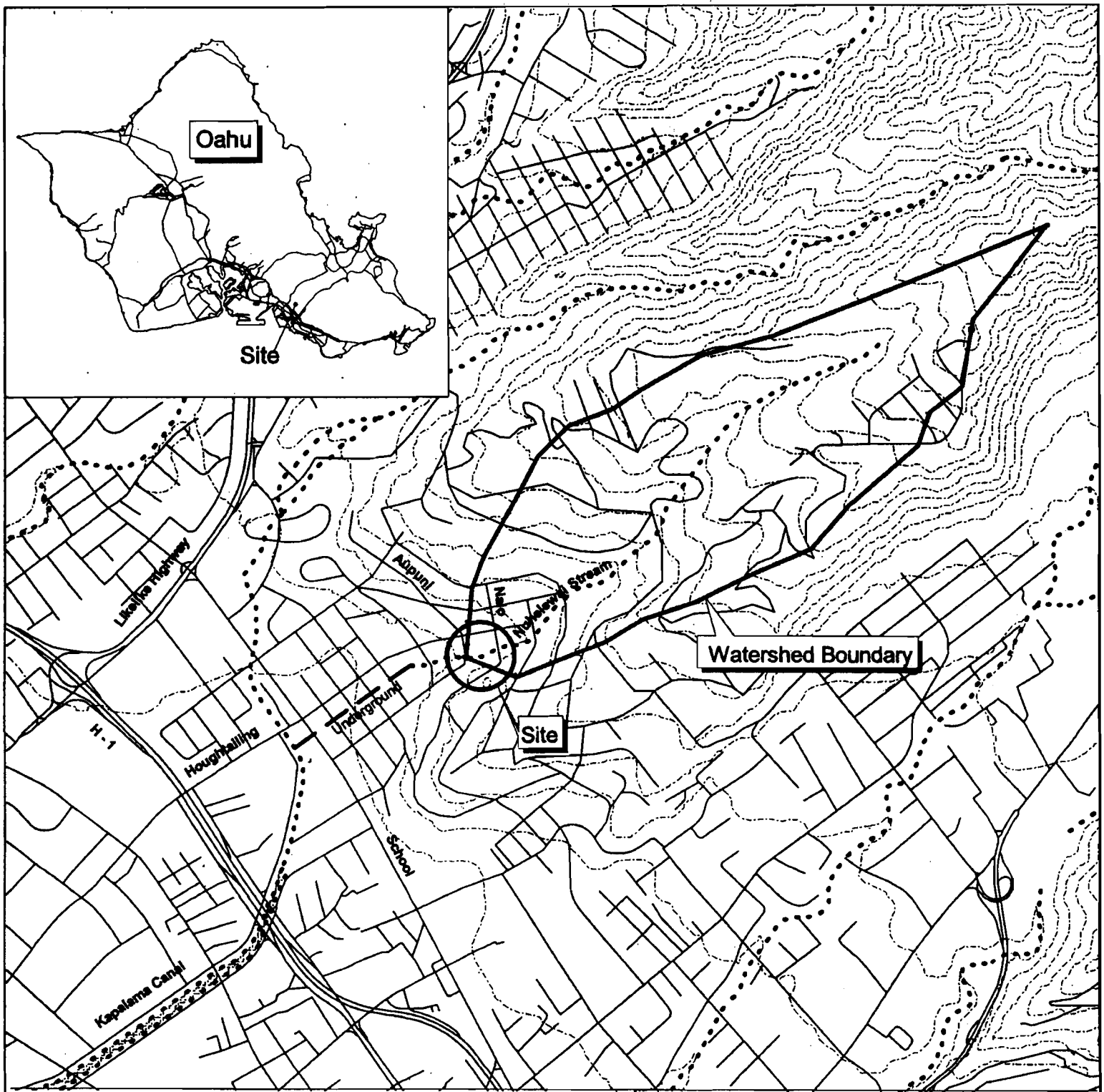
2. Dried-up pool with dead Mexican mollies. Pen for scale.

3. Another dried up pool, same scale as above. Dead Mexican mollies.

4. Condition of stream bottom looking down stream from dried-up pools. Note absence of water or pools.

5. Looking upstream at top of project site. Note eroding condition of invert and undercut toe where high velocity stream water discharges.

6. Picture taken from same location as above, but towards bank to show eroding condition of stream bank with under-cut garage in background.



Location Map

Figure 1

Nuhelewai Stream Channel Improvement

Adapted from GIS data:

City and County of Honolulu

Prepared by: E. Dashiell, AICP, Environmental Planning Services

Vicinity Map "Honolulu" USGS Quad

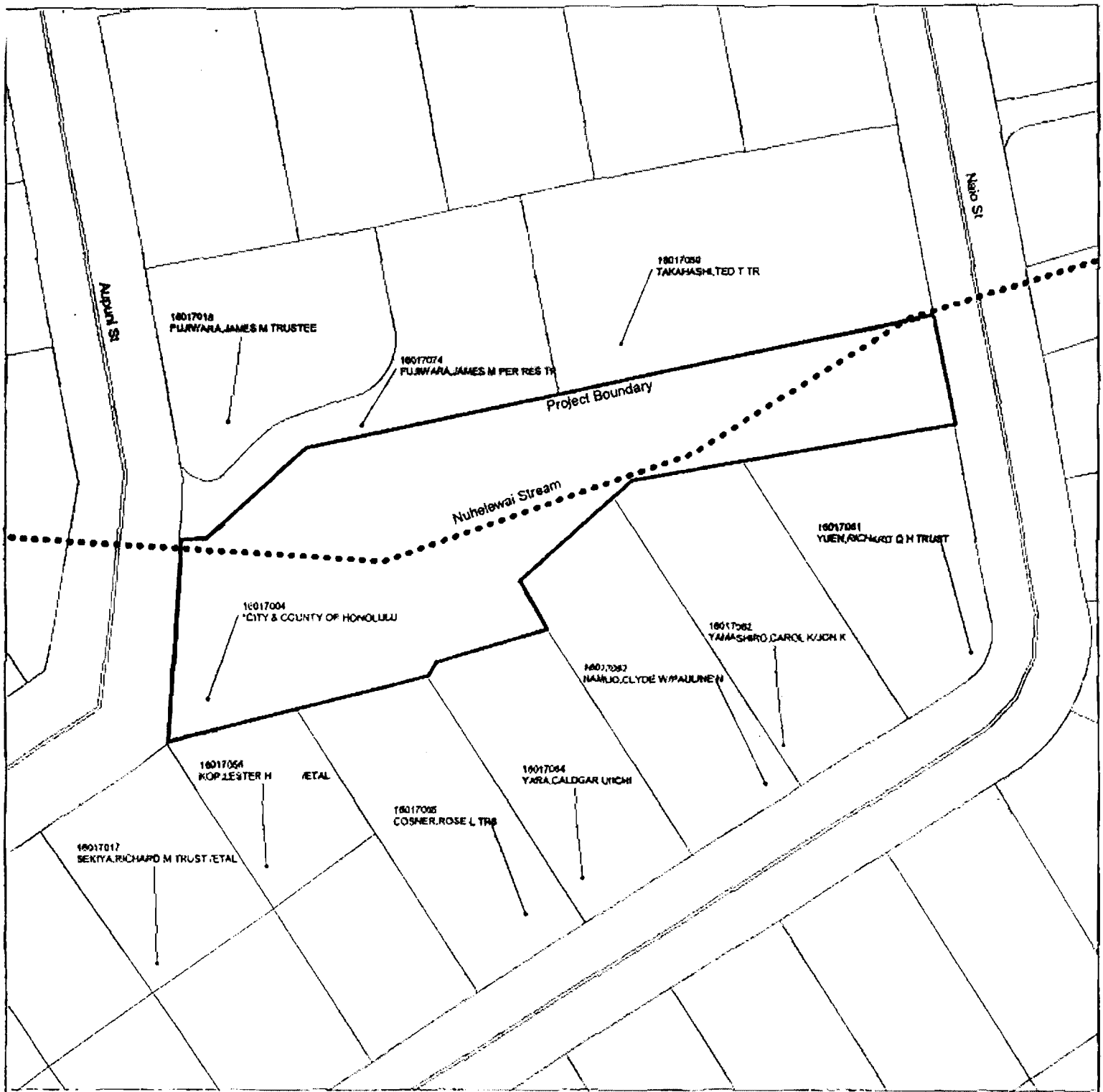
Adapted from GIS data:

City and County of Honolulu

Prepared by: E. Dashiell, AICP, Environmental Planning Services

Figure 2

Nuhelewai Stream Channel Improvement



50 0 50 100 Feet

Site Map
TMK & Ownership

Zoning: R-5 Residential

Figure 3

Nuhelewai Stream Channel Improvement

Adapted from GIS data:

City and County of Honolulu

Prepared by: E. Dashiell, AICP, Environmental Planning Services

NUHELEWAI STREAM BIOLOGICAL REPORT ADDENDUM

May 23, 2006 AECOS No. 1000B

By Eric Guinther
Biologist, AECOS Inc.

INTRODUCTION

The project area along Nuhelewai Stream was visited on April 18, 2006 for the purpose of quantifying stream habitat and stream biota. This report is a follow up to the original stream survey conducted in December 2001 (*AECOS*, 2002). The project area is described in this earlier report and elsewhere. We are concerned here only with establishing a sense of the resource value of the stream in the project area as now required for streams and wetlands for projects seeking Dept. of the Army approvals.

QUANTIFICATION

The following numbers were generated by estimating the area and depth of stream physical features (habitat) and making counts in various areas for averaging of numbers and or density (biota).

For the stream within the project area:

> Stream pool habitat was estimated at 19 m^2 (204 ft^2). This consisted of one large pool of 12 m^2 (129 ft^2).and maximum depth of perhaps 1 meter, and the remainder (7 m^2 or 75 ft^2) as multiple small pools, most or all of which will likely dry up during the dry season.
>
> Stream riffle habitat consists of very shallow connecting channels between pools on the basalt stream bed and a small channel of flowing water in front of the outlet culvert. The area of the latter is estimated to be 0.8 m^2 (8.6 ft^2).

Because the stream habitat was mostly not inhabited by the pool-seeking biota except at the bottom in front of the culvert outlet, numbers of animals were lumped from both habitats. The total number and average

density (number per square meter of stream) of biota in the project area was:

SPECIES	COMMON NAME	No.	Density
Poecilia mexicana	Mexican mollie, adults	1376	70
" "	Mexican mollie, juveniles	1092	55
Awaous guamensis	*'o'opu nakea*	36	2
Bufo marinus	tadpoles	2100	106

INTERPRETATION

A similar composition of stream biota was observed in December 2001, although no guppies (*Poecilia reticulata*) or snails (*Melanoides tuberculata* and *Physa virgata*) were detected in the most recent survey, and no native fishes were observed in the original survey. The presence of any stream animals at all (aquatic insects excepted) is difficult to reconcile with the characterization of Nuhelewai Stream as strictly an intermittent stream. All of the species observed are perhaps capable of movement upstream from the confluence with the main perennial branch, Kapalama Stream, although the long concrete culvert (both open and underground) would discourage such movement unless there was a long period of flow that might not be typical. It seems more reasonable to conclude that Nuhelewai is an interrupted Stream (Timbol and Maciolek, 1978). That is, flow in much of the stream is intermittent and generated by local rainfall on the watershed, but some perhaps small segments or pools in the stream contain water all of the time and these areas serve as refugia for aquatic life that then become more widely distributed during wetter periods. In the project area, the one large pool, thought to be a new feature since the 2001 survey, could be more or less permanent if the basin is in bedrock as it appears to be.

While the presence of native fish ('o'opu nakea) might be interpreted as signifying a valuable resource, this is not the case. Only two individual 'o'opu were observed, both were in the large pool. It is not unusual for these diadromous fish to migrate upstream from Kapalama Stream and Honolulu Harbor where the stream empties into the ocean, during the long wet season of 2005-6. Once in Nuhelewai Stream, the fish are doomed as the stream dries up. Even were they to survive for a time in the pool, they would not likely establish a breeding population here, and all evidence suggests no such populations exist anywhere along Nuhelewai Stream.

All of the other aquatic species observed are non-native species. Some are known or presumed to be detrimental to native species in local streams. It is therefore concluded that the stream biota as observed here lacks resource value.

REFERENCES

AECOS Inc. 2002. Biological resources survey for a stream bank repair project on Nuhelewai Stream, Honolulu. Prep. for Eugene Dashiell. *AECOS* No. 1000: 11 pp.

Timbol, A. S., and J. A. Maciolek. 1978. *Stream Channel Modification in Hawaii. Part A. Statewide Inventory of Streams, Habitat Factors and Associated Biota.* Vol. Part A. Stream Channel Modification in Hawaii. Stream Alteration Project, Office of Biological Services, Fish & Wildlife Service. 157 pp.