DAVID Y. IGE
GOVERNOR

DR. CHRISTINA M. KISHIMOTO
SUPERINTENDENT

STATE OF HAWAI`I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI`I 96804

OFFICE OF THE SCHOOL FACILITIES AND SUPPORT SERVICES

November 1, 2017

Scott Glenn, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813-2437

Re: Honowai Elementary School Eight Classroom Building
Tax Map Key: [1] 9-4-053: 007
Hoaeae, District of Ewa, Oahu, Hawai'i
DOE Job No. Q86002-14

Dear Mr. Glenn:

The Department of Education, State of Hawai'i, has reviewed the Draft Environmental Assessment for the subject project and anticipates a Finding of No Significant Impact (FONSI) determination. Please publish this determination in the next Environmental Notice.

One printed copy of the Draft Environmental Assessment and a CD with the document in PDF format are attached. The Environmental Notice publication form will be e-mailed to the Office of Environmental Quality Control.

Please contact Mr. Benjamin Miura, Project Coordinator, of the Facilities Development Branch, Project Management Section, at (808) 784-5122 if you have any questions.

Sincerely,

Duane Y. Kashiwai
Public Works Administrator
Facilities Development Branch

DYK:lm
Attachment

c: Facilities Development Branch

18-216

AGENCY
PUBLICATION FORM

Project Name:	Honowai Elementary School Eight Classroom Building
Project Short Name:	Honowai Elementary School
HRS §343-5 Trigger(s):	343-5(a) (1) Propose the use of state land and funds
Island(s):	O'ahu
Judicial District(s):	District of 'Ewa
TMK(s):	[1] 9-4-053: 007
Permit(s)/Approval(s):	Variance from Pollution Controls, Facility Access Review, Chapter 6E Historic Site Review, Grubbing, Grading and Stockpiling, Building, Certificate of Occupancy, Waiver Application, Building Permit and Construction Plan Review, Fire Plans Review
Proposing/Determining Agency:	Department of Education, State of Hawai'i Office of School Facilities and Support Services Facilities Development Branch, Project Management Section 3633 Waialae Avenue Honolulu, HI 96816
Contact Name, Email, Telephone, Address	Benjamin Miura, Project Coordinator Department of Education, State of Hawai'i Office of School Facilities and Support Services Facilities Development Branch, Project Management Section 3633 Waialae Avenue Honolulu, HI 96816 T: (808) 784-5122
Accepting Authority:	(for EIS submittals only)
Contact Name, Email, Telephone, Address	
Consultant:	Gerald Park Urban Planner
Contact Name, Email, Telephone, Address	Gerald Park 95-595 Kaname'e Street #324 Mililani, HI 96789 T: (808) 625-9626 E: gpark@gpup.biz

Status (select one)	**Submittal Requirements**
__X__ DEA-AFNSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
____ FEA-FONSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
____ FEA-EISPN	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
____ Act 172-12 EISPN ("Direct to EIS")	Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
____ DEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.

____ FEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
____ FEIS Acceptance Determination	The accepting authority simultaneously transmits to both the OEQC and the proposing agency a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
FEIS Statutory Acceptance	Timely statutory acceptance of the FEIS under Section 343-5(c), HRS, is not applicable to agency actions.
____ Supplemental EIS Determination	The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.
____ Withdrawal	Identify the specific document(s) to withdraw and explain in the project summary section.
____ Other	Contact the OEQC if your action is not one of the above items.

Project Summary

Provide a description of the proposed action and purpose and need in 200 words or less.

The proposed eight classroom building will house three classrooms, the Medically Fragile and Special Education Programs, and provide state of the art learning environments for Science, Technology, Engineering Arts, and Math (STEAM), and Production Media Programs. Building spaces are designed to support the above specialty programs and facilities in form and function.

The new classroom building will be erected on a sloping site at the northeast corner of the campus. The three level structure will house three general classrooms on the Lower Level, Medically Fragile and Special Education programs at Ground Level, and media production, wet and dry lab spaces for the STEAM program, and a maker lab on the Upper Level.

A new paved drop off area is proposed off Honowai Street in the vicinity of the new classroom building. The drop off area should ease congestion in the main parking lot and traffic queueing on Honowai Street. A one-way circulation pattern is proposed. Thirteen parking stalls will be provided near the entry driveway.

A walkway/ramp system will replace an existing walkway that will be demolished for construction of the classroom building. Located near the center of campus, the new walkway/ramp system will connect a sidewalk from the top of slope behind Building E-2 to the level play area at the bottom. The ramp will maintain 1:12 maximum slope for ADA accessibility. An existing planting area at the top of slope will be renovated and re-landscaped.

Construction costs are estimated at $14.6 million and will be funded by the Department of Education, State of Hawai'i. Construction is projected to commence in April 2018 with completion by mid-2019. Building occupancy is projected for the start of academic year 2019-2020.

DRAFT ENVIRONMENTAL ASSESSMENT

HONOWAI ELEMENTARY SCHOOL EIGHT CLASSROOM BUILDING

Hō'ae'ae Ahupu'aa, District of 'Ewa, O'ahu, Hawai'i

Perspective by Lionäkis

Prepared for

Department of Education, State of Hawai'i
Office of School Facilities and Support Services
Facilities Development Branch-Project Management Section
3633 Waialae Avenue
Honolulu, Hawai'i 96816

'Okakopa 2017

DRAFT ENVIRONMENTAL ASSESSMENT

HONOWAI ELEMENTARY SCHOOL EIGHT CLASSROOM BUILDING

Hō'ae'ae Ahupua'a, District of 'Ewa, Oah'u, Hawai'i

Prepared in Partial Fulfillment of the Requirements of Chapter 343, Hawai'i Revised Statutes and Title 11-200, Hawai'i Administrative Rules, Department of Health, State of Hawai'i

Prepared for

Department of Education, State of Hawai'i
Office of School Facilities and Support Services
Facilities Development Branch-Project Management Section
3633 Waialae Avenue
Honolulu, Hawai'i 96816

Prepared by

Gerald Park Urban Planner
95-595 Kaname'e Street #324
Mililani, Hawai'i 96789

and

LIONÄKIS
1919 Nineteenth Street
Sacramento, California 95811

'Okakopa 2017

PROJECT PROFILE

Proposed Action:	Honowai Elementary School Eight Classroom Building DOE Job No. Q86002-14
Location:	Hōʻaeʻae Ahupuaʻa, ʻEwa District, Oʻahu, Hawaiʻi
Street Address:	94-600 Honowai Street Waipahu, Hawaiʻi 96797
Proposing/ **Determining Agency**	Department of Education, State of Hawaiʻi Office of School Facilities and Support Services Facilities Development Branch Project Management Section 3633 Waialae Avenue Honolulu, HI 96816
Tax Map Key:	[1] 9-4-053: 007
Land Area:	6.085 acres
Landowner:	State of Hawaiʻi
Existing Use:	Public Elementary School
State Land Use Designation:	Urban
General Plan for Oahu:	Urban Fringe
***Sustainable* Communities Plan:**	Central Oahu
SCP Land Use Map:	Residential and Low Density Apartment
Zoning:	R-5 Residential
Special Management Area:	Outside Special Management Area
Need for Assessment:	Chapter 343, Hawaiʻi Revised Statutes §343-5 (a) (1) Propose the use of state or county lands or the use of state or county funds.
Anticipated Determination:	Finding of No Significant Impact
Contact Person:	Benjamin Miura, Project Coordinator Department of Education Office of School Facilities and Support Services Facilities Development Branch Project Management Section 3633 Waialae Avenue Honolulu, HI 96816 Telephone: (808) 784-5122

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SECTION 1
DESCRIPTION OF THE PROPOSED ACTION

The Department of Education, State of Hawai'i, proposes to construct a new classroom building at Honowai Elementary School located in the town of Waipahu, *ahupua'a* of Hōa'ea'e, District of 'Ewa, O'ahu, Hawai'i. Honowai Elementary School (hereafter "Honowai School" or "School") is located in the Harbor View Subdivision and bounded by Honowai Street on the north, Waikele Stream Drainage Channel on the east, and residential lots on the south and west. Honowai Neighborhood Park also adjoins the campus on the west. A Vicinity Map is shown as Figure 1.

The parcel bears Tax Map Key 9-4-053: 117 encompassing an area of 6.085 acres. A Tax Map is shown as Figure 2.

A. Basis of Design

The proposed eight classroom building will house three classrooms, the Medically Fragile and Special Education Programs, and provide state of the art learning environments for Science, Technology, Engineering Arts, and Math (STEAM), and Production Media Programs. The building will be developed on a steeply sloping site with outdoor learning lanais designed to blur the line between indoor and outdoor learning environments.

Building spaces are designed to support the above specialty programs and facilities in form and function. The arrangement provides flexible environments that can be used by other programs such as arts education. The above programs and curricula will no longer have to be limited by the size of a classroom made for a traditional teaching and learning environment.

B. Technical Characteristics

Improvements disclosed in this environmental assessment are planned at two locations. Major improvements are proposed in the northeast section of the campus identified as the building site. This area is occupied by three portable classroom buildings ("portables") and bounded on the west by Building J, Building K, and Building G which are permanent structures.

A second location is at the rear of the campus bounded by Building EE on the north, Building D on the west, and Building L on the east. This site is a landscaped sloping hillside on which a new concrete walkway / ramp system will be constructed. This site is referred to as the walkway/ramp site. An open play area at the bottom of the slope is used for play by kindergarten students.

1. Demolition

Prior to demolition, water systems at the building and ramp sites will be cut and plugged. An existing 10-foot wide sewer easement crossing the building site from northeast to southwest will be relocated closer to the property line on the south side. A 15" sewer line and manholes in the easement will be demolished and the easement cancelled.

At the building site, three portables including stairs and ramps (P-3/P-4, P-5, and P-6) will be removed. Sections of chain link fencing and concrete sidewalk and gutters along Honowai Street will be demolished for a new driveway. The existing accessible walkway system from Buildings G and K will be demolished and vegetation grubbed.

Photograph 1. Partial View of Building Site. Portable 5 in the Background.

2. Classroom Building

A new three-story classroom building will be erected on a major portion of the building site. Three general classrooms on the Lower Level are DOE standard classrooms and will replace the portable classrooms. Spaces for the Medically Fragile and Special Education are at Ground Level to allow ease of parent drop-off, ambulance and emergency vehicle access, and parent visitation. Media production, wet and dry labs, and a maker lab are on the Upper Level. A Site Plan is shown as Sheet CS100 and program spaces shown on Table 1.

Floor plans for each Level and a Roof Plan are shown as Sheets A-111, A-112A-113, and A-113.

The roof and floor will be primarily constructed of reinforced concrete slabs supported on reinforced concrete beams and some cast-in-place reinforced concrete walls. Beams will be supported by cast-in-place concrete columns. All concrete is anticipated to be cast-in-place. The foundation system will largely depend on the recommendations provided in the geotechnical report. It is expected that the soil will support typical shallow foundations. This would result in shallow pad footings under columns and shallow continuous footings under walls. Where the concrete floor slab is supported directly on soil, it is assumed that there will be a vapor barrier and prepared sub-grade. The ground level finished floor elevation is 95.50 feet.

Walls of the structure will be framed with either infill concrete masonry walls or cast-in-place concrete depending on their function and configuration. These walls will serve as the primary lateral framing system.

Table 1. Architectural Space Program

New Classroom Building					
Lower Level		**Ground Level**		**Upper Level**	
Space	**SF**	**Space**	**SF**	**Space**	**SF**
Art Classroom	905	Medically Fragile Fragile 1	1,141	Wet Lab	937
Resource Room	391	Medically Fragile Fragile 2	922	Dry Lab	949
Music Classroom	1,219	SPED Life Skills	931	Maker Lab	616
Music Storage	192	Resource Classroom	352	Media Production	947
Exterior Stair 2	147	SSC Office	155	Studio	130
Exterior Elevator	71	Conference Room	245	Tech Officce	101
Elev. Machine Rm	29	Toilet/Shower	244	Equipment Room	94
		Boys Bathroom	63	Control Room	139
		Girls Bathroom	62	Girls	142
		Shower	19	Boys	135
		Toilet Shower	98	IDF	114
		Staff Restroom	65	Staff Restroom	68
		Interior Stair 1	129	Hallway	663
		Storage	71	Lanai Court	854
		Electrical Room	92	Exterior Elevator	71
		Pump Room	120	Custodian	59
Source: Lionakis, Inc., 2017.					

A tensile fabric structure covering parts of the lanai on the upper level will provide shade for outdoor learning.

Elevation differences between the walkway and the project area will be negotiated by a concrete exterior stairway. Wheelchair access will be provided via an access route (1:20 slope) at the north end of this stairway. A second stairway will be constructed on the south side of the new building for firefighter access.

Vertical access between floors will be provided by one elevator and two stairways. The elevator and Stairway 2 are on the exterior of the building on its south side. A second stairway (Stairway 1) is inside the building on its north side.

The building and the three levels are oriented to take advantage of the prevailing breezes for ventilation and the path of the sun for natural lighting. The entire building will be air conditioned for overall student comfort. The ventilation strategy is to assure proper dehumidification, minimize infiltration, and prevent potential mold issues due to the humid year round climate in Hawai'i (Basis of Design, Mechanical, 2017). Air conditioning should also benefit the Medically Fragile who at times requires a temperature controlled environment.

The height of the building is approximately 35 feet measured from existing grade to top of roof ridge. The building exceeds the height limit for the residential zoning district. The Department of Education will seek a height Waiver from the Department of Planning and Permitting, City

and County of Honolulu to allow the encroachment. Exterior Elevations are shown as Sheets A-212 and A-213.

3. Circulation and Off-Street Parking

A new paved drop off area is proposed off Honowai Street in the vicinity of the new classroom building (See Photograph 2). The drop off area should ease congestion in the main parking lot and traffic queueing on Honowai Street. A one-way circulation pattern is proposed with 24-foot wide driveways, 18-foot wide drop off lane, and a traffic table pavement (See Sheet CS100). Egress will be at the Kihou / Honowai Street intersection.

Photograph 2. Site of New Drop Off Area. Portables 3/4 on Right. Honowai Street on Left.

Off-street parking will be constructed on the west side of the entry driveway. The parking area features thirteen uncovered stalls with one of the stalls designated for accessible parking. One portable building (P-6) will be removed for the parking area.

The drop-off and parking area is approximately 7,400 square feet.

Walkways at the lower and ground levels will link with existing walkways at Buildings K and G. To be built on the *makai* side of the building the new walkways will replace the existing.

4. Walkway/Ramp System

The walkway / ramp system (Sheet AS404) will connect a sidewalk from the top of slope behind Building E-2 to the level play area at the bottom (See Photograph 3). The area to be disturbed is estimated at 4,100 square feet. The ramp will maintain 1:12 maximum slope for ADA accessibility. An existing planting area at the top of slope will be renovated and re-landscaped.

5. Grading and Drainage

The building site will be grubbed, filled, and graded to attain a finish floor elevation of 95.3 feet at the Lower Level and 107.8 feet at Ground Level. The area to be disturbed by construction

Photograph 3. Section of Site for the New Walkway/Ramp System. Building EE in the Background.

is estimated at 0.61 to 0.7 acres. Earthwork quantities are estimated at 1,060 CY of cut and 522 CY of fill.

The proposed drainage system consists of an on-site collection system and two separate subsurface detention systems. On-site runoff (from the parking area, landscaped areas, and roof drains) will be piped to either a detention system on the north or south side of the new building. The detention system on the south side will be a closed system without an infiltration component. The detention system on the north side is proposed as a subsurface detention facility with an infiltration gallery to meet peak flow attenuation requirements and City objective of Low Impact Development. Each system will include a flow control manhole to limit the peak flow rate released to the downstream drainage system. The combined peak flow rate will be restricted to approximately 0.70 cfs for the 10-year storm event. The required storage volume is estimated to be in the range of 1,200 cubic feet. The outlet from each flow control manhole will be piped into the adjacent drainage channel (Basis of Design, Civil Engineering, 2017).

Grading and Drainage Plans are shown as Sheets CG100 and CG401.

6. Infrastructure

Existing water lines in the vicinity of the improvements will be cut, plugged, or abandoned in place. Potable water to the new classroom building will be supplied through a new 3" line and a new 2" line will service the new ramp and stairway system. Water will be drawn from the on-site water distribution system.

A 6" ductile iron fire line will be installed from a 12" main in Honowai Street near Kipou Place to a fire sprinkler system in the new classroom building. A fire lane is not proposed.

A new 6" lateral will connect the classroom building to the on-site wastewater collection system. On-site wastewater is collected by 4" and 6" laterals that discharge into a manhole *makai* of Building EE. An 8" lateral connects the manhole and the 15" sewer in the sewer easement.

All new service lines for electrical system, fire alarm, and telecommunications systems will be routed underground from the main electrical room in Building C.

A Utility Plan is shown as Sheet CU100.

7. Landscaping

Native Hawaiian or Polynesian introduced species will be used in the landscaping. Plant selection will also consider low maintenance material that can adapt to the site and help reduce urban heat island effects. A Landscape Plan is shown as Sheet L003.

An automatic controlled underground irrigation system will be installed in landscaped areas.

8. Sustainable Characteristics

The classroom building will be designed according to a high performance building rating program developed to specifically facilitate the design, construction, and operation of high performance schools. The rating system is termed the Hawaii Collaborative for High Performance Schools or HI-CHPS. A high performance school is defined as having learning environments that are healthy and comfortable, energy resource and water efficient, safe, secure and adaptable, and easy to operate and maintain.

HI-CHPS criteria will be used to develop sustainability features for the project during design, construction, and performance phases. Design strategies will be developed and documented for the design phase; construction related criteria will be developed and documented for the construction phase; and operation and maintenance criteria documented for the performance phase.

C. Economic Characteristics

Construction costs are estimated at $14.6 million and will be funded by the Department of Education, State of Hawai'i.

Construction is projected to commence in April 2018 with completion by mid-2019. Building occupancy is projected for the start of academic year 2019-2020.

The 6.085 acre School lot is owned by the State of Hawai'i and under the jurisdiction of the Department of Education (Executive Order 3063, 1981).

D. Social Characteristics

Removal and demolition of the portable classroom buildings will displace kindergarten classes to available space in other campus buildings. There are no plans to relocate or construct portable classrooms for the displaced classes.

Source: Google Maps 2017 Aerial

Figure 1
Vicinity Map

Honowai Elementary School Classroom Building

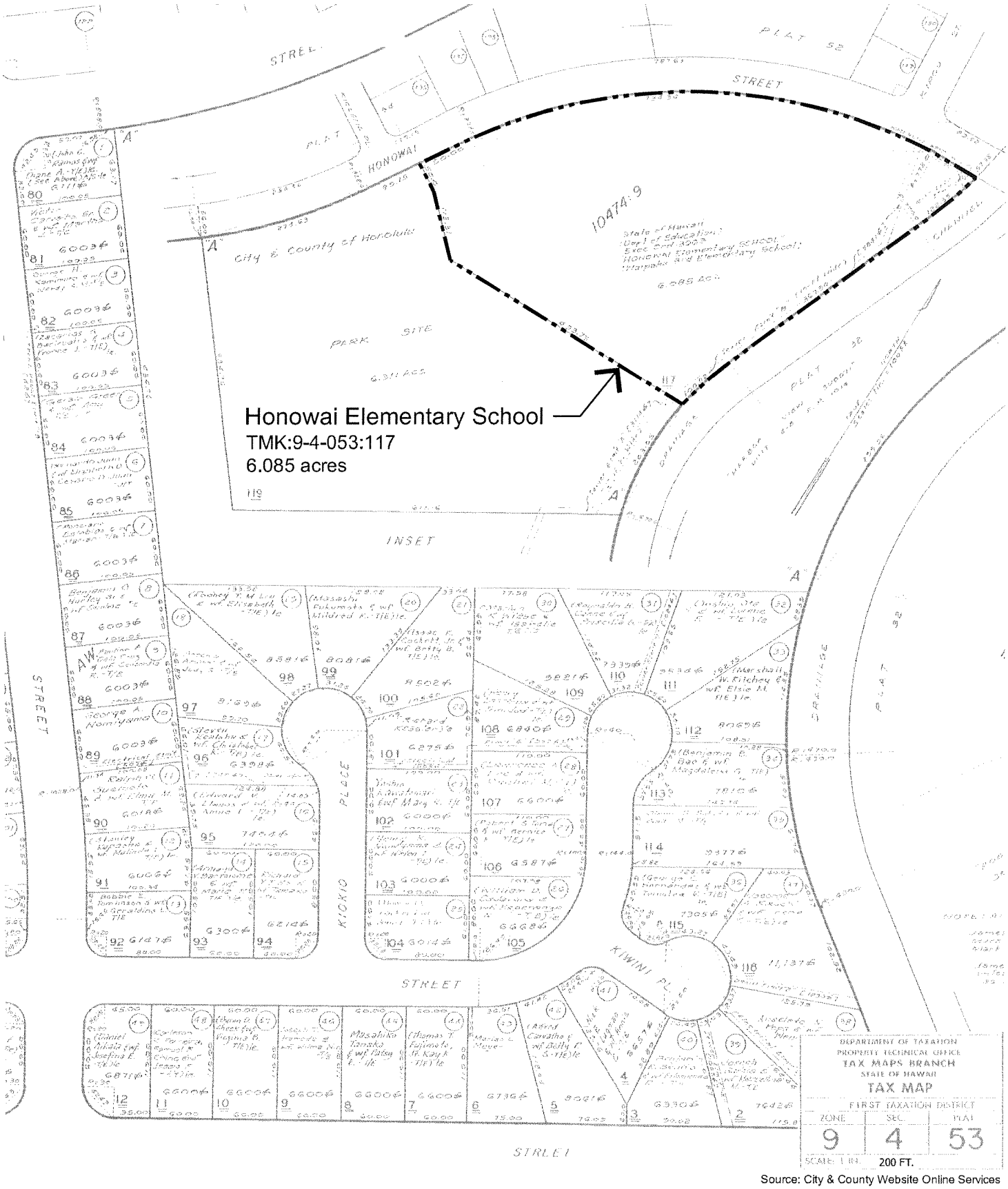
Gerald Park
Urban Planner
June 2017

LINEAL SCALE (FEET)
150 75 0 75 150 300

NORTH

Hō'ae'ae Ahupua'a, District of 'Ewa, O'ahu, Hawai'i

Department of Education, State of Hawai'i



Source: City & County Website Online Services

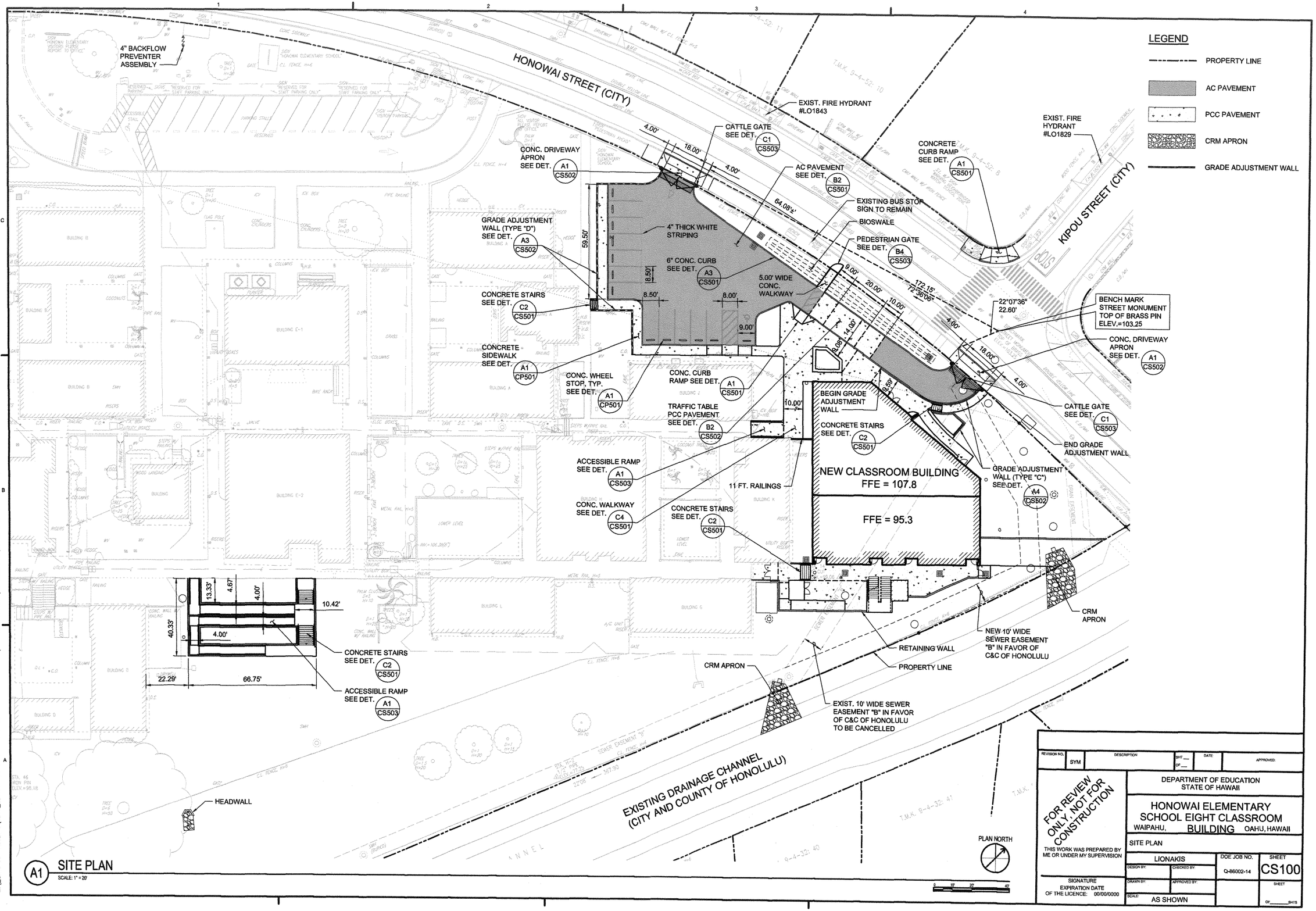
Figure 2
Tax Map
Honowai Elementary School Classroom Building

LINEAL SCALE (FEET)
100 50 0 50 100 200
NORTH

Gerald Park
Urban Planner
June 2017

Hō'ae'ae Ahupua'a, District of 'Ewa, O'ahu, Hawai'i

Department of Education, State of Hawai'i



A1 SITE PLAN
SCALE: 1" = 20'

REVISION NO.	SYM	DESCRIPTION	SHT — OF —	DATE	APPROVED:

FOR REVIEW ONLY, NOT FOR CONSTRUCTION

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE
EXPIRATION DATE OF THE LICENCE: 00/00/0000

DEPARTMENT OF EDUCATION
STATE OF HAWAII

HONOWAI ELEMENTARY SCHOOL EIGHT CLASSROOM
WAIPAHU, BUILDING OAHU, HAWAII

SITE PLAN

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	CS100
DRAWN BY:	APPROVED BY:		
SCALE: AS SHOWN			SHEET OF SHTS

W:_CIVIL 3D PROJECTS\2014_084.001 LIONAKIS HONOWAI ES 8 CLASSROOM BLDGS\01 CIVIL DRAWINGS\DD SUBMITTAL\CS100 SITE PLAN.DWG 08/11/17 16:53

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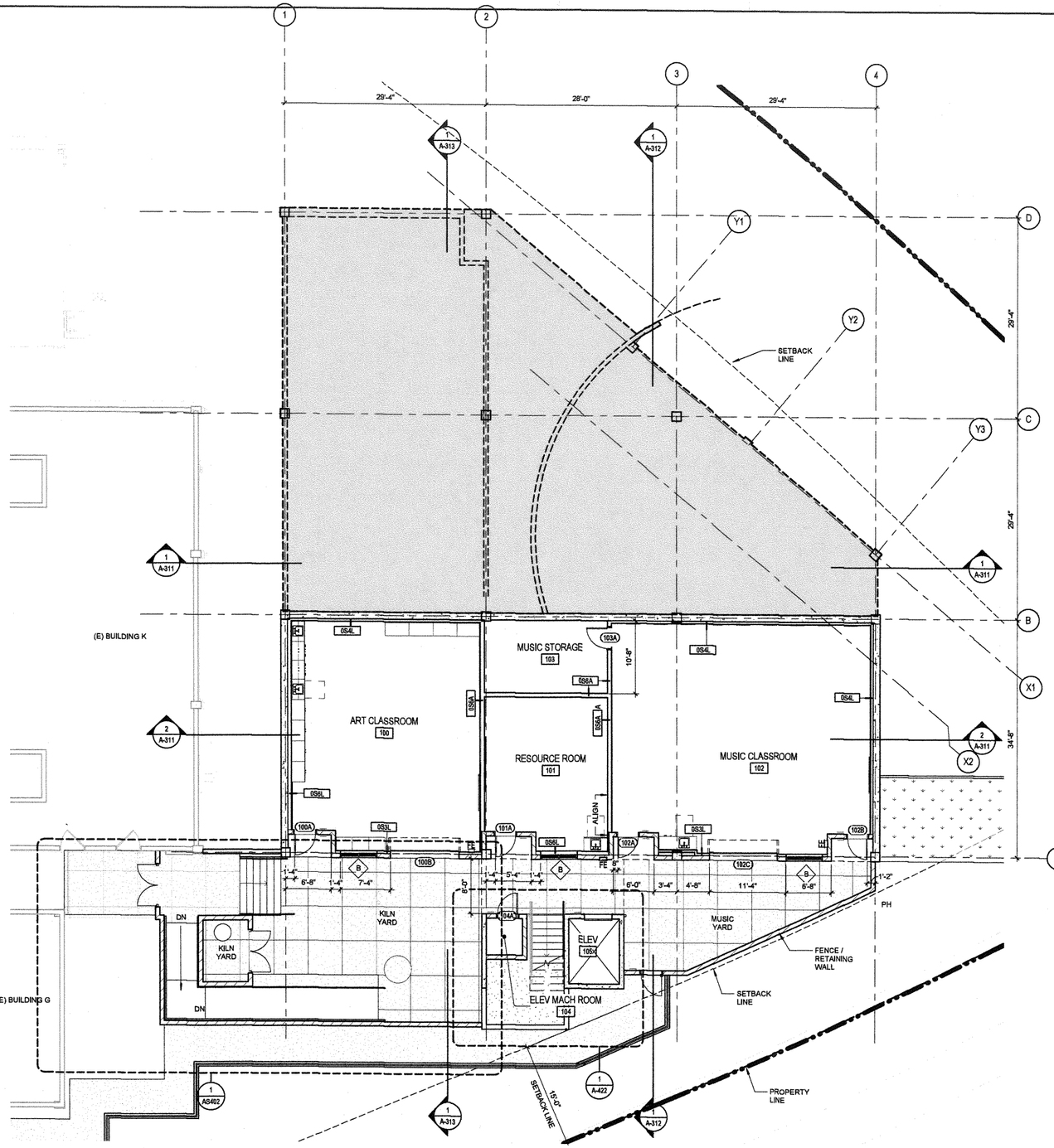

1 FLOOR PLAN - LEVEL 1
SCALE 1/8" = 1'-0"

GENERAL NOTES

1. ARCHITECTURAL DIMENSIONS ARE TO FACE OF STUDS OR CENTERLINE OF COLUMN GRIDS UNLESS OTHERWISE NOTED.
2. SEE ARCH WALL SECTIONS AND STRUCTURAL PLANS FOR EXTERIOR WALL CONSTRUCTION. WALL CONSTRUCTION SHALL COMPLY W/ **CBC TABLE 601**
3. LOCATE DOOR JAMBS 4" AWAY FROM ADJACENT WALL UNLESS OTHERWISE DIMENSIONED.
4. KEY NOTED WALL TYPES SHALL EXTEND FROM CORNER TO CORNER, FULL LENGTH OF WALL UNLESS OTHERWISE NOTED.
5. FOR SYMBOLS LEGEND SEE SHEET G-002
6. SEE SHEET ——— FOR FINISH FLOOR PLAN AND ——— FOR FINISH SCHEDULE.
7. SEE SHEET ——— FOR CASEWORK DETAILS.
8. SEE SHEET AG111, AG112, & AG113 FOR SIGNAGE PLANS.
9. SEE SHEET A-221, A-222, A-223, A-224, & A-225 FOR INTERIOR ELEVATIONS.
10. SEE SHEET A-411 & A-412 FOR RESTROOM PLAN AND ELEVATIONS.
11. FOR BLOCKING REQUIREMENTS SEE TYPICAL FRAMING DETAILS FOR REQUIRED CONSTRUCTION.
12. UNLESS OTHERWISE NOTED ALL INTERIOR FLOOR DRAINS ARE SET 3/4" BELOW TOP OF FLOOR SLAB WITH A MAX FLOOR SLOPE OF 2% TO THE DRAIN.
13. SEE SHEET A-631 FOR WINDOW TYPES.
14. FOR ASSISTIVE LISTENING SYSTEM, INLCUDING NUMBER OF REQUIRED DEVICES, SEE ELECTRICAL AND TELECOM SHEETS. RECEIVERS MUST BE READILY AVAILABLE.
15. SITE PLAN INFORMATION SHOWN ON FLOOR PLANS IS FOR REFERENCE PURPOSES ONLY. REFER TO ARCHITECTURAL SITE DRAWINGS, CIVIL AND OR LANDSCAPE DRAWINGS.
16. FOR SEMI-RECESSED FIRE EXTINGUISHER CABINET AT NON-RATED WALL SEE XXXXX

FLOOR PLAN LEGEND

- CMU WALL
- CONCRETE WALL
- MTL STUD WALL FURR OUT O/ CONCRETE WALL, SEE FLOOR PLAN
- METAL STUD WALL, SEE PLANS AND SHEET A-531
- DOOR, FOR DOOR TYPES SEE A-621
- 101A — DOOR NUMBER, SEE DOOR SCHEDULE ON SHEETS A-621
- 10 — WINDOW TYPE, SEE SHEET A-631
- 2W12W|A — WALL TYPE, SEE SHEET A-531
- ROOM NAME / A101 — ROOM NAME AND NUMBER
- FEC — FIRE EXTINGUISHER IN CABINET, SEE XXX
- WALL MOUNTED FIRE EXTINGUISHER ON BRACKET FOR MOUNTING HEIGHT, SEE XXX
- PH — PANIC HARDWARE
- NEAREST OBSTRUCTION
- 30"x48" CLR ACCESSIBLE SPACE
- 4'-0" MIN CLR
- 60" CLEAR ACCESSIBLE TURNING SPACE

PLAN NORTH

REVISION NO.	SYM	DESCRIPTION	SHT ___ OF ___	DATE:	APPROVED:

FOR REVIEW ONLY, NOT FOR CONSTRUCTION

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE
EXPIRATION DATE OF THE LICENCE: 00/00/0000

DEPARTMENT OF EDUCATION
STATE OF HAWAII

HONOWAI ELEMENTARY SCHOOL
EIGHT CLASSROOM BUILDING
WAIPAHU, OAHU, HAWAII

FLOOR PLAN - LEVEL 1

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	A-111
DRAWN BY:	APPROVED BY:	DATE	SHEET
SCALE: AS SHOWN			OF ___ SHTS

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10/30/2017 1:33:09 PM

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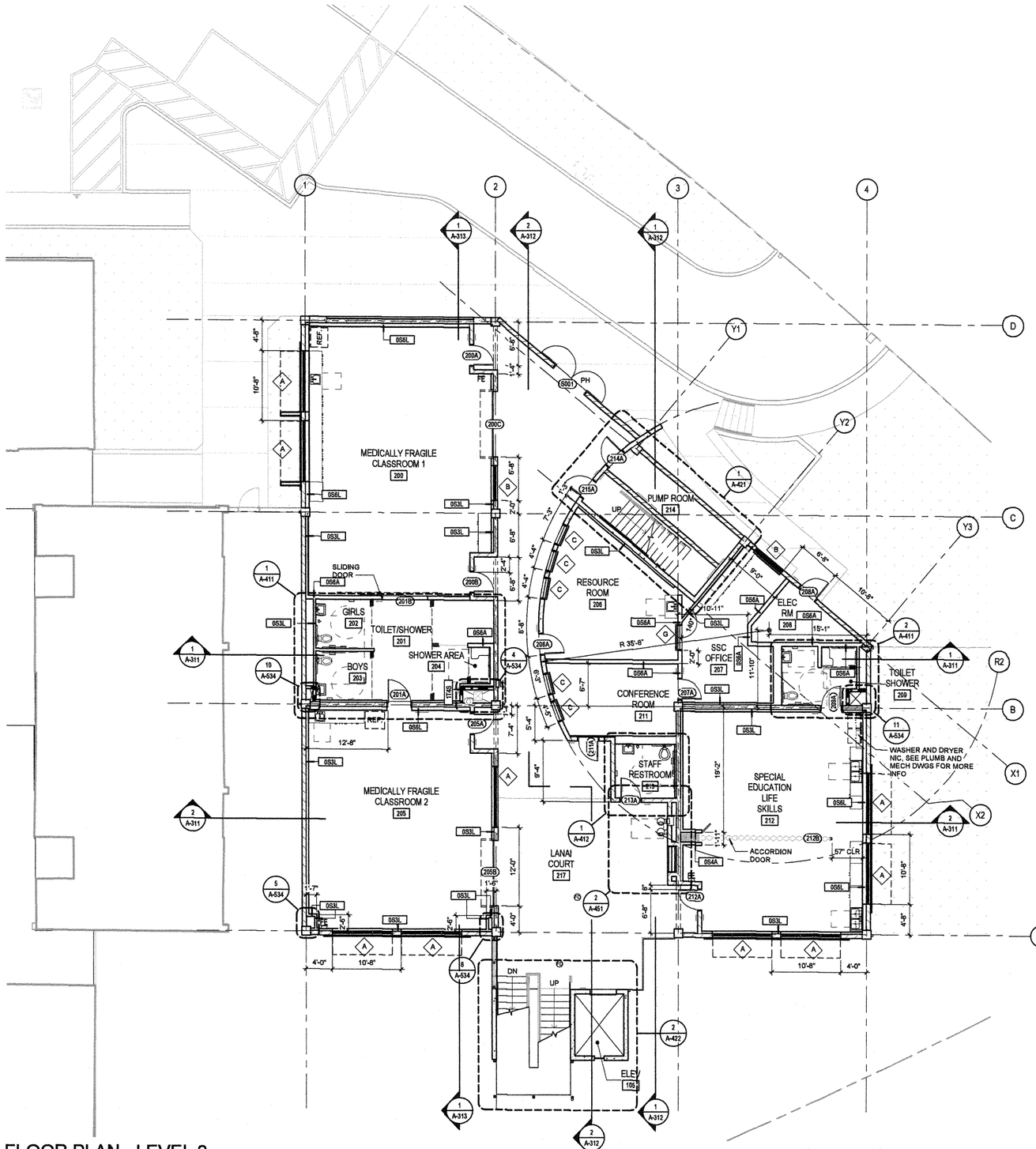

1 FLOOR PLAN - LEVEL 2
SCALE 1/8" = 1'-0"

PLAN NORTH

GENERAL NOTES

1. ARCHITECTURAL DIMENSIONS ARE TO FACE OF STUDS OR CENTERLINE OF COLUMN GRIDS UNLESS OTHERWISE NOTED.
2. SEE ARCH WALL SECTIONS AND STRUCTURAL PLANS FOR EXTERIOR WALL CONSTRUCTION. WALL CONSTRUCTION SHALL COMPLY W/ **CBC TABLE 601**
3. LOCATE DOOR JAMBS 4" AWAY FROM ADJACENT WALL UNLESS OTHERWISE DIMENSIONED.
4. KEY NOTED WALL TYPES SHALL EXTEND FROM CORNER TO CORNER, FULL LENGTH OF WALL UNLESS OTHERWISE NOTED.
5. FOR SYMBOLS LEGEND SEE SHEET G-002
6. SEE SHEET ——— FOR FINISH FLOOR PLAN AND ——— FOR FINISH SCHEDULE.
7. SEE SHEET ——— FOR CASEWORK DETAILS.
8. SEE SHEET AG111, AG112, & AG113 FOR SIGNAGE PLANS.
9. SEE SHEET A-221, A-222, A-223, A-224, & A-225 FOR INTERIOR ELEVATIONS.
10. SEE SHEET A-411 & A-412 FOR RESTROOM PLAN AND ELEVATIONS.
11. FOR BLOCKING REQUIREMENTS SEE TYPICAL FRAMING DETAILS FOR REQUIRED CONSTRUCTION.
12. UNLESS OTHERWISE NOTED ALL INTERIOR FLOOR DRAINS ARE SET 3/4" BELOW TOP OF FLOOR SLAB WITH A MAX FLOOR SLOPE OF 2% TO THE DRAIN.
13. SEE SHEET A-631 FOR WINDOW TYPES.
14. FOR ASSISTIVE LISTENING SYSTEM, INLCUDING NUMBER OF REQUIRED DEVICES, SEE ELECTRICAL AND TELECOM SHEETS. RECEIVERS MUST BE READILY AVAILABLE.
15. SITE PLAN INFORMATION SHOWN ON FLOOR PLANS IS FOR REFERENCE PURPOSES ONLY. REFER TO ARCHITECTURAL SITE DRAWINGS, CIVIL AND OR LANDSCAPE DRAWINGS.
16. FOR SEMI-RECESSED FIRE EXTINGUISHER CABINET AT NON-RATED WALL SEE XXXXX

FLOOR PLAN LEGEND

- CMU WALL
- CONCRETE WALL
- MTL STUD WALL FURR OUT O/ CONCRETE WALL, SEE FLOOR PLAN
- METAL STUD WALL, SEE PLANS AND SHEET A-531
- DOOR, FOR DOOR TYPES SEE A-621
- 101A — DOOR NUMBER, SEE DOOR SCHEDULE ON SHEETS A-621
- 10 — WINDOW TYPE, SEE SHEET A-631
- 2W12WA — WALL TYPE, SEE SHEET A-531
- ROOM NAME / A101 — ROOM NAME AND NUMBER
- FEC — FIRE EXTINGUISHER IN CABINET, SEE XXX
- WALL MOUNTED FIRE EXTINGUISHER ON BRACKET FOR MOUNTING HEIGHT, SEE XXX
- PH — PANIC HARDWARE
- NEAREST OBSTRUCTION
- 30"x48" CLR ACCESSIBLE SPACE
- 4'-0" MIN CLR
- 60" CLEAR ACCESSIBLE TURNING SPACE

REVISION NO.	SYM	DESCRIPTION	SHT ___ OF ___	DATE:	APPROVED

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EXPIRATION DATE OF THE LICENCE: 00/00/0000

DEPARTMENT OF EDUCATION
STATE OF HAWAII

HONOWAI ELEMENTARY SCHOOL
EIGHT CLASSROOM BUILDING
WAIPAHU, OAHU, HAWAII

FLOOR PLAN - LEVEL 2

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	A-112
DRAWN BY:	APPROVED BY:	DATE	SHEET
SCALE: AS SHOWN			OF ____ SHTS

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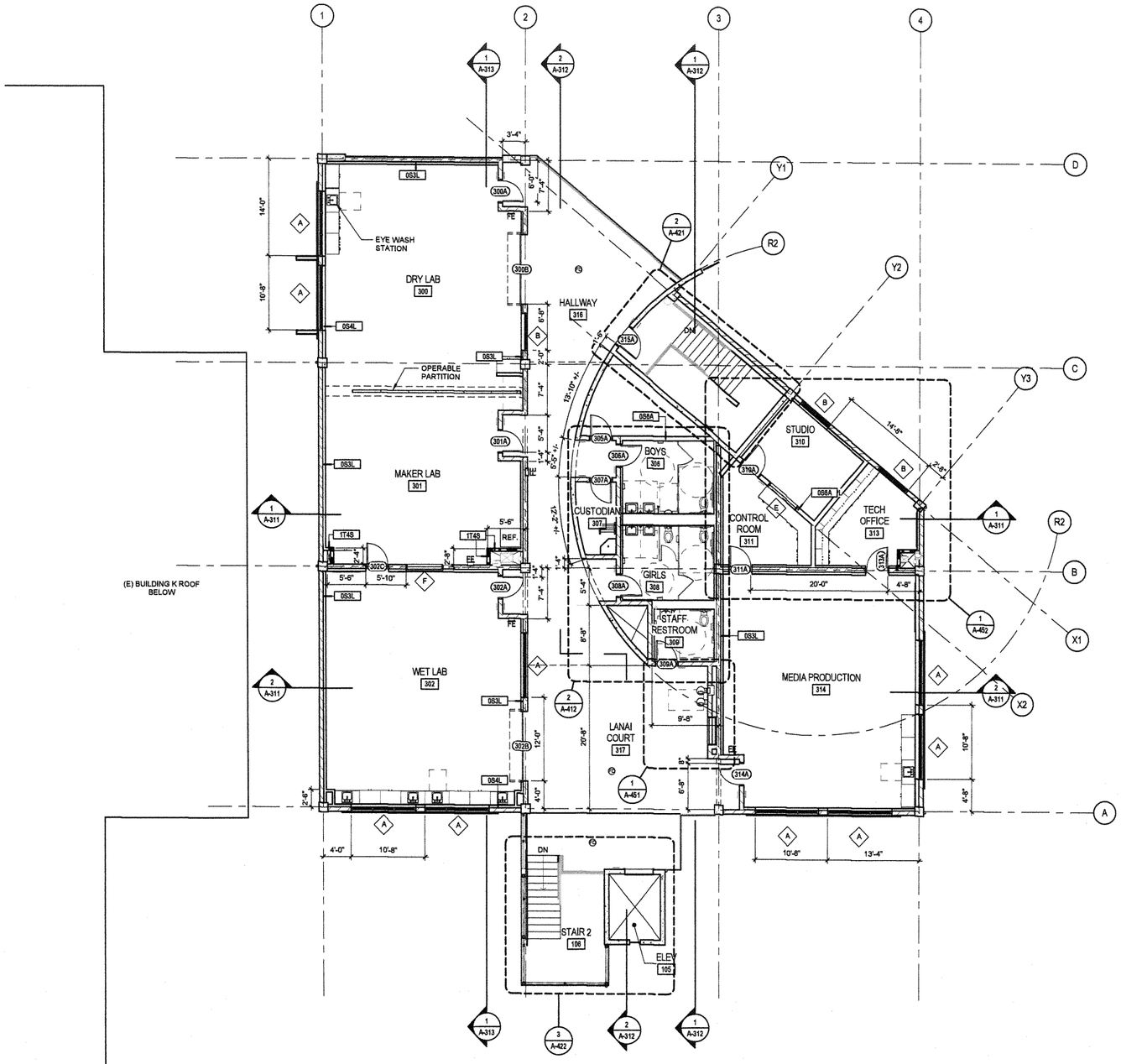

1 FLOOR PLAN - LEVEL 3
SCALE 1/8" = 1'-0"

PLAN NORTH

GENERAL NOTES

1. ARCHITECTURAL DIMENSIONS ARE TO FACE OF STUDS OR CENTERLINE OF COLUMN GRIDS UNLESS OTHERWISE NOTED.
2. SEE ARCH WALL SECTIONS AND STRUCTURAL PLANS FOR EXTERIOR WALL CONSTRUCTION. WALL CONSTRUCTION SHALL COMPLY W/ **CBC TABLE 601**
3. LOCATE DOOR JAMBS 4" AWAY FROM ADJACENT WALL UNLESS OTHERWISE DIMENSIONED.
4. KEY NOTED WALL TYPES SHALL EXTEND FROM CORNER TO CORNER, FULL LENGTH OF WALL UNLESS OTHERWISE NOTED.
5. FOR SYMBOLS LEGEND SEE SHEET G-002
6. SEE SHEET —— FOR FINISH FLOOR PLAN AND —— FOR FINISH SCHEDULE.
7. SEE SHEET —— FOR CASEWORK DETAILS.
8. SEE SHEET AG111, AG112, & AG113 FOR SIGNAGE PLANS.
9. SEE SHEET A-221, A-222, A-223, A-224, & A-225 FOR INTERIOR ELEVATIONS.
10. SEE SHEET A-411 & A-412 FOR RESTROOM PLAN AND ELEVATIONS.
11. FOR BLOCKING REQUIREMENTS SEE TYPICAL FRAMING DETAILS FOR REQUIRED CONSTRUCTION.
12. UNLESS OTHERWISE NOTED ALL INTERIOR FLOOR DRAINS ARE SET 3/4" BELOW TOP OF FLOOR SLAB WITH A MAX FLOOR SLOPE OF 2% TO THE DRAIN.
13. SEE SHEET A-631 FOR WINDOW TYPES.
14. FOR ASSISTIVE LISTENING SYSTEM, INLCUDING NUMBER OF REQUIRED DEVICES, SEE ELECTRICAL AND TELECOM SHEETS. RECEIVERS MUST BE READILY AVAILABLE.
15. SITE PLAN INFORMATION SHOWN ON FLOOR PLANS IS FOR REFERENCE PURPOSES ONLY. REFER TO ARCHITECTURAL SITE DRAWINGS, CIVIL AND OR LANDSCAPE DRAWINGS.
16. FOR SEMI-RECESSED FIRE EXTINGUISHER CABINET AT NON-RATED WALL SEE XXXXX

FLOOR PLAN LEGEND

- CMU WALL
- CONCRETE WALL
- MTL STUD WALL FURR OUT O/ CONCRETE WALL, SEE FLOOR PLAN
- METAL STUD WALL, SEE PLANS AND SHEET A-631
- 101A — DOOR, FOR DOOR TYPES SEE A-621
- DOOR NUMBER, SEE DOOR SCHEDULE ON SHEETS A-621
- 10 — WINDOW TYPE, SEE SHEET A-631
- 2W12WA — WALL TYPE, SEE SHEET A-531
- ROOM NAME / A101 — ROOM NAME AND NUMBER
- FEC — FIRE EXTINGUISHER IN CABINET, SEE XXX
- WALL MOUNTED FIRE EXTINGUISHER ON BRACKET FOR MOUNTING HEIGHT, SEE XXX
- PH — PANIC HARDWARE
- NEAREST OBSTRUCTION
- 30"x48" CLR ACCESSIBLE SPACE
- 4'-0" MIN CLR
- 60" CLEAR ACCESSIBLE TURNING SPACE

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HONOWAI ELEMENTARY SCHOOL
EIGHT CLASSROOM BUILDING
WAIPAHU, OAHU, HAWAII

FLOOR PLAN - LEVEL 3

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	A-113
DRAWN BY:	APPROVED BY:	DATE	SHEET
SCALE: AS SHOWN			OF ____ SHTS

0 1/4" 1/2" 1"

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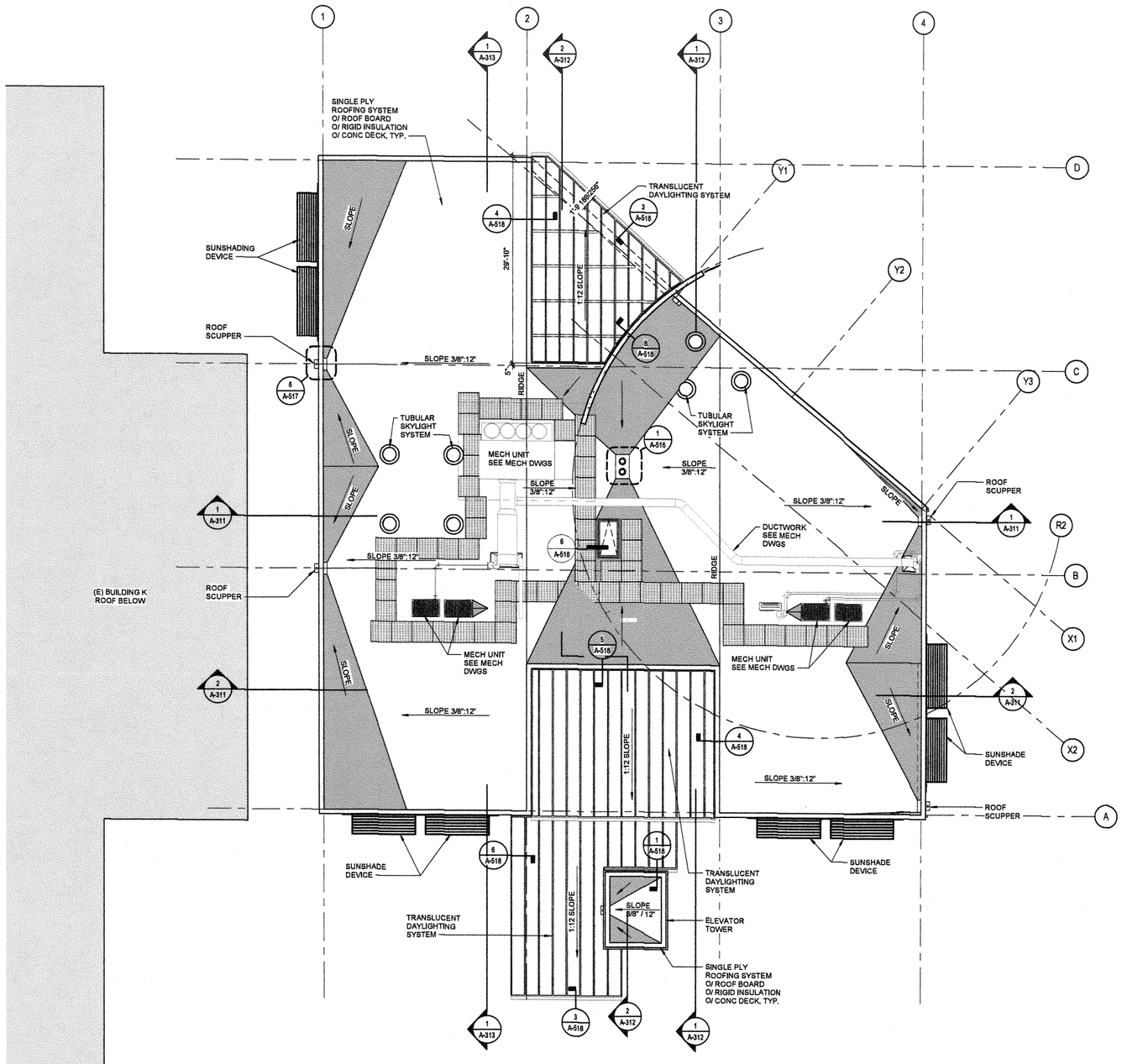

1 ES ROOF PLAN
SCALE 1/8" = 1'-0"

PLAN NORTH

GENERAL NOTES

1. MAJOR PENETRATIONS TO BE 24" MIN FROM EACH OTHER AND FROM PARAPET WALLS
2. FOR TYP VENT AND CONDUIT BOOT FLASHING AT ROOFING SYSTEM, SEE MECH DWGS AND DETAILS —
3. RIGID INSULATION TO BE 5" MIN ACROSS ENTIRE ROOF
4. SEE PLUMBING DRAWINGS FOR ROOF DRAIN AND OVERFLOW DRAIN SIZING AND LOCATION

ROOF PLAN LEGEND

- SINGLE PLY ROOFING SYSTEM O/ ROOF BOARD O/ TAPERED RIGID INSULATION (4" MIN) O/ CONC DECK, TYP
- TAPERED INSULATION CRICKET ASSEMBLY, W/ CLASS A SINGLE-PLY ROOFING, SLOPE TO DRAIN
- SLOPE 3/8:12 — SLOPE TO DRAIN
- TRANSLUCENT DAYLIGHTING PANELS, SSEE DTLS
- SINGLE PLY WALKWAY PADS
- MECHANICAL UNIT, SEE MECHANICAL DRAWINGS
- ROOF ACCESS HATCH, SEE DETAIL 6/A-516
- ROOF DRAIN AND OVERFLOW. CONNECT TO CIVIL BELOW GRADE. OVERFLOW DRAIN PIPE TO DAYLIGHT PER EXTERIOR ELEVATION SEE DTL 1/A-516
- TUBULAR SKYLIGHT SYSTEM, SEE DETAIL 10/A-516

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HONOWAI ELEMENTARY SCHOOL
EIGHT CLASSROOM BUILDING
WAIPAHU, OAHU, HAWAII

ROOF PLAN - LEVEL 3

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	A-133
DRAWN BY:	APPROVED BY:	DATE	SHEET
SCALE: AS SHOWN			OF ____ SHTS

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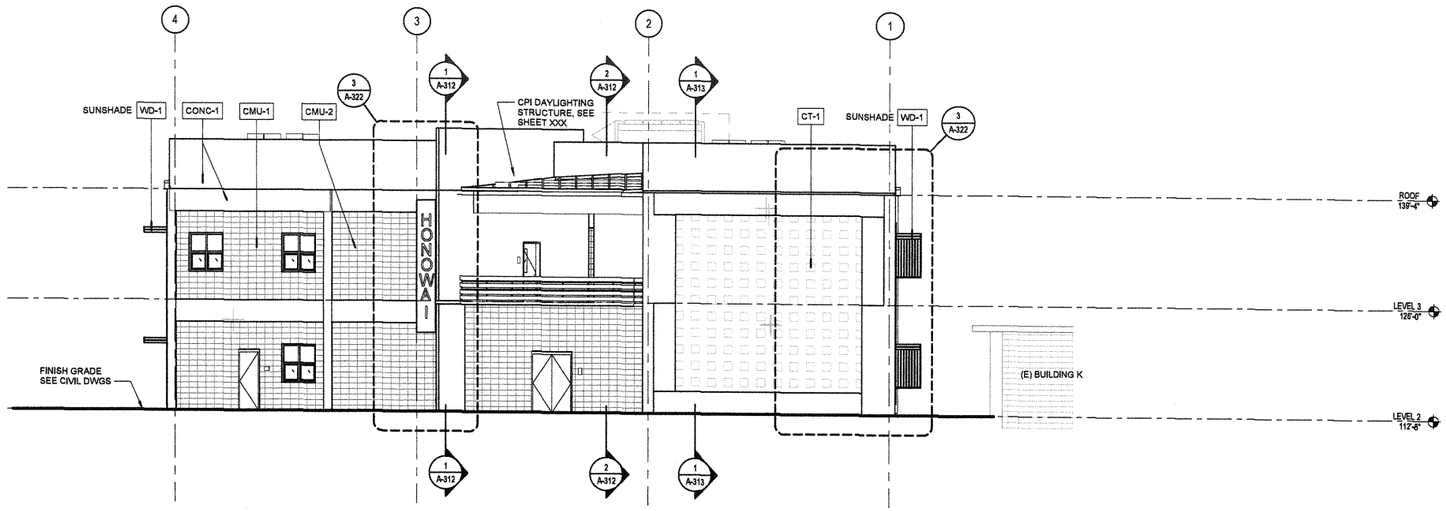
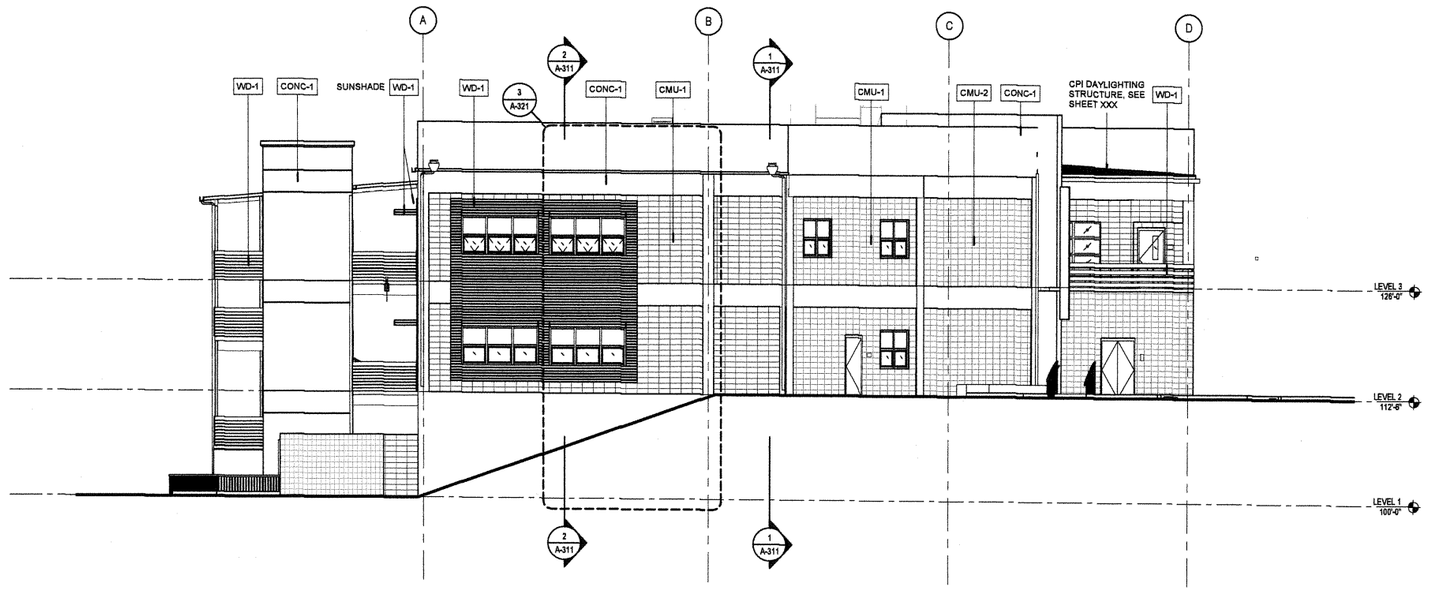


1 EXTERIOR ELEVATION - NORTH

SCALE 1/8" = 1'-0"



2 EXTERIOR ELEVATION - EAST

SCALE 1/8" = 1'-0"

GENERAL NOTES

1. SEE DOOR & FRAME SCHEDULE SHEET A-621 FOR EXTERIOR DOOR FINISHES.
2. SEE WINDOW SCHEDULE SHEET A-631 FOR WINDOW FRAME FINISHES.
3. ALL EXTERIOR HM DOORS AND FRAMES TO BE PAINTED _____
4. ADD DOUBLE BUILDING PAPER AND TAPE AT ALL EXTERIOR WINDOW, DOORS AND OTHER OPENINGS, SEE SHEET _____
5. ALL ALUMINUM DOOR AND WINDOW FRAMES TO BE CLEAR ANODIZED.
6. ALL CMU SHALL HAVE WATER REPELLANT & ANTI-GRAFFITI COATING APPLIED TO ALL SURFACES
7. FOR EXTERIOR WALL ASSEMBLIES SEE SHEET A-510

EXTERIOR FINISH SCHEDULE

MAT #	DESCRIPTION
CONC-1	**CONCRETE** BASIS OF DESIGN: **TBD.**, TEXTURE: **TBD**, FINISH: **TBD** COLOR: ***TBD***
CMU-1	**CONCRETE MASONRY UNIT** BASIS OF DESIGN: TILECO INC., TEXTURE: **PUNALU'U; ECLIPSE**, FINISH: **STANDARD FINISH**, COLOR: **BASALT LIME**
CMU-2	**SCREEN BLOCK** BASIS OF DESIGN: TILECO INC., TEXTURE: **#414**, SIZE: **8X8X16** FINISH: **STANDARD FINISH**, COLOR: ***BASALT LIME***
WD-1	**WEATHER RESISTENT WOOD FACADE** BASIS OF DESIGN: RESYSTA, FINISH: STANDARD FINISH COLOR: ***C24***
CT-1	**MOSAIC CERAMIC TILE** BASIS OF DESIGN: **TBD**, FINISH: **TBD** COLOR: ***TBD***
CP-1	**CEMENT PLASTER SYSTEM** BASIS OF DESIGN: **TBD**, FINISH: **TBD** COLOR: ***TBD***

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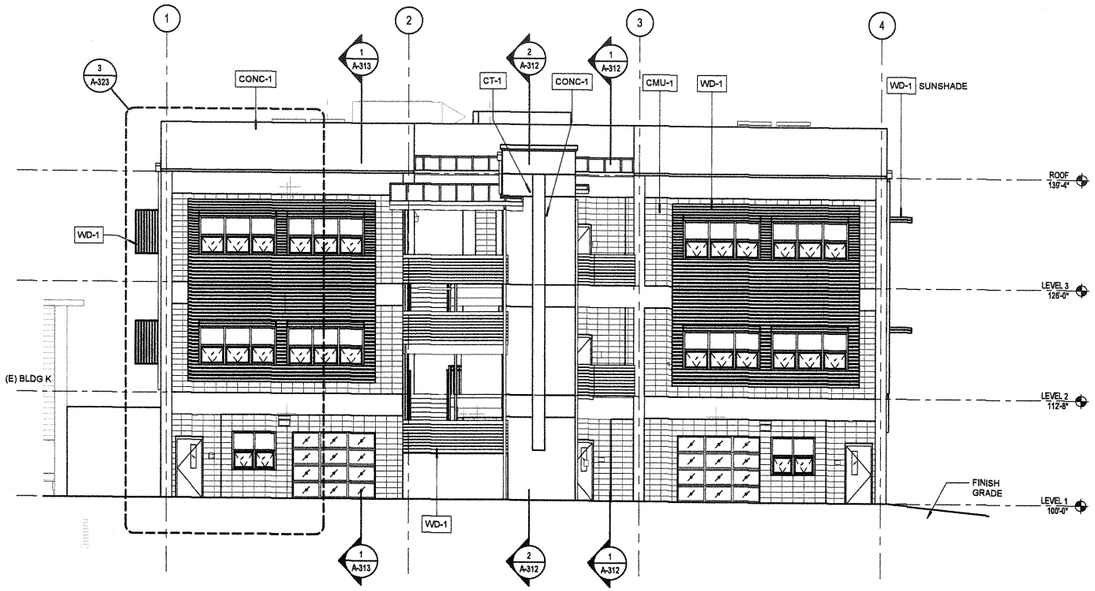
STATE OF HAWAII

HONOWAI ELEMENTARY SCHOOL
EIGHT CLASSROOM BUILDING
WAIPAHU, OAHU, HAWAII

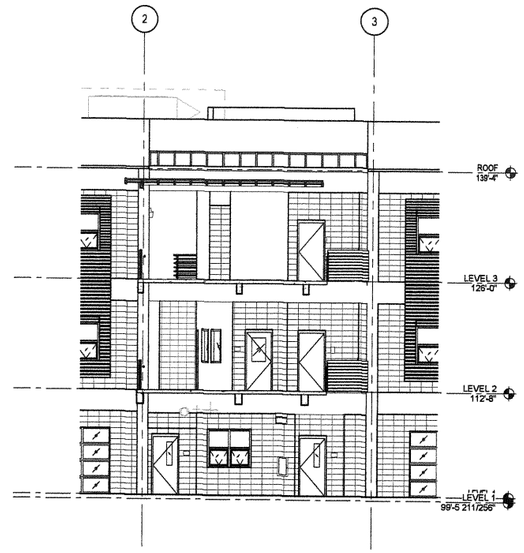
ELEVATIONS - EXTERIOR

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	A-212
DRAWN BY:	APPROVED BY:	DATE	SHEET
SCALE: AS SHOWN			OF ____ SHTS



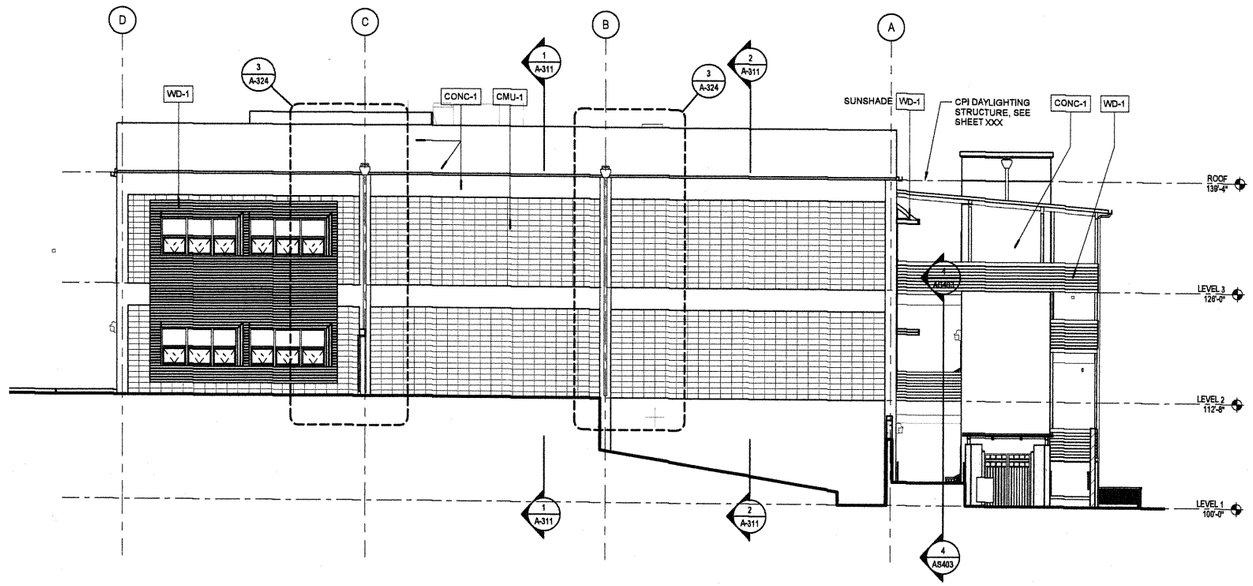
1 EXTERIOR ELEVATION - SOUTH

SCALE 1/8" = 1'-0"



3 EXTERIOR ELEVATION - SOUTH AT GRID 2-3 BEHIND STAIR 2 AND ELEVATOR

SCALE 1/8" = 1'-0"



2 EXTERIOR ELEVATION - WEST

SCALE 1/8" = 1'-0"

GENERAL NOTES

1. SEE DOOR & FRAME SCHEDULE SHEET A-621 FOR EXTERIOR DOOR FINISHES.
2. SEE WINDOW SCHEDULE SHEET A-631 FOR WINDOW FRAME FINISHES.
3. ALL EXTERIOR HM DOORS AND FRAMES TO BE PAINTED _____
4. ADD DOUBLE BUILDING PAPER AND TAPE AT ALL EXTERIOR WINDOW, DOORS AND OTHER OPENINGS, SEE SHEET _____
5. ALL ALUMINUM DOOR AND WINDOW FRAMES TO BE CLEAR ANODIZED.
6. ALL CMU SHALL HAVE WATER REPELLANT & ANTI-GRAFFITI COATING APPLIED TO ALL SURFACES
7. FOR EXTERIOR WALL ASSEMBLIES SEE SHEET A-510

EXTERIOR FINISH SCHEDULE

MAT #	DESCRIPTION
CONC-1	**CONCRETE** BASIS OF DESIGN: **TBD.**, TEXTURE: **TBD**, FINISH: **TBD** COLOR: ***TBD***
CMU-1	**CONCRETE MASONRY UNIT** BASIS OF DESIGN: TILECO INC., TEXTURE: **PUNALU'U: ECLIPSE**, FINISH: **STANDARD FINISH**, COLOR: **BASALT/LIME**
CMU-2	**SCREEN BLOCK** BASIS OF DESIGN: TILECO INC., TEXTURE: **#414**, SIZE: **8X8X16** FINISH: **STANDARD FINISH**, COLOR: ***BASALT/LIME***
WD-1	**WEATHER RESISTENT WOOD FACADE** BASIS OF DESIGN: RESYSTA, FINISH: STANDARD FINISH COLOR: ***C24***
CT-1	**MOSAIC CERAMIC TILE** BASIS OF DESIGN: **TBD**, FINISH: **TBD** COLOR: ***TBD***
CP-1	**CEMENT PLASTER SYSTEM** BASIS OF DESIGN: **TBD**, FINISH: **TBD** COLOR: ***TBD***

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HONOWAI ELEMENTARY SCHOOL
EIGHT CLASSROOM BUILDING
WAIPAHU, OAHU, HAWAII

ELEVATIONS - EXTERIOR

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	A-213
DRAWN BY:	APPROVED BY:	DATE	SHEET
SCALE: AS SHOWN			OF ____ SHTS

0 1/4" 1/2" 1"

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0 1/4" 1/2" 1" 2"

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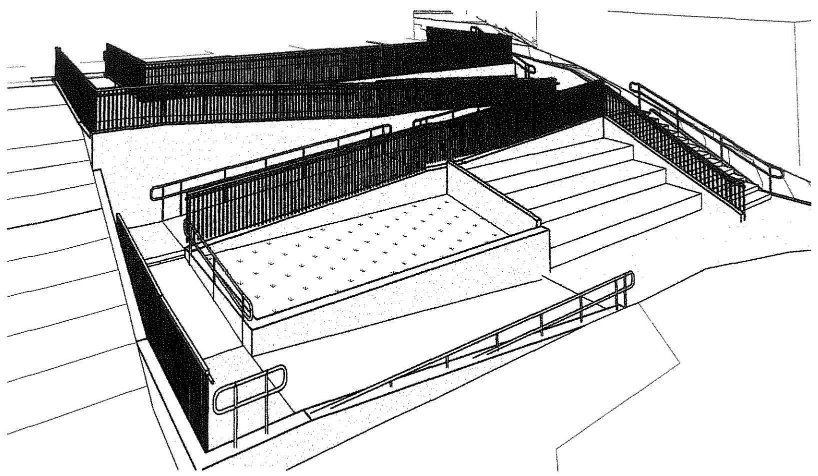
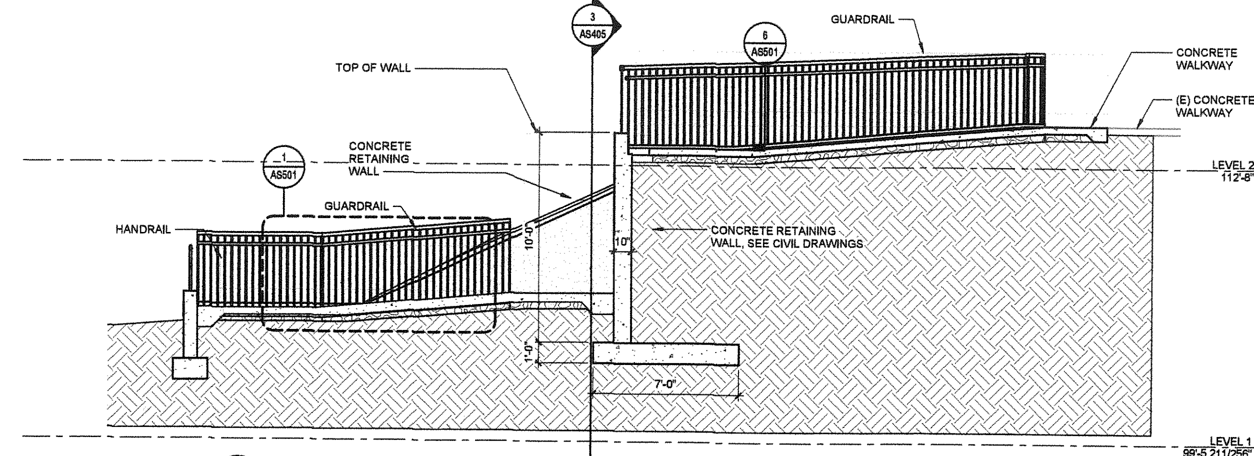
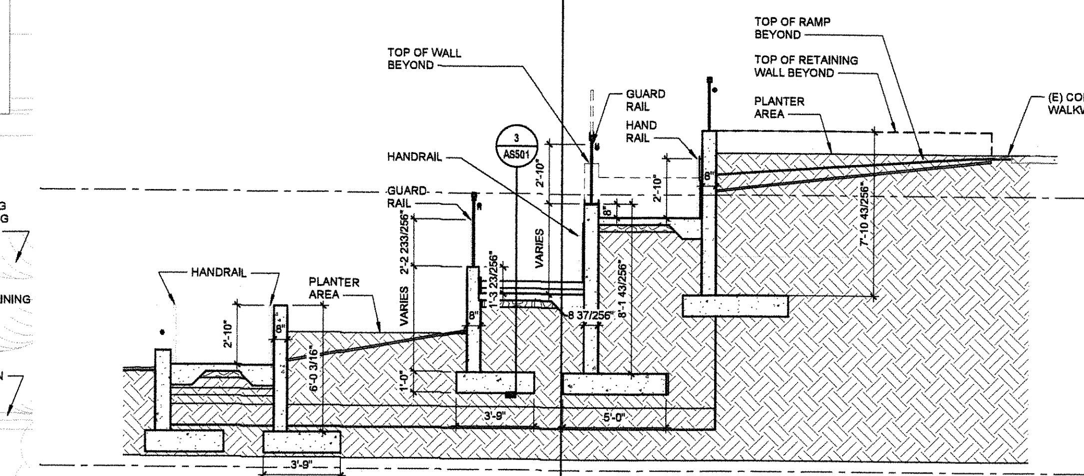


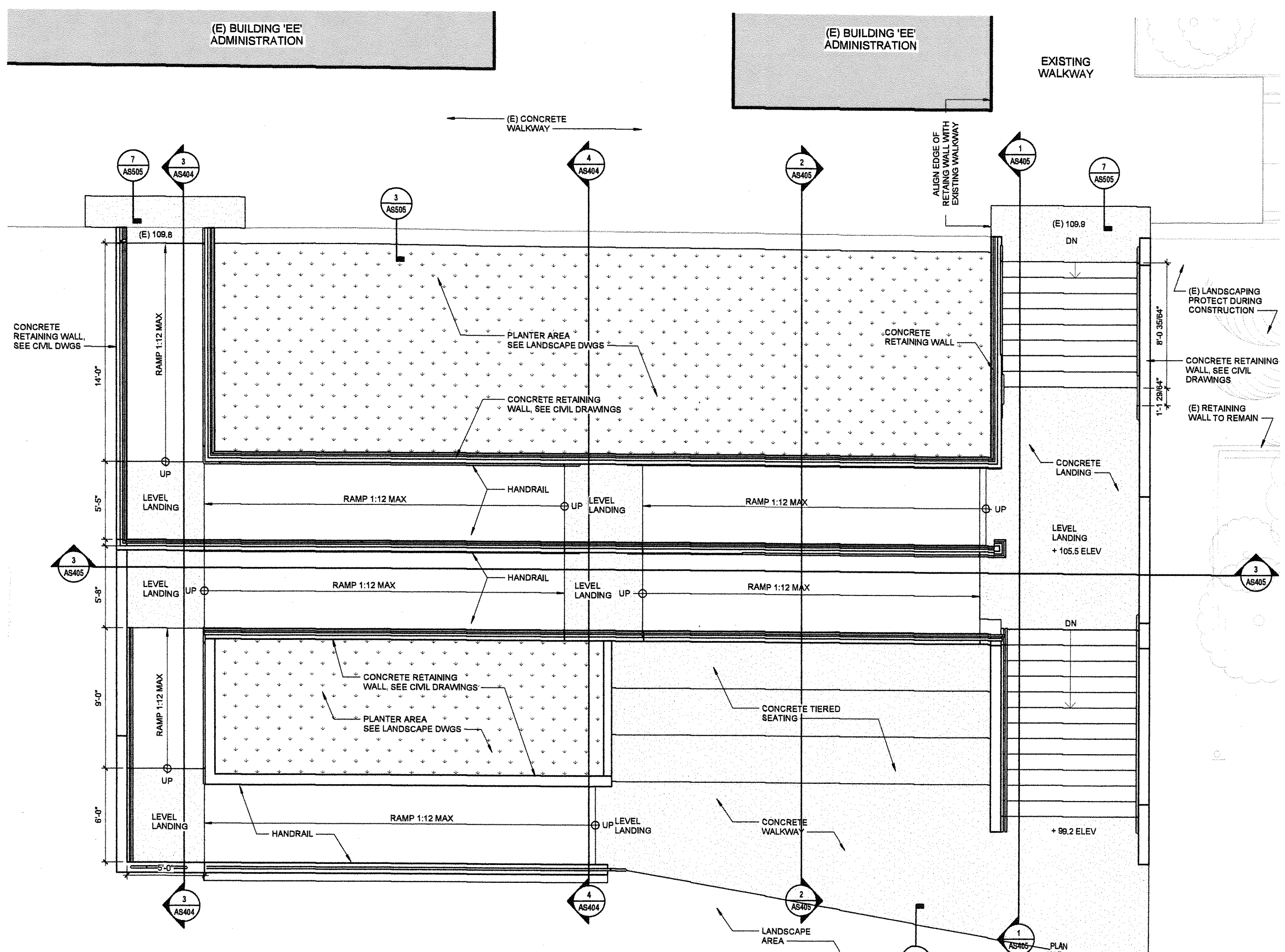
1 SOUTHWEST STAIR AND RAMP PERSPECTIVE
SCALE



3 SITE RAMP SECTION - 1
SCALE 1/4" = 1'-0"



4 SITE RETAINING WALLS AND RAMP LANDINGS - 2
SCALE 1/4" = 1'-0"



2 ENLARGED PLAN - SOUTHWEST STAIR AND RAMP
SCALE 1/4" = 1'-0"

REVISION NO.	SYM	DESCRIPTION	SHT__ OF__	DATE	APPROVED

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EIGHT CLASSROOM BUILDING
WAIPAHU, OAHU, HAWAII

ENLARGED SITE PLAN - SOUTHWEST STAIR AND RAMP

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	AS404
DRAWN BY:	APPROVED BY:	DATE	SHEET
SCALE: AS SHOWN			OF ___ SHTS

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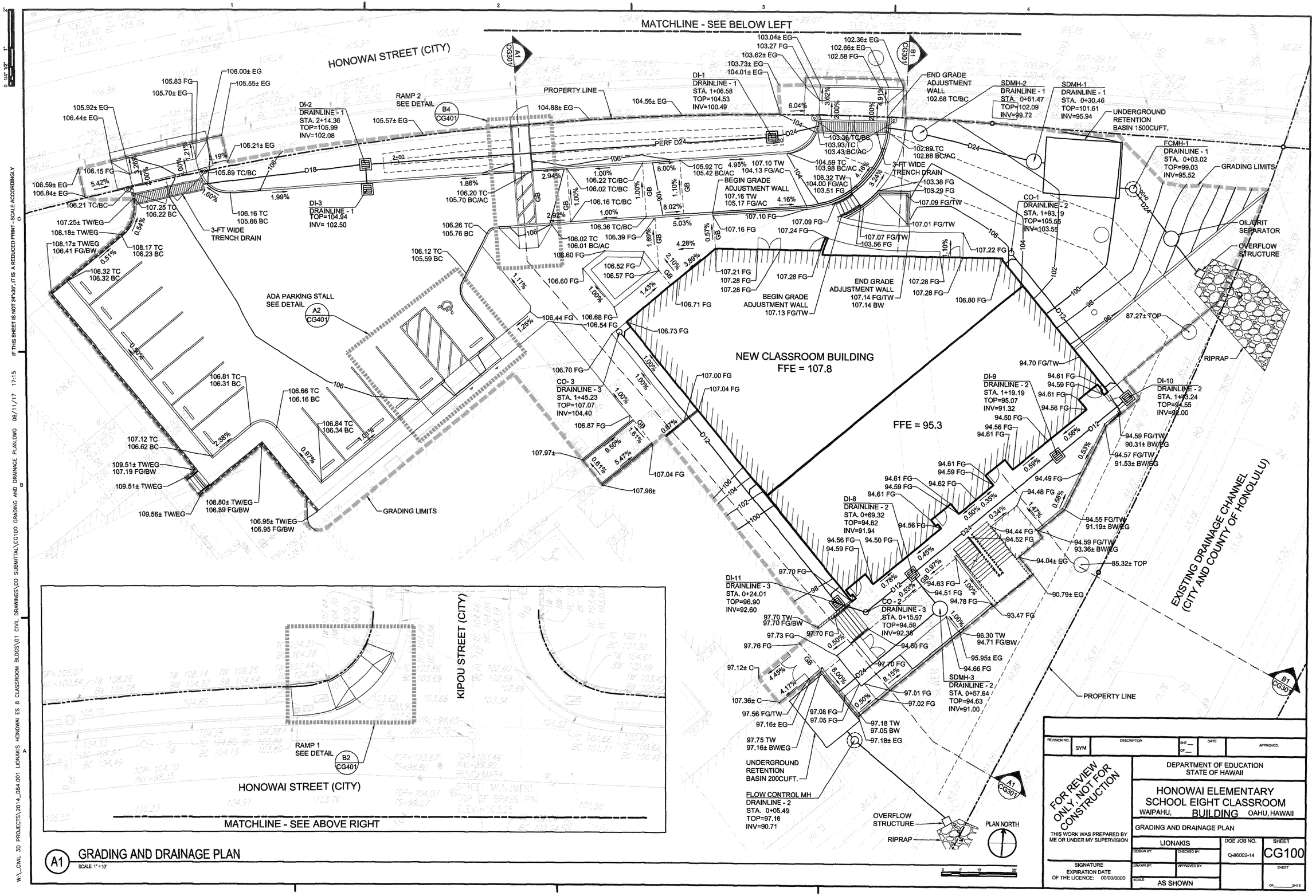

A1 GRADING AND DRAINAGE PLAN
SCALE: 1" = 10'

REVISION NO.	SYM	DESCRIPTION	SHT __ OF __	DATE	APPROVED:

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SCHOOL EIGHT CLASSROOM
WAIPAHU, BUILDING OAHU, HAWAII

GRADING AND DRAINAGE PLAN

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	CG100
DRAWN BY:	APPROVED BY:		SHEET OF ___SHTS
SCALE: AS SHOWN			

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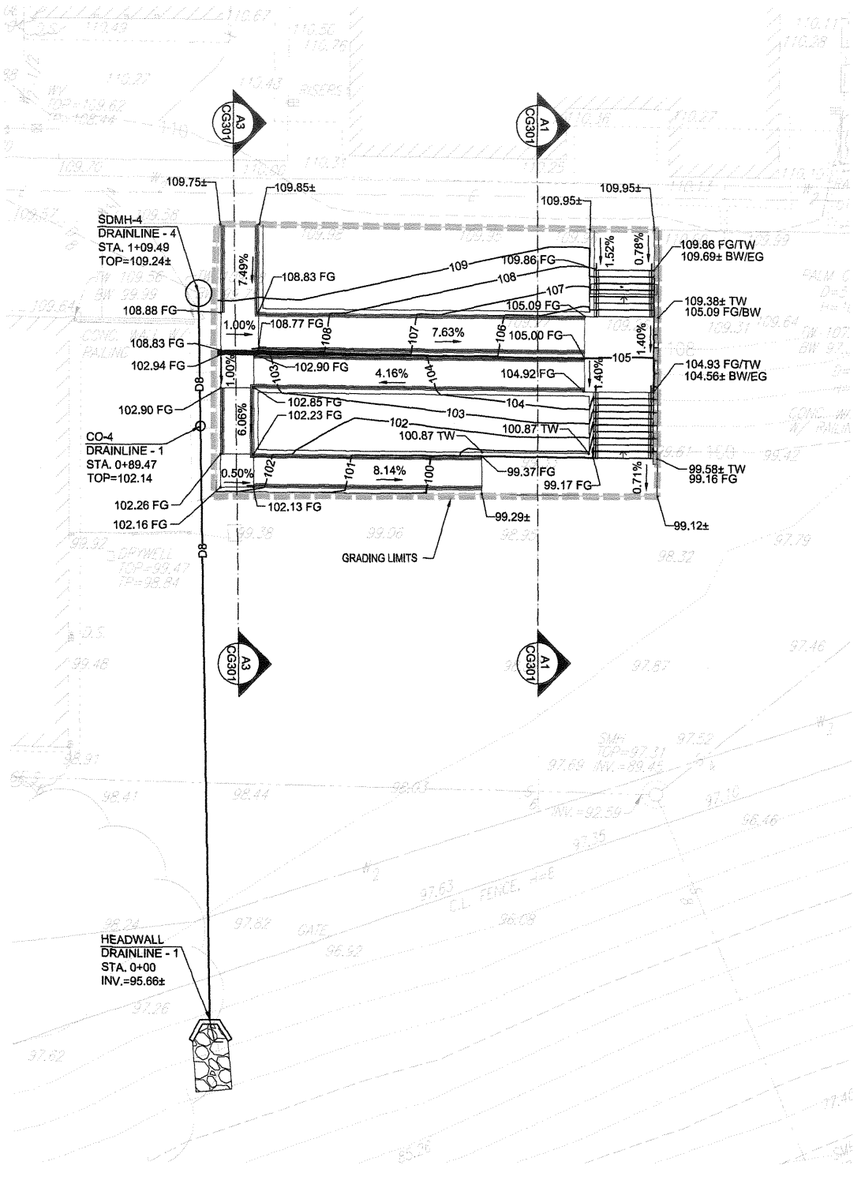
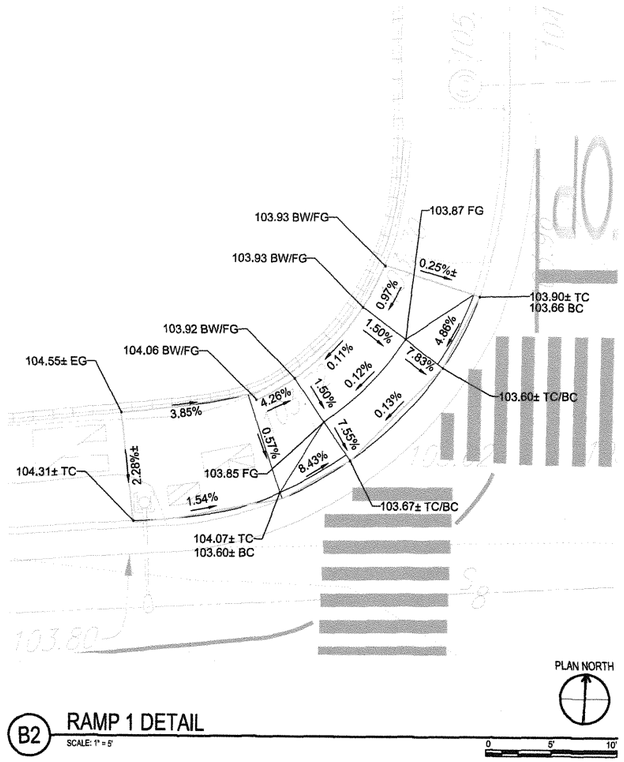
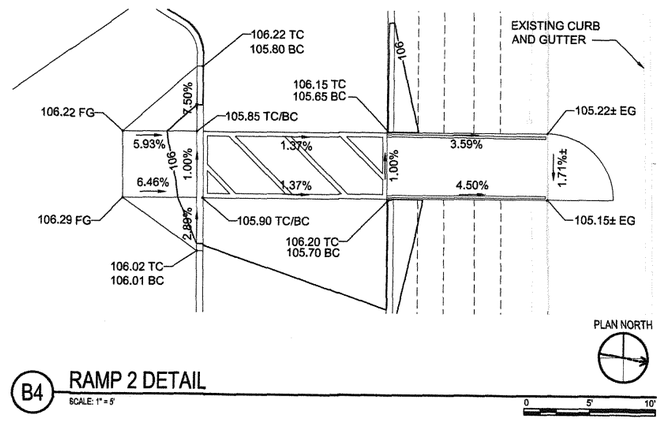
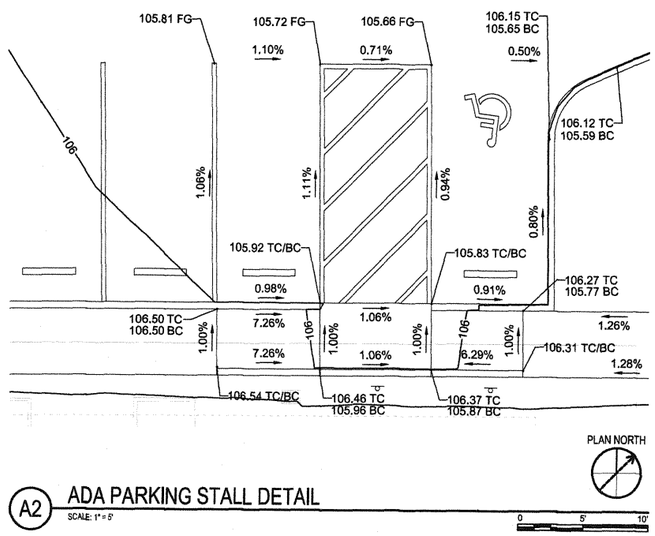
W:_CIVIL 3D PROJECTS\2014_084.001 LIONAKIS HONOWAI ES & CLASSROOM BLDGS\01 CIVIL DRAWINGS\DD SUBMITTAL\CG100 GRADING AND DRAINAGE PLAN.DWG 08/11/17 17:15









REVISION NO.	SYM	DESCRIPTION	SHT ___ OF ___	DATE	APPROVED

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STATE OF HAWAII

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SCHOOL EIGHT CLASSROOM
WAIPAHU, BUILDING OAHU, HAWAII

RAMP GRADING PLAN AND DETAILS

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	CG401
DRAWN BY:	APPROVED BY:		SHEET
SCALE: AS SHOWN			OF ____ SHTS

W:_CIVIL 3D PROJECTS\2014_084.001 LIONAKIS HONOWAI ES 8 CLASSROOM BLDGS\01 CIVIL DRAWINGS\DD SUBMITTAL\CG401 RAMP GRADING PLAN AND DETAILS.DWG 08/11/17 17:10 IF THIS SHEET IS NOT 24"x36", IT IS A REDUCED PRINT - SCALE ACCORDINGLY

EXIST. 4" WATER METER
M/N # 11129409
P/ID # 424389464

4" BACKFLOW PREVENTER ASSEMBLY, CONCRETE JACKET BETWEEN THE EXISTING WATER METER AND BACKFLOW PREVENTER

HONOWAI STREET (CITY)

EXIST. FIRE HYDRANT #LO1843

EXIST, FIRE HYDRANT #LO1829

KIPOU STREET (CITY)

BEGIN WL-1 STA. 0+00.00
CONNECT TO EXIST.
3" WATERLINE
1- 3" TEE
1- 3" GATE VALVE
1- CONC. BLOCK

WATERLINE - 1

WL-1 STA. 0+62.88
1- 3" 1/8 BEND
1- CONC. BLOCK

BIOSWALE

PERF D24

WL-1 STA. 2+29.57
1- 3" 1/4 BEND
1- CONC. BLOCK

END WL-1 STA. 2+47.44
FOR CONT.
SEE PLUMBING DWGS

NEW CLASSROOM BUILDING
FFE = 107.8

END WATERLINE - 3
WL-3 STA. 0+92.26
FOR CONT.
SEE PLUMBING PLANS

FFE = 95.30

WL-2 STA. 0+69.20
1- 6" 1/4 BEND
1- CONC. BLOCK

CONNECT SEWER MANHOLE TO EXIST 15" SEWERLINE
SMH-6
STA. 2+62.31
TOP=102.96
INV = 93.72±

SMH-5
SEWERLINE
STA. 2+40.27
TOP=103.49
INV = 91.50

BEGIN WATERLINE - 2
WL-2 STA. 0+00.00
CONNECT TO EXIST.
12" WATERLINE
1- 12"x6" TAPPING VALVE
1- 6" GATE VALVE
1- CONC. BLOCK

WATERLINE - 2

WL-2 STA. 0+28.41
1- 6" 1/4 BEND
1- CONC. BLOCK

6" DETECTOR CHECK WATER METER

UNDERGROUND RETENTION BASIN

FLOW CONTROL MAHOLE

SMH-4
SEWERLINE
STA. 1+69.40
TOP=100.05
INV = 87.39

OIL/GRIT SEPARATOR

OVERFLOW STRUCTURE

CRM APRON

SMH-3
SEWERLINE
STA. 1+39.15
TOP=87.27
INV = 83.02

END WATERLINE - 3
WL-3 STA. 0+74.47
CONNECT TO EXIST.
2" WATERLINE
1- 2" 1/4 BEND

EXIST. 2" WATERLINE

R.C. JACKET

WL-3 STA. 0+54.26
1- 2" 1/4 BEND
1- CONC. BLOCK

DRAIN MANHOLE

WATERLINE - 3

WL-3 STA. 0+20.08
1- 2" 1/4 BEND
1- CONC. BLOCK

BEGIN WATERLINE - 3
WL-3 STA. 0+00
CONNECT TO EXIST.
2" WATERLINE
1- 2" 1/4 BEND

EXIST. 2" WATERLINE

CONC. HEADWALL

STORM DRAIN MANHOLE

UNDERGROUND RETENTION BASIN

CONNECT TO EXIST SEWER MANHOLE
SMH-1
STA. 0+00
TOP=82.76
INV = 76.65±

CRM APRON

EXIST. 15" SEWERLINE

SEWERLINE
SMH-2
SEWERLINE
STA. 0+71.53
TOP=85.32
INV = 79.92

NEW 10' WIDE SEWER EASEMENT IN FAVOR OF C&C OF HONOLULU

EXISTING DRAINAGE CHANNEL (CITY AND COUNTY OF HONOLULU)

EXIST. 10' WIDE SEWER EASEMENT "B" IN FAVOR OF C&C OF HONOLULU TO BE CANCELLED

PLAN NORTH

0 10' 20' 40'

A1 UTILITY PLAN
SCALE: 1" = 20'

REVISION NO.	SYM	DESCRIPTION	SHT ___ OF ___	DATE	APPROVED

FOR REVIEW ONLY, NOT FOR CONSTRUCTION

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE
EXPIRATION DATE OF THE LICENCE: 00/00/0000

DEPARTMENT OF EDUCATION
STATE OF HAWAII

HONOWAI ELEMENTARY SCHOOL EIGHT CLASSROOM
WAIPAHU, BUILDING OAHU, HAWAII

UTILITY PLAN

LIONAKIS		DOE JOB NO.	SHEET
DESIGN BY:	CHECKED BY:	Q-86002-14	CU100
DRAWN BY:	APPROVED BY:		SHEET OF ___ SHTS
SCALE: AS SHOWN			

IF THIS SHEET IS NOT 24"x36", IT IS A REDUCED PRINT - SCALE ACCORDINGLY

W:_CIVIL 3D PROJECTS\2014_084.001 LIONAKIS HONOWAI ES 8 CLASSROOM BLDGS\01 CIVIL DRAWINGS\DD SUBMITTAL\CU100 UTILITY PLAN.DWG 08/10/17 15:53

IF THIS SHEET IS NOT 24"x36", IT IS A REDUCED PRINT - SCALE ACCORDINGLY

0 1/4" 1/2" 1"

NOTE: ALL NEW LANDSCAPED AREAS SHALL BE WATERED WITH AN AUTOMATICALLY CONTROLLED IRRIGATION SYSTEM.

5 EA. | PODOCARPUS GRACILIOR
PODOCARPUS
15 GAL., 6' HT., 2' SP., 1" CAL.
(TYP. SYMBOL)

1,650 S.F. | IPOMOEA PES-CAPRAE OR VIGNA MARINA
12" O.C. | POHUEHUE OR NANEA
4" POT, 4" HT., 6" SP.

16 EA. | CORDYLINE TERMINALIS
4' O.C. | TI
3 GAL., 4' HT., 2' SP.

285 S.F. | CAESALPINIA PULCHERRIMA OR SIDA FALLAX OR WIKSTROEMIA UVA-URSI OR PSILOTUM COMPLANATUM
12" O.C. | 'OHAI (FEMALE) OR 'ILIMA PAPA OR 'AKIA (MALE) OR MOA
6" POT, 12" HT., 12" SP.
(TYP. SYMBOL)

760 S.F. | MICROSORIUM DIVERSIFOLIUM
12" O.C. | DWARF LAUA'E FERN
ROOTED DIVISIONS, 12" HT.

3 EA. | METROSIDEROS POLYMORPHA
'OHI'A LEHUA

65 S.F. | VITEX ROTUNDIFOLIA
12" O.C. | POHINAHINA
3 GAL. 30" HT. 12" SP.

7 EA. | CIBOTIUM SPLENDENS
HAPU'U (HAWAIIAN FERN TREE)

575 S.F. | NEPHROLEPIS SP. OR DIPLAZIUM ESCULENTUM
12" O.C. | KUPUKUPU FERN OR POHOLE FERN
4" POT, 8" HT., 4" SP.

520 S.F. | DIANELLA SANDWICENSE
12" O.C. | 'UKI'UKI
6" POT, 12" HT., 12" SP.

33 EA. | METROSIDEROS POLYMORPHA OR SCAEVOLA GAUDICHAUDIANA
36" O.C. | WAUKE OR NAUPAKA KUAHIWI
3 GAL., 2' HT., 2' SP.
W/DWARF LAUA'E BENEATH

1,495 S.F. | IPOMOEA BATATAS
12" O.C. | UALA
4" POT, 6" HT., 6" SP.
(TYP. SYMBOL)

APPROX. LIMITS OF WORK

GRASS

PE

CE

CONC. STRIP FOR MAINTENANCE PURPOSES TYP.

EXST. TREES TO REMAIN.

PUAKENIKENI (RELOCATED STORED SPECIMENS)

NON-PLANTED STRIP FOR MAINTENANCE PURPOSES (CONC. OR GRAVEL) TYP.

8" CONC. EDGING.

POHAKU (WAHINE)

POHAKU (KANE)

CONC. STRIPS FOR MAINTENANCE PURPOSES TYP.

NEW CLASSROOM BUILDING

CONC. STRIP FOR MAINTENANCE PURPOSES TYP.

UNDERGROUND RETENTION BASIN

RIPRAP (SEE CIVIL DWGS)

NEW FENCE

RE-NATURALIZE SLOPE TO MATCH EXISTING.

NORTH

0 10' 20' 40' 60'
SCALE: 1"=20'

1 LANDSCAPE PLANTING PLAN
SCALE: 1"=20'

REVISION NO.	SYM	DESCRIPTION	SHT__ OF__	DATE:	APPROVED:

DEPARTMENT OF EDUCATION
STATE OF HAWAII

HONOWAI ELEMENTARY SCHOOL
8 CLASSROOM BUILDING
(SCHEMATIC DESIGN)
WAIPAHU, OAHU, HAWAII

LANDSCAPE PLANTING PLAN

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE
EXPIRATION DATE OF THE LICENCE: 00/00/0000

DESIGN BY:	CHECKED BY:	JOB NO.	SHEET
DRAWN BY:	APPROVED BY:	Q-86002-14	L003
SCALE: AS SHOWN			SHEET OF__SHTS

SECTION 2
EXISTING CONDITIONS

A. Existing Uses and Structures

Honowai Elementary School (K-6) opened for instruction in 1968 with 12 permanent buildings. Excluding portable structures there have not been any new buildings constructed since that time. Existing structures and uses are tabulated in Table 2 and buildings shown on Figure 3.

Table 2. Structures at Honowai Elementary School

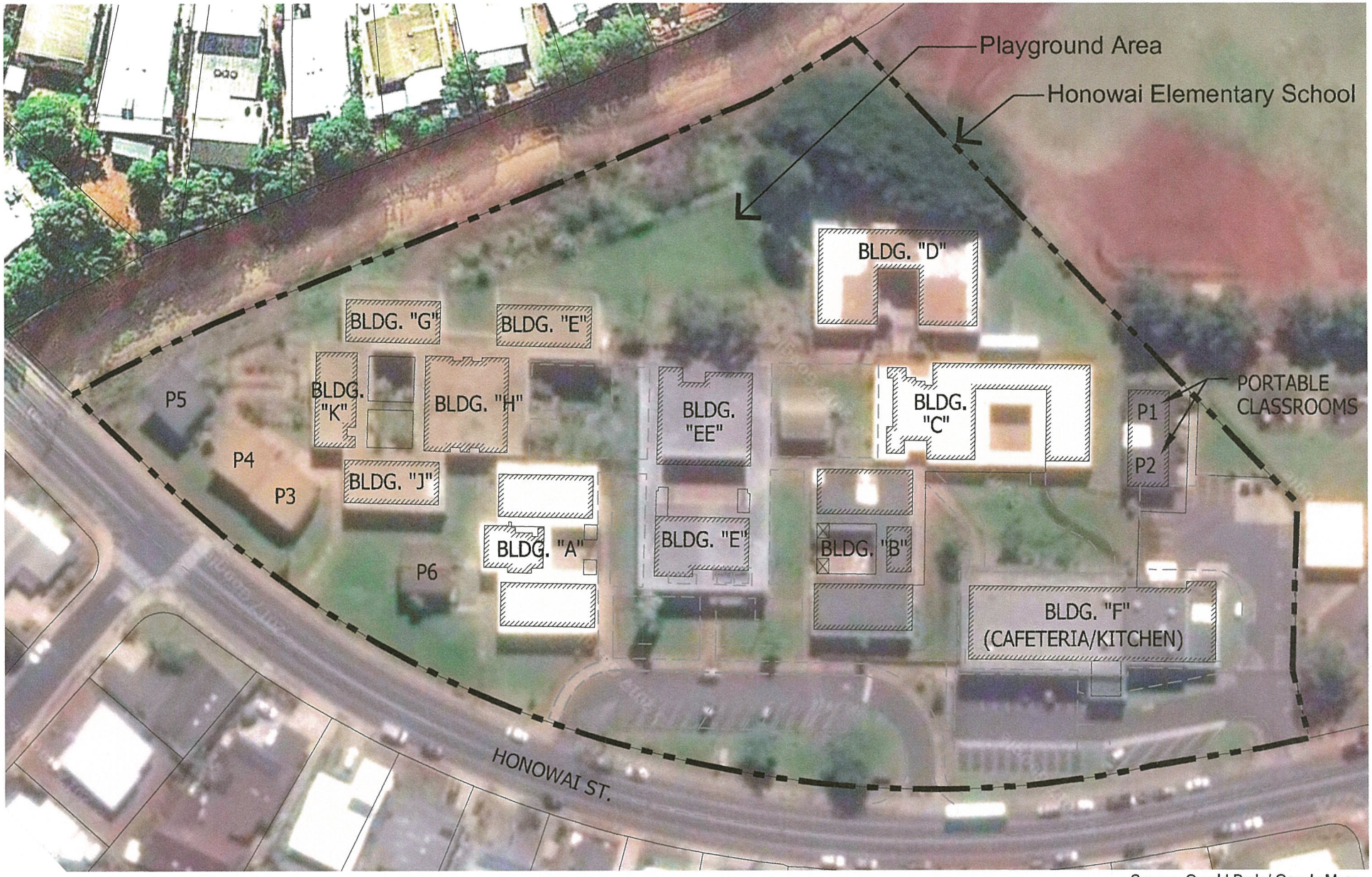
Building	Function	Levels	Rooms	Year Built	Square Feet
A	Classroom	1	4	1968	4,696
B	Classroom	1	4	1968	4,064
C	Classroom	1	4	1968	5,432
D	Classroom	2	8	1968	8,840
E	Administration	1	0	1968	2,362
EE	Library	1	0	1968	3,724
F	Serving Kitchen	1	0	1968	8,592
G	Classroom	2	6	1968	5,376
H	Classroom	1	4	1968	3,584
J	Classroom	1	2	1968	1,792
K	Faculty Workroom	1	0	1968	2,772
L	Classroom	2	4	1968	3,652
P01-P04	Classroom	1	4	1969	896
P05	Classroom	1	1	1963	936
P06	Classroom	1	1	1992	812

Source: Department of Education Facilities Inventory System Report, 2006.
Note: Building Functions May Not Be Current.

The three portable classrooms to be demolished house kindergarten classes. All three have in-room sinks but only one has restrooms.

The School is part of the Department of Education's Leeward Oahu District. The District is comprised of the Pearl City-Waipahu, Campbell-Kapolei, and Nanakuli-Waianae Complex Areas. Seven public elementary, intermediate, and high schools in Waipahu make up the Waipahu Complex. The public elementary schools are August Ahrens, Honowai, Kaleiopuu, Waikele, and Waipahu Elementary Schools. In general, the elementary schools "feed" students into Waipahu Intermediate which in turn "feeds" students into Waipahu High School.

For school year 2015-2016, enrollment was reported at 723 students in grades K-6 including regular, special education, and pre-K (DOE, 2016). The design enrollment is 870 students. Administrators report the School is staffed by 128 persons including 3 administrators, 2 counselors and 56 teachers. Staffing also includes office workers, cafeteria staff, Adult supervisors, custodians, and educational assistants.



Source: Gerald Park / Google Maps

Figure 3
Campus Map

Honowai Elementary School Classroom Building

Gerald Park
Urban Planner
June 2017

LINEAL SCALE (FEET)
45' 22.5' 0' 22.5' 45' 90'

NORTH

Hō'ae'ae Ahupua'a, District of 'Ewa, O'ahu, Hawai'i

Department of Education, State of Hawai'i

The YMCA operates an after-school A+ Program Mondays through Fridays from the end of school to 5:30 pm.

School bus service is available only for Special Education students who meet qualifications. Students are dropped off from 7:00 am to 7:45 am depending on traffic and bus situations. Pick-up time is usually at the end of the school day (MTThF 2:15 pm and W 1:25 pm). The pick-up/drop-off area is in the front parking lot.

B. General Environmental Characteristics

1. Climate

Waipahu can be characterized as having relative equable temperatures ranging from an annual average maximum of about 80^0 Fahrenheit in August to an annual average low of 65^0 F in January. The average annual temperature is 73.8 F. Average annual rainfall is approximately 25 to 30 inches, the majority of which falls in the months of February and December and the monthly averages ranges from 1 to 3 inches. The northeasterly trade winds blow about 75 percent of the time at an average speed of about 10 knots or 15 miles per hour (Belt, Collins Hawaii et.al., 1998).

2. Topography

The triangular-shaped lot has been modified for construction of buildings, walkways, parking areas, play areas, utilities, and landscaping. The ground surface has been remodeled and elevations represent man-made rather than former natural contours. Taken at the three corners of the lot, ground elevation ranges from 114 feet above mean sea level in the northwest corner, 97 feet in the southwest corner, 109 feet at the main parking area at the front of the School, and 100 feet at the building site. Based on the above elevations the terrain slopes *mauka to makai* from Honowai Street towards the back of the School and the two low corners.

3. Soils

The Soil Conservation Service (1972) soil map for the area identifies a single soil --- Molokai silty clay loam, 7 to 15 percent slope --- underlying the School (Code: MuC). Found on the islands of Maui, Moloka'i, Lāna'i, and O'ahu this soil developed from weathered igneous rock. Soil profile data is not available for this soil but it's characterized as having medium runoff and moderate erosion hazard.

Site improvements probably have blurred the distinctions between surface and subsurface soil layers. Because of grading, backfilling, and landscaping the existing surface material is a mixture of Molokai silty clay loam, imported engineered fill, and imported topsoil.

4. Water Resources

a. Surface Water

There are no surface water features on the premises. Along the western boundary Waikele Stream flows within a concrete lined trapezoid-shaped vessel. There are no visible signs of its former natural water course.

b. Ground Water

Based on aquifer classification records (Mink and Lau, 1990) the geographic area roughly between Kunia Road on the west, Kamehameha Highway on the east, Wheeler Army Airfield on the north, and land alongside the *makai* edge of the H-1 Freeway on the south is situated over the Waipahu aquifer of the Pearl Harbor aquifer sector. The basal, unconfined aquifer provides fresh drinking water, is ecologically important, and highly vulnerable to contamination (See Table 3). The aquifer is one of several basal aquifers comprising the Pearl Harbor Aquifer and the Pearl Harbor Water Management Area.

Honowai Elementary School is situated above the lower boundary of the Waipahu aquifer below the H-1 Freeway and to the southeast of the Kunia Road – H-1 Freeway Interchange.

Table 3. Aquifer Classification

Aquifer Code	**30203111**
Island Code	3 - Oahu
Aquifer Sector	02 - Pearl Harbor
Aquifer System	04 - Waipahu
Aquifer Type; hydrogeology	1 - Basal
Aquifer Condiiton	1 - Unconfined
Aquifer Type; geology	1 - Flank
Status Code	**11111**
Development Stage	1 - Currently Used
Utility	1 - Drinking
Salinity	1 - Fresh (<250)
Uniqueness	1 - Irreplaceable
Vulnerability to Contamination	1 - High

Source: Mink and Lau, 1990.

c. Ocean Water

Honowai Elementary School occupies an inland site and is not on or near the shoreline. The nearest ocean water is at Pearl Harbor's West Loch about 4,000 lineal feet directly south of the School.

5. Flood Hazard

The Flood Insurance Rate Map ("FIRM") panel for this section of Waipahu places the School in flood zone "D" which is defined as "undisturbed areas where flood hazards are undetermined, but flooding is possible (Department of Land and Natural Resources, 2014)." The FIRM panel is shown as Figure 3.

The School is outside the O'ahu Tsunami Evacuation Zone (Department of Emergency Management Public Information System, TsunamiReady@honolulu.gov).

6. Biological Resources

Two of the three areas proposed for improvements are planted with trees, palms, shrubs, and groundcover some of which are Native to Hawaii

The area proposed for the drop-off driveway and parking area is sparsely landscaped with grass and spot planted bottle palms. Ti grows around the portable buildings.

Plant materials embellish the walkway ramp system. In a limited space, gold tree, ohia lehua, paper mulberry, kou, papaya, and hala grow with shrubs such as red ginger, hibiscus, bougainvillea, Native gardenia, and puakenikeni. Palms include Manila, fan, and Macarthur. Guinea grass, haole koa, and ipomea, all weedy specimens, abound beyond the chain link fence demarcating the property line.

At the ramp site, kukui, satin leaf, hala, and fern trees grow on and atop the slope. Banana, papaya, sisal, sansivera, red ginger, croton further add to the landscaping,

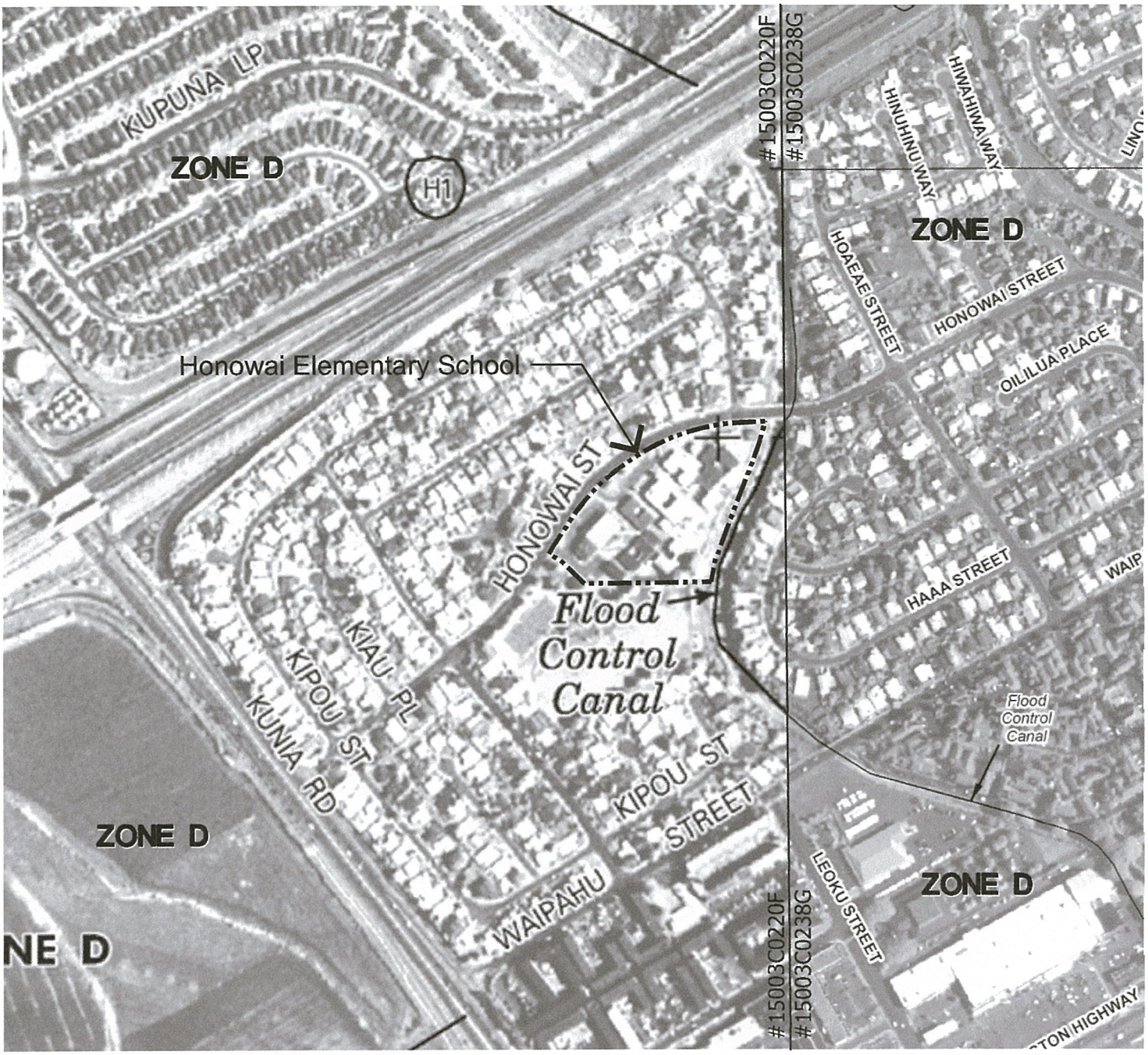
7. Historical Resources

CSH completed background research and a field inspection for this project. Background research indicates the project area was unlikely to have been a focus of traditional Hawaiian activity as it was well back from the coast and was not within a *kuleana* Land Commission Award (see Figure 10, Figure 12, and Figure 17). The project area is believed to have been in intensive commercial sugar cane cultivation for nearly a century (see Figure 26). No historic properties have been identified in the vicinity (see Figure 31).

No historic properties were identified in the background research or in the field inspection and none are believed to be present; with the possible exception of two stones of some note.

There is a belief held by some that two distinctive stones on the campus have religious associations. Regarding the basalt boulder (*pōhaku*) understood as a "female stone" under a portable building (Portable 4; see Figure 39) in the northeast corner of the campus, the local lore is that the female stone is upside down or something and is not happy.
The male stone in the central northwest side of the campus has been suggested as a *pōhaku o kāne* which is suggested by its distinctive shape (Figure 41 and Figure 42). Kamakau (1964:33; see Appendix B) relates: *"*There were very many Stones of Kane in every *ahupua'a..."* No information was developed in this study to support or refute the possibility. There was a famous marker stone located on the boundary of Honouliuli and Hō'ae'ae Ahupua'a to the west of the project area known as *"Pōhaku Pālaha"* but neither of the stones in the present area appears to be that boundary marker boulder.

It is recommended that the DOE initiate obtaining a determination letter from the SHPD as per Hawaii Administrative Rules (HAR) §13-275-3 and that this study be attached to the request to provide background information. No further archaeological work is recommended for this eight classroom construction project but this is not a clearcut matter given local perceptions of the import of two *pōhaku* on the campus to which import is ascribed.



Legend

Special Flood Hazard Zone Subject to Inundation by the 1% Annual Chance Flood

Zone AE Base Flood Elevation Determined.

Zone VE Coastal Flood Zone with Velocity Hazard (Wave Action); Base Flood Elevations Determined.

Floodway Areas in Zone AE

The floodway is the channel of a stream plus adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood height.

Other Flood Areas

Zone X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

Other Areas

Zone X Areas determined to be outside the 0.2% annual Chance Floodplain.

Zone D Areas in which flood hazards are undetermined, but possible.

Source: Federal Emergency Management Agency
Flood Insurance Rate Map:
#15003C0220F - SEPT. 30, 2004
#15003C0238G - JAN. 19, 2011

LINEAL SCALE (FEET)
250 125 0 125 250 500

NORTH

Gerald Park
Urban Planner
June 2017

Figure 4
FIRM Map
Honowai Elementary School
Classroom Building

Hō'ae'ae Ahupua'a, District of 'Ewa, O'ahu, Hawai'i

Department of Education, State of Hawai'i

C. Land Use Controls

State Land Use District:	Urban
General Plan for O'ahu:	Urban Fringe
Development Plan Area:	Central Oahu
Sustainable Communities Plan:	Central Oahu
Community Plan Land Use Map:	Residential and Low Density Apartment
Zoning:	R-5 Residential (See Figure 5)
Special Management Area:	Outside Special Management Area

The State Land Use Commission under the authority of Chapter 205, Hawai'i Revised Statutes classifies all land in the State of Hawaii as Agricultural, Conservation, Rural, and Urban. Uses in the Agricultural District are regulated by the Land Use Commission; uses in the Conservation District by the Board of Land and Natural Resources, uses in the Rural District by the Land Use Commission, and uses in the Urban District by the respective county government. The zoning powers of the respective counties also govern uses in other than the Conservation District.

Honowai Elementary School, almost all of Waipahu Town and the nearby residential communities of Waikele, Village Park, and Royal Kunia are designated Urban by the State Land Use Commission.

Honowai Elementary School was constructed and serving elementary school students before current City and County of Honolulu land use policies and controls were put into place. The School precedes the current General Plan, Central Oahu *Sustainable* Communities Plan (formerly the Central Oahu Development Plan), and the Land Use Ordinance (zoning). These tools recognize the existence of the School and applicable policies and zoning controls allow public school use of the property. School use is thus consistent with City and County of Honolulu land use polices and controls.

D. Public Facilities and Services

Honowai Street is a two-lane, two-way county-owned road that serves the School and adjoining residential subdivision on the north. Oriented in an east-west direction, the road lies within a 56-foot right of way and is fully improved with curbs, gutters, and sidewalks on both sides. The posted speed limit is 25 miles per hour.

On-street parking is allowed on 7-foot wide shoulders on both sides. There is no striping of individual stalls but a continuous stripe parallel with the street curbing marks the parking areas. Parked vehicles line both sides of the street during school hours.

Crosswalks on Honowai Street are at the existing School entry and exit driveways and Kipou Street.

There is no travel lane striping or signage for bicycle use.

A C-shaped driveway at the front of the School accesses a parking area and student drop off area fronting the Administration Building. The circulation pattern is one-way with a separate entry and exit on Honowai Street. There are no dedicated turning lanes for left and right turn movements from Honowai Street at the entry and for outbound traffic at the exit. The entry and exit are three-legged unsignalized intersections.

Legend

B-2	COMMUNITY BUSINESS
R-5	RESIDENTIAL (5,000 SF. LOT MINIMUM)
A-2	MEDIUM DENSITY APARTMENTS
P-2	PRESERVATION (GENERAL)

Source: City & County of Honolulu,
GIS Website: http://gis.hicentral.com/pubwebsite/

LINEAL SCALE (FEET)
250 125 0 125 250 500

NORTH

Gerald Park
Urban Planner
June 2017

Figure 5
Zoning
Honowai Elementary School
Classroom Building

Hō'ae'ae Ahupua'a, District of 'Ewa, O'ahu, Hawai'i

Department of Education, State of Hawai'i

A Traffic Impact Assessment Report was prepared for the project (SSFM International, 2017) and is reproduced in Appendix B. Excerpts from and interpretation of the data are described below. A tabulation of morning and afternoon peak hour traffic at the entry/exit driveway is shown as Table 4. Morning inbound traffic is evenly split from eastbound and westbound directions. The outbound right turn movement onto Honowai Street is double that of the left turn movement.

Afternoon peak hour traffic is minimal at both the entry and exit.

Table 4. Existing Conditions at Entry/Exit Driveway

Peak Hour	Eastbound	Westbound	Total	Level of Service
AM (7:00 - 8:00)				
Honowai Street @ Entry	194	259	453	
Inbound	91 (Right turn)	92 (Left turn)	183	A
Honwai Street @ Exit	102	198	300	
Outbound	60 (Left turn)	121 (Right turn)	181	B
PM (3:15 - 4:15)				
Honowai Street @ Entry	83	132	215	
Inbound	3 (Right turn)	5 (Left turn)	8	A
Honowai Street @ Exit	83	119	202	
Outbound	8 (Left turn)	9 (Right turn)	17	A

Source: SSFM International, 2017.

The traffic count shows that 180± vehicles enter and exit the driveway during morning peak hours. In this author's opinion, the number of vehicles transiting the one-way driveway in conjunction with other factors congests the driveway and Honowai Street. On a typical morning, vehicles queue inside the entry, at the drop off-area, at the exit, and east and west bound lanes on Honowai Street. This circular queueing on the driveway and Honowai Street slows vehicle movement through the entire area. Students crossing the driveways and Honowai Street to get to school and residents attempting to enter or exit driveways on Honowai Street also contribute to an overall slowdown in movement with longer queueing.

The consulting traffic engineers rated traffic at the two intersections using Level of Service. "Level of service (LOS) is an operational analysis rating system used in traffic engineering to measure the effectiveness of roadway operating conditions. There are six LOS ranging from A to F. LOS A is defined as being the least interrupted flow conditions with little or no delays, whereas LOS F is defined as conditions where extreme delays exist. Honowai Street is classified as a collector within an urban area. Guidelines from *A Policy on Geometric Design of Highways and Streets* (AASHTO, 2011) state that an appropriate LOS for an urban collector road is LOS D or better. Thus, LOS D or better is the standard for operations at the intersections (SSFM International, 2017)".

LOS equates to an average controlled delay (in seconds per vehicle) of less than 10 seconds, LOS B more than 10 seconds but less than 15 seconds and LOS D more than 25 seconds but less than 35 seconds.

Congestion occurs every day school is in session and some mornings can be more congested than others. Honowai Elementary School is not the only public elementary school on O'ahu where traffic congestion occurs before and after school hours.

Bus stops on both sides of Honowai Street are located near its intersection with Kipou Street. The bus stop for west bound passengers' fronts residential dwellings; the bus stop for eastbound passengers fronts a section of the School (fronting Portables 3 and 4).

The Honolulu Board of Water Supply system provides domestic water to the School from a 12-inch main in Honowai Street. From the main line, a 4-inch lateral connects to a 4-inch water meter from which water is distributed through the on-site distribution system.

Wastewater from the School is collected in the on-site wastewater system and discharged to the 15" sewer in the sewer easement. The discharge manhole is located *maka*i of Buildings D and EE in the open play space.

A City and County of Honolulu drainage channel bounds the School on its north and east sides. Along Honowai Street a 48-inch drain inlet crosses the north end corner of the School property and outlets into the drainage channel. On-site runoff at the building site surface flows to the drainage channel and also onto Honowai Street. Based on the approximate project site area of 0.61 acres, the peak flow rate under the 10 year storm is estimated at 0.75 cubic feet per second (cfs) (Basis of Design, Civil, 2017).

Solid waste is collected by a private hauler under contract with the Department of Education.

Protective services originate from the Pearl City Police Station on Waimano Home Road at Ho'olaulea Street. The Station is approximately 4.0 miles east of Harbor View Subdivision. On duty police officers routinely patrol Waipahu town and its neighborhoods.

The Honolulu Fire Department operates two fire stations in Waipahu. The Waipahu Fire Station (Station 12) is located on Leonui Street in Waipahu town about 0.5 miles south of the School. A quint and engine are posted to the station. A second and newer station, the Waikele Fire Station (Station 42), is above the H-1 Freeway on Lumiaina Street about 2.0 miles to the northeast. An engine is posted to this station.

Honowai Neighborhood Park adjoins Honowai School on the west. Owned by the City and County of Honolulu, the 6.31 acre park features a comfort station, two lighted outdoor basketball and volleyball courts, two softball fields with bleachers (one lighted), and a children's play apparatus. Parking is limited to two stalls (Department of Parks and Recreation, 1997; G. Park Field Observation, 2017).

SECTION 3
SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MEASURES TO MITIGATE ADVERSE EFFECTS

The scope of the project was discussed with the consulting architect and members of the design team. Questions about the project and the School were posed to staff of the Project Management Branch, Department of Education and School administrators. State and County agencies were contacted for information relative to their jurisdiction. Time was spent in the field noting site conditions and conditions in the vicinity of Honowai Elementary School. Archaeological and traffic reports were prepared by others for use in the environmental assessment. The sum total of the consultations and field investigations helped to identify existing conditions and features that could affect or be affected by the project. These conditions include:

- Honowai Elementary School has been at this location since 1968;
- The proposed improvements will be constructed on previously modified terrain;
- Observed on-site flora and fauna are common to the State of Hawai'i;
- There are no archaeological resources associated with the building and ramp sites;
- The School is not located in a flood hazard area;
- There are no streams, ponds, or wetlands on the premises;
- Domestic water is available to the School;
- Wastewater collection is available to the School.

A. Short-term Impacts

Site work, a necessary function to prepare the land for building temporary and permanent improvements is the first and probably the most disruptive construction activity on the environment. Approximately 0.7 acres will be grubbed and graded. Grubbing will remove vegetation and grading will establish preliminary and final design elevations. Trees and shrubs on and around the building and ramp site will be tagged for disposition (left in place, relocated, or demolished).

Site work is a persistent source of fugitive dust. Site contractors are aware that fugitive dust is a nuisance to construction workers, people living and working near work sites, and in this instance school age children and staff. Because the project is proposed on school grounds stringent dust control measures will be implemented.

Molokai silty clay loam poses a moderate erosion hazard under normal conditions but dust generation can be magnified on windy days. Water sprinkling is probably the most effective dust control measure given the area of the building site and the scale of the proposed improvements. It is anticipated that dust screens will be erected around the site to minimize fugitive dust blowing towards Buildings J, K. and G and other campus buildings. The contractor also may choose to implement other measures and best management practices based on their experience with similar projects and job site conditions.

The contractor will be responsible for general housekeeping of the site and for keeping adjacent driveways and streets free of dirt, mud, and construction litter and debris. Pollution control measures shall comply with Chapter 60.1, Air Pollution Control regulations of the

State Department of Health.

The building site is sloping. Site work will expose soil creating opportunities for erosion and construction-related runoff. Approximately 0.7 acres will be graded. Grading quantities are estimated at 1,060 CY of cut and 522 CY of fill. Grading, trenching, and stockpiling excavated or imported material will be performed in accordance with Chapter 14, Articles 13, 14, and 15 Revised Ordinances of Honolulu, 1990, as amended.

The City and County of Honolulu enacted new Rules for Water Quality effective August 16, 2017. The Rules provide standards for design, selection, and maintenance of best management practices (BMPs) to protect the City's drainage infrastructure and receiving waters from pollution attributable to "land disturbance, surface hardening, and land use activities" (from Rules, 2017). A Sediment and Erosion Control Plan detailing construction and post-construction BMPs will be prepared and submitted to the Department of Planning and Permitting for review and approval.

An NPDES permit for storm water runoff associated with construction activities may be required if more than one acre will be disturbed during construction (the current estimate is 0.7 acres). The project limits and grading limits for the building and ramp sites will be determined during design development.

Schools are considered noise sensitive facilities. Construction noise will be audible in classrooms and buildings adjoining both sites and is expected to vary in volume, frequency, and duration attributable to construction activity and equipment in use. Buildings J (Library), K, and G are located west of the building site about 50 feet away. At this distance construction noise can interfere with instruction and distract students and teachers. Construction barriers or and/or dust screens will be erected around the area to aid in noise mitigation, dust control (with dust screens), and safety. Classrooms in Building K face the building site and will be exposed directly to dust and noise. The classrooms have operable wooden louvers and air conditioning units. To mitigate construction dust and noise the louvers will be closed and the rooms air conditioned.

Noise will vary also by construction phase, the duration of each phase, and the type of equipment used during the different phases. For this project, noise will be most pronounced during the early stages when the site is grubbed, graded, and building foundation poured. Maximum sound levels in the range of 82-96 db(A) measured at 50 feet from the source would be generated by heavy machinery during site work. Noise will diminish as the structure is erected and roofed. Once the structure is completed, most construction activities will take place inside the building and the exterior walls will help to attenuate noise.

Community Noise Control regulations (Hawaii Administrative Rules Chapter 46) establish a maximum permissible sound level for construction activities occurring within (acoustical) zoning districts. The School is in a residential zoning district and thus classified as a Class A zoning district for noise control purposes. The maximum permissible daytime sound level for excessive noise sources (to include stationary noise sources and construction and industrial activities) in the Class A zoning district is 55 dBA from 7:00 AM to 10:00 PM (Ibid). Construction activities often produce noise in excess of the permissible daytime noise level and a variance (or Noise Permit) may be needed. The contractor will be responsible for obtaining the variance and complying with applicable conditions.

Construction will overlap into the school year and a time / work schedule will be developed in consultation with school administrators. With a projected April 2018 start-up it is possible for initial site work to be performed during the summer break when school is not is session. During this time period construction activities would preclude dust, noise, and construction vehicle traffic from adversely affecting daily school activities and provide for the safety of students and staff.

The project is proposed in an area that has been previously altered by site work and building construction for prior school development. Should excavation unearth subsurface archaeological sites, artifacts, or cultural deposits, work in the immediate area will cease and the proper authorities notified for disposition of the finds. If *iwi kupuna* are uncovered and appear to be less than 50 years old, the Honolulu Police Department will be notified. If the burials appear to be more than 50 years old, then the State Historic Preservation Officer will be notified. As a matter of protocol, both agencies will be notified for inspection and proper disposition of the finds.

The School and associated facilities are less than 50 years old and thus not considered historic property.

On-site vegetation is not considered rare, threatened or endangered or proposed for that status.

Infrastructure improvements will require construction in the Honowai Street right-of-way at Kipou Street. Work will include the project driveways and drop off area, parking lot, fire line connections, new sewer manholes, and sewer line connections.

To minimize traffic impacts during construction, the contractor will:

- Post notices alerting drivers of scheduled work on and around the driveway and within the right-of-way;
- Position traffic cones or other directional devices to guide vehicles around work areas;
- Post flagmen for traffic control;
- Cover open trenches with steel plates during non-working hours and post safety devices with warning lights to alert motorists;
- Schedule work to avoid student drop-off and pick- up times; and
- Coordinate construction work and traffic movement/mitigation with School administrators.

Vehicles carrying workers and material will contribute to traffic on surface streets to the Harbor View Subdivision and on Honowai Street fronting the School. Material deliveries will be scheduled during non-peak traffic hours to minimize impact on school and residential traffic. As much as practical building materials will be off-loaded outside the right-of-way. If street unloading is necessary, flagmen will be posted for traffic control.

A field office and base yard will be set up at a location to be determined. Material will be unloaded and stockpiled at the base yard. Construction equipment will be stored at the base yard and the yard secured after working hours.

B. Long-term Impacts

The portable buildings to be demolished will be replaced by three standard DOE classrooms. The 900+ square foot classrooms are larger than the spaces in the individual portable buildings.

Medically Fragile and Special Education Students will have their own flexible space on the ground level. The space will be air conditioned to provide a climate controlled environment for the Medically Fragile. The level will be accessible from all walkways to the building, from the new drop-off area, and by elevator.

The upper level is devoted to Science, Technology, Engineering, Arts, and Math (STEAM) provides ample and open flexible space for STEAM students for classroom learning and lab work/projects. A portion of the upper level is set aside for leaning and application of Media Production techniques and skills. STEAM and Media Production curricula provide basic skills for students who can continue their education in both disciplines in middle and high school. A short-range goal of the Department of Education is to provide diverse curricula at the elementary school level such that students can build on their learned skills at the middle, high school, and higher education levels. The long-range charge is to expose, prepare, and provide opportunities for students early on to learn the skills they will need for creating the 21st century. The goal is statewide for all public schools not only Honowai Elementary School.

Ambient air quality should not be adversely affected in the long-term. The principal source of air pollution is expected to be exhaust emissions from vehicles entering and exiting the School grounds and traveling Honowai Street. Emissions will be dispersed by the prevailing winds.

There are no pollutant generating activities to be located in the new building..

Generally elementary schools are not significant noise generators. Noise associated with classroom use can be expected and confined to interior spaces by walls and doors. Sounds of students talking and laughing outside of the classroom are typical and should not be constantly audible in residential areas *mauka* of the School.

Water demand will depend on usage and will vary every day. Low flow fixtures and devices for faucets, toilets, and water closets will be installed to reduce water use and wastewater. The Board of Water Supply, City and County of Honolulu will determine the availability of water in consultation with the mechanical engineer and/or during the building permit review process.

Post-development storm water runoff is projected at 0.70 cubic feet per second (cfs) for the 10-year storm event. The recommended engineering solution is to collect, pipe, and detain on-site runoff in two subsurface detention systems. Each system will include a flow control manhole to limit the peak flow rate released to the downstream drainage system. The required storage volume is estimated to be in the range of 1,200 cubic feet (Basis of Design, Civil Engineering, 2017).

Electrical consumption is anticipated to increase. The increase will be offset by architecturally siting and orienting occupied building spaces for natural cooling and ventilation by the trade wind and natural lighting. The use of insulated materials for walls,

energy efficient fixtures, and low-E glazed glass will also promote energy conservation.

The new walkway/ramp replaces the existing walkway between Building K and the portable classrooms and provides direct access from Building EE (and other areas of campus) to the play area at the bottom of the slope. The walk/ramp should benefit kindergarten students who recreate at the play area.

It is anticipated that the new driveway and drop-off area will provide "relief" during morning drop-off times. The traffic engineers project a "modal split" between the existing and project driveways. Drop off traffic is projected to increase in 2027 and each driveway is projected to accommodate about 100 vehicles apiece. This is compared to 180± vehicles under existing conditions. What is not certain is whether traffic circulation with the project driveway will improve, remain about the same, or deteriorate during morning peak hour.

Table 5. Future (2027) Traffic with Project

Peak Hour	Eastbound	Westbound	Total	Level of Service
School Driveway				
AM (7:00 - 8:00)				
Honowai Street @ Entry	213	234	447	
Inbound	50 (RT)	50 (LT))	100	A
Honowai Street @ Exit	162	200	362	
Outbound	33 (LT)	66 (RT)	99	B
PM (3:15-4:15)				
Honowai Street @ Entry	91	143	234	
Inbound	1 (RT)	3 (LT)	4	A
Honowai Street @ Exit	93	133	226	
Outbound	4 (LT)	5 (RT)	9	A
Project Driveway				
AM (7:00 - 8:00)				
Honowai Street @ Entry	228	243	471	
Inbound	50 (RT)	51 (LT)	101	A
Honowai Street @ Exit	173	231		
Outbound	33 (LT)	62 (RT) ,1 (TH)	100	A/B/B
PM (3:15 - 4:15)				
Honowai Street @ Entry	98	184	282	
Inbound	2 (RT)	3 (LT)	5	A
Honowai Street @ Exit	94	154	248	
Outbound	5 (LT)	4 (RT), 1 (TH)	10	A/A/A

Source: SSFM International, 2017.

"The resulting LOS for Future (2027) Without Project and Future (2027) With Project

conditions were LOS C or better for all movements. The total number of students attending Honowai Elementary School would remain similar to existing conditions even after the completion of the school's new classroom building. Half of all trips associated with the school were rerouted to use the new drop-off/pick-up area. Further analysis determined that there is no need to add a dedicated left-turn or right-turn lane along Honowai Street at the intersection of Honowai Street and Project Entrance. The proposed new classroom building will have negligible impact on the traffic in the surrounding areas" (SSFM International, 2017).

The new building will present a new object to be seen on campus. At three floors in height, it will be the same height as existing classroom buildings with similar roofing. Trees and shrubs planted near or alongside the building will "soften" its mass and add a vertical element to its form. It should not be visible from adjoining streets or residential areas because of its location at the back of the School. Over time, it will come to blend with the existing permanent classroom buildings and visual environment.

Elementary schools are a permitted use in the residential zoning district. Adding a classroom building to an existing permitted property use will not alter the character of surrounding areas, the zoning of adjacent properties, and the uses and zoning of the School property.

The new classroom building and associated improvements (such as landscaping) will be designed and built to "high-performance" criteria incorporating sustainability features in design, construction, and operations. The project thus supports a State goal for fostering sustainability in new construction. HI-CHPS defines a high-performance school "as having learning environments that are healthy and comfortable, energy resource and water efficient, safe, secure, and adaptable and easy to operate and maintain". In the long-run it is the students, educators, and parents that will determine if Honowai Elementary School functions as a high-performance school.

SECTION 4
ALTERNATIVES TO THE PROPOSED ACTION

A. No Action

The No Action Alternative would not achieve the objectives of the project. This objective would maintain the status quo of the building site thus precluding the occurrence of all environmental impacts short and long-term, beneficial and adverse described in this assessment.

B. Alternative Location

None.

SECTION 5
PERMITS AND APPROVALS

Permits required for the project and responsible authorities are identified below. Additional permits and approvals may be required depending on final construction plans.

State of Hawai'i

Department of Health

Variance from Pollution Controls (Noise Permit)

Disability and Communications Access Board
Facility Access Review

Department of Land and Natural Resources

Chapter 6E Historic Site Review

City and County of Honolulu

Department of Planning and Permitting

Grubbing, Grading, and Stockpiling Permit
Building Permit for Building, Electrical, Plumbing, Sidewalk/Driveway and Demolition Work
Certificate of Occupancy
Waiver Application

Board of Water Supply

Building Permit and Construction Plan Review

Honolulu Fire Department

Fire Plans Review

SECTION 6
AGENCIES AND ORGANIZATIONS TO BE CONSULTED IN THE ENVIRONMENTAL ASSESSMENT PROCESS

State of Hawai'i

Department of Land and Natural Resources
Historic Preservation Division

City and County of Honolulu

Board of Water Supply
Department of Parks and Recreation
Department of Planning and Permitting
Department of Transportation Services
Honolulu Police Department
Honolulu Fire Department

Others

Hawaiian Electric Company, Inc.
The Honorable Henry J.C. Aquino, 38th Representative District
The Honorable Ty J.K. Cullen, 39th Representative District
The Honorable Clarence Nishihara, 17th Senatorial District
The Honorable Ron Menor, Honolulu City Council
Waipahu Neighborhood Board No. 22
Waipahu Public Library (Placement)

SECTION 7
DETERMINATION OF SIGNIFICANCE

Chapter 200 (Environmental Impact Statement Rules) of Title 11, Administrative Rules of the State Department of Health, establishes criteria for determining whether an action may have significant effects on the environment (§11-200-12). The relationship of the proposed project to these criteria is discussed below.

1) **Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;**

   No historic properties were identified in the background research or in the field inspection and none are believed to be present; with the possible exception of two stones of some note. The shapes of the stones or boulders make them appear to be a male and female stone. Their locations are known to School staff and disposition will be determined by the Department of Education in consultation with the State Historic Preservation Division, and School administrators and staff.

2) **Curtails the range of beneficial uses of the environment;**

   The project will improve the underused building site occupied by three portable buildings. The new building will provide classrooms equivalent to the three portables and two levels of new space for special need students and STEAM and Media Production facilities.

3) **Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, Hawaii Revised Statutes, and any revisions thereof and amendments thereto, court decisions or executive orders;**

   The project does not conflict with long-term environmental policies, goals, and guidelines of the State of Hawaii.

4) **Substantially affects the economic or social welfare of the community or State;**

   The project will not substantially affect the economic or social welfare of the State.

5) **Substantially affects public health;**

   Short-term environmental impacts in the form of fugitive dust, noise from construction equipment, and minor erosion can be expected. These impacts will be mitigated by measures described in this Assessment and measures, such as BMPs for erosion control, to be submitted with construction plans and documents.

   Building materials to be used will not expose students and teachers to public health hazards.

6) **Involves substantial secondary impacts, such as population changes or effects on public facilities;**

Population changes and substantial effects on public facilities are not anticipated as a result of the proposed action.

7) Involves a substantial degradation of environmental quality;

The project area was previously altered by grubbing and grading associated with construction of the school (1968) and portable buildings over time. It is postulated that environmental quality of the school grounds was most impacted at that time and the proposed classroom building will not substantially degrade environmental quality of the man-made environment.

8) Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;

Construction and long-term use will not result in significant adverse short and long-term environmental impacts or involve a commitment for a larger action.

9) Substantially affects a rare, threatened or endangered species, or its habitat;

Rare, threatened or endangered flora and fauna are not found on the building site.

10) Detrimentally affects air or water quality or ambient noise levels;

Ambient air quality will be affected by fugitive dust and combustion emissions during construction but can be controlled by measures stipulated in this Assessment. Construction noise may be pronounced during site preparation work but should diminish once the structural improvements are completed. All construction activities will comply with air quality and noise pollution regulations of the State Department of Health.

Erosion control measures will be prescribed in grading plans and best management practices prepared for the project.

11) Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

The classroom building is not located in an environmentally sensitive area.

12) Substantially affects scenic vistas and view planes identified in county or state plans or studies, or,

Honowai Elementary School and its immediate environs are neither identified as a visual resource nor located within scenic vistas or view planes identified in county or state plans.

Over time, the new building's scale, mass, and height will visually and physically blend with existing classroom buildings at the school. Although a three-story building its lower level should not be visible from the street and the upper two levels will match the height of existing two-level buildings.

13) Requires substantial energy consumption.

Energy consumption is anticipated to increase given the floor area and scale of the building and the need for a climate controlled environment for special need children. Design measures were disclosed in this assessment and other energy saving opportunities and materials will be identified during design development by all design disciplines.

It is anticipated that adhering to the HI-CHPS system and criteria should deliver a high-performance school this is healthy and comfortable, energy resource and water efficient, safe, secure and adaptable, and easy to operate and maintain.

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APPENDIX A

Archaeological Literature Review and Field inspection in support of HAR §13-275-3 Consultation with the SHPD for the Honowai Elementary School Eight-Classroom Building Project (94-600 Honowai Street), Hōʻaeʻae Ahupuaʻa, ʻEwa District, Oʻahu TMK [1] 9-4-053: 007.

Draft

Archaeological Literature Review and Field Inspection in support of HAR §13-275-3 Consultation with the SHPD for the Honowai Elementary School Eight-Classroom Building Project (94-600 Honowai Street), Hō‘ae‘ae Ahupua‘a, ‘Ewa District, O‘ahu TMK: [1] 9-4-053:007

Prepared for
Gerald Park Urban Planner

Prepared by
David W. Shideler, M.A.,
Gina M. Farley, M.A.,
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: HOAEAE 3)

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Management Summary

Reference	Archaeological Literature Review and Field Inspection in support of HAR §13-275-3 Consultation with the SHPD for the Honowai Elementary School Eight-Classroom Building Project (94-600 Honowai Street), Hō‘ae‘ae Ahupua‘a, ‘Ewa District, O‘ahu, TMK: [1] 9-4-053:007 (Shideler et al. 2017)
Date	July 2017
Project Number(s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: HOAEAE 3
Investigation Permit Number	CSH completed the fieldwork component of this study under archaeological fieldwork permit number 17-08, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-282.
Agencies	State Historic Preservation Department (SHPD)
Land Jurisdiction	Hawai‘i State Department of Education (DOE)
Project Proponent	DOE
Project Funding	State of Hawai‘i
Project Location	Honowai Elementary School is at 94-600 Honowai Street in Hō‘ae‘ae Ahupua‘a, ‘Ewa District, O‘ahu, TMK: [1] 9-4-053:007. The project area is depicted on a portion of the 1998 Schofield Barracks and Waipahu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles.
Project Description	The proposed project involves the construction of a new eight-classroom building and accessible walkway in the northeastern corner of the Honowai Elementary School campus, across Kipou Street. This will involve the installation of water lines, a sewer line, a storm drain and sewer manholes, a water meter, and a fire line as well as grading of the land surface. It will also involve the demolition and/or removal of the following: portions of the sidewalk and gutter along Honowai Street, chain-link fences, water lines, portable classrooms with associated ramps and stairs, sewer lines, a sewer manhole, hedges, and trees.
Project Acreage	The project area is understood to be the entire Honowai Elementary School campus, which comprises approximately 6.1 acres (2.47 hectares).
Document Purpose	This investigation was designed—through detailed historical, cultural, and archaeological background research and a field inspection of the project area—to determine the likelihood that historic properties may be affected by the project and, based on findings, consider cultural resource management recommendations. This document is intended to facilitate the project’s planning and support the project’s historic preservation and environmental review compliance and is intended to support obtaining a determination letter from the SHPD as per HAR §13-275-3.

Fieldwork Effort	Fieldwork was accomplished on 17 April 2017 by CSH archaeologist David Shideler, M.A., under the general supervision of Hallett Hammatt, Ph.D. This work required approximately 3 hours to complete.
Results Summary	CSH completed background research and a field inspection for this project area. Background research indicates the project area was unlikely to have been a focus of traditional Hawaiian activity as it was well back from the coast and was not within a *kuleana* Land Commission Award. The project area is believed to have been in intensive commercial sugarcane cultivation for nearly a century. No historic properties have been identified in the vicinity. No historic properties were identified in the background research or in the field inspection and none are believed to be present, with the possible exception of two stones of some note that are discussed.
Recommendations	It is recommended that the DOE initiate obtaining a determination letter from the SHPD as per HAR §13-275-3 and that this study be attached to the request to provide background information. No further archaeological work is recommended for this eight-classroom construction project but this is not a clear cut matter given local perceptions of the import of two *pōhaku* (stones) on the campus.

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Section 1 Introduction

1.1 Project Background

At the request of Gerald Park Urban Planner, Cultural Surveys Hawai‘i, Inc. (CSH) has prepared this archaeological literature review and field inspection (LRFI) in support of HAR §13-275-3 consultation with the State Historic Preservation Division (SHPD) for the Honowai Elementary School (94-600 Honowai Street) Eight-Classroom Building project, Hō‘ae‘ae Ahupua‘a, ‘Ewa District, O‘ahu, TMK: [1] 9-4-053:007. Honowai Elementary School is at 94-600 Honowai Street, Waipahu, in south-central O‘ahu. It is within the traditional Hawaiian land unit (*ahupua‘a*) of Hō‘ae‘ae in ‘Ewa District. The project area is understood to be the entire Honowai Elementary School campus, which comprises 6.1 acres (2.47 hectares). The project area is depicted on a portion of the 1998 Schofield Barracks and Waipahu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles (Figure 1), a tax map plat (Figure 2), and a 2013 aerial photograph (Figure 3).

The proposed development is the construction of a new eight-classroom building and accessible walkway in the northeastern corner of the campus, across Kipou Street. This will involve the installation of water lines, a sewer line, a storm drain and sewer manholes, a water meter, and a fire line as well as grading of the land surface. It will also involve the demolition and/or removal of the following: portions of the sidewalk and gutter along Honowai Street, chain-link fences, water lines, portable classrooms with associated ramps and stairs, sewer lines, a sewer manhole, hedges, and trees. Anticipated areas of ground disturbance for the proposed project, as indicated by the demolition plan (Figure 4), grading plan (Figure 5), site plan (Figure 6), and utility plan (Figure 7) are depicted on Figure 8 showing anticipated areas of ground disturbance.

1.1 Document Purpose

This investigation was designed—through detailed historical, cultural, and archaeological background research and a field inspection of the project area—to determine the likelihood that historic properties may be affected by the project and, based on findings, consider cultural resource management recommendations. This document is intended to facilitate the project’s planning and support the project’s historic preservation and environmental review compliance. This investigation does not fulfill the requirements of an archaeological inventory survey investigation, per Hawai‘i Administrative Rules (HAR) §13-13-276. Consequently, this report cannot be used to make formal recommendations for SHPD review and acceptance.

1.2 Environmental Setting

1.2.1 Natural Environment

The Honowai Elementary School campus is in the Waipahu area, approximately 1.2 km inland (northwest) of the West Loch of Pearl Harbor. The Hō‘ae‘ae Stream runs along the southeastern edge of the campus, and elevation in the project area ranges from approximately 19 m (63 feet [ft]) to 32 m (104 ft) above mean sea level (AMSL). The mean annual rainfall is approximately 600–800 mm (24–32 inches) (Giambelluca et al. 2013).

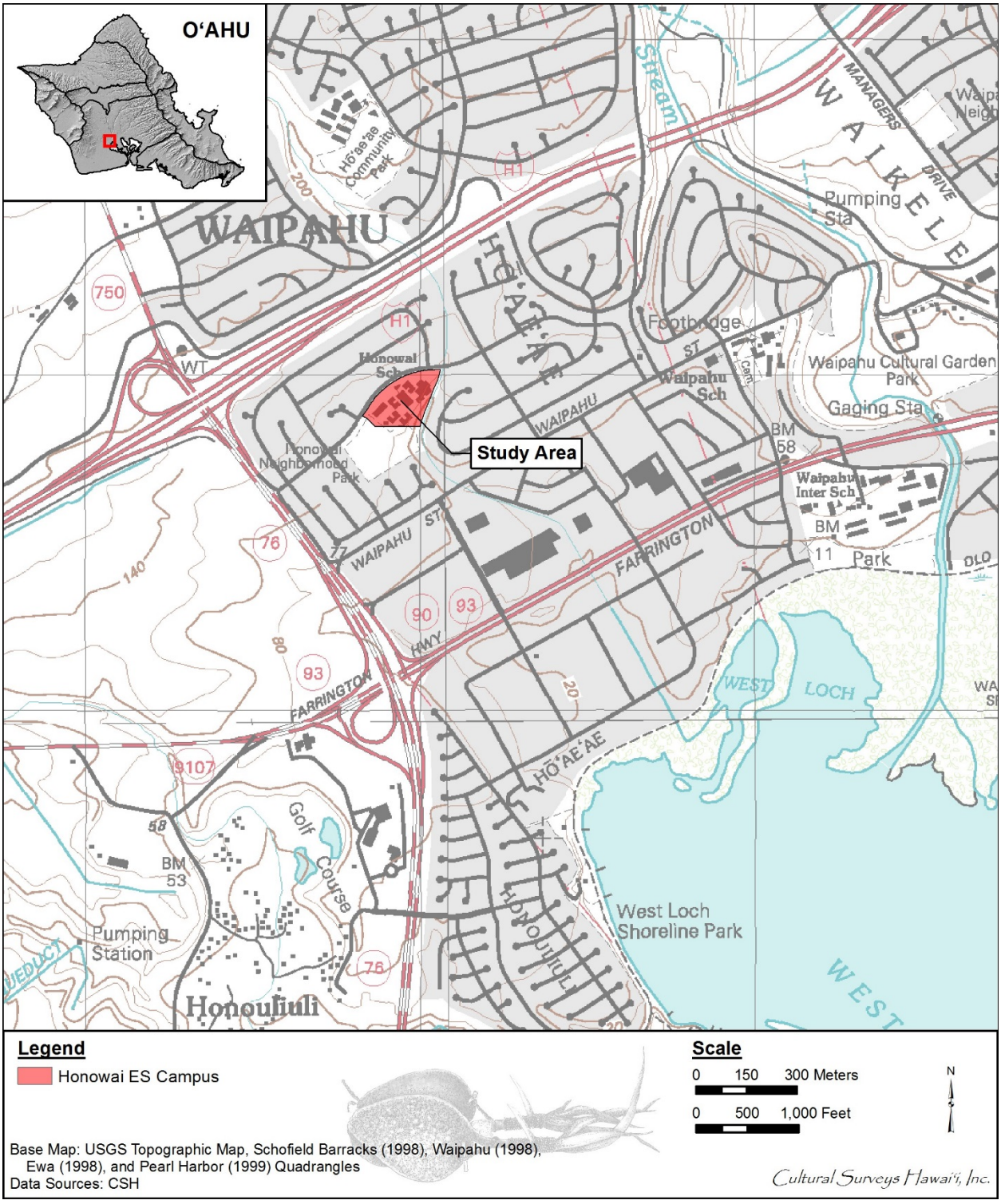

Figure 1. A portion of the 1998 Schofield Barracks and Waipahu USGS 7.5-minute topographic quadrangles indicating the project area

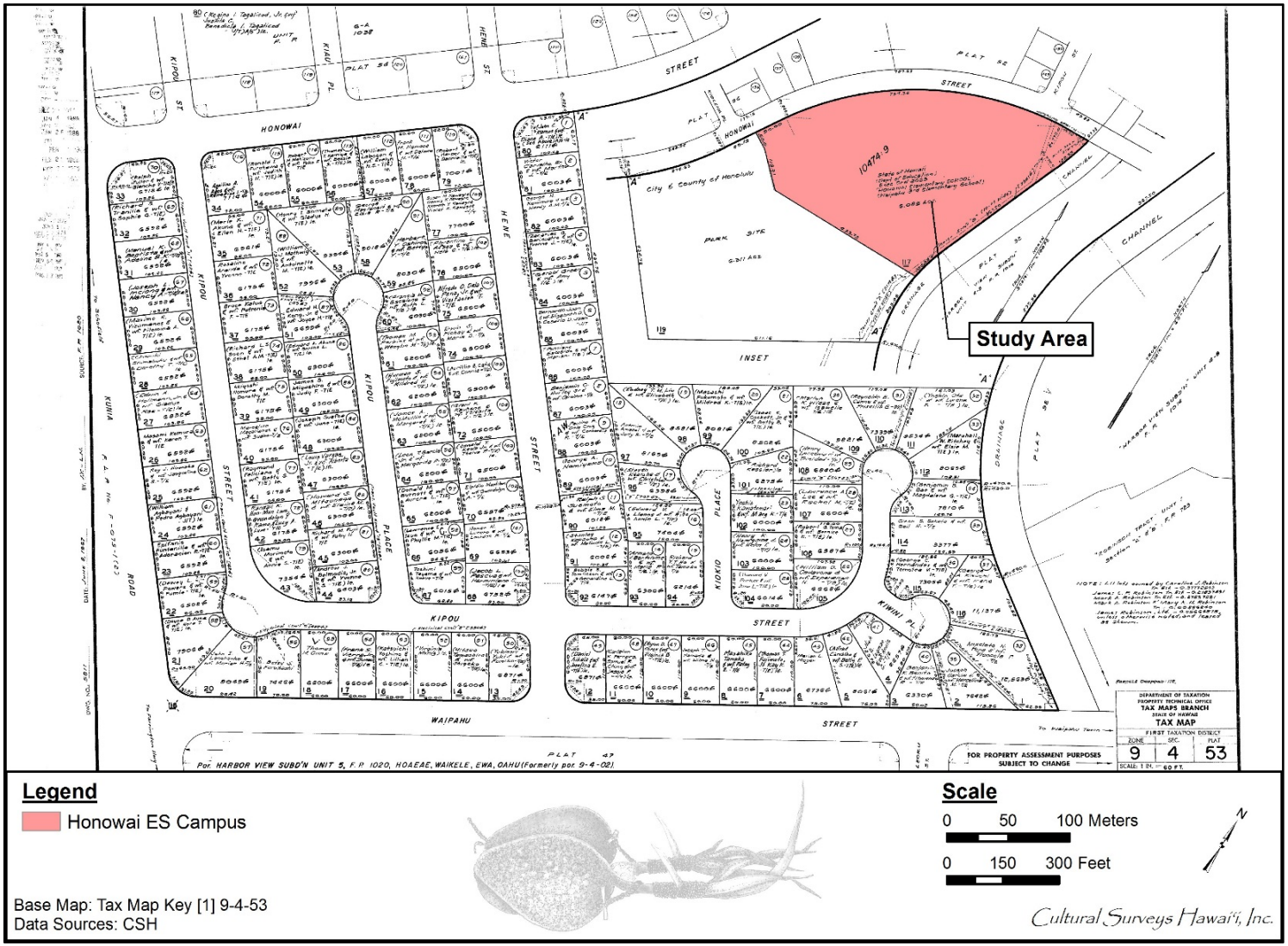

Figure 2. Tax Map Key (TMK): [1] 9-4-53 showing the project area (parcel 98) (Hawai‘i TMK Service 2014)

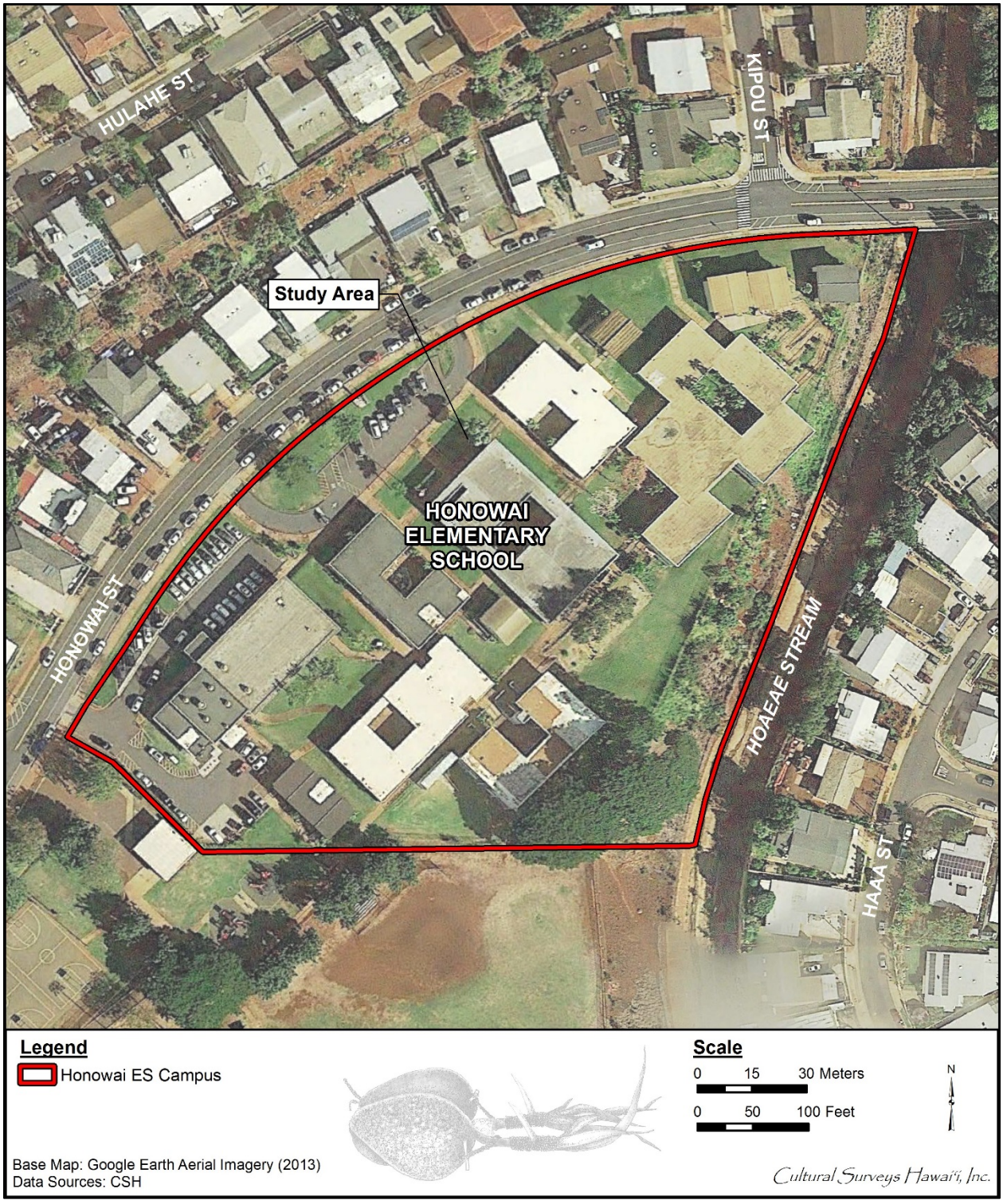

Figure 3. Aerial photograph indicating the project area (Google Earth 2013)

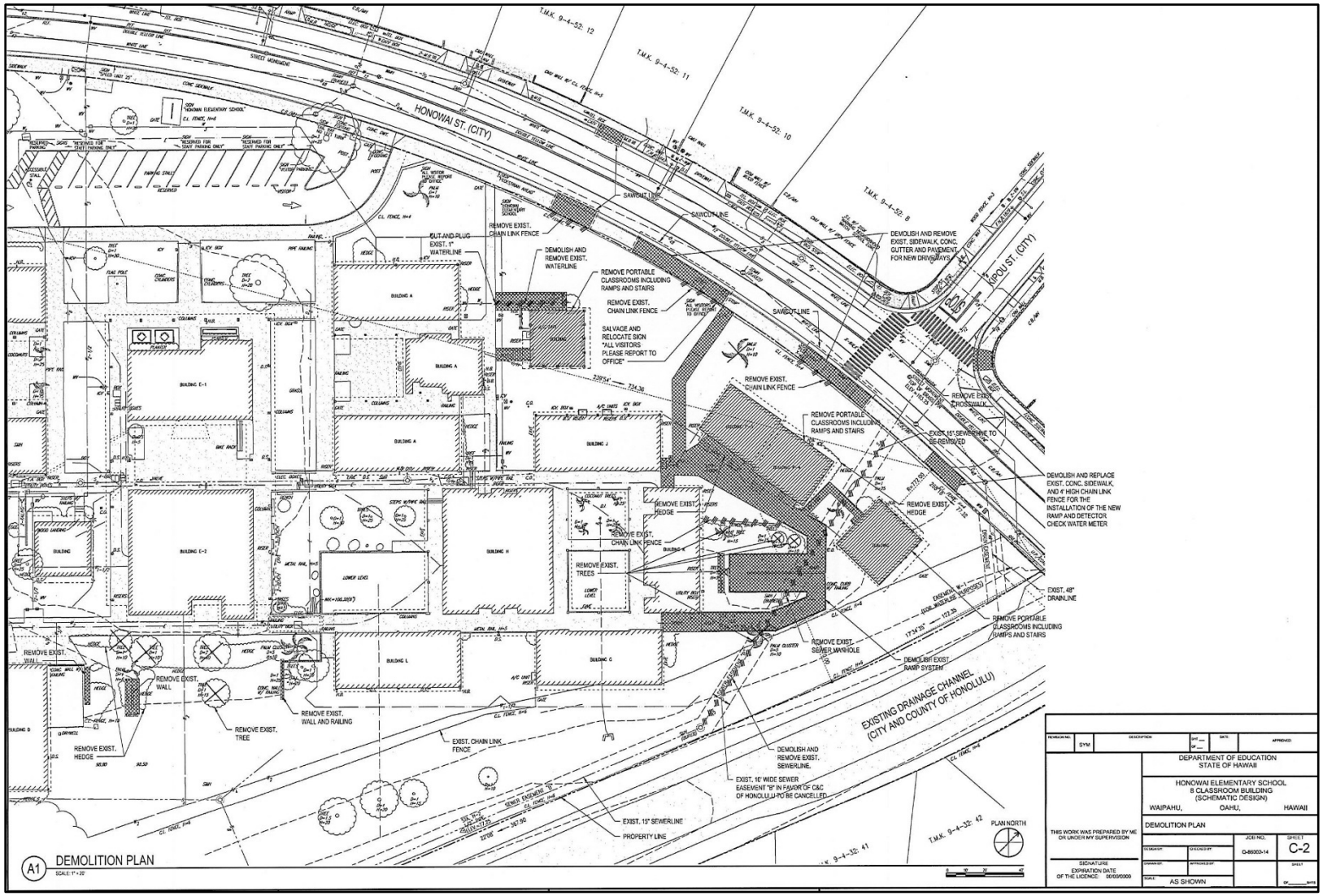

Figure 4. Demolition plan for the Honowai Elementary School Eight-Classroom Building project (courtesy of client)

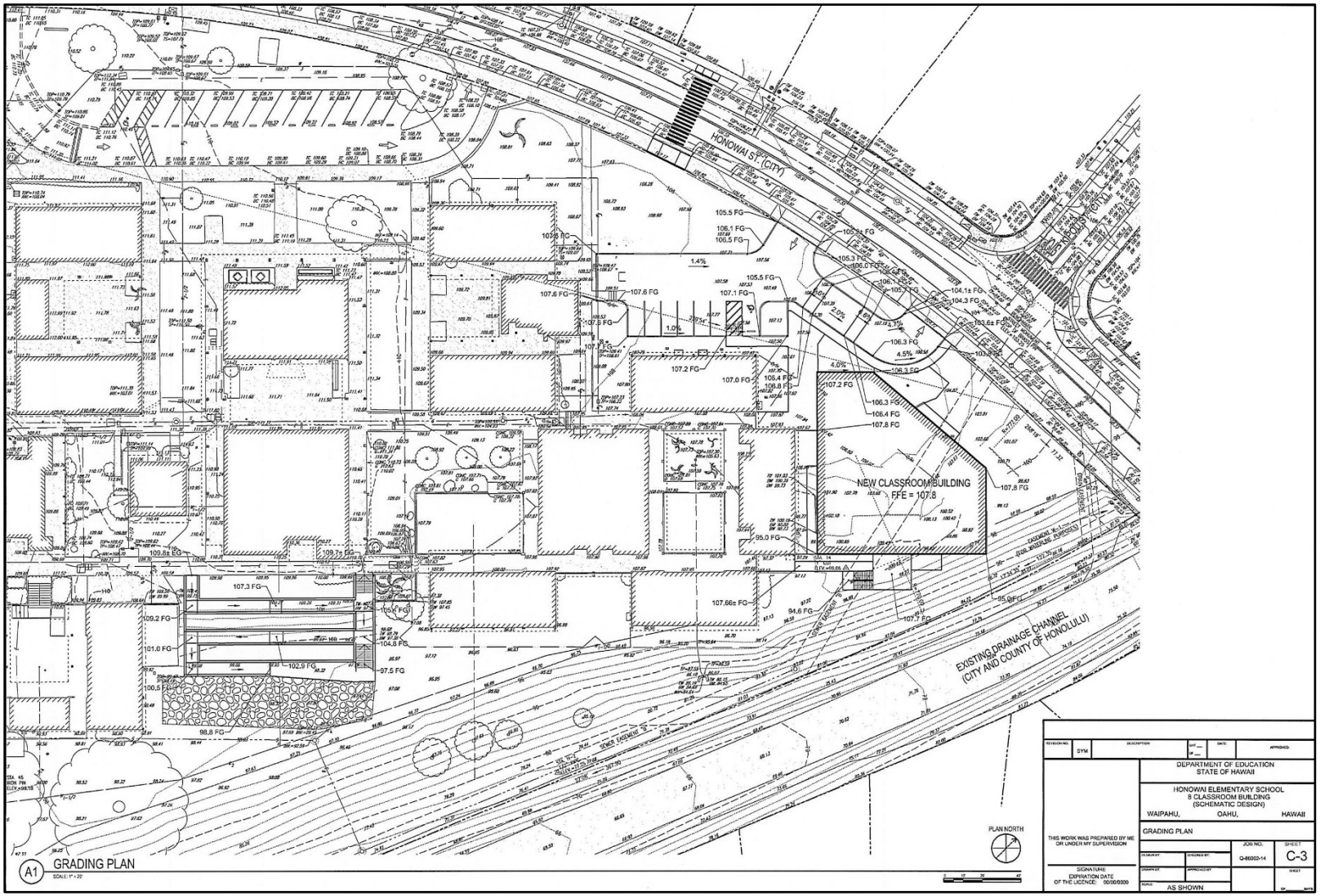

Figure 5. Grading plan for the Honowai Elementary School Eight-Classroom Building project (courtesy of client)

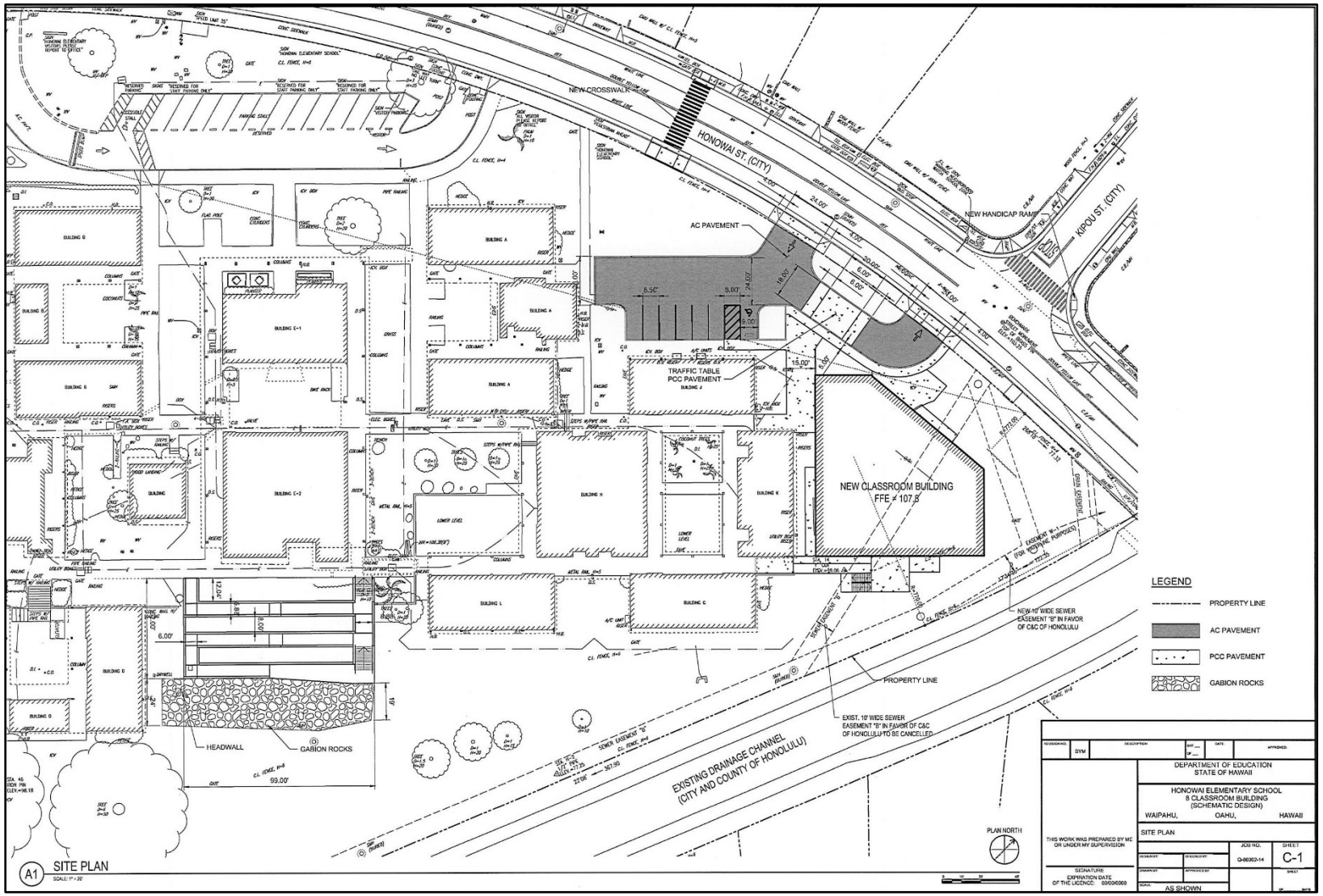

Figure 6. Site plan for the Honowai Elementary School Eight-Classroom Building project (courtesy of client)

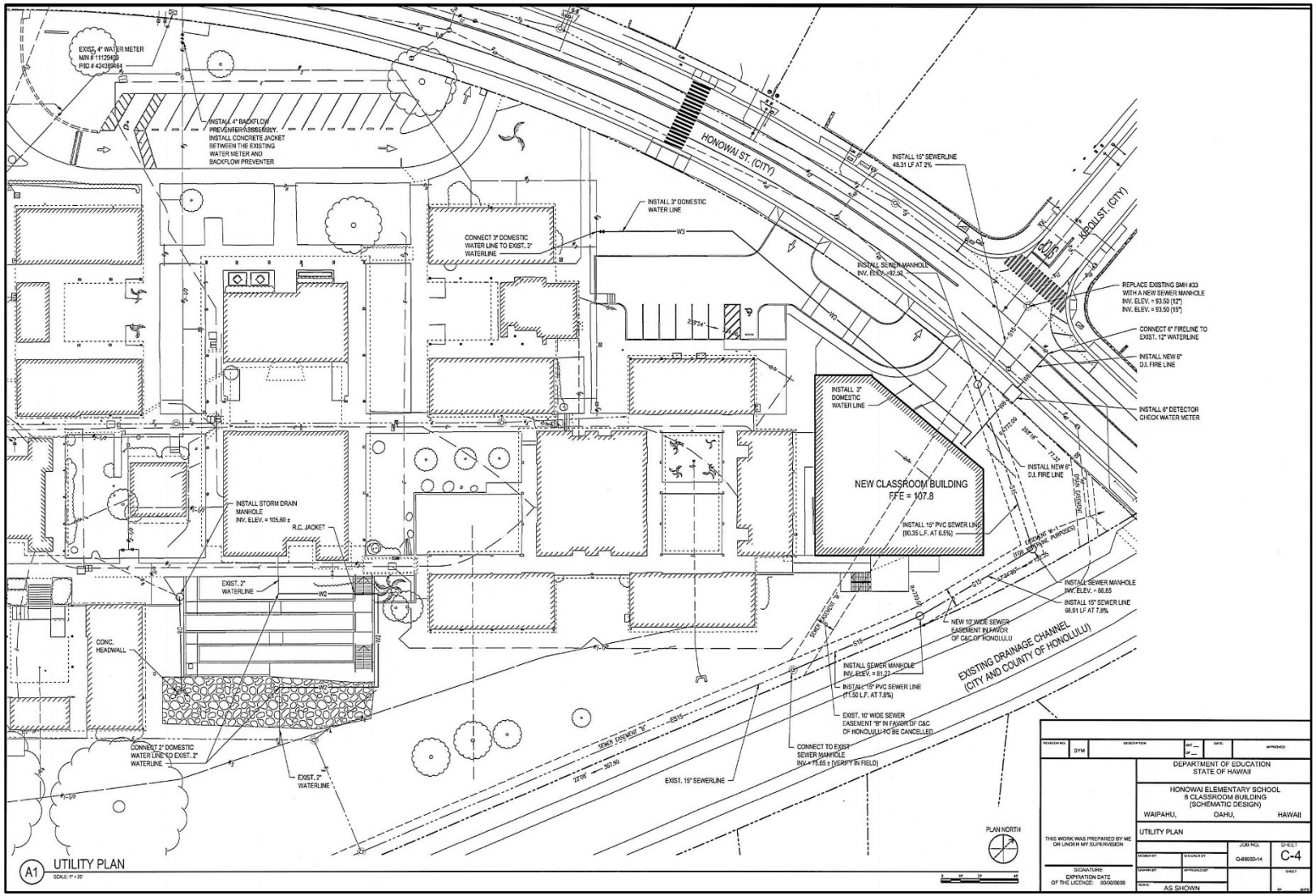

Figure 7. Utility plan for the Honowai Elementary School Eight-Classroom Building project (courtesy of client)

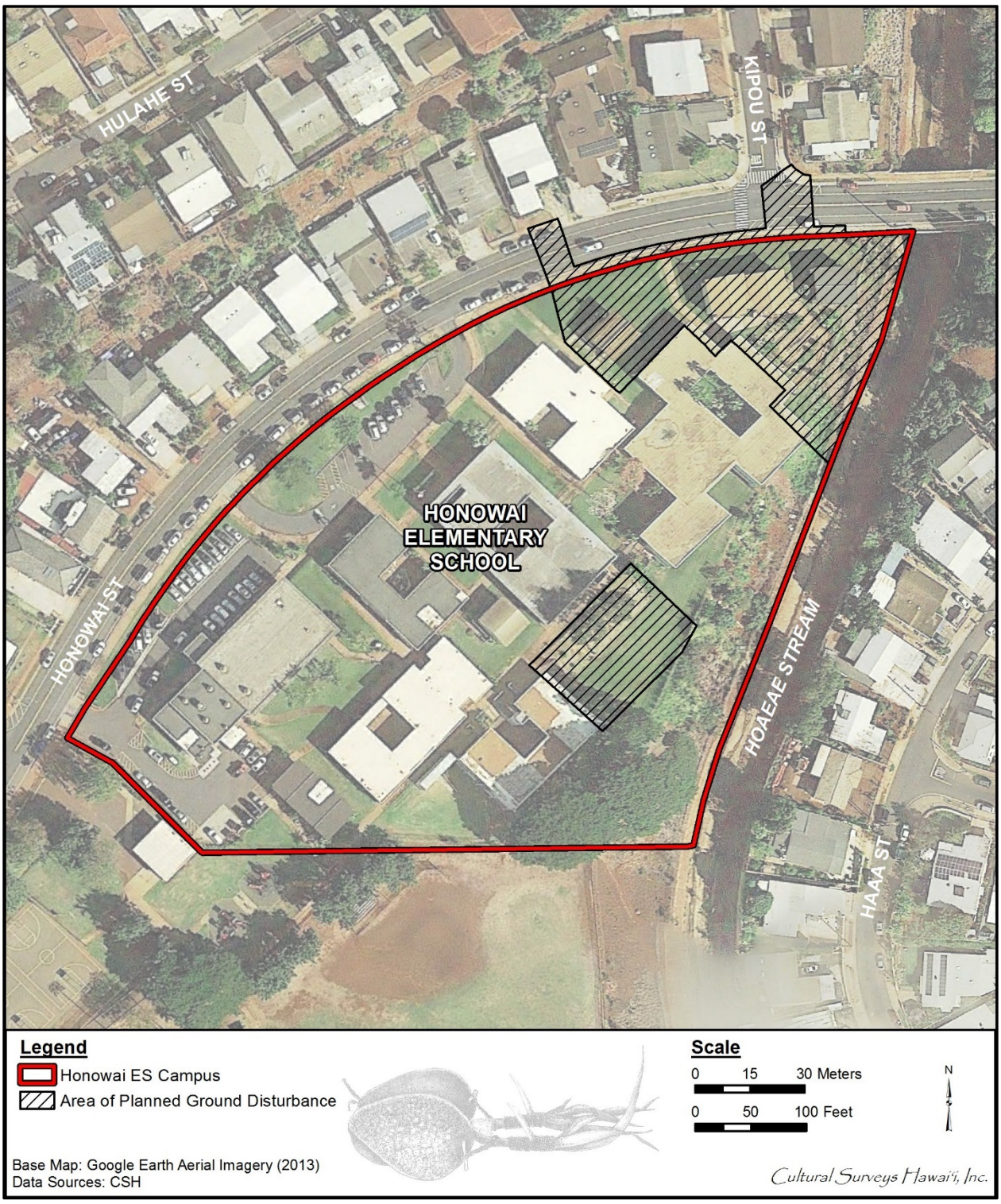

Figure 8. Anticipated areas of ground disturbance within the Honowai Elementary School campus project area (Google Earth 2013)

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area's soils consist mainly of Molokai silty clay loam, 7 to 15% slopes (MuC), with Molokai silty clay loam, 3 to 7% slopes (MuB) along the northwestern boundary (Figure 9). Foote et al. (1972) describe the Molokai Series soils as follows:

> This series consists of well-drained soils on uplands on the islands of Maui, Lanai, Molokai, and Oahu. These soils formed in material weathered from basic igneous rock. They are nearly level to moderately steep. Elevations range mainly from nearly sea level to 1,000 feet but are as much as 1,500 feet on Lanai. The annual rainfall amounts to 20 to 25 inches, most of which occurs between November and April. The summers are hot and dry. The mean annual soil temperature is 73° F. [Foote et al. 1972:96]

Foote et al. (1972:97) further describe MuC soils as "occur[ing] on knolls and sharp slope breaks. Runoff is medium; and the erosion hazard is moderate. This Soil is used for sugarcane, pineapple, pasture, wildlife habitat, and homesites." MuB soils are described as follows: "Runoff is medium, and the hazard of wind and water erosion is severe. This soil is used entirely for pasture and wildlife habitat" (Foote et al. 1972:97).

1.2.2 Built Environment

The Honowai Elementary School campus is in west Waipahu, approximately 200 m *makai* (seaward) of the H-1 (Queen Lili‘uokalani) Freeway, 500 m north of Farrington Highway, and 300 m east of Kunia Road, which is a major north/south trending road connecting the Waipahu and ‘Ewa areas with Wahiawā and central O‘ahu. The school was established in 1968 to serve the growing subdivisions of Harbor View and Robinson Heights, and the community consists of a mixture of single-family homes and affordable and low-income housing projects. It borders the subdivision of Village Park in Kunia to the north.

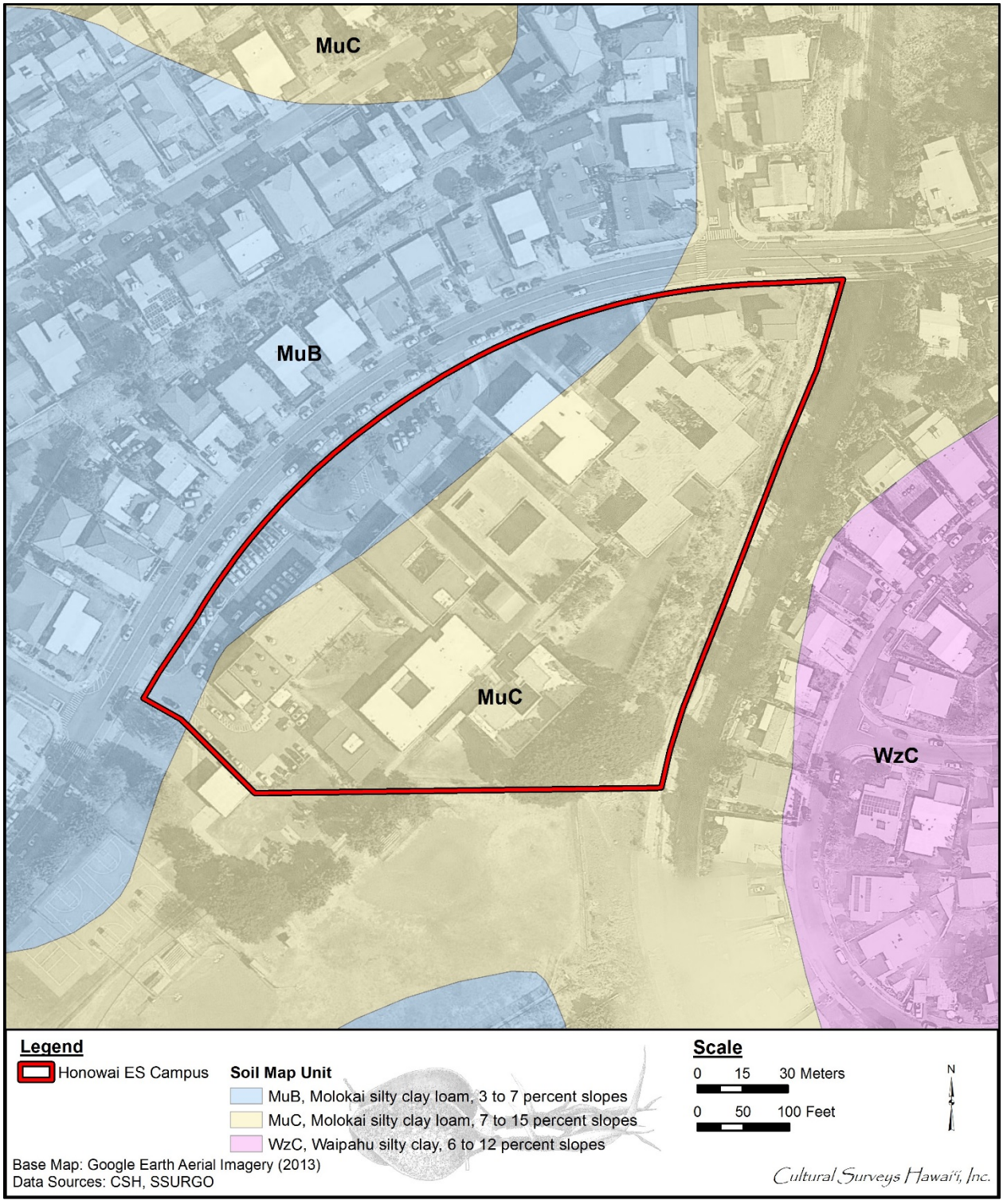

Figure 9. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area (USDA Soils Survey Geographic Database [SSURGO] 2001)

Section 2 Methods

2.1 Field Methods

CSH completed the fieldwork component of this study under archaeological fieldwork permit number 17-08, issued by the SHPD pursuant to HAR §13-282. Fieldwork was conducted on 17 April 2017 by CSH archaeologist David Shideler, M.A. This work required approximately 3 hours to complete under the general supervision of Principal Investigator, Hallett Hammatt, Ph.D. Fieldwork included 100% pedestrian inspection of the project area, (see Figure 32 for a field inspection track log), which was undertaken for the purpose of historic property identification and documentation. The pedestrian survey was accomplished through systematic sweeps spaced 5 m apart.

2.2 Research Methods

Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Bishop Museum; study of historic photographs at the Hawai‘i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina database.

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the project area.

Section 3 Background Research

3.1 Traditional and Historical Background

3.1.1 Traditional Place Names and *Mo‘olelo* of Hō‘ae‘ae

Hō‘ae‘ae Ahupua‘a has very few recorded place names compared to the much larger Honouliuli Ahupua‘a adjacent to the west and north (Figure 10). Hō‘ae‘ae is bounded by the north shore of Pearl Harbor’s West Loch on the *makai* side, by a trail running along the eastern edge of Honouliuli Gulch on the west side, and by Waikele Gulch and a traditional Hawaiian trail on the east side (Figure 11). Uncharacteristically, the *mauka*, or inland, edge of Hō‘ae‘ae Ahupua‘a does not extend to the mountains, but is “cut off” by Honouliuli to the northwest and Waikele to the east. Hō‘ae‘ae Ahupua‘a was described by Handy in 1940 as follows: “This *ahupua‘a* had a moderate-sized area of terraces watered by springs inland from West Loch of Pearl Harbor” (Handy 1940:82). Pre-Contact and early post-Contact agriculture focused on the spring-fed floodplains adjacent to West Loch.

Hō‘ae‘ae means “to make soft or fine,” according to *Place Names of Hawaii* (Pukui et al. 1974:47). Pukui et al. (1974) do not explain why the *ahupua‘a* was given this name but do mention there was a famous *pōhaku* (stone) called Pōhaku-Pili on the boundary between Hō‘ae‘ae and Waikele. Another source (Thrum 1922:632) reports that Hō‘ae‘ae means “to pulverize.” Pukui and Elbert’s *Hawaiian Dictionary* (1986) records the possible meanings of Hō‘ae‘ae as “to rise the tide, to make fine, to pulverize, to refine, to soften.” *‘Ae* can also mean to lend, to say yes, to consent, to approve or to denote fine mash or sap from seaweed or leaves of plants such as taro.

In *Place Names of Hawaii* (Pukui et al. 1974:49), Honowai is simply listed as an “[e]lementary school and playground,” with the additional note that it is “[p]erhaps a new name.”

3.1.2 Leeward O‘ahu Trails

There were several traditional Hawaiian/historic trails across ‘Ewa: a cross-*ahupua‘a* trail that traversed ‘Ewa and connected Honolulu to Wai‘anae; a *mauka-makai* trail that branched off from the cross-*ahupua‘a* trail and followed the boundary between Honouliuli and Hō‘ae‘ae to the Pōhākea Pass and Kolekole Pass to Wai‘anae; and a second, branching *mauka-makai* trail that generally followed the path of Waikele Stream in Waikele Ahupua‘a to Wahiawā in central O‘ahu (see Figure 6 and Figure 11). ‘Ī‘ī (1959:97) noted the following regarding the first *mauka-makai* trail: “From Kunia the trail went to the plain of Keahumoa, on to Maunauna, and along Paupauwela, which met with the trails from Wahiawā and Waialua.” ‘Ī‘ī places the area called Kunia east of Pōhākea Pass in the *ahupua‘a* of Honouliuli and Hō‘ae‘ae, *makai* of the modern town of Kunia, and places the plain of Keahumoa between Kunia and Paupauwela, in the most *mauka* portion of Honouliuli. The trail passed near the peak called Maunauna in upper Honouliuli. To the east of Honouliuli, this trail was just *mauka* of the floodplains near Pearl Harbor, skirting the inland edges of the productive taro fields (see Figure 12). The current project area is situated just *mauka* of the cross-*ahupua‘a* trail and between the two *mauka-makai* trails.

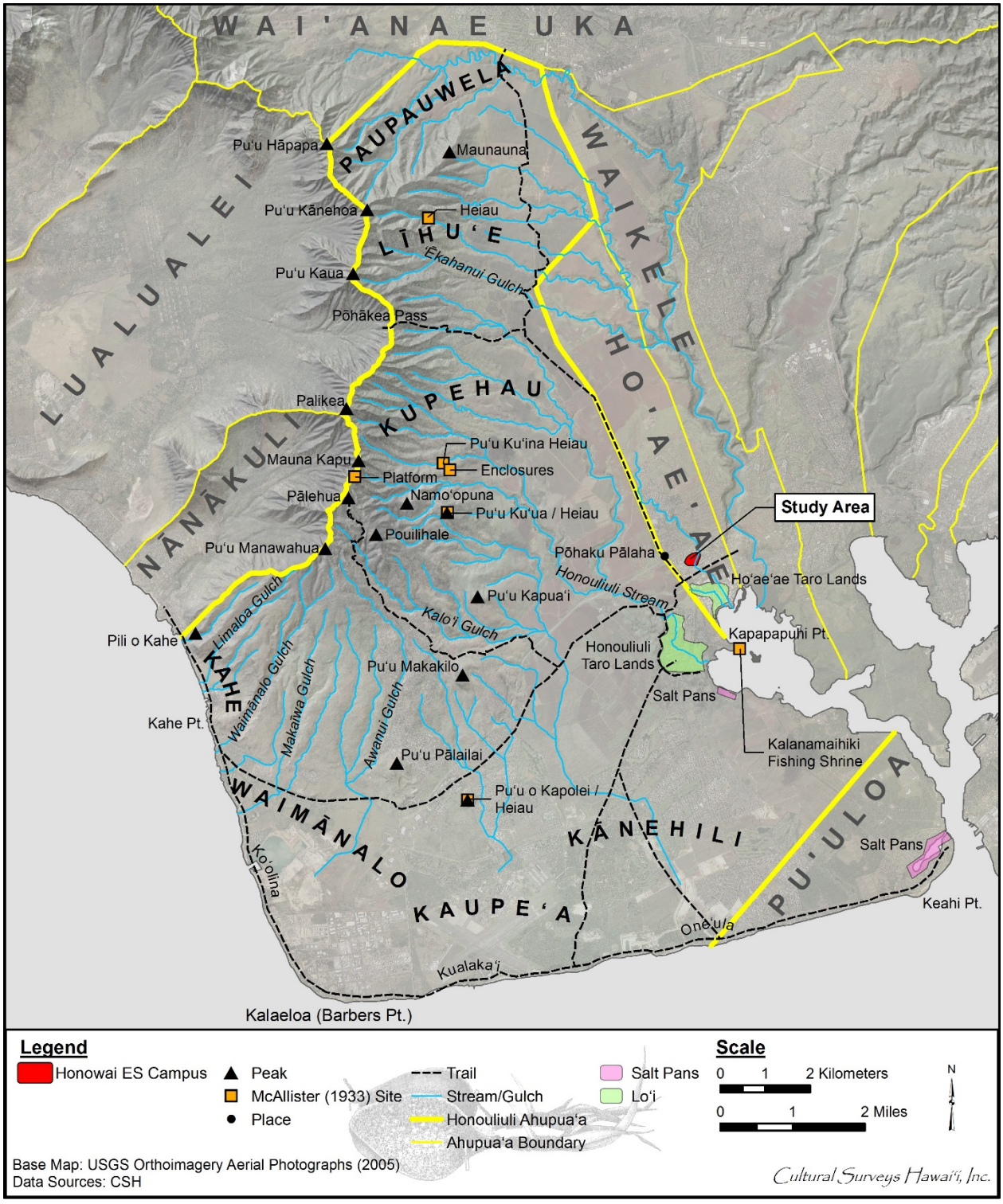

Figure 10. Place names of Honouliuli (base map: 1998 USGS Orthoimagery); note the modern Farrington Highway and Kunia Road generally follow the ancient trails

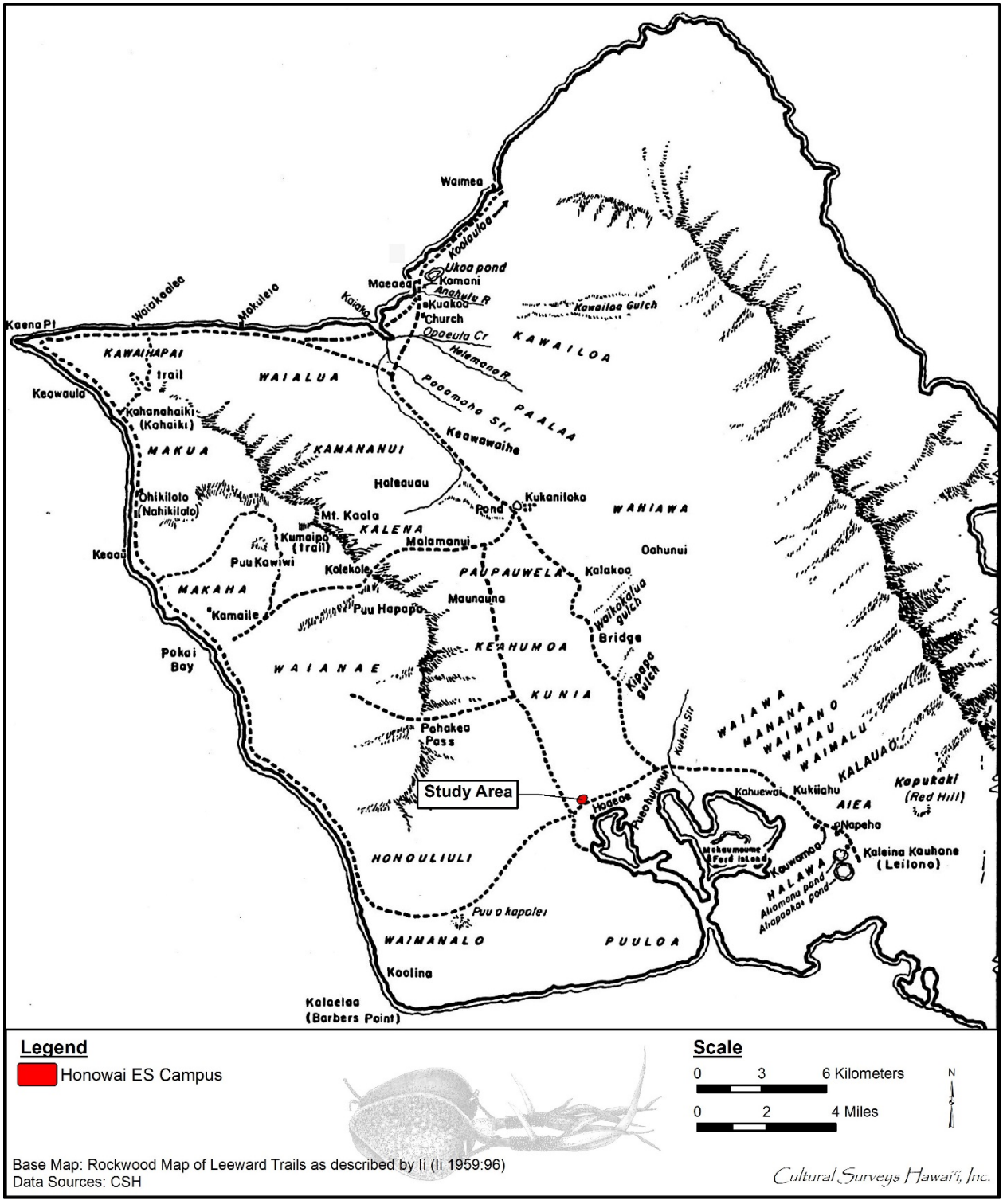

Figure 11. Portion of the Paul Rockwood map of traditional trails of Leeward O‘ahu, indicating the project area (‘Ī‘ī 1959:96)

3.1.3 Pre-Contact and Early Post-Contact ‘Ewa

The rich resources of the Pearl Harbor lochs, the shoreline fishponds, the numerous springs, and the irrigated lands along the streams made central ‘Ewa a prize for competing chiefs. Battles were fought for and on ‘Ewa lands, at times between competing O‘ahu chiefs and at other times by invading chiefs from neighboring islands.

By ca. AD 1320 (based on genealogical reckoning), ‘Ewa, Kona, and Ko‘olaupoko were the dominant political districts, ruled by the sons of a chief named Māweke (Cordy 2002:21). Around AD 1400, the entire island was ruled by La‘akona. Chiefs within his line, the Māweke-Kumuhonua line, reigned until about AD 1520-1540, with their major royal center in Līhu‘e in ‘Ewa (Cordy 2002:24). Haka, the last chief of the Māweke-Kumuhonua line, was slain by his men at the fortress of Waewae near Līhu‘e (Kamakau 1991:54). Power shifted among the chiefs of different districts from the 1500s until the early 1700s, when Kūali‘i achieved control of all of O‘ahu by defeating the Kona chiefs, then the ‘Ewa chiefs, and finally expanding his control to windward Kaua‘i. Peleiholani, the heir of Kūali‘i, gained control of O‘ahu ca. 1740 and later conquered parts of Moloka‘i. He was ruler of O‘ahu until his death in ca. 1778, when Kahahana of the ‘Ewa line of chiefs was selected as the ruler of O‘ahu (Cordy 2002:24–41).

An early account speaks of the reign of Mā‘ilikūkahi, an *ali‘i kapu* (divine chief) who was born at Kūkaniloko in Wahiawā (Pukui et al. 1974:113). Upon consenting to become *mō‘ī* (king) at the age of 29, he was taken to Kapukapuākea Heiau (temple) at Pa‘ala‘akai in Waialua to be consecrated. Soon after becoming *mō‘ī*, Mā‘ilikūkahi was taken by the chiefs to live at Waikīkī. The story relates that he was probably one of the first chiefs to live there, since up to that time the chiefs had always lived at Waialua and ‘Ewa. Under his reign, the land divisions were reorganized and redefined.

In reference to the productivity of the land and the population during Mā‘ilikūkahi’s reign, Kamakau wrote the following:

> In the time of Mā‘ili-kūkahi, the land was full of people. From the brow, of Kulihemo to the brow of Maunauna in ‘Ewa, from the brow of Maunauna to the brow of Pu‘ukea [Pu‘u Ku‘ua] the land was full of chiefs and people. From Kānewai to Halemano in Wai‘alua, from Halemano to Paupali, from Paupali to Hālawa in ‘Ewa the land was filled with chiefs and people. [Kamakau 1991:55]

Mā‘ilikūkahi was *mō‘ī* of O‘ahu from about AD 1520 to 1540 (Cordy 2002:19). Mā‘ilikūkahi was popular during his reign and was remembered for initiating land reforms, which brought about peace, and for encouraging agricultural production, which brought about prosperity. He also prohibited the chiefs from plundering the *maka‘āinana* (commoners), under punishment of death (Kamakau 1991:55).

Mā‘ilikūkahi’s peaceful reign was interrupted by an invasion that would change Waipi‘o ‘Uka forever. The following is Fornander’s description of the Battle of Kīpapa:

> I have before referred to the expedition by some Hawaii chiefs, Hilo-a-Lakapu, Hilo-a-Hilo-Kapuhi, and Punaluu, joined by Luakoa of Maui, which invaded Oahu during the reign of Mailikukahi. It cannot be considered as a war between the two islands, but rather as a raid by some restless and turbulent Hawaii chiefs . . . The invading force landed at first at Waikiki, but for reasons not stated in the legend,

> altered their mind, and proceeded up the Ewa lagoon and marched inland. At Waikakalaua they met Mailikukahi with his forces, and a sanguinary battle ensued. The fight continued from there to the Kīpapa gulch. The invaders were thoroughly defeated, and the gulch is said to have been literally paved with the corpses of the slain, and received its name ‘Kīpapa,’ from this circumstance. Punaluu was slain on the plain which bears his name, the fugitives were pursued as far as Waimano, and the head of Hilo was cut off and carried in triumph to Honouliuli, and stuck up at a place still called Poo-Hilo. [Fornander 1996:89–90]

Apparently, Kīpapa Gulch in Waipi‘o was named after this particular battle, or more likely renamed. In old Hawai‘i, places were often given names based on historic events. The literal translation of the word *kīpapa* is “to be paved,” as in “paved with the corpses of the slain.”

Around AD 1600–1620, the entire island of O‘ahu was united under the rule of one woman, an *ali‘i* named Kala‘imanuia (Cordy 2002:30). Before her death, she divided her kingdom among four of her children, giving the districts of Kona and Ko‘olaupoko to Kū; the *ahupua‘a* of Kalauao, ‘Aiea, Moanalua, and Hālawa to Ka‘ihikapu; the districts of ‘Ewa and Wai‘anae to Ha‘o; and the districts of Waialua and Ko‘olauloa to her daughter Kekela. To Kū she passed on her title of *mō‘ī*, or king, so the other three were still subject to their eldest brother. However, Kū was greedy and began to try to take the lands allotted to his siblings. Ha‘o joined with this brother Ka‘ihikapu in a battle defending against an attack by Kū, who was slain during the battle. Ka‘ihikapu then became *mō‘ī* and was a good king, taking care of his subjects and making frequent tours around the island to observe the people. On one of these circuits, he visited his brother Ha‘o at his court in Waikele and grew jealous of the riches at his brother’s home. Ka‘ihikapu sent a large man-eating shark that had been caught near his court in Waikīkī to his brother as a gift, so that Ha‘o could use it as a sacrifice to dedicate to the gods at his *heiau* in Waikele. Ka‘ihikapu’s forces then attacked Ha‘o and his priests at the temple as they were unarmed and busy with the dedication ceremonies. There is a saying concerning this rivalry between the two brothers: *“Ke one kuilima laula o ‘Ewa*. The sand on which there was a linking of arms [*kuilima*] on the breadth of ‘Ewa.” This saying is in reference to how Ka‘ihikapu took Ha‘o’s lands from him:

> The chiefs of Waikīkī and Waikele were brothers. The former wished to destroy the latter and laid his plot. He went fishing and caught a large *niuhi* [man-eating shark], whose skin he stretched over a framework. Then he sent a messenger to ask his brother if he would keep a fish for him. Having gained his consent, the chief left Waikīkī hidden with his best warriors in the ‘fish.’ Other warriors joined them along the way until there was a large army. They surrounded the residence of the chief of Waikele and linked arms [*kuilima*] to form a wall, while the Waikīkī warriors poured out of the ‘fish’ and destroyed those of Waikele. [Pukui 1983:191]

In a different version of this story (Kamakau 1991:61–67), Ka‘ihikapu cut open the shark captured from the Waikīkī waters and removed all the meat but left the skin and bones. He sent a messenger to his brother, Ha‘o, chief of Waikele, offering the shark to him. Ha‘o quickly agreed, and waited for the shark to be delivered to Waikele, where he planned to place it at his *heiau* as an offering to the gods. When the shark was placed on the altar, Ka‘ihikapu and his men jumped out and slaughtered his brother and all the priests. The slain men were then put into the shark and offered as a sacrifice at the former *heiau* of Waikele. Kamakau (1991:67) says the name of this place of slaughter in Waikele was called Paumakua. Thrum (1922:665) translates this place name

as “all fiery eyed.” McAllister (1933:106) located this destroyed *heiau*, called Hapupu, at the site then occupied by the Waipahu plantation stables (see Section 3.2.1 discussion of Site 129).

3.1.4 Early Historic Period

In a study of the resources and population of the *ahupua‘a* in ‘Ewa, Ross Cordy (1996:12) wrote a correlation study of three factors: floodplain size, fishery size, and population size. Hō‘ae‘ae had a small floodplain area, directly adjacent to the north shore of Pearl Harbor’s West Loch, and a fairly small fishery, which took up only a small portion of West Loch. Waiawa had a medium-sized floodplain, shared with the neighboring *ahupua‘a* of Mānana, and a small fishery, again shared with Mānana, on the north shore of Middle Loch. Waikele had a large floodplain and had irrigated fields along the lower Waikele Stream and the inland Waikakalaua Stream, but only a medium-sized fishery along the west shore of West Loch. Waipi‘o had a large floodplain, irrigated fields along Kīpapa Stream, and a large fishery, encompassing most of Middle Loch and the fringes of West Loch along Waipi‘o Peninsula. Cordy found that the first two factors were good predictors for pre-Contact and early post-Contact population. Waipi‘o had the largest population, Waikele and Waiawa had medium-sized populations, and Hō‘ae‘ae, where the current project is located, had the smallest population of the four.

Of the four *ahupua‘a* in central ‘Ewa, Waipi‘o was the main focus of Hawaiian settlement and activity during the centuries preceding Western Contact. “The populous dwelling place of the *ali‘i* (chiefly class) was formerly located on an east point of Waipi‘o Peninsula known as Lēpau” (McAllister 1933:106). The *ali‘i* at Waipi‘o were no doubt attracted to the great abundance of resources the region offered. However, the entire *moku* (district) of ‘Ewa was generally prosperous and productive, and the land was heavily populated. ‘Ewa continued to be a political center through the eighteenth century when Kahahana, a Maui chief, was chosen by the O‘ahu chiefs to rule over the island. Kahahana was the son of Elani who died fighting Kahekili and was a chief of O‘ahu (Kamakau 1992:87). After the Maui war chief Kahekili conquered O‘ahu ca. 1785, he ruthlessly suppressed a rebellion of O‘ahu chiefs causing a great loss of life at Hō‘ae‘ae. The forces of Kahekili:

> . . . overran the districts of Kona and Ewa, and a war of extermination ensued. Men, woman and children were killed without discrimination and without mercy. The streams of . . . Hoaeae in Ewa, are said to have been literally choked with the corpses of the slain. [Fornander 1919:4:290]

After Kahekili’s death, it was his son Kalanikūpule who was defeated by Kamehameha.

‘Ewa is depicted as an abundant and populated land where chiefs of distinguished lineages were born and resided. The land was fertile and well fed by mountain streams that helped sustain the agricultural lifestyle needed to support the chiefs, their households, and their people. An examination of the place names reveals that water was a very important factor in this district. Six of the 12 *ahupua‘a* names begin with *wai*, the Hawaiian word for water: Waikele, Waipi‘o, Waiawa, Waimano, Waiau, and Waimalu. The fact that there were so many fishponds in the ‘Ewa District and in the Pu‘uloa area—more than any other district on O‘ahu—indicates agricultural/ aquacultural intensification was a direct link to the chiefs who resided there and also to the increasing needs of the population. Thus, ‘Ewa’s part in the politics and history of O‘ahu is of noteworthy importance.

Early historical accounts indicate ‘Ewa District was once widely inhabited by pre-Contact populations. This likely can also be said of Hō‘ae‘ae, although much less is documented regarding this *ahupua‘a*. Thriving human habitation in ‘Ewa is attributable for the most part to the plentiful marine and estuarine resources available at the coast. Other subsistence-related features of this area include irrigated lowlands suitable for wetland taro cultivation (Hammatt and Shideler 1990), as well as the lower forest area of the mountain slopes for the procurement of forest resources. Exploitation of the forest resources along the slopes of the Wai‘anae Range, as suggested by E.S. and E.G. Handy, probably acted as a viable subsistence alternative during times of famine:

> The length or depth of the valleys and the gradual slope of the ridges made the inhabited lowlands much more distant from the *wao*, or upland jungle, than was the case on the windward coast. Yet the *wao* here was more extensive, giving greater opportunity to forage for wild foods during famine time. [Handy and Handy 1972:469–470]

These upper valley slopes may have also been a significant resource for sporadic quarrying of basalt for the manufacturing of stone tools. This is evidenced in part by the existence of a probable quarrying site (State Inventory of Historic Places [SIHP] # 50-80-12-4322) in Makaiwa Gulch (Hammatt et al. 1991). The lowlands, bisected by ample streams, were ideal terrain for the cultivation of irrigated taro, while the hinterland consisted of deep valleys running far back into the Ko‘olau range. Between the valleys were ridges with steep sides, but a very gradual increase of altitude. The lower parts of the valley sides were excellent for the cultivation of yams (*Dioscorea* spp.) and bananas (*Musa* spp.). Farther inland grew the *‘awa* (kawa, *Piper methysticum*) for which the area was famous.

In addition, breadfruit (*Artocarpus altilis*), coconuts (*Cocos nucifera*), *wauke* (paper mulberry, *Broussonetia papyrifera*, used to make *kapa* for clothing), *olonā* (*Touchardia latifoli*, used to make cordage), and other plants were grown in the interior. ‘Ewa was known as one of the best areas to grow gourds and was famous for its *māmaki* (*Pipterus* spp., used to make *kapa* for clothing). It was also famous for a rare form of taro called the *kāī o ‘Ewa*, which was grown in mounds in marshy locations (Handy and Handy 1972:471). The cultivation of this prized and delicious taro led to the following saying:

> *Ua ‘ai i ke kāī-koi o ‘Ewa*. He has eaten the Kāī-koi taro of ‘Ewa.
>
> Kāī is O‘ahu’s best eating taro; one who has eaten it will always like it. Said of a youth of a maiden of ‘Ewa, who, like the Kāī taro, is not easily forgotten. [Pukui 1983:305]

Subsequent to Western Contact in the area, the landscape of the ‘Ewa plains and Wai‘anae slopes was adversely affected by the removal of the sandalwood forest and the introduction of domesticated animals and new vegetation species. Domesticated animals, including goats, sheep and cattle, brought to the Hawaiian Islands by Captain Vancouver in the early 1790s, were allowed to graze freely about the land for some time after. L.A. Henke reports the existence of a longhorn cattle ranch in Wai‘anae by at least 1840 (Frierson 1972:10). During this time, perhaps as early as 1790, exotic vegetation species were also introduced to the area. These typically included vegetation best suited to a terrain disturbed by the logging of sandalwood forest and eroded by animal grazing. The following dates of specific vegetation introduced to Hawai‘i are given by R. Smith and outlined by Frierson (1972:11):

(1) ‘early,’ ca. 1790: prickly pear cactus (*Opuntia tuna*), *koa haole* (*Leucaena leucocephala*) and guava (*Psidium guajava*)

(2) 1828 or 1837: *kiawe* tree (*Prosopis pallida*)

(3) 1835–1840: bermuda grass (*Cynodon dactylon*), wire grass (*Eleusine indica*)

(4) 1858: Lantana (*Lantana camara*)

At Contact, the most populous *ahupua‘a* on the island was Honouliuli in ‘Ewa District, with the majority of the population centered on Pearl Harbor. In 1832, a missionary census of Honouliuli recorded the population as 1,026. Within four years, the population was down to 870 (Schmitt 1973:19, 22). In 1835, there were eight to ten deaths for every birth (Kelly 1991:157–158). Between 1848 and 1853, there was a series of epidemics of measles, influenza, and whooping cough that often wiped out whole villages. In 1853, the population of ‘Ewa and Wai‘anae combined was 2,451 people. In 1872, it was 1,671 (Schmitt 1968:71). The inland area of ‘Ewa was probably abandoned by the mid-nineteenth century due to population decline and consolidation of the remaining people in the town of Honouliuli, near Kapapapūhi Point.

3.1.5 The Māhele and the Kuleana Act

The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848, the crown, the Hawaiian government, and the *ali‘i* received their land titles. The *maka‘āinana* (commoners) received their *kuleana* awards (individual land parcels) beginning in 1850. It is through records for Land Commission Awards (LCAs) generated during the Māhele that the first specific documentation of life in ‘Ewa, as it had evolved up to the mid-nineteenth century, comes to light.

By the time of the Māhele, many of the chiefs had accumulated huge debts to American merchants. A common practice at the time was to lease or mortgage large portions of unused land to other high chiefs and foreigners to generate income to pay off these earlier debts. Until the passage of the Act of 3 January 1865, which made Crown Lands inalienable, Kamehameha III and his successors did as they pleased with the Crown Lands, selling, leasing, and mortgaging them at will (Chinen 1958:27).

In 1850, the Privy Council passed resolutions that affirmed the rights of commoners or native tenants. To apply for fee simple title to their lands, native tenants were required to file their claims with the Land Commission within the specified time period of February 1846 to February 1848. Under the Kuleana Act of 1850, the claimant was required to have two witnesses who could testify they knew the claimant and the boundaries of the land, knew the claimant had lived on the land for a minimum of two years, and knew that no one had challenged the claim. The land also had to be surveyed.

Not everyone who was eligible to apply for *kuleana* lands did so and likewise, not all claims were awarded. Some claimants failed to follow through and come before the Land Commission; others failed to produce two witnesses or to have their land surveyed. Of the potential 2,500,000 acres of Crown and Government lands, “less than 30,000 acres of land were awarded to the native tenants” (Chinen 1958:31).

Twenty-three land claims were made in Hō‘ae‘ae Ahupua‘a, with 20 claims awarded to commoners (Table 1). The bulk of these claims deal with Hō‘ae‘ae Fisheries around West Loch,

Table 1. Land Commission Awards in Hō‘ae‘ae Ahupua‘a

LCA	Awardee	*‘Ili*	Land Use
193	Rees, Lewis	–	One *‘āpana* (lot or parcel); 3,453 acres Pasture lands
750	Mokumakuaole	Koipu, Kalokoloa	One *‘āpana*; 0.85 acres
887	Kaihikapu	Kalaikea, Kapapapuhi, Kuainihi, Kalokoeli, Pakai	Kalaikea: one *‘āpana*; 1.189 acres Kapapapuhi: one *‘āpana*; 0.45 acres
889	Puko	Waihi	One *‘āpana*; 2.082 acres
899	Kahooweliweli	Amakeahilalo	One *‘āpana*; 1.45 acres House lot
909	Kaneiahuea	Paniu, Kalahale, Lihue, Kumuhau	Kalahale: one *‘āpana*; 0.244 acres Panui: one *‘āpana*; 2.374 acres House lot
1533	Kealaiki	Muki, Waihi, Kalokoeli	One *‘āpana*; 2.22 acres Four *lo‘i*
1561	Kaumanu	Amakeahiluna, Kamalokala	One *‘āpana*; 1.73 acres
1562	Kapili	Kaaiiole, Koipuu	Two *‘āpana*; 1.93 acres
1571	Kalihue	Kamalokala	One *‘āpana*; 1.239 acres
1578	Kaihumai	Laekea	Two *‘āpana*; 0.855 acres
1582	Kukahoe	Koipu	Two *‘āpana*; 0.575 acres
1583	Kekapa	Waihi	Two *‘āpana*; 1.77 acres House lot
1601	Kekoamiki	Keahupuaa, Kaaiiiole, Holokoeli	One *‘āpana*; 1.3 acres House lot
1605	Kaualei	Koipuiki, Koipu	Koipuiki: one *‘āpana*; 0.73 acres Koipu: one *‘āpana*; 0.25 acres
1660	Ewa	Kahuu	Two *‘āpana*; 1.64 acres
1707	I	Kalokoeli	Two *‘āpana*; 3.966 acres House lot
1721	Hinawale	Kuainiho, Kaaiiole	One *‘āpana*; 1.65 acres
5634	Kaiwi	Kalokoeli, Koipuu	One *‘āpana*: 0.567 acres
10474	Namauu	Ahupua‘a	*‘Āpana* 9

\south of the project area. The project area is within the 3,453-acre Māhele Award 193 (Figure 12, Appendix A) surveyed by Metcalf in 1848 and awarded to Lewis Rees, the servant of Manuia. All unclaimed lands in the *ahupua‘a* were awarded to Nueku Nāmau‘u as Māhele Award 63 (LCA 10474). Nāmau‘u was a descendant of Hawai‘i Island chieftains and a cousin (or nephew) to Mataio Kekūanao‘a, the father of Hawaiian monarchs Alexander Liholiho (Kamehameha IV) and Lot Kapuāiwa (Kamehameha V) (Day 1984:69).

3.1.6 Mid- to Late 1800s

3.1.6.1 Explorer, Missionary, and Military Surveys

The first foreign attempt to survey Pearl Harbor was made in 1840 during the U.S. Exploring Expedition led by Charles Wilkes. He described the area as follows:

> In this district is a large inlet of the sea, into which the river Ewa empties; at the entrance of this inlet is the village of Laeloa (at Kalaeloa Pont): the shore is known by the name of Pearl River or harbour, from the circumstance that the pearl oyster is found here; and it is the only place in these islands where it occurs. The inlet has somewhat the appearance of a lagoon that has been partly filled up by alluvial deposits. At the request of the king, we made a survey of it: the depth of water at its mouth was found to be only fifteen feet; but after passing this coral bar, which is four hundred feet wide, the depth of water becomes ample for large ships, and the basin is sufficiently extensive to accommodate any number of vessels. If the water upon the bar should be deepened, which I doubt not can be effected, it would afford the best and most capacious harbour in the Pacific. [Wilkes 1970:79]

In 1873, General Schofield presented a confidential report to the U.S. Secretary of War, recommending that Pearl Harbor should be available to the U.S. Navy. Schofield wrote the following:

> In case it should become the policy of the Government of the United States to obtain the possession of this harbor for naval purposes, jurisdiction over all the waters of Pearl River with the adjacent shores to the distance of 4 miles from any anchorage should be ceded to the United States by the Hawaiian Government…
>
> The cession of Pearl River could probably be obtained by the United States in consideration of the repeal of the duty of Sandwich Island sugar. Indeed, the sugar-planters are so anxious for a reciprocity treaty, or so anxious rather for free trade in sugar with the United States, that many of them openly proclaim themselves in favor of annexation of these islands of the United States. [Sen. Ex. Docs, 52nd Congressional 2nd Session No. 77:150–154, reproduced in Judd 1971:Appendix 3]

This reciprocity treaty was concluded in 1876, with the provision that Hawai‘i would not “lease or relinquish sovereignty to another country or any harbor, etc.” In 1887, the treaty was renewed and amended to allow the United States the “exclusive right to enter the harbor of Pearl River, in the Island of Oahu, to establish and to maintain there a coaling and repair station for the use of vessels of the United States” (Judd 1971:128).

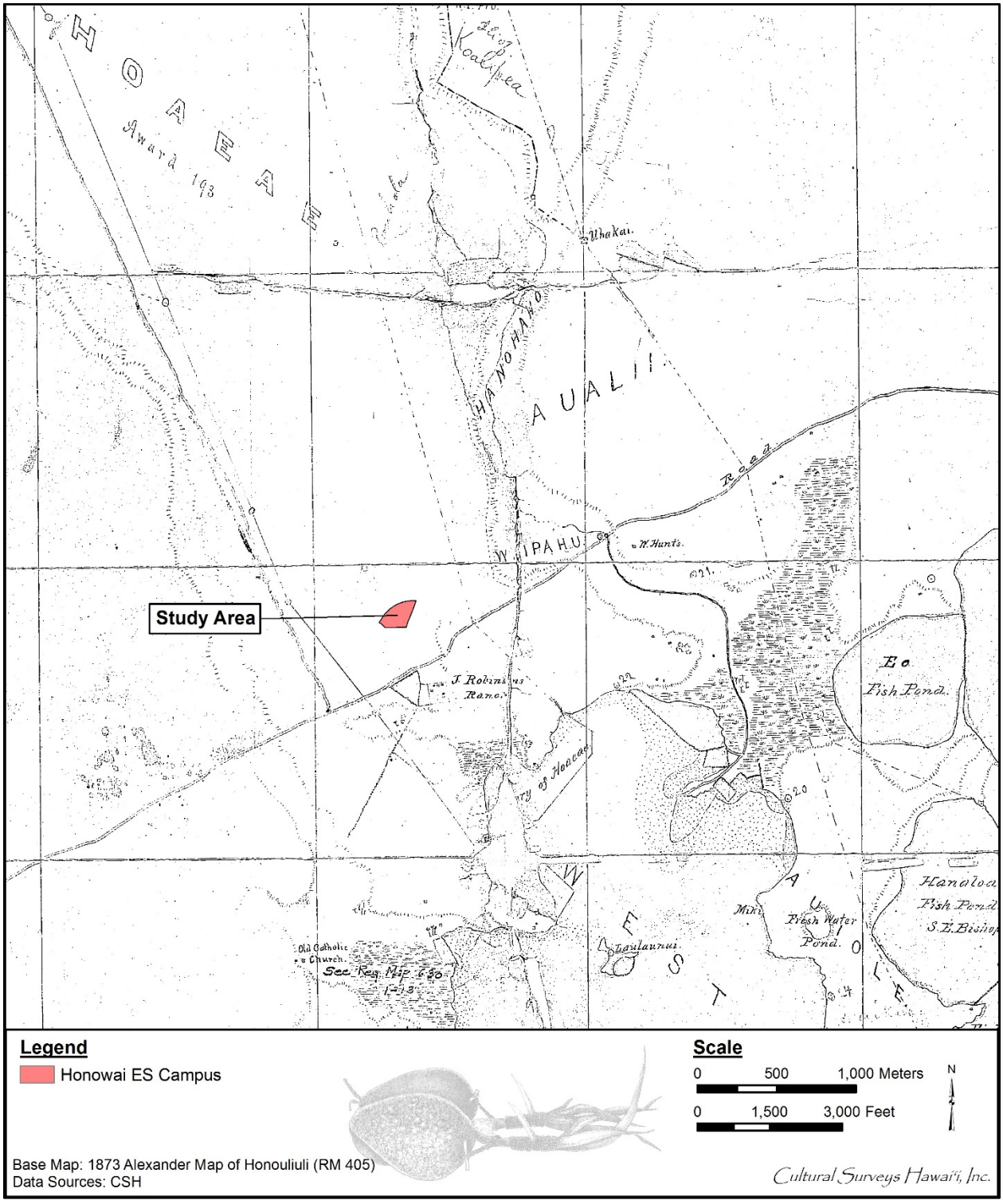

Figure 12. Portion of the 1873 Alexander map of Honouliuli showing the project area within LCA 193; note “J. [John James] Robinson Ranch” headquarters 250 m to the south on the *makai* side of the main “Road”

3.1.6.2 Plantations, Ranching, Agriculture, Irrigation, and the Railroad in the Late 1800s

Benjamin Dillingham envisioned a great land colonization scheme that included a railroad along the west and north coasts of O‘ahu. With Samuel Allen, James Castle, Robert Lewers, John Paty, and Mark Robinson, Dillingham organized the Oahu Railway and Land Company (OR&L), chartered in 1889. The railroad connected the outlying areas of O‘ahu to Honolulu. By 1890, the railroad reached from Honolulu to Pearl City and continued on to Waianae in 1895, to Waialua in 1898, and to Kahuku in 1899 (Kuykendall 1967:99–100). To attract business to his new railroad system, Dillingham subleased all land below roughly 200 ft elevation to William Castle, who in turn sublet the area to the Ewa Plantation Company for sugarcane cultivation (Frierson 1972:15) (Figure 13 through Figure 16). The history of the Ewa Plantation Company is summarized as follows:

> With the prospect of irrigation water available from underground sources, Ewa Plantation Company was incorporated in 1890. Mr. B.F. Dillingham sublet more than 11,000 acres of land to the newly formed company, considering the future hauling business a necessary factor in the success of his Oahu Railway plans.
>
> Clearing the land began on January 6, 1890 with 15 men, two horses and nine mules. The first seed cane, the Lahaina variety, was planted two months later. During the first year of operation, 22 wells were bored and 775 acres were planted at Honouliuli and Ewa. In April of 1890, the first Japanese laborers arrived at Ewa Plantation.
>
> Excavation for the mill began in January 1891 and in the same year the high lift pump began bringing water into a reservoir.
>
> The first crop, harvested in 1892, produced 2,849 tons of sugar. By 1923 Ewa Plantation was the first sugar company in the world to raise ten tons of sugar per acre and, by 1933, the plantation produced over 61,000 tons of sugar a year.
>
> By 1910 the Ewa Plantation Company community of 2,500 people contained several laborers camps, the plantation store, kindergarten, clubhouse, hospital and dispensary, and several outlying camps.
>
> Approximately 30 miles of railroad track serviced the plantation. Sugar from the mill was conveyed by the Oahu Railway and Land Company to Honolulu Harbor for shipping.
>
> There were 16 artesian wells scattered over the plantation in 1919 and, by 1933, 69 artesian and five surface wells provided water to 24 pumps. Ewa plantation had experimented with various methods of distributing irrigation water, one of which, the Ewa Border Method, was used on numerous other plantations.
>
> Ewa Plantation was considered one of the most prosperous plantations in Hawaii and in 1931 a new 50 year lease was executed, completing the agreement with Oahu Railway and Land Company and beginning an association with the James Campbell Estate.
>
> A new hospital was built in 1935, part of an exemplary health care system which

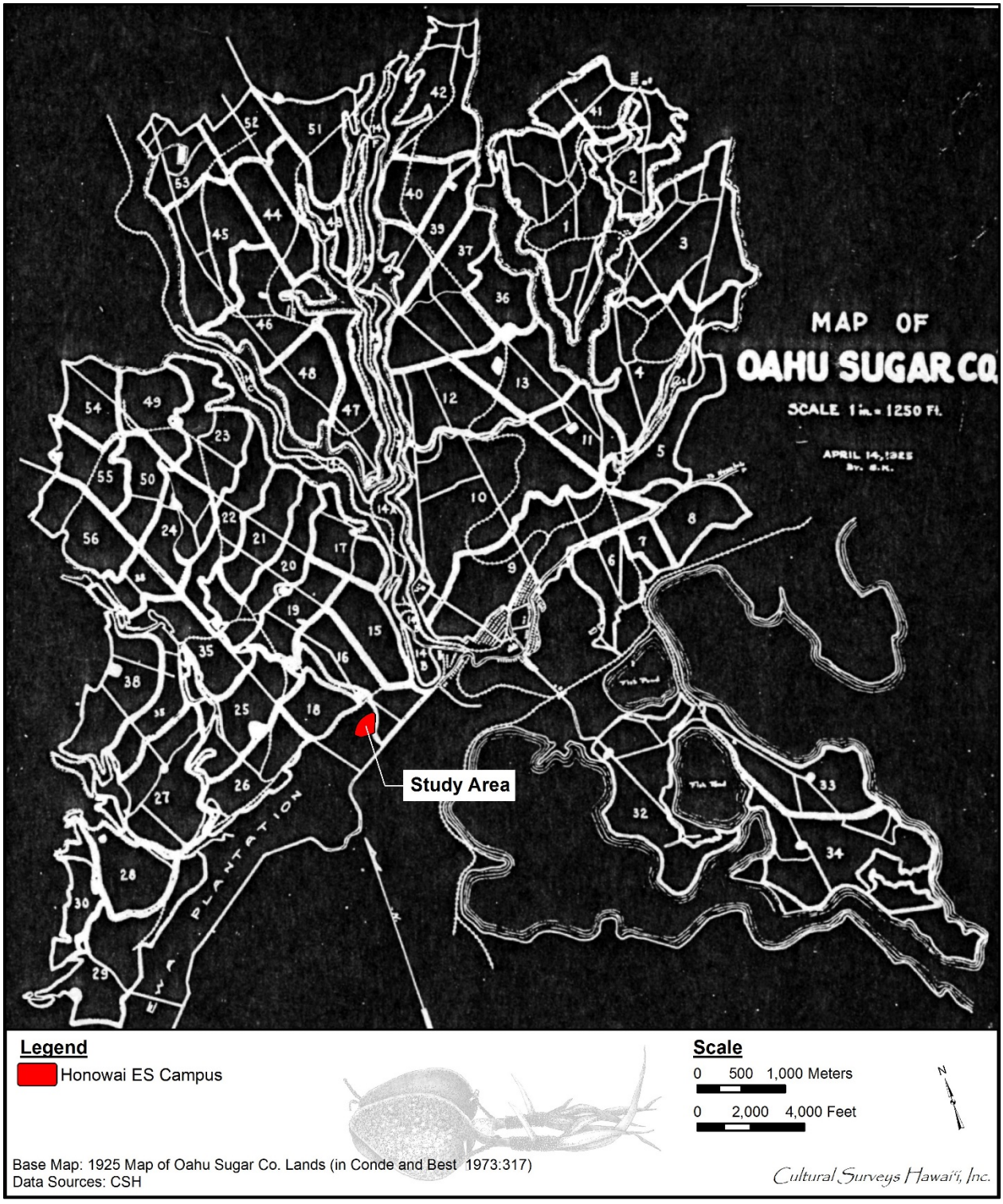

Figure 13. 1925 map of Oahu Sugar Company Lands indicating the project area within the Ewa Plantation (Condé and Best 1973:317)

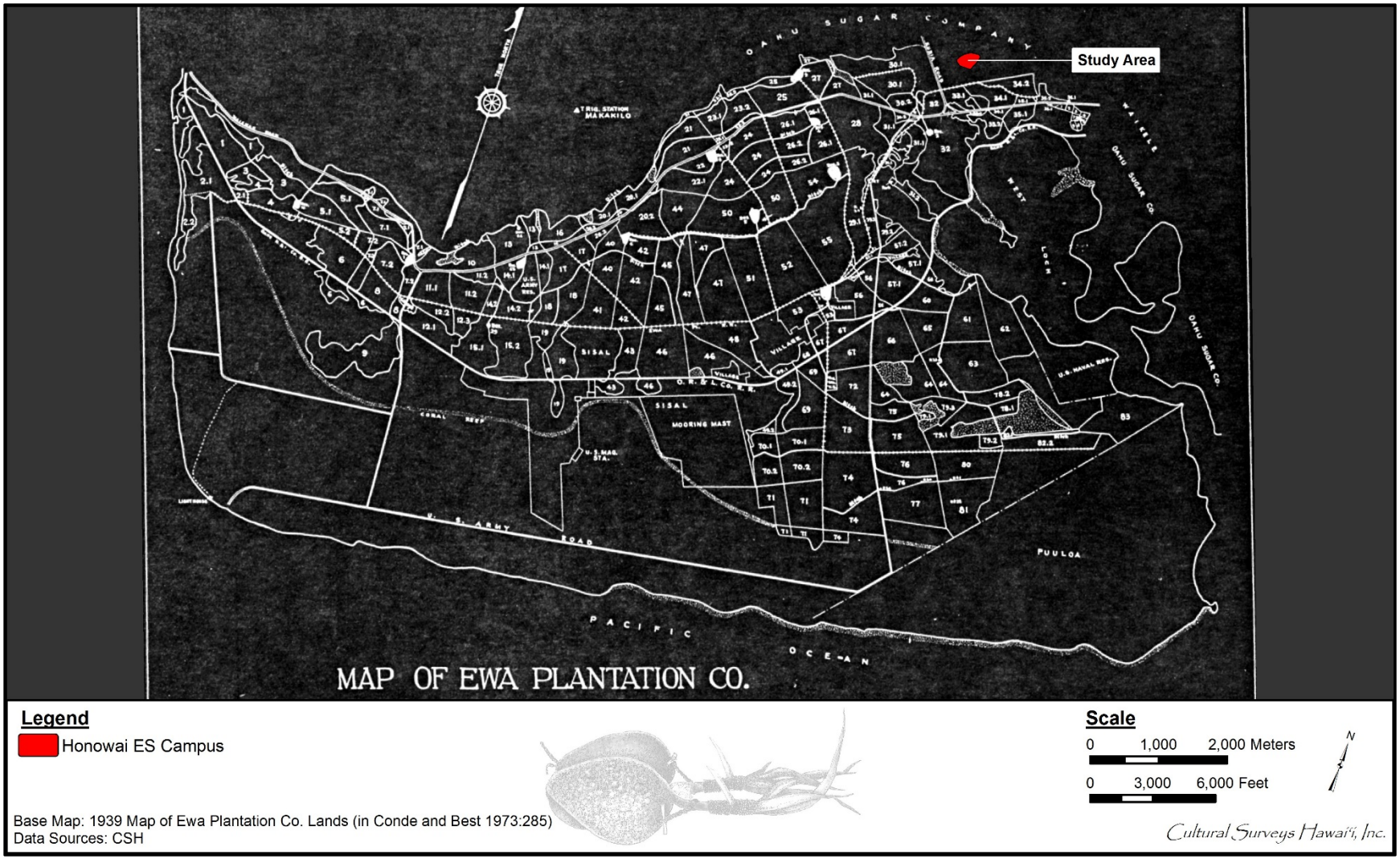

Figure 14. 1939 map of Ewa Plantation Company

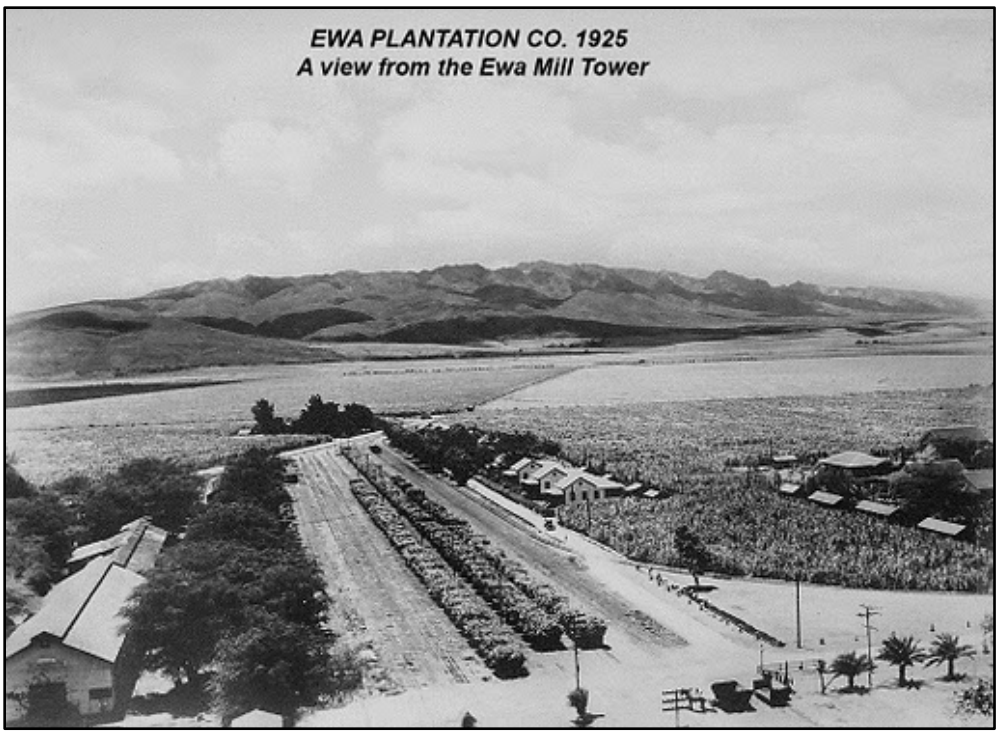

Figure 15. Ewa Plantation Company ca. 1925, as viewed from the Ewa Mill Tower (Memoirs of growing up in paradise 2013)

Figure 16. Ewa Plantation Company Train (Memoirs of growing up in paradise 2013)

> included kindergartens, child health clinics, and nutrition studies. [Hawaiian Sugar Planters' Association 2004]

By 1936 Ewa Plantation Company was the first plantation to have a fully mechanized harvesting operation and by 1946 tests were made to convert the hauling of cane from railroads to large trucks.

> Due to the proximity of Pearl Harbor, Ewa Plantation Company suffered some damage from machine gun fire and anti-aircraft shells during the December 7, 1941 air attack. With the entry of the United States into World War II, the Army took possession of over 500,000 acres of Ewa Plantation land. As with all Hawaii sugar companies, Ewa Plantation's most serious wartime problem was a shortage of laborers.
>
> By 1951 a good sugar crop and substantial investment in new equipment and development had mitigated the effects of the war and a labor strike in 1946, and a record crop was produced.
>
> In 1962 Castle and Cooke Ltd. Purchased majority control of Ewa Plantation Company stock and in 1970 Ewa Plantation Company merged with Oahu Sugar Company in Waipahu, Oahu. [Hawaiian Sugar Planters' Association 2004]

Dillingham's lands above approximately 200 ft elevation that were suitable for sugarcane cultivation were sublet to the Oahu Sugar Company. Although it is unclear based on Figure 13 if the current project area was part of the Ewa Plantation Company or the Oahu Sugar Company, Figure 14 seems to indicate it lay outside the bounds of the Ewa Plantation and was instead part of the Oahu Plantation. The Oahu Sugar Company was incorporated in 1897 and included lands in the foothills and central valley of O‘ahu above the ‘Ewa plain and Pearl Harbor. The 12,000 acres of land were leased from the estates of ‘Ī‘ī, Bishop, and Robinson and had over 900 field workers composed of 44 Hawaiians, 473 Japanese, 399 Chinese, and 57 Portuguese. The sprawling plantation "covered some 20 square miles . . . ranging in elevation from 10 feet at the Waipio Peninsula . . .to 700 feet at the Waiahole Ditch" (Condé and Best 1973:313). Prior to commercial sugar cultivation, the lands occupied by the Oahu Sugar Company were described as being "of near desert proportion until water was supplied from drilled artesian wells and the Waiahole Water project" (Condé and Best 1973:313). From 1890 to 1892 the Ranch Department of the OR&L desperately sought water for their herds of cattle by tapping plantation irrigation flumes and searching for alternative sources of water. Water to irrigate the *mauka* cane fields was initially pumped to elevations of 500 ft by some of the "largest steam pumps ever manufactured" (Dorrance and Morgan 2000:49).

In addition, Mark Robinson, mentioned above as one of the founders of the OR&L, also owned Hoaeae Ranch south of the current project area. Hoaeae Ranch contained a macadamia nut orchard and is depicted on several historic maps (see Figure 12, Figure 17, and Figure 18), where it is labelled "J. Robinsons Ranch," "Robinson's," or simply "Ranch House." Note J. Robinson presumably refers to John James Robinson, father of Mark Robinson and friend of Kamehameha II and John Young. Note also that the 1905 Monsarrat map (see Figure 18) depicts the former traditional Hawaiian trails south and west of the project area as a "Government Road" and "Konia Road," respectively. A railroad also runs east-west *makai* of the project area. Although this map appears to show the project area within the Oahu Sugar Company lands, it is clear from historical documentation that it was still part of the Ewa Plantation at this time.

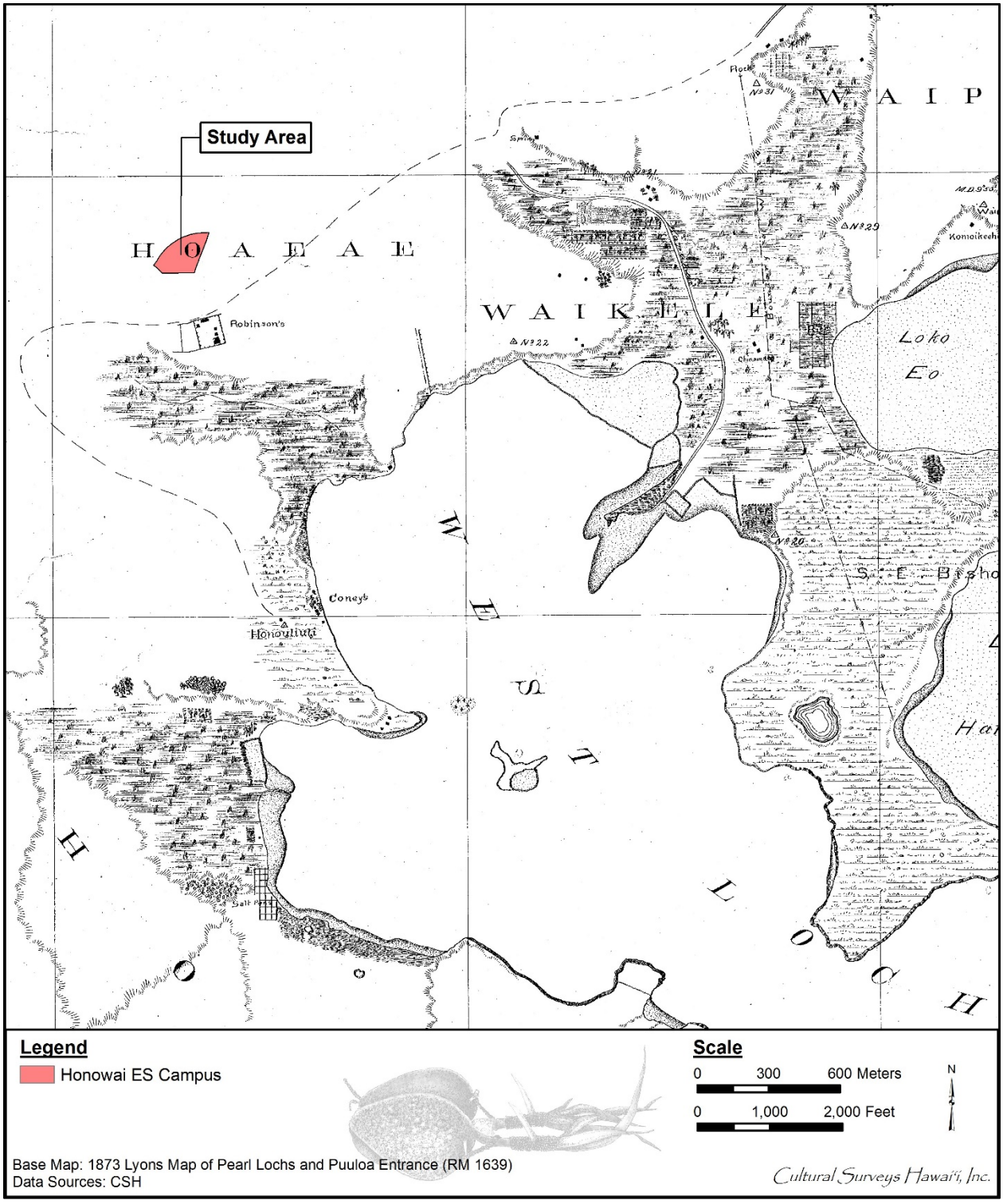

Figure 17. 1873 Lyons map of Pearl Lochs and Puuloa Entrance showing the project area; note “Robinson’s Ranch” headquarters 250 m to the south

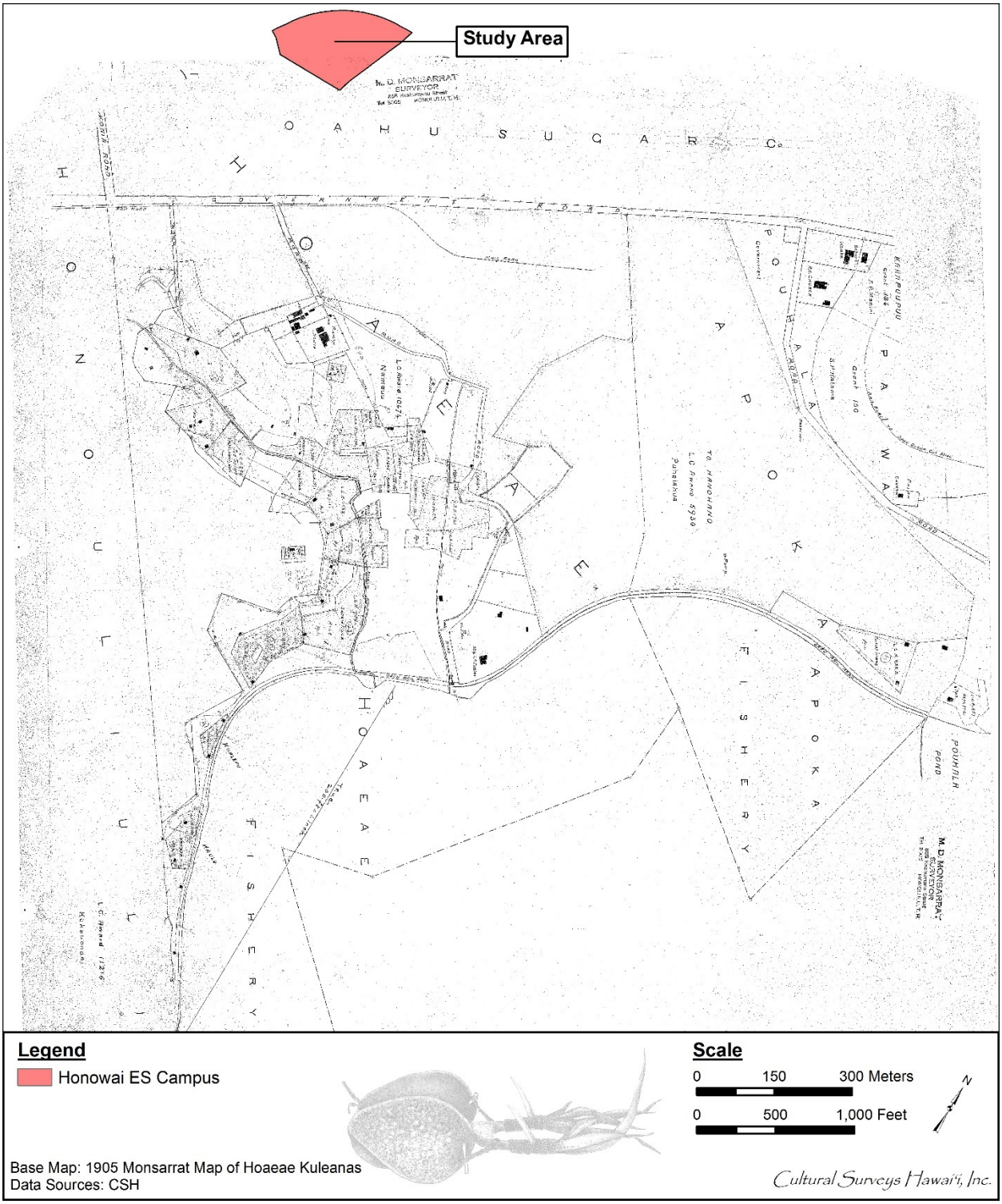

Figure 18. 1905 Monsarrat map of Hō‘ae‘ae; note “Government Road” to the south and “Konia Road” to the southwest

3.1.7 Hō‘ae‘ae in the Popular Press (1853–1918)

It is often the case that the popular press offers insights into land use, social history, and the traditional and customary practices of ethnic communities that are not available from standard historical studies. This is particularly true for smaller, more obscure areas such as Hō‘ae‘ae Ahupua‘a, which have not been a major focus of historical study. The relatively recent advent of searchable archives such as the Library of Congress "Chronicling America" website has offered a time-efficient research tool to further explore the land use, social history, and practices of ethnic communities at Hō‘ae‘ae Ahupua‘a. A total of 352 newspaper articles from a dozen newspapers were reviewed that included the key word "Hoaeae," spanning the timeframe from January 1853 through June 1918. The "Chronicling America" website appears to address Hawai‘i newspapers from 1836 through 1922; reasons for the apparent absence of articles at the ends of this range are unclear. It may be the case that there were no articles about Hō‘ae‘ae between 1836 and 1853, and it may be the case that the place name "Hō‘ae‘ae" dropped out of popular usage following World War I, as it was replaced by more popular place names such as "Waipahu." References to Hō‘ae‘ae were identified in the following 12 newspapers:

- *Daily Bulletin* (1888–1893)
- *Evening Bulletin* (1896–1912)
- *Hawaii Holomua Progress* (1893)
- *Hawaiian Gazette* (1888–1917),
- *Hawaiian Star* (1893–1912)
- *Hilo Tribune* (1903)
- *Honolulu Republican* (1901)
- *Honolulu Star-Bulletin* (1912–1917)
- *Independent* (1901)
- *Maui News* (1903–1918)
- *Pacific Commercial Advertiser* (1862–1910)
- *Polynesian* (1853-1862)

3.1.7.1 Control of Access to Hō‘ae‘ae Lands

One of the most popular themes for Hō‘ae‘ae lands in newspapers is in small advertisements restricting access or "trespass." These start in September 1889 with a "Notice" promulgated by A.J. Campbell, Manager of Hoaeae Ranch, forbidding "shooting or trespass" (*Daily Bulletin* 4 September 1889 "Notice"). Some 98 trespass notices were identified in the *Daily Bulletin* (1889–1893), *Pacific Commercial Advertiser* (1892–1905), *Hawaiian Star* (1901), and *Evening Bulletin* (1901–1905). The trespassing prohibitions promulgated by Hoaeae Ranch are associated with A.J. Campbell, S.M. Damon, J.I. Dowsett, and J.M. Dowsett. M.P. Robinson is associated with trespass notices for Hō‘ae‘ae (1893–1905) that do not specifically reference the Hoaeae Ranch. In 1910, the Hawaiian Fibre Company, Ltd. was actively warning people not to trespass or shoot on their Hō‘ae‘ae lands *(Pacific Commercial Advertiser* 28 September 1910). These trespass notices reference "shooting," "shooting of game," "hunting," or "sportsmen," and it appears self-evident that unauthorized hunting on Hō‘ae‘ae lands was perceived as enough of a problem that it needed to be addressed repeatedly. One aspect of these trespass notices is that large landowners clearly believed they had the exclusive right to regulate public access to their lands from as early as 1889, during the years of the Hawaiian Kingdom.

3.1.7.2 Hunting at Hō‘ae‘ae and Vicinity

The 98 identified trespass notices for Hō‘ae‘ae noted above all reference “shooting,” “shooting of game,” “hunting,” or “sportsmen,” indicating there was something to hunt at Hō‘ae‘ae. In the odd case of the shooting of Ah See in the back at Hō‘ae‘ae by the youths Willie Davis and Mark Robinson in August 1901, it is asserted that “[t]he boys had gone up into the mountains to hunt goats” (*Pacific Commercial Advertiser* 21 August 1901). Goats were ubiquitous in the mountains of O‘ahu ca. 1900. An article entitled “Will Stock Preserves with Pheasants Again” notes “[a] consignment of seventeen pheasants of three varieties arrived from Canada and California. These will be distributed among shooting preserves at Ahuimanu, upper Hoaeae and Sisal” (*Evening Bulletin* 5 February 1912). Therefore, it appears the prohibitions against trespass were largely focused on preventing the poaching of game birds.

3.1.7.3 Diversified Agricultural Production at Hō‘ae‘ae

3.1.7.3.1 Cattle

Hoaeae Ranch is referenced in more than 50 articles between 1888 and 1901. It may be that the Ranch started earlier and lasted longer but it seems clear sisal and sugar operations at Hō‘ae‘ae had eclipsed the Ranch as an economic and social force by the beginning of the twentieth century. Most ranches not associated with the Portuguese were typically meat cattle ranches; however, in early 1896 there were 25 advertisements for “Table Butter” from “celebrated dairies,” including Hoaeae (*Pacific Commercial Advertiser* 20 February 1896 through 21 March 1896).

3.1.7.3.2 Horses

It was common for ranches to raise horses, particularly for horse racing. Accounts of famous O‘ahu horses praised “Signal,” a mare by “McClellan,” imported in 1884 by Hoaeae Ranch to produce a number of stylish saddle and carriage horses (*Pacific Commercial Advertiser* 23 December 1903). In addition, injuries arising from training horses were common and are reported from Hoaeae Ranch in 1898 (*Pacific Commercial Advertiser* 13 January 1898).

3.1.7.3.3 Rice

Clearly rice production at Hō‘ae‘ae was a major enterprise, although we only have ancillary references available:

- An article “Over the Oahu Railway Line” discussing the new OR&L railroad notes “[t]he road will reach the shores of the lagoon in Halawakai and from this point on to Hoaeae will run along the shores, passing through a continuous and unbroken rice field . . . ” (*Hawaiian Gazette* 25 September 1888).
- An article on a railroad press excursion to visit the Haleiwa Hotel notes that in passing “[t]hrough the rice fields of Waipio and Hoaeae the speed was increased” (*Pacific Commercial Advertiser* 5 August 1899).
- An article on a domestic tragedy, “Suicided While Insane,” notes that at the time of a Chinese woman at Hō‘ae‘ae taking strychnine, “her husband was out in the rice fields shooting rice birds . . . ” (*Hawaiian Star* 21 November 1903).

3.1.7.3.4 Traditional Hawaiian Crops

The continuation of traditional Hawaiian agricultural practices at Hō‘ae‘ae in the 1853–1918 timeframe is uncertain. The newspaper accounts only record three references to taro. The first is in a dispute between Mataio Kekūanao‘a and Charles Dana in 1856, which involved “a certain

tract of *kalo* land and a fishpond adjoining situated at Hoaeae" and resulted in a "Marshal's sale" (*Polynesian* 7 and 21 June 1856). This suggests Hawaiian taro lands going out of Hawaiian ownership.

A second account is in the case of the murder of Tong Hoon Hoo at Hō‘ae‘ae. Hoo chased a burglar Liung Yao "across a taro patch" only to be shot dead (*Hawaiian Gazette* 17 October 1893; *Pacific Commercial Advertiser* 16 October 1893). In this time frame, many taro patches are believed to have been managed by Chinese, who converted them from taro production to rice production (and back) in response to market forces.

A third reference to taro is in an account of "Realty Transfers" from "M.P. Robinson et al to Kum Sai Yuen of six taro patches" at Hō‘ae‘ae for 10 years at $100 per year (*Hawaiian Star* 19 December 1903; *Pacific Commercial Advertiser* 19 December 1903). Again, this supports the general belief that Chinese farmers were taking over former taro lands at the turn of the century for the production of taro and/or rice at Hō‘ae‘ae.

The only other reference to any traditional Hawaiian cultigens is in an account of "The Oahu Railroad Project," noting that the completion of the OR&L railroad to an interim terminus at Hō‘ae‘ae had the effect that "banana, vegetable and sugar culture have been stimulated and property has more than doubled in market value" (*Daily Bulletin* 14 July 1890). The indication is of commercial cultivation; there is no reference to the ethnicity of the cultivators.

Although a reference to a fishpond has been noted in the dispute above between Mataio Kekūanao‘a and Charles Dana in 1856, there is no other clear reference to fishponds at Hō‘ae‘ae in these newspaper accounts.

3.1.7.3.5 Sisal

Commercial sisal (rope) production was prevalent at Hō‘ae‘ae for a short period. The operation burst onto the scene in 1908 with the "Hawaiian Fibre Co.," when the following was reported,

> Over 500 acres of new planting has recently been put out at the new plantation in upper Hoaeae and work is being vigorously pushed to cover the entire tract of some 1800 acres with sisal and the gulches with forest trees . . . The machinery of the company has been all overhauled and refitted and will immediately start up as the company now has 600 acres of matured plants ready to take off and 260 acres additional will be ready by the time the crop is harvested . . . The officers of the Hawaiian Sisal Company are Cecil Brown, president, M.P. Robinson, vice president . . . " [*Pacific Commercial Advertiser* 30 May 1908]

Much of the initial transformation of lands at Hō‘ae‘ae may have been for sisal as documented in an article titled "Traction Plows for Hoaeae Sisal Lands":

> The Directors of the Hawaiian Fibre Company decided to investigate the matter of traction plows for plowing Hoaeae lands adding 1200 to 1400 acres of sisal and forest to the six hundred acres the company has already planted there. The company has 'enough in sight to keep its machinery in operation night and day for a year. It will begin shipments by the next American-Hawaiian steamship.' [*Pacific Commercial Advertiser* 26 August 1908]

An article on “Sisal Planting” continues the bullish theme of rapid agricultural land development:

> The Hawaiian Fibre Company is planning to plow with traction plows all the Hoaeae lands and plant the same in sisal and forest, adding from 1200 to 1400 acres to the 600 acres they already have planted there . . . The work of harvesting at the plantation at Sisal has begun and there is sufficient in sight to keep the decorating machine at work for a year. [*Pacific Commercial Advertiser* 30 August 1908]

A new place name, “Sisal,” appears in 1910 (*Pacific Commercial Advertiser* 28 September 1910). One of the last accounts of sisal at Hō‘ae‘ae comes from a Maui Island source relating that control of the Hawaiian Fiber Company sisal growers passed to the Hawaiian Pineapple Company. The fiber company was said to have had about 1,800 acres at Hōa‘ea‘e and at Sisal, near ‘Ewa:

> About 1000 acres was planted to sisal, and has since the beginning of the world war enjoyed a considerable degree of prosperity . . . The prevailing high price of sisal is said to have been the reason which urged the pineapple company to take up the new industry. Plans have been made so that if there should be a decline in sisal prices after the war, the land can be planted to pineapples. [*Maui News* 7 June 1918]

3.1.7.3.6 Pineapple

At the end of the 1800s, pineapple cultivation showed promise in central O‘ahu:

> Pineapple cultivation by the Pearl City Fruit and Packing Company is a success in the uplands of Hoaeae in upper lands the company swapped for low lands. It is the intention of the company to ultimately move its cannery and packing plant to the plantation on the hills. [*Hawaiian Star* 13 January 1899]

However, there is no reason to believe a cannery was ever built in the uplands of Hō‘ae‘ae. A neighboring property was the holdings of “the California colony,” where “pineapples, grapes, melons, strawberries, vegetables of all kinds and some fruit trees” were being cultivated (*Hawaiian Star* 13 January 1899). As noted above, in 1918, with the collapse of the sisal industry following the end of World War I, sisal lands appear to have been converted to pineapple.

3.1.7.4 The Rise of Oahu Sugar Company at Hō‘ae‘ae

In 1897, Benjamin Frank Dillingham promoted the Oahu Sugar Company, Inc. that leased lands from the John Papa ‘Ī‘ī, Bishop, and Robinson Estates. As early as 1890, it was widely noted that the OR&L railroad had stimulated sugar cultivation on serviced lands (*Daily Bulletin* 14 July 1890). The Oahu Sugar Company was a calculated investment, and Dillingham sought expert testimony, the sharing of which undoubtedly encouraged investors in his enterprises. This included publishing (twice) of a letter from J. Marsden, the Commissioner of Agriculture and Forestry, regarding a proposed B.F. Dillingham plantation at “Waipio, Hoaeae and Honouliuli” who noted “the land is perfectly clear from any growth except grass” and noted the proximity of limestone for liming the fields. Commissioner Marsden commented that a “veritable gold mine has been lying at Ewa and you are the first one who has had the courage to dig it” (*Pacific Commercial Advertiser* 2 January 1895).

An opinion was also sought from W.D. Alexander (and published twice), who concluded “[b]etween Hoaeae and Waiawa there is land enough for a first-class plantation . . . ” (*Pacific*

Commercial Advertiser 2 January 1895). However, the development of the Hō‘ae‘ae fields by the Oahu Sugar Company appears to have gotten off to a slow start due to a lack of water. For example:

> . . . 282 acres of long ratoon cane, above the 550 feet level in Hoaeae, depending entirely on rain and mountain water, could only with difficulty be kept alive during the hot summer months. Eighty two acres of this field had to be abandoned. [*Hawaiian Star* 23 February 1906]

The fields of Hō‘ae‘ae were subsequently transformed by the Waiahole Ditch:

> The Waiahole aqueduct was completed as far as the boundary line of Hoaeae and Honouliuli, on May 27, 1916 and the water turned in on that date. [*Honolulu Star-Bulletin* 16 February 1917]

> Of the area planted, 1374 acres is new land, taken in under the Waiahole ditch in Waipio and Hoaeae . . . the young ratoons, particularly in the Hoaeae and Honouliuli Sections, are in a very advanced condition . . . ” [*Hawaiian Gazette* 16 February 1917]

3.1.7.5 Ethnicity at Hō‘ae‘ae

3.1.7.5.1 Hawaiians

Mark Prevor Robinson (1852–?) was the owner of Hoaeae Ranch and a member of Queen Lili‘uokalani’s cabinet (Minister of Foreign Affairs), as well as a founder of First National Bank of Hawaii and First American Savings. His father, John James Robinson (?–1876) arrived in Hawai‘i in 1820 and married Rebecca Prevor, with whom he had eight children. While Rebecca Prevor’s geneaology is not altogether clear, she is understood to have been a daughter of Kamakana, a Maui chiefess (“Mysterious Mary Foster,” *Honolulu Star-Bulletin* 22 September 2006); thus, Mark P. Robinson was a very prominent Hawaiian.

There are surprisingly few other references to Hawaiians at Hō‘ae‘ae. There is a reference to a policeman named Mahuka from Hō‘ae‘ae who died of natural causes in 1915; otherwise, almost all references to Hawaiians at Hō‘ae‘ae appear to be in the context of land transactions or disputes. The Board of Commissioners to quiet Land Titles awarded Hō‘ae‘ae (among many other large properties) to N. Namauu in 1853, but he was deceased by that time. The *ali‘i* Mataio Kekūanao‘a was in legal disputes regarding Hō‘ae‘ae lands with Samuel Thompson in 1853 and Charles Dana in 1856. Lands were conveyed by Kekūanao‘a and Kapoli, widow of Namauu, to Samuel Thompson prior to 1862. In 1894, there was an argument over land at Hō‘ae‘ae among descendants of Kahooweliweli. In 1903, A. Kauhi and wife sold land at Hō‘ae‘ae to Kulapii for $200. In 1905, it appears Mark P. Robinson sold land at Hō‘ae‘ae to D. Kalou, who sold it back to Robinson in a transaction that is unclear. In 1905, there were land transactions involving the estate of J.K. Kahookanoi, K.P. Kaneiahuea, and M.P. Robinson, with Robinson seemingly purchasing land for $50 and selling it back for $50. There was another land sale in 1905 from Lui Kaihikapu to M.P. Robinson for $250. In 1907, Daniela Kalou bought land from the A.N. Campbell Trust for $200 and immediately sold it to Mark P. Robinson for $275. Also in 1907, the Dowsett Company, Ltd., filed “ejectment proceedings” against Keliikipi, Ilikole, and three Japanese as unlawfully being in possession of land at Kaulu, Hō‘ae‘ae. The result of these financial transactions was dispossession of Hawaiians of their lands. One other notice believed to refer to a Hawaiian was a small “personal” notice to a Mrs. Foster going to Hō‘ae‘ae for a vacation in 1895. This is understood to be Mary

Elizabeth Mikahala Robinson Foster (1844–1930) granddaughter of Kamakana, a Maui chiefess and sister of Mark P. Robinson.

3.1.7.5.2 Chinese

The stories of Chinese at Hō‘ae‘ae are marked by violence. The first account is of the murder of Tong Hoon Hoo, otherwise known as Tong Yong and likely also as Dan Hung Hoy (as the victim was named in the United Chinese Society offering of a reward), who lived at Hōa‘ea‘e and was shot and killed by the burglar Liung Yao. There were at least 13 articles in five different newspapers about this case between 16 and 25 October 1893. Despite the aggregate offer of $300—a sizable reward at that time—there is no account of the suspect being apprehended. The final article on the subject, entitled “Not Caught Yet: Liung Yao, the Chinese Murderer is a Will-o’-the-Wisp,” relates that Liung Yao had been seen several times, “but all have been afraid to touch him as it is said he is armed to the teeth . . . two white men came to the police station and offered to guarantee to catch Yao if they could be allowed the privilege of shooting him on sight, which was refused . . .” (*Pacific Commercial Advertiser* 25 October 1893).

Another reference to Chinese at Hō‘ae‘ae comes in the context of unappreciated cooking for the overseers (*luna*) at Oahu Sugar Company plantation at Hoaeae:

> . . . a strike of lunas on the new Oahu plantation . . . the kick of the men was the class of food served by the salaried chefs at Hoaeae . . . served by Chinese, according to Chinese ideas. Nearly everything was burned to a crisp . . . This is the first trouble Manager Ahrens has had with white men in his employ. [*Hawaiian Star* 5 May 1898]

Certainly one of the biggest stories in the history of Hō‘ae‘ae involves the shooting of Ah Chee in August 1901, covered by five different newspapers as follows:

- “A Waipahu Tradgedy: Willie Davis Charged with Shooting Chinese,” *Evening Bulletin* 20 August 1901,
- “He Was Shot in the Back: Ah Chee Attacked on the Highway,” *Hawaiian Star* 20 August 1901,
- “Inoffensive Chinese Fired Upon by Hoaeae Toughs,” *Honolulu Republican* 21 August 1901,
- “Shot in the Back: A Mysterious Gun Scrape at Ewa,” *Pacific Commercial Advertiser* 21 August 1901, and
- “A Shooting Scrape,” *Independent* 21 August 1901.

The facts of the case are consistent in the different accounts; two Chinese men were riding in a “brake” (a horse drawn carriage typically with four wheels, a high seat upon which the driver sits, and an open bed platform behind). The Chinese maintained they were accosted by two boys and told to halt. Fearing robbery, they urged their horse and drove away and then both boys began to fire at them with revolvers. The perpetrators of the attack were Willie Davis and Mark Robinson, boys about 18 years of age. Robinson was the son of Mark Robinson, owner of Hoaeae Ranch, and Davis’ father was Joseph Davis, the manager of Robinson’s ranch at Hoaeae. The deputy sheriff found young Robinson in possession of a .38 caliber revolver with four empty cartridges. No gun was found with Davis, and it was speculated he had thrown it away. Both boys were believed to be under the influence of alcohol at the time of the shooting. Ah Chee was reported to

be in a very precarious condition from the gunshot wound. The Chinese companion asserted Davis was the one who shot Ah Chee. The Robinson boy was not held by the sheriff. Four accounts relate the youths talking about shooting dogs. The fate of the merchant Ah Chee is uncertain, but it seems likely he survived as there is no account of either of the young, well-connected *haole* men being brought to trial.

Finally, in 1903, there is an account of the "Suicided While Insane," in which a 31-year-old Chinese mother apparently committed suicide with strychnine poison while her husband attended his rice fields (*Hawaiian Star* 21 November 1903).

3.1.7.5.3 Japanese

There is only one early account specific to Japanese at Hō‘ae‘ae, summarized in an article entitled "Was Hanging to a Tree: Desperate Ending of a Jap at Hoaeae":

> A Japanese laborer at Ewa Plantation named Sagura was found hanging dead from a kiawe tree at Hō‘ae‘ae Gulch. A coroner's jury determined suicide. There was excitement 'that the fellow had been lynched.' He was buried in Ewa. [*Hawaiian Star* 6 February 1899]

The speculation as to whether the Japanese worker had in fact been lynched has a certain resonance with the case of the seemingly unprovoked shooting of the Chinese Ah Chee by Caucasian youth associated with Hoaeae Ranch two years later.

3.1.8 1900s

In Hō‘ae‘ae and Honouliuli, the cultivation of sisal (*Agavacea*) for high quality rope fiber was attempted on arid lands, although no evidence suggests this enterprise or similar efforts to grow pineapple affected the current project area. Thrum's *Hawaiian Almanac and Annual* speaks of the prospect of sisal cultivation glowingly from 1904 to 1912, but the greater profits to be made from sugarcane cultivation eventually led to the decline of this industry. Upper Hō‘ae‘ae seems to have been the focus of sisal cultivation by the Hawaiian Fiber Company, as shown in excerpts from Thrum's 1909 (Thrum 1908:167) and 1913 (Thrum 1912:171) annuals.

Further, a Japanese pineapple growers' enterprise, the Waipio Pineapple Company, was founded in 1908, leasing approximately 808 acres in portions of Kīpapa Gulch (Kimura 1988:103). In 1917, Libby, McNeill & Libby took over Waipio Pineapple Company's leases and continued to cultivate pineapple in the area (Hawkins 2011:122). By the late 1920s, James Dole's Hawaiian Pineapple Company, incorporated in 1901, was cultivating pineapple on thousands of acres leased from the ‘Ī‘ī estate in the *mauka* area of Waipi‘o.

Besides sisal, cotton, and pineapple, other crops were grown in central ‘Ewa. One such crop was macadamia nut:

> At Hoaeae, in the Ewa district, is another tract of about six acres on the Robinson estate, reported to be in fine condition . . . Mr. Grant Bailey, manager of the Hoaeae Ranch, kindly furnishes the following data on the infant industry . . . 'Our planting is about six acres. Apparently one would have to wait about ten years before expecting commercial results on the planting. Our oldest trees are seven years old and they are just now beginning to bear.' [Thrum 1927:96]

Many irrigated crops such as pineapple, coffee, and macadamia nuts were grown for export markets; however, sugar became the king of crops, and fields of sugarcane dominated the landscapes of Hawai‘i from the 1880s through the 1980s. For much of that century, sugar was the single greatest force at work in Hawai‘i—not only economically and politically but socially and environmentally.

Sugar production at the Oahu Sugar Company, which likely included the land within the current project area, increased from 29,983 tons in 1915 to 50,005 tons in 1918. The expense of pumping water to the high elevations of the plantation led to the proposal to transport water from the windward side of the Ko‘olau Mountains. The subsidiary Waiahole Water Company was formed in 1913 to dig a tunnel through the Ko‘olau range to transport runoff from the eastern side of the mountains. The Waiāhole Ditch was built to pass through Hō‘ae‘ae the north of the project area, bringing water via an interconnected network of irrigation flumes. Figure 19 and Figure 20 show workers at the Waiāhole Tunnel ca. 1916 and the Oahu Sugar Company ca. 1933.

Innovation was encouraged at the Oahu Sugar Company. Mechanical loading of harvested cane began in 1924, and mechanical harvesting was introduced during World War II. A plantation railroad carried harvests to a mill at Waipahu, and the raw sugar was transported to the Honolulu docks by the OR&L, until the railroad was replaced by trucks in 1950. In 1970, when the Ewa Plantation ceased operations, much of its land was acquired by the Oahu Sugar Company, which produced some 76,925 tons of sugar from 11,526 cultivated acres in 1990. However, by 1993 both the plantation and the mill were surrounded by urban growth, and the Oahu Sugar Company closed after the 1995 harvest.

The Donn map of 1906 (Figure 21) shows the project area within the extensive sugar cultivation lands of the “Oahu Plantation”; note the area depicted on the map appears to include the lands of both the Oahu Sugar Company and the Ewa Plantation Company. The traditional *mauka-makai* trail on the Honouliuli/ Hō‘ae‘ae boundary (see Figure 11) is now shown as an unimproved road just west of the project area, and the Hoaeae Ranch is still indicated to the south; however, no other development is indicated in the vicinity. Subsequent maps show the project area surrounded by sugarcane infrastructure, including roads/trails, ditches, reservoirs, and railroads (Figure 22 through Figure 24). An unimproved path/road immediately west of the project area likely represents a field access road (see Figure 22). However, maps and aerial photographs that post-date 1950 (Figure 25 through Figure 27) appear to show a ditch or flume in the place of that field access road. In addition, a flume descending from a reservoir north of the project area skirts along the western edge of the Honowai Elementary School campus, in the location of what is now referred to as Hoaeae Stream. In these figures, the railroad tracks have been replaced with roads, indicating the transition from railroads to trucks for the transportation of sugarcane and raw sugar.

The 1969 Schofield Barracks USGS topographic quadrangle map (see Figure 27) shows the increasing urban growth east of the project area in the second half of the twentieth century, which eventually led to the closing of the sugar plantation. The map indicates at least three schools in the vicinity, a drive-in theater, and the H-1 (Queen Lili‘uokalani) highway, which was still under construction at that time. The increasing development and proximity of the new highway are also clearly visible on a 1977/1978 aerial photograph (Figure 28).

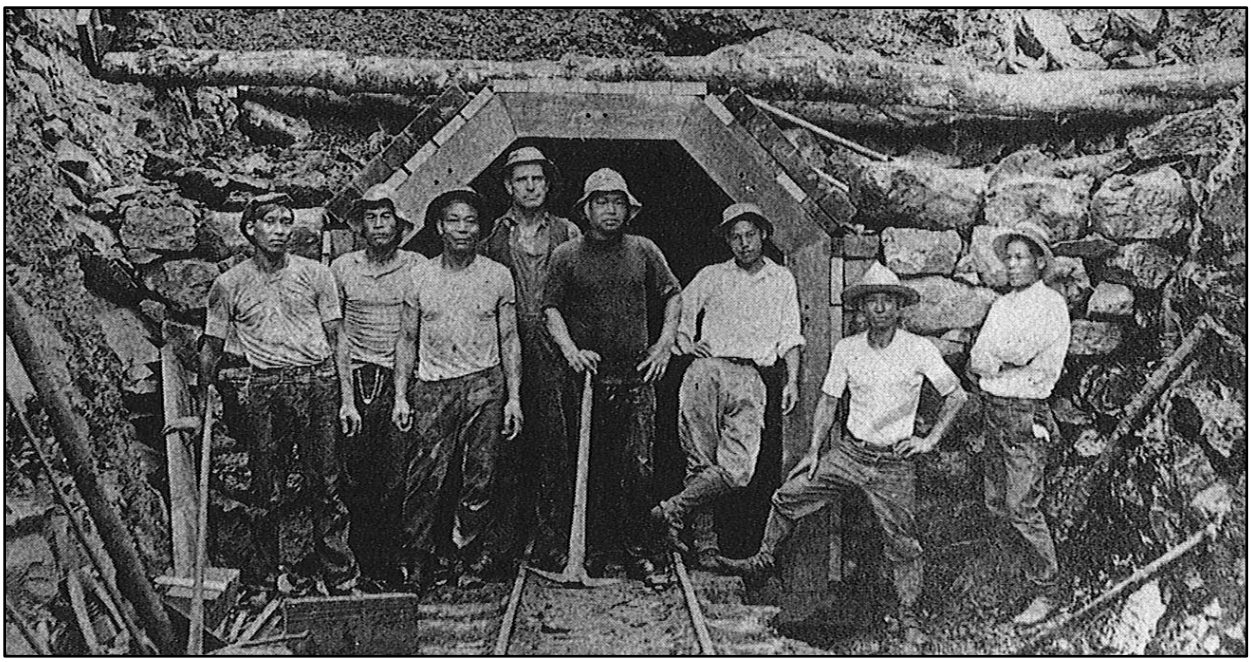

Figure 19. Workers at the Waiāhole Tunnel, ca. 1916 (Wilcox 1996:107)

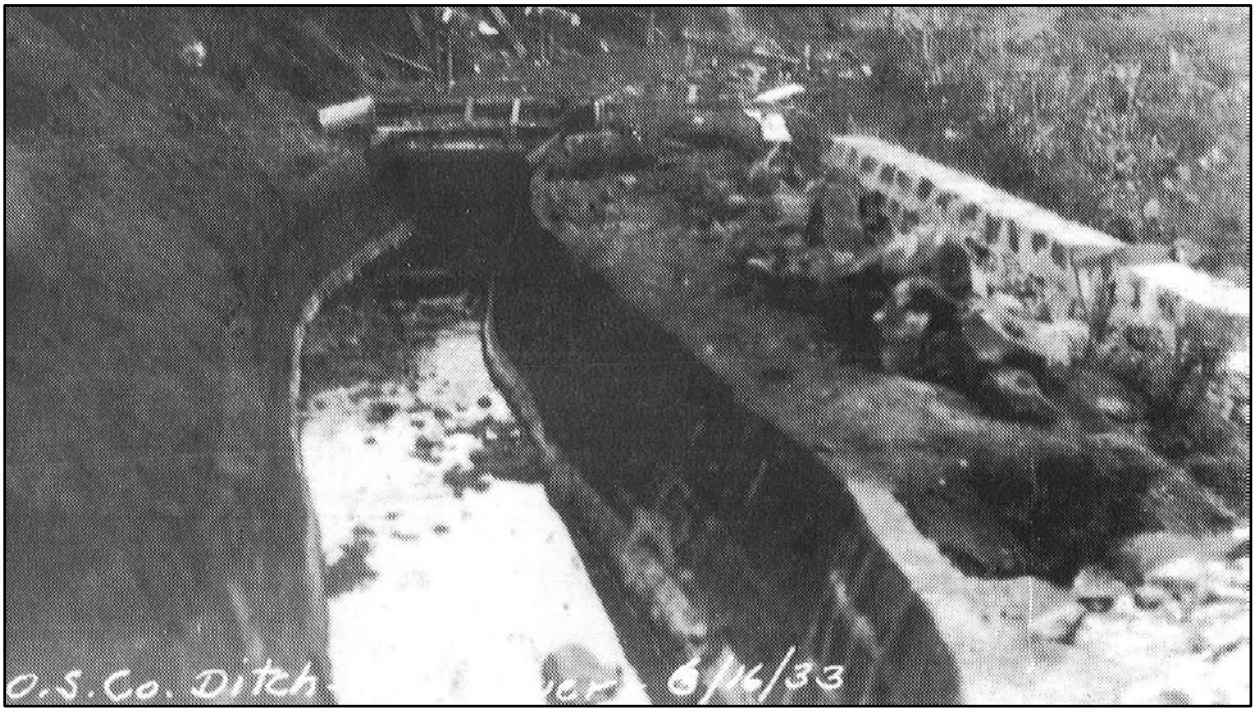

Figure 20. Oahu Sugar Company irrigation ditch under construction in 1933 at Kīpapa Gulch (Bishop Museum)

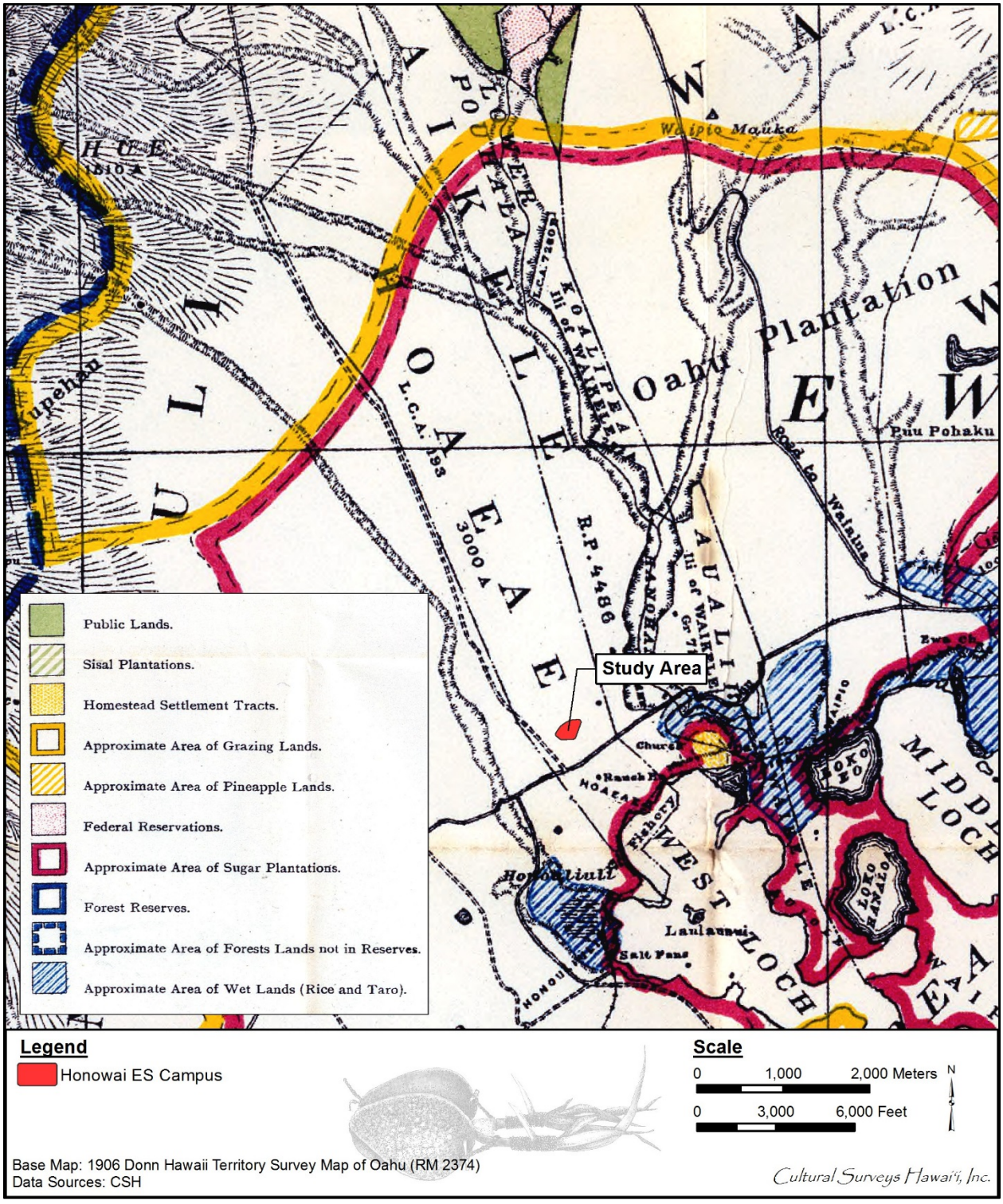

Figure 21. 1906 Donn Hawaii Territory Survey Map of O‘ahu showing the project area under sugarcane cultivation

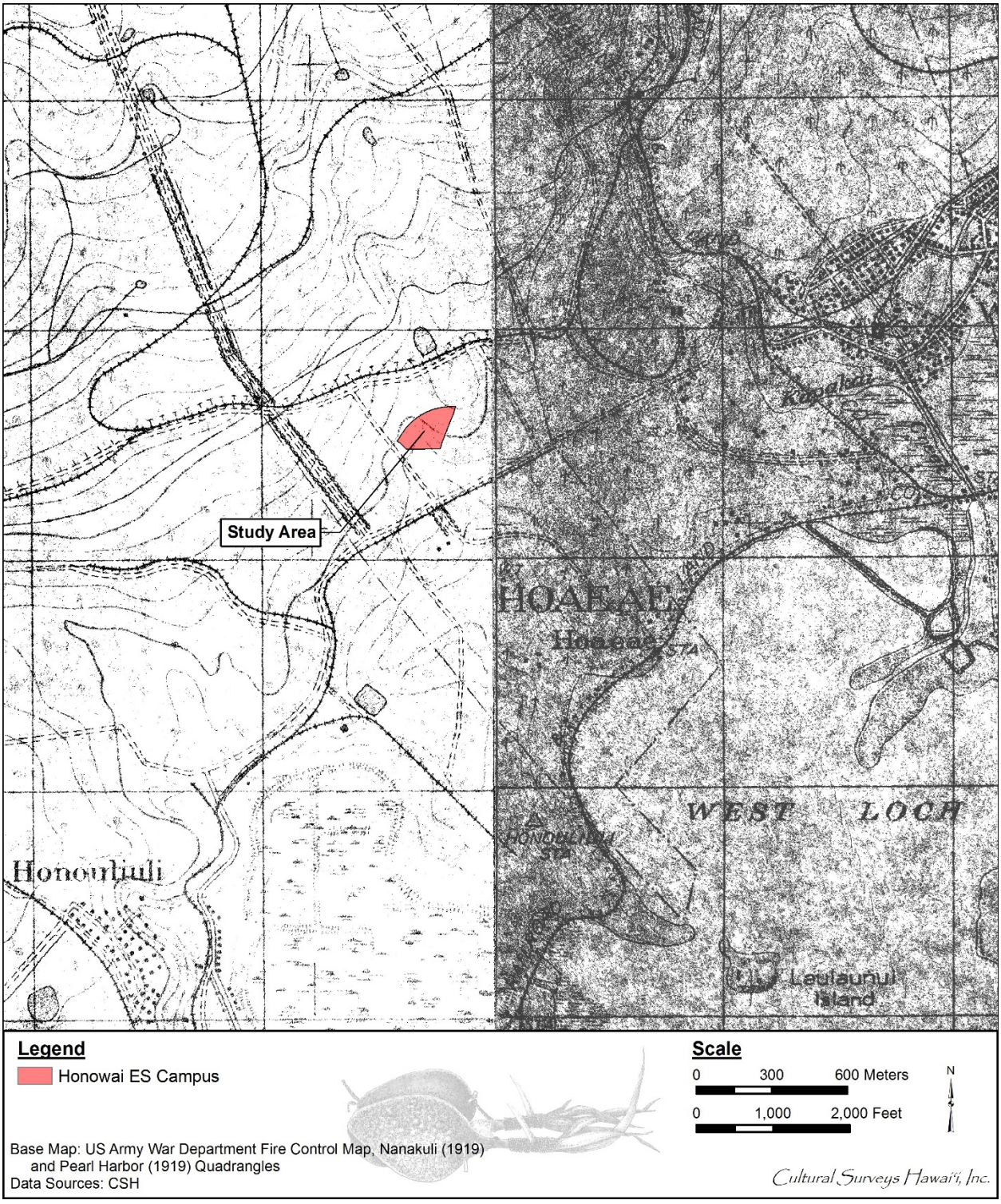

Figure 22. 1919 U.S. Army War Department fire control map indicating the project area surrounded by sugarcane cultivation and associated infrastructure

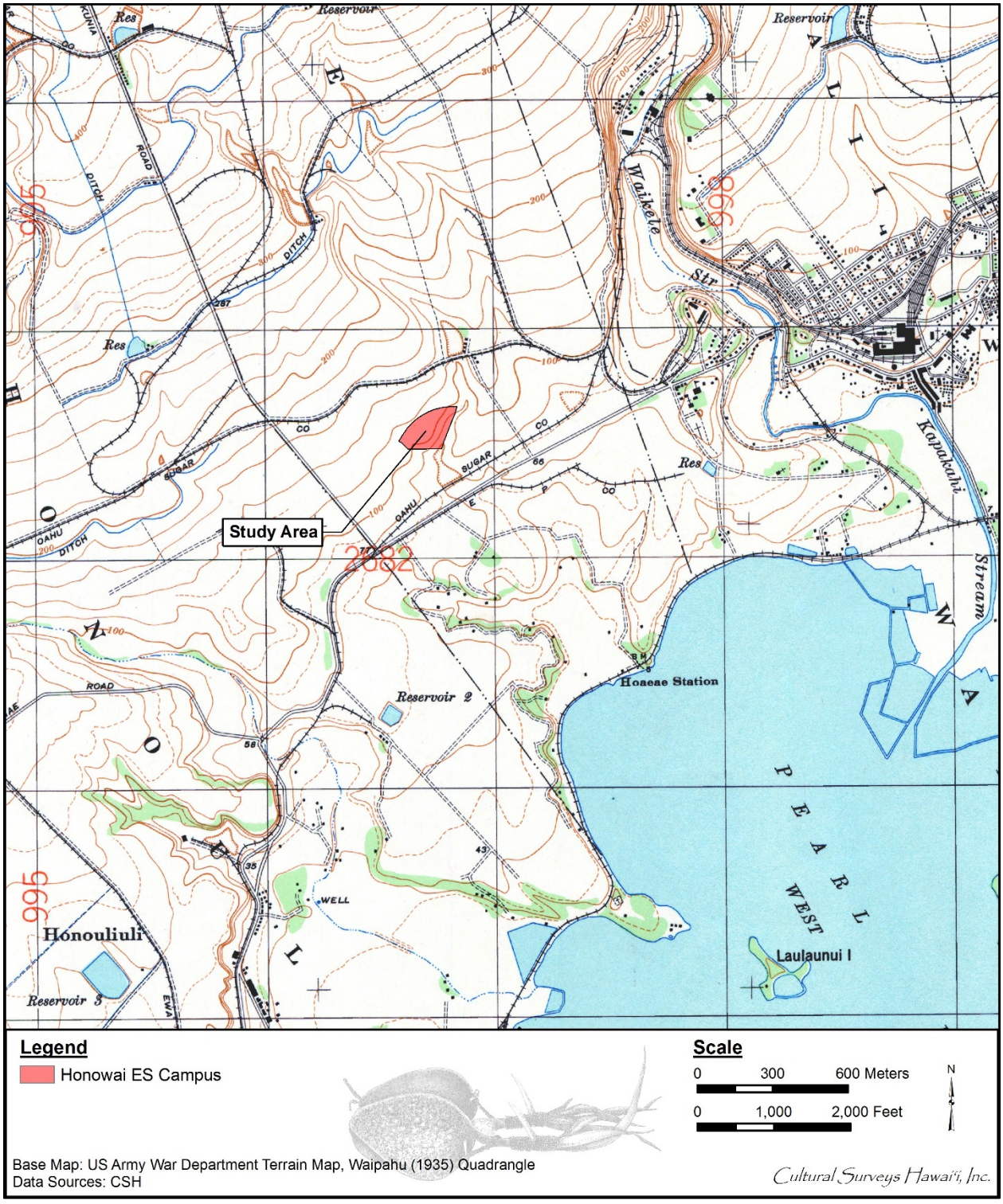

Figure 23. Portion of U.S Army War Department terrain map, Waipahu (1935) Quadrangle, indicating the project area (ditches are depicted as blue lines, unimproved roads as two parallel dashed lines)

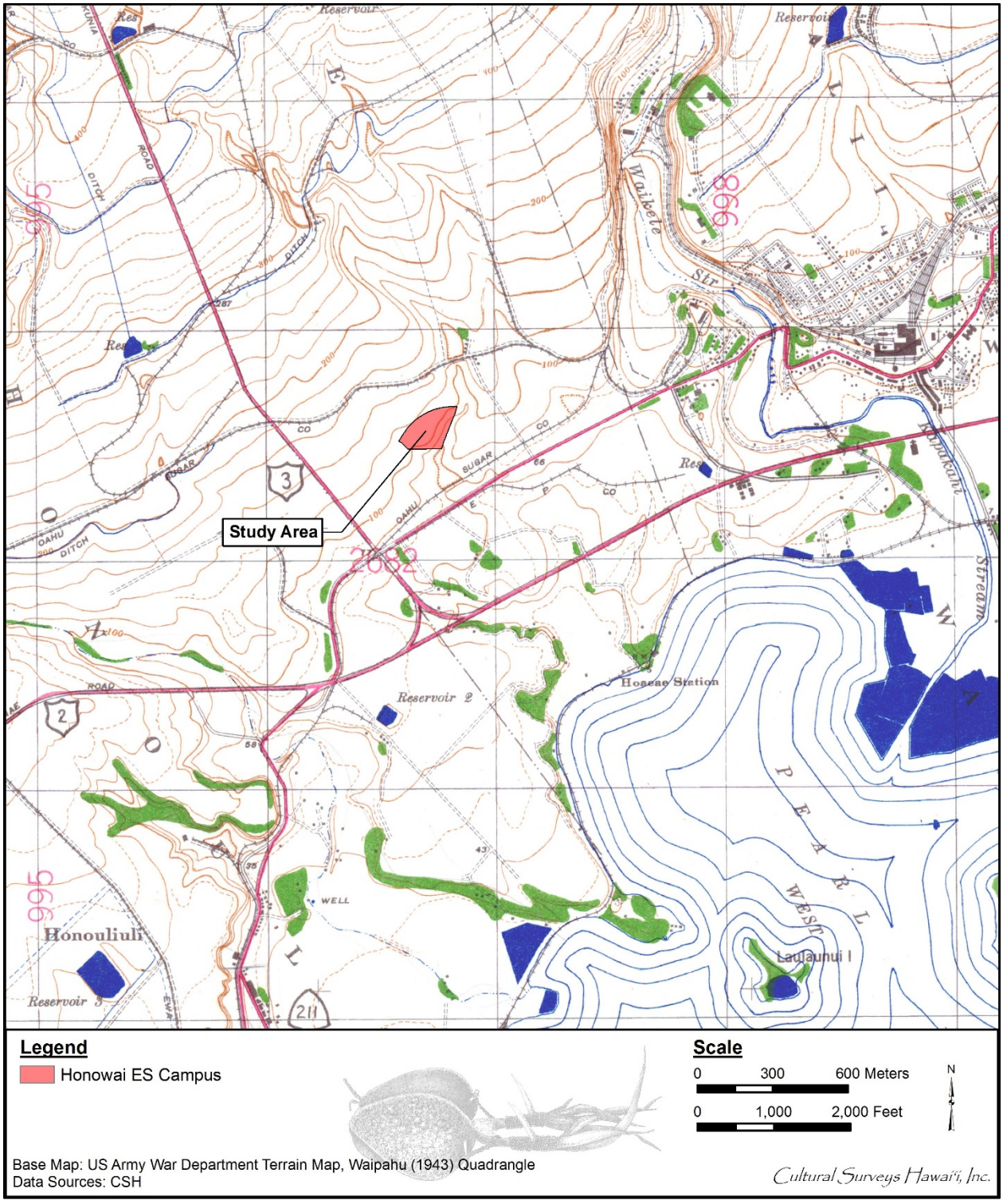

Figure 24. Portion of U.S Army War Department terrain map, Waipahu (1943) Quadrangle, indicating the project area

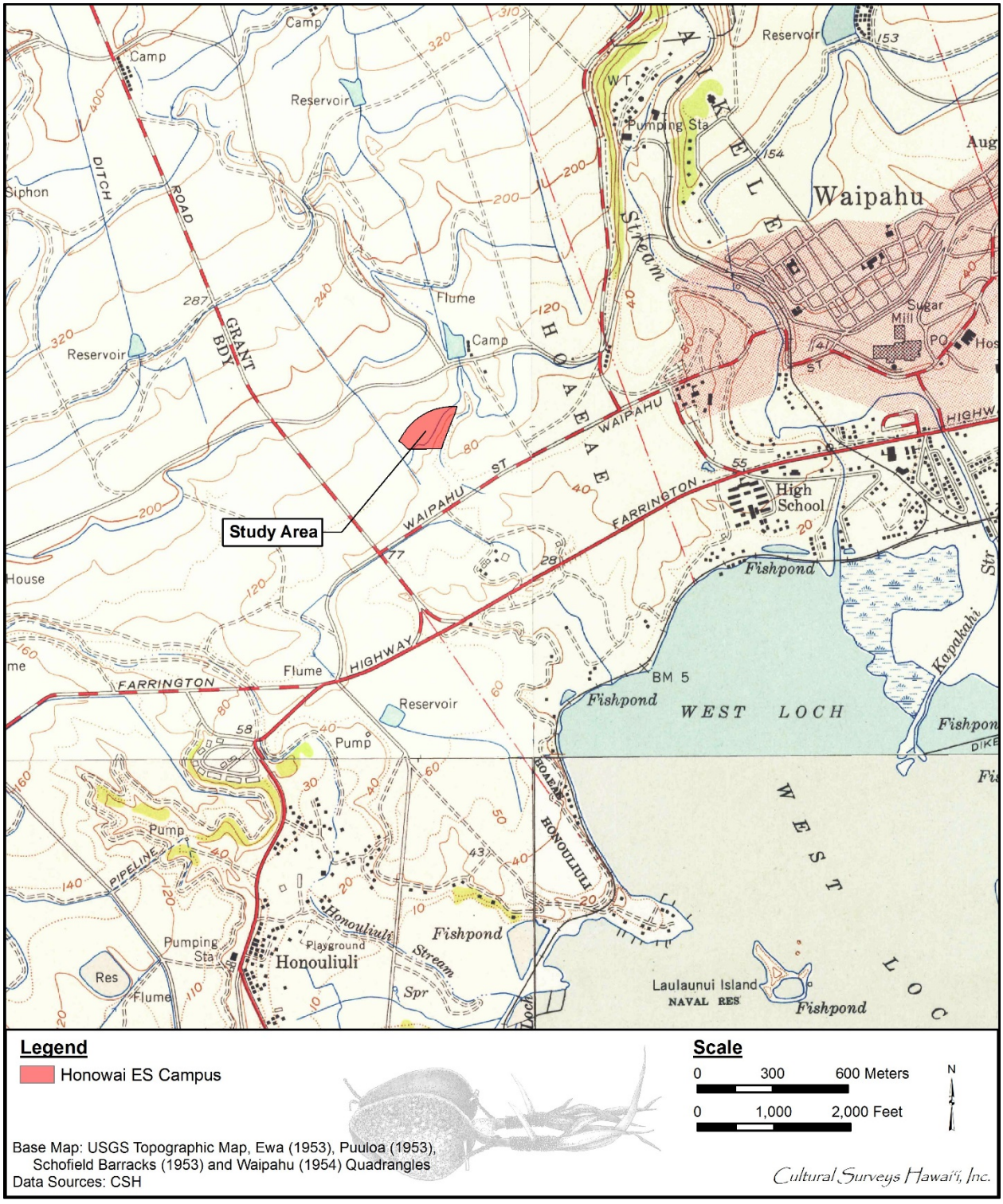

Figure 25. Portion of 1953 Schofield Barracks USGS topographic quadrangle indicating the project area

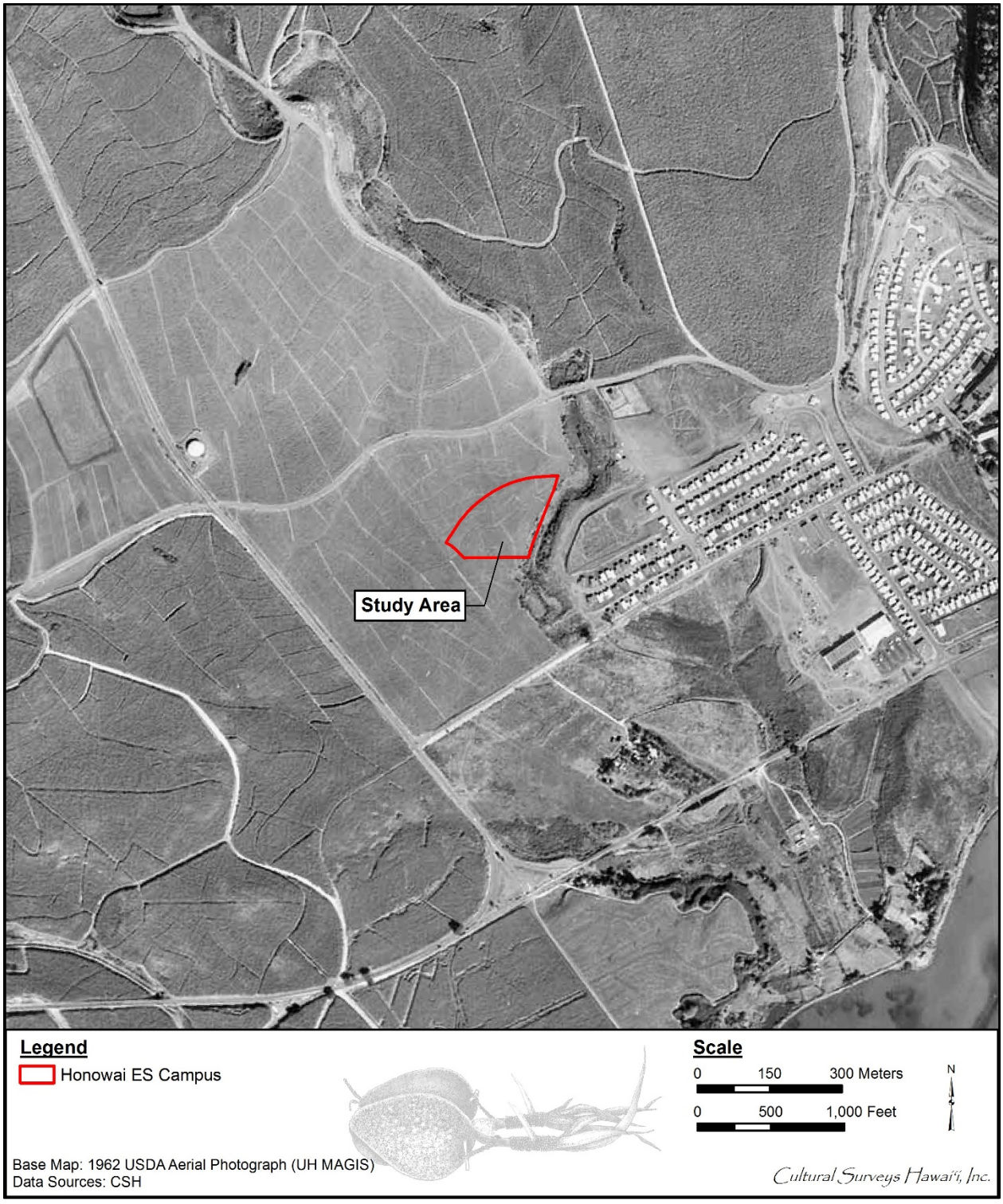

Figure 26. 1962 USDA aerial photograph (UH MAGIS) showing the project area

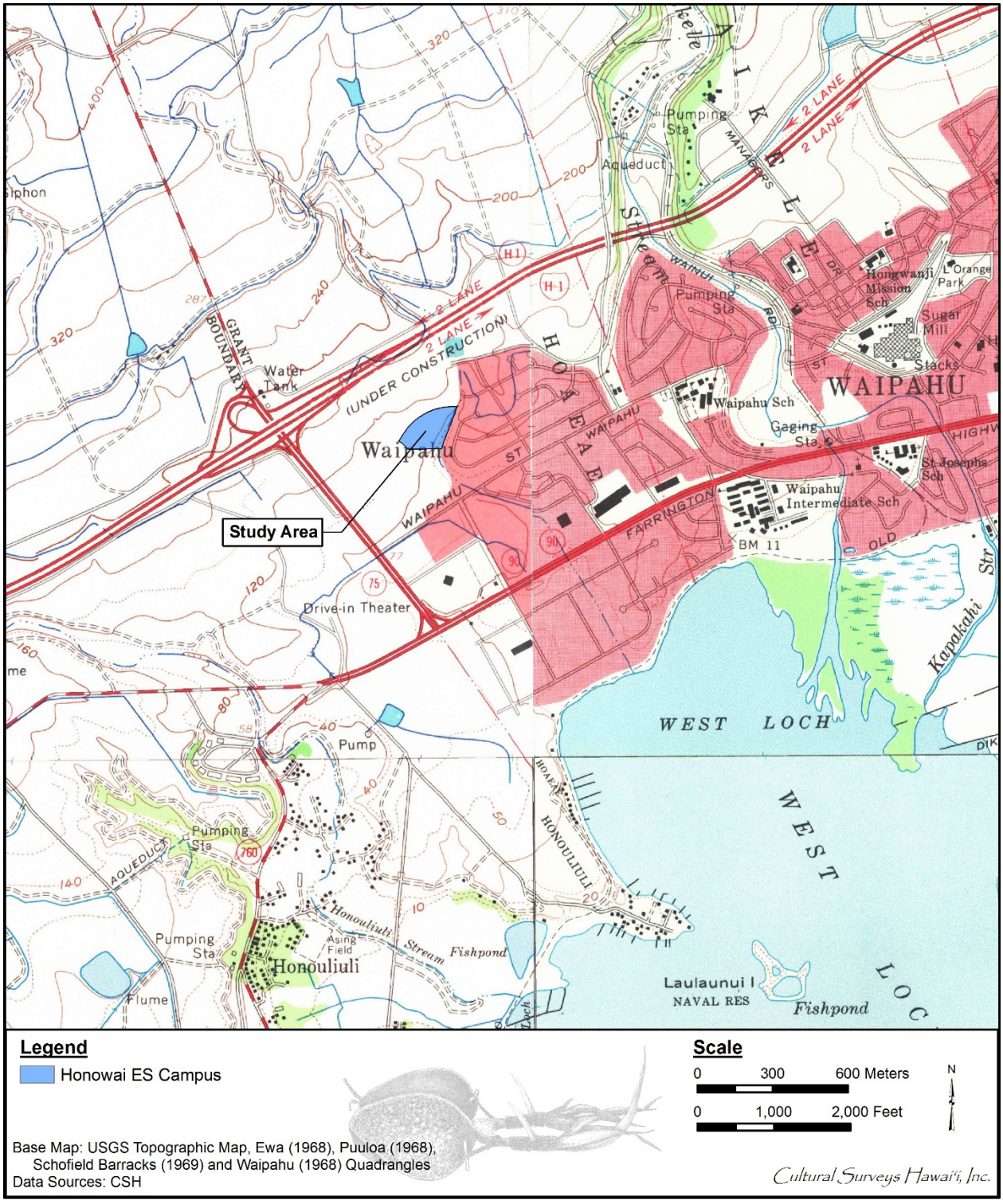

Figure 27. Portion of 1969 Schofield Barracks USGS topographic quadrangle indicating the project area

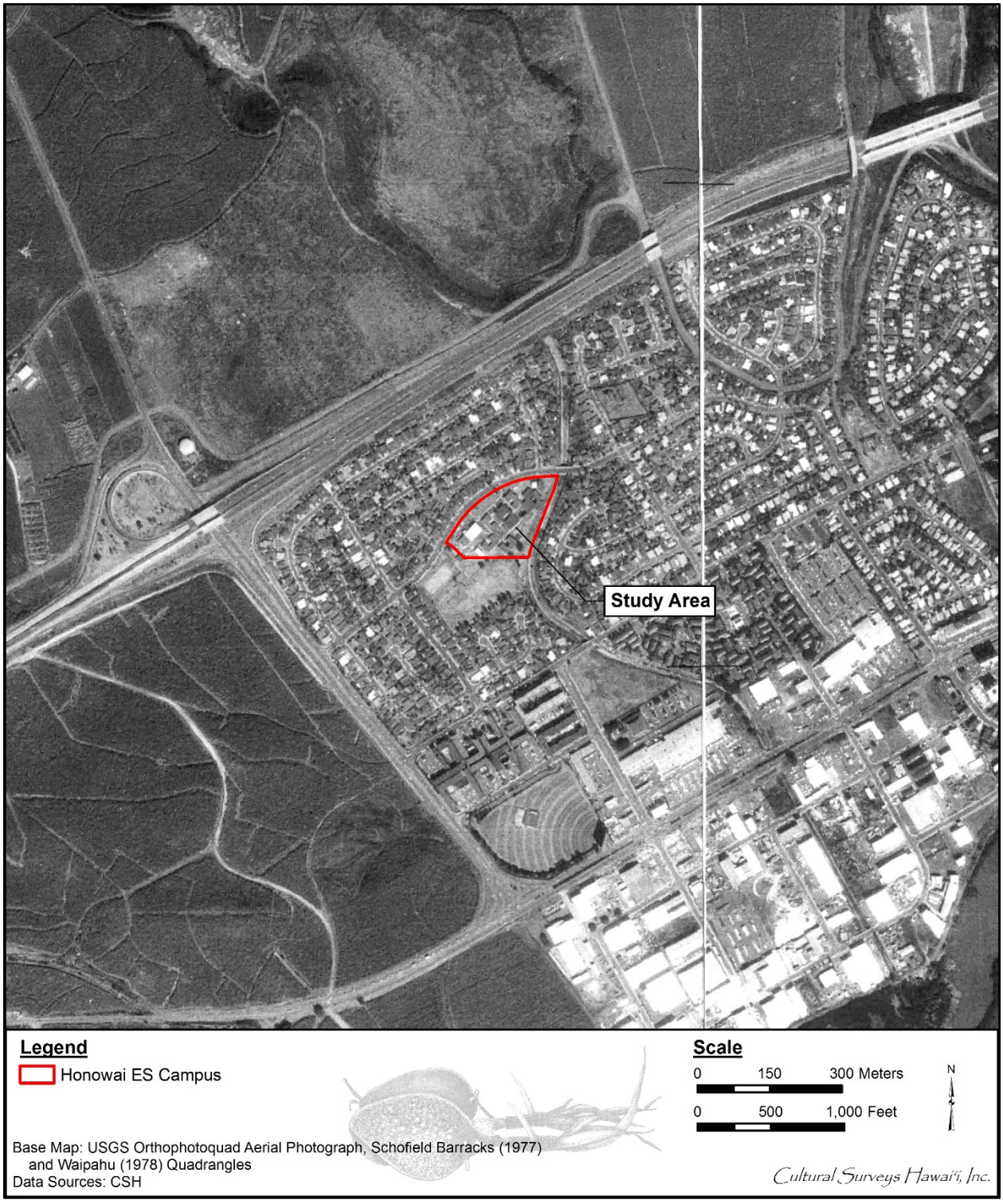

Figure 28. 1977/1978 aerial photograph of the project area (USGS 1977)

3.1.9 Contemporary Land Use

The eight-classroom building project area is within the Honowai Elementary School campus. Honowai Elementary School was established in 1968 to serve the growing subdivisions of Harbor View and Robinson Heights. It is situated *makai* of the H-1 freeway and borders the subdivision of Village Park in Kunia to the north. At the time of development, the vicinity of Honowai Elementary School was still quite rural (Figure 29) but would be rapidly developed into suburban housing. The community consisted of a mixture of single-family homes and affordable and low-income housing projects. The school currently has about 750 students in pre-kindergarten through sixth grade (State of Hawai‘i Department of Education 2016).

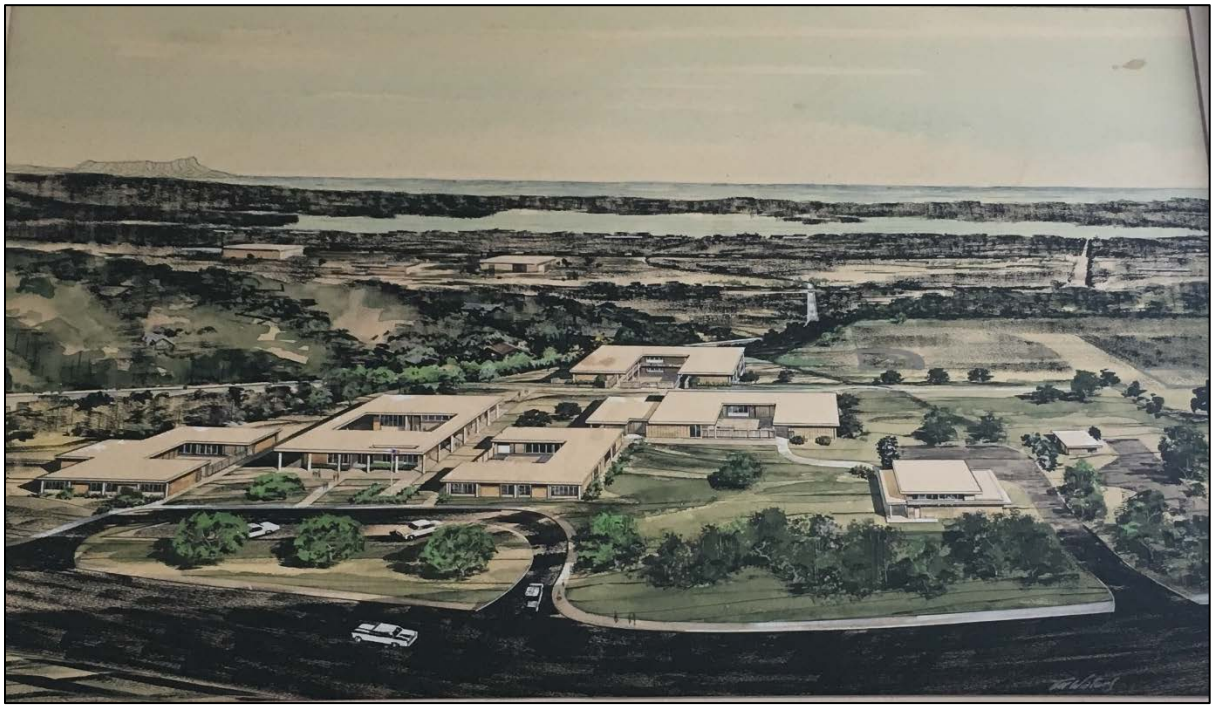

Figure 29. Rendition of to-be-constructed Honowai Elementary School showing generally rural character of the vicinity of that time (ca. 1968) (framed on wall of Honowai Elementary School administration building)

3.2 Previous Archaeological Research

While the southwest corner of the island of O‘ahu has been subjected to many archaeological studies, none have been located within or immediately adjacent to the current project area. The following discussion focuses on previous archaeological projects in Hō‘ae‘ae Ahupua‘a and the vicinity of the project area (Figure 30 and Table 2). Historic properties previously identified in the project area vicinity are presented in Figure 31 and Table 3.

3.2.1 McAllister's Survey

In his island-wide survey, archaeologist J. Gilbert McAllister recorded five historic properties in the vicinity of the current project area. These historic properties were designated as Sites 126–129 and 139 and are east and south of the current project area. They are described below:

> Site 126. Kaaukuu and Pouhala ponds formerly adjoined and were located in Waikele.
>
> According to Cobb, Kaaukuu was 41 acres in extent and Pouhala was 22 acres. The ponds have now been made into a number of smaller ponds and rice fields . . .
>
> Site 127. Mokoula Heiau, southwest of the main road in the village of Waipahu.
>
> The heiau has been completely destroyed for building purposes of the neighborhood. The site is at the edge of a 50-foot elevation which projects out into the present rice fields and was pointed out by Kaluawai, a *kamaaina* undoubtedly more than 100 years old.
>
> Site 128. Waipahu spring, famous in tradition as the place at which the tapa mallet appeared after having been lost in Kahuku (68, p. 41). A pump has been placed over the site.
>
> Site 129. Heiau, Waipahu, said to have been named Hapupu.
>
> The Waipahu plantation stables on the mountain side of the road across from the schoolhouse west of the town now occupy the site of the former heiau at Waikele. Nothing remains of the heiau. According to Thrum (79, 4), it was a 'Heiaupookanaka, where the chief Hao was surprised during temple worship and slain with his priest and attendant chiefs by direction of the moi of Oahu, about 1650.' The site was pointed out by Kapano…
>
> Site 139. Kalanamaihiki fishing shrine (*ko‘a*) at Kapapapuhi, Honouliuli.
>
> Near the end of the small tongue of land that juts out opposite Laulaunui Islandin the west loch of Pearl Harbor, are two large rough stones about 2.5 feet in size, with six or seven smooth stones averaging 1 foot in size in a small pile adjoining the larger stones. The entire site is covered with *akulikuli* (*Batis maritima* ?) and would not be noticed or considered unusual if the Hawaiians did not know of its former sacredness. [McAllister 1933:106, 108]

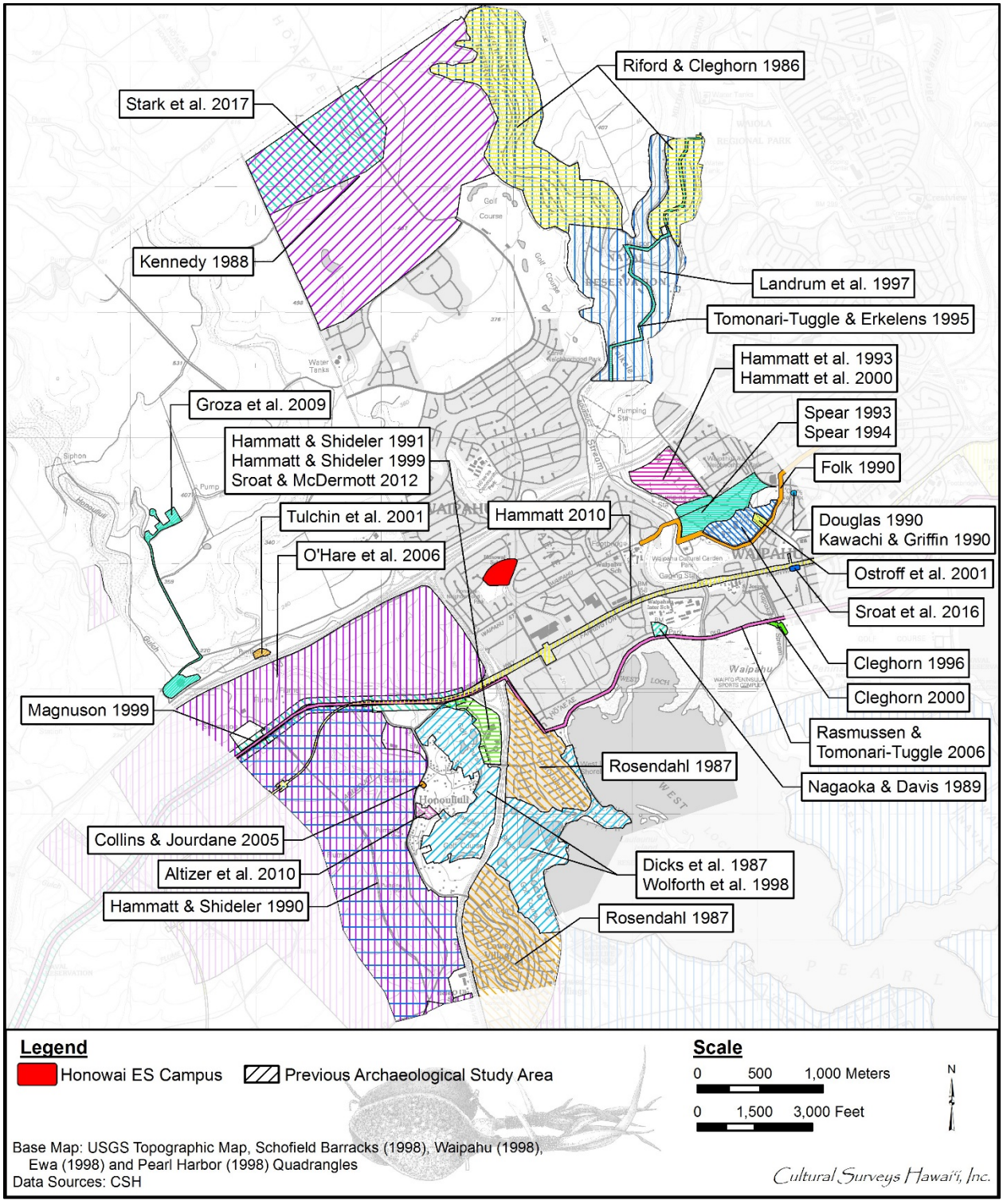

Figure 30. Map showing previous archaeological studies within the vicinity of the project area

Table 2. Previous archaeological studies in the vicinity of the project area

Reference	Type of Study	Location	Results
McAllister 1933	Archaeological reconnaissance survey	Island of O‘ahu	Sites 126 (Pouhala and Ka‘auku‘u Fishponds), 127 (Mokoula Heiau), 128 (Waipahu Spring), 129 (Hapupu Heiau), and 139 (Kalanamaihiki Fishing Shrine) all near current project area
Riford and Cleghorn 1986	Archaeological inventory survey	Lualualei Naval Magazine, Waikele Branch	Both traditional Hawaiian and post-Contact historic properties identified: State Inventory of Historic Places (SIHP) #s 50-80-08-2919 through -2923
Dicks et al. 1987	Archaeological reconnaissance survey	West Loch Estates – golf course and parks	Seven historic properties, SIHP #s 50-80-13-3318 through -3324, identified; included both pre- and post-Contact habitation and burial sites, as well as remnants of extensive agricultural system
Rosendahl 1987	Archaeological reconnaissance survey	West Loch Estates	Modern cemetery (SIHP # 50-80-13-3319) with a pre-Contact deposit, two historic sites with pre-Contact deposits (SIHP #s -3318, -3320); a pre-Contact deposit with a burial (SIHP # -3321), a buried fishpond (SIHP # 3322), an 1890s fishpond (SIHP # -3323), and a buried pond field system (SIHP # -3324)
Kennedy 1988	Archaeological reconnaissance survey	Royal Kunia, Phase II, TMK: [1] 9-4-002:001	No historic properties identified
Nagaoka and Davis 1989	Archaeological inventory survey	Pupu‘ole Park, Waipahu	No historic properties identified; possible shell midden associated with traditional Hawaiian activity in area observed
Folk 1990	Archaeological reconnaissance survey	Waipahu St, Waipahu	Area identified as “archaeologically sensitive”; concluded likely cultural deposits would be encountered during construction activities
Douglas 1990; Kawachi and Griffin 1990	Burial report	94-1049 Kahuailani St, Waipahu, TMK: [1] 9-4-026:078	Inadvertent discovery of human remains, SIHP # 50-80-09-4245

Reference	Type of Study	Location	Results
Hammatt and Shideler 1990	Archaeological inventory survey	West Loch Bluffs project site, Honouliuli	Survey area includes former sites of three plantation villages and Honouliuli (Kapalani) Catholic Church, as well several LCAs; subsurface testing recommended in those areas, and a portion of ‘Ewa Plantation Railway berm and three well sites recommended for preservation
Hammatt and Shideler 1991	Archaeological inventory survey	St Francis Medical Center West, Honouliuli	No historic properties identified; entire area extensively disturbed due to several decades of sugarcane cultivation
Hammatt et al. 1993	Archaeological reconnaissance survey	TMK: [1] 9-4-002:005, 39.6-acre parcel	Two historic properties identified: SIHP # 50-80-09-0530, petroglyphs, and SIHP # -4660, remnants of the former Oahu Sugar Company plantation camp and management residences
Spear 1993, 1994	Archaeological reconnaissance survey	Waikele Industrial Subdivision, Waipahu, TMK: [1] 9-4-002: various	No significant historic properties identified and no further investigation recommended
Tomonari-Tuggle and Erkelens 1995	Archaeological inventory survey	46kV Sub-Transmission Line through NAVMAG-Waikele	Two historic properties: a rock shelter and adjacent cave containing cultural materials (SIHP # 50-80-09-4935) and a terrace interpreted as a remnant of an early twentieth century railroad bed (SIHP # 50-80-09-4936)
Cleghorn 1996	Archaeological inventory survey	Oahu Sugar Mill, Waipahu, TMK: [1] 9-4-002:004	No historic properties identified
Landrum et al. 1997	Archaeological reconnaissance survey	U.S. Naval Facilities on O‘ahu, including Naval Magazine Waikele Branch	Documented previously identified historic properties: SIHP #s 50-80-08-4935 and -4936 and SIHP #s 50-80-09-2919, -2920, and -2921 (rock shelters), SIHP # -2922 (historic basalt quarry), and # -2923 (historic rock wall)
Wolforth et al. 1998	Archaeological data recovery	West Loch Estates – golf course and shoreline park	Excavations at SIHP #s 50-80-13-3319 through -3321 (subsurface cultural deposits), -3322 (buried fishpond), and -3324 (extensive pondfield system), as well as construction monitoring

Reference	Type of Study	Location	Results
Hammatt and Shideler 1999	Archaeological reconnaissance survey	St Francis Medical Center West	Survey of two small parcels adjacent to St Francis West; subsurface testing recommended for one parcel, due to proximity of SIHP # 50-80-12-3321 (subsurface cultural deposit)
Magnuson 1999	Archaeological reconnaissance survey	‘Ewa Plain	Two historic bridges identified (no SIHP #s assigned)
Cleghorn 2000	Archaeological inventory survey	Waipio Peninsula Soccer Park	OR&L right-of-way only historic property identified
Hammatt et al. 2000	Archaeological inventory survey	Manager’s Dr, Waipahu, TMK: [1] 9-4-002:005	Documented a group of traditional Hawaiian petroglyphs (SIHP # 50-80-09-0530) and remains of Higashi Camp (SIHP # 50-80-09-4660), a plantation housing camp for employees of Oahu Sugar Company
Ostroff et al. 2001	Burial report	Filipino Community Center, Waikele, TMK: [1] 9-4-161:001	Inadvertent discovery of human remains, SIHP # 50-80-09-5882
Tulchin et al. 2001	Archaeological inventory survey	Honouliuli Gulch, TMK: [1] 9-2-001	Pedestrian survey revealed a stone wall alignment (SIHP # 50-80-08-6370), likely associated with cattle ranching or a nearby pumping station; subsurface testing adjacent to wall revealed no additional historic properties
Collins and Jourdane 2005	Burial report	Adjacent to 91-2168 Old Fort Weaver Rd	SIHP # 50-80-04-6665, inadvertent discovery of human skeletal remains on private property
O’Hare et al. 2006	Archaeological inventory survey	Honouliuli Ahupua‘a, TMKs: [1] 9-1-010:002; 9-1-017:004, 059, 072; 9-1-018:001, 004; 9-2-001:001	Four additional features (three walls and a concrete ditch) of SIHP # 50-80-12-4344 (plantation infrastructure) identified
Rasmussen and Tomonari-Tuggle 2006	Archaeological monitoring	Waiau fuel pipeline corridor	No historic properties identified near current project area

Reference	Type of Study	Location	Results
Groza et al. 2009	Archaeological inventory survey	Waiāhole Ditch (north and west boundary), Kupehau Rd (south boundary), TMK: [1] 9-2-001:001	Entire northern portion of project area appeared bulldozed; no historic properties identified
Altizer et al. 2010	Archaeological inventory survey	Hale Kipa	SIHP #s 50-80-14-7084, six surface features associated with mid-1900s housing units, and -7085, sub-surface cultural layer containing taro *lo‘i* sediments and charcoal flecking
Hammatt 2010	Archaeological inventory survey	Section 1 of Hawai‘ì Rapid Transit Project	92 test excavations revealed one historic property, a buried agricultural deposit
Sroat and McDermott 2012	Literature review and field inspection	Hawaii Medical Center West (formerly St Francis West)	No historic properties identified
Sroat et al. 2016	Archaeological data recovery	Waipahu Transit Station	Excavation at SIHP # 50-80-09-7751 (subsurface agricultural deposit)
Stark et al. 2017	Archaeological inventory survey	Kunia Agricultural Park	One historic property, SIHP # 50-80-08-7758, with five features identified; all features relate to agricultural activity associated with Oahu Sugar Co

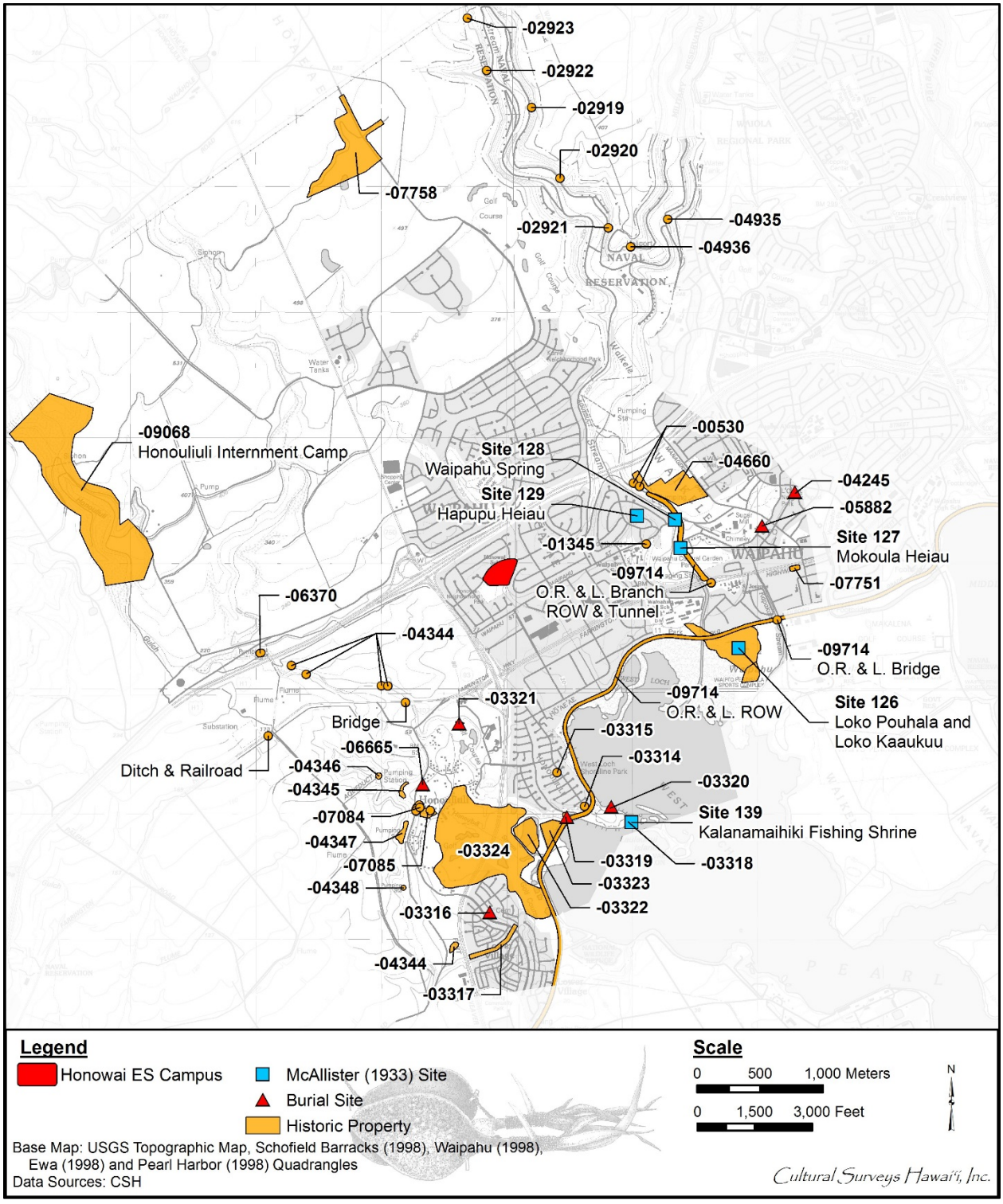

Figure 31. Previously identified historic properties located within the vicinity of the project area

Table 3. Previously identified historic properties in the vicinity of the project area

SIHP # (50-80-)	Formal Type	Source	Comment
126	Fishponds	McAllister 1933	Loko Pouhala and Loko Kaaukuu
127	*Heiau*	McAllister 1933	Mokoula Heiau
128	Legendary spring	McAllister 1933	Waipahu Spring; a pump has been placed over the site
129	*Heiau*	McAllister 1933	Hapupu Heiau
139	Fishing shrine	McAllister 1933	Kalanamaihiki Fishing Shrine
08-2919	Overhang	Riford and Cleghorn 1986	Traditional Hawaiian
08-2920	Overhang	Riford and Cleghorn 1986	Traditional Hawaiian
08-2921	Overhang	Riford and Cleghorn 1986	Traditional Hawaiian
08-2922	Quarry	Riford and Cleghorn 1986	Post-Contact
08-2923	Wall	Riford and Cleghorn 1986	Post-Contact
08-6370	Wall	Tulchin et al. 2001	Post-Contact
08-7758	Plantation infrastructure	Stark et al. 2017	Post-Contact
08-9068	Honouliuli Internment Camp	Hawai‘i Register of Historic Places	Temporary internment of people of Japanese ancestry during WWII
09-0530	Petroglyphs	Hammatt et al. 2000	Traditional Hawaiian
09-1345	Wakamiya Inari Shrine	National Register of Historic Places	Shrine moved to Waipahu Cultural Garden
09-4245	Burial	Kawachi and Griffin 1990	One individual; metal, glass, and beads mixed with bones
09-4660	Plantation camp remnants	Hammatt et al. 2000	Post-Contact
09-4935	Rockshelter and adjacent cave	Tomonari-Tuggle and Erkelens 1995	Contained traditional Hawaiian cultural materials
09-4936	Railroad berm	Tomonari-Tuggle and Erkelens 1995	Believed to be a remnant of an early twentieth century railroad bed, either a spur of the OR&L line or part of Oahu Sugar Co rail system
09-5882	Burial	Ostroff et al. 2001	One individual; remains determined to be Native Hawaiian and disinterred

SIHP # (50-80-)	Formal Type	Source	Comment
09-7751	Subsurface wetland sediment	Hammatt et al. 2000 Sroat et al. 2016	Pre- to post-Contact
12-3316	Historic cemetery	Rosendahl 1987	Five burials
12-3317	Surface artifact collection	Rosendahl 1987	Post-Contact
12-3321	Subsurface cultural deposit	Dicks et al. 1987 Wolforth et al. 1998	Included three burials
12-3324	Subsurface *lo‘i* sediment	Dicks et al. 1987	Pre- to post-Contact
12-4344	Plantation infrastructure	O’Hare et al. 2006	Walls and a concrete ditch
12-4345	Railroad berm	O’Hare et al. 2006	Ewa Plantation railroad berm
12-4346	Plantation pumping station	O’Hare et al. 2006	Post-Contact
12-4347	Plantation pumping station	O’Hare et al. 2006	Post-Contact
12-4348	Plantation pumping station	O’Hare et al. 2006	Post-Contact
12-6665	Burial	Collins and Jourdane 2005	One individual
12-7084	Historic infrastructure	Altizer et al. 2010	Terrace, cesspool, historic house foundations (2), water control feature irrigation ditch
12-7085	Subsurface *lo‘i* sediment	Altizer et al. 2010	Pre-Contact
12-9714	OR&L infrastructure	Folk 1990	Railroad bridge, tunnel, and rights-of-way (2)
13-3314	Subsurface cultural deposit	Rosendahl 1987	–
13-3315	Surface artifact collection	Rosendahl 1987	Post-Contact
13-3318	Historic artifact scatter	Dicks et al. 1987	Post-Contact
13-3319	Mounds and subsurface cultural deposit	Dicks et al. 1987 Wolforth et al. 1998	Included three individuals
13-3320	Subsurface cultural deposit	Dicks et al. 1987 Wolforth et al. 1998	Pre- to post-Contact; included four burials

SIHP # (50-80-)	Formal Type	Source	Comment
13-3322	Buried fishpond	Dicks et al. 1987 Wolforth et al. 1998	Pre-Contact
13-3323	Historic fishpond	Dicks et al. 1987 Wolforth et al. 1998	Post-Contact
No SIHP #	Remnant ditch and railroad	Magnuson 1999	Post-Contact
No SIHP #	Historic bridge	Magnuson 1999	Post-Contact

3.2.2 Modern Archaeological Studies

3.2.2.1 Riford and Cleghorn 1986

Approximately 3 km north/northeast of the current project area, Riford and Cleghorn (1986) documented “a total of five archaeological sites, composed of nine features: State Inventory of Historic Places (SIHP) # 50-80-08-2919 through -2923.” They were described as follows:

> . . . probable prehistoric, temporary habitation caves, crawl spaces, and one rock shelter. Two sites are historic, one a probable quarry and one a quarried rock wall. Other historic features were identified, including boulder mounds, stream facings, abandoned roadbeds and railroad berms, and construction tailings. [Riford and Cleghorn 1986:190]

3.2.2.2 Rosendahl 1987

An archaeological reconnaissance survey (Rosendahl 1987) was conducted in association with the development of the 232-acre “West Loch Estates” Residential Increments I and II project (including golf course and parks). The study area was approximately 1 km south of the current project area, in the section of the Honouliuli taro lands adjacent to Pearl Harbor. This study covered portions of the old town of Honouliuli, the focus of population in the early historic period (and possibly earlier). Identified historic properties included a modern cemetery (SIHP # 50-80-13-3319) with a remnant pre-Contact deposit; two historic sites of minimal integrity with some possible pre-Contact deposits (SIHP #s -3318 and -3320) at Kapapapuhi Point; a significant pre-Contact deposit with trash pits, fire pits, and at least one human burial (SIHP # -3321); a buried fishpond (SIHP # -3322); a historic fishpond (SIHP # -3323) built in the 1890s during the construction of the OR&L railroad; and a buried pondfield system (SIHP # -3324) (Rosendahl 1987:7, 9). It was noted that some artifacts “indicate the possibility of pre-1900 occupation” (Rosendahl 1987:8).

3.2.2.3 Dicks et al. 1987

In 1987, Paul H. Rosendahl, Inc. (PHRI) conducted a study of historic properties within the approximately 216-acre West Loch Estates, golf course and parks project area in Honouliuli (Dicks et al. 1987). The field investigation included field survey, shallow subsurface testing with hand tools, and deep subsurface testing by machine auger, as well as backhoe trenching. Seven historic properties, SIHP #s 50-80-13-3318 through -3324, were identified. These included both pre- and post-Contact habitation and burial sites, as well as the remnants of an extensive agricultural system, which combined aquaculture in fishponds on the shores of West Loch, irrigated pondfields on the floodplain, and dryland cultivation on the surrounding slopes.

3.2.2.4 Kennedy 1988

In 1988, Kennedy surveyed the land associated with the Royal Kunia Phase II subdivision, approximately 2.5 km north/northwest of the current project area. The 670-acre survey was conducted by “a two man survey team [that] covered the area by automobile along the network of cane haul roads and by foot in the few areas where this was necessary. Visibility was limited by the dense stands of sugarcane” (Kennedy 1988:1). No historic properties were recorded.

3.2.2.5 Nagaoka and Davis 1989

In 1989, International Archaeological Research Institute, Inc. (IARII) conducted subsurface testing and archaeological monitoring at the proposed Pupu‘ole Park on the shore of Pearl Harbor. The investigations revealed a “prograding shoreline indicative of long-term erosion in the nearby uplands and its consequent deposition at the coast. A major component of this cycle of erosion and redeposition is a buried lagoonal ‘muck’ containing well preserved vegetal remains” (Nagaoka and Davis 1989:ii). While no traditional Hawaiian artifacts were recovered, the shells of molluscan species typically found in pre-Contact midden were present. The condition of the shells indicated they were collected live, although the immediate source of the material and nature of the deposit were unclear. Nagaoka and Davis (1989) suggested traditional Hawaiian activity in the area immediately *mauka* (present-day Waipahu Intermediate School) was the most likely the source of the shell midden.

3.2.2.6 Douglas 1990; Kawachi and Griffin 1990

In 1990, human remains were inadvertently discovered at a construction site in Waipahu, approximately 3 km east of the current project area (Douglas 1990; Kawachi and Griffin 1990). The burial appeared to be in situ and was designated as SIHP # 50-80-09-4245. Local informants reported the site had once housed a Chinese Buddhist temple. Pieces of metal and glass, tiny beads, marine shells, and fish and small mammal bones were mixed with the bones; however, it could not be determined if the shell and bones were associated with the burial, or if a midden layer had been present prior to the burial.

3.2.2.7 Folk 1990

In 1990, CSH (Folk 1990) conducted archaeological reconnaissance and historical research for the proposed Waipahu street widening project, approximately 1.5 km east of the current project area. The area was identified as “archaeologically sensitive,” because historical data “point to present day Waipahu town as occupying the same physical space as the earlier traditional Hawaiian village of Waikele” (Folk 1990:9). Because early historic and traditional Hawaiian archaeological remains are often well preserved under urban streets, Folk (1990) concluded it was likely cultural deposits would be encountered during construction activities.

3.2.2.8 Hammatt and Shideler 1990

Also in 1990, CSH conducted an archaeological inventory survey of an approximately 546-acre West Loch Bluffs project area in Honouliuli (Hammatt and Shideler 1990). Approximately 90% of the project area had been impacted by nearly 100 years of sugarcane cultivation and plantation infrastructure construction. The survey revealed no evidence of traditional Hawaiian activity; however, the survey area included the sites of three former plantation villages (Pipeline Village, Stable Village, and Drivers Village), as well as the former sites of the Honouliuli (Kapalani) Catholic Church and multiple LCAs. More research, including subsurface testing, was recommended in all of those areas. Furthermore, a portion of the Ewa Plantation Railway berm and three large rectangular well sites were recommended for preservation.

3.2.2.9 Hammatt and Shideler 1991

In 1991, CSH conducted an archaeological inventory survey for a proposed expansion of Saint Francis Medical Center West in Honouliuli (Hammatt and Shideler 1991). The results were

reported as an archaeological assessment, as no surface historic properties were identified. It was deemed unlikely that any subsurface deposits were present either. The survey revealed the entire area had been extensively disturbed due to several decades of sugarcane cultivation, and no further work was recommended.

3.2.2.10 Hammatt et al. 1993

In 1993, CSH conducted archaeological investigations, including a surface survey and historical research, at a 39.6-acre parcel in Waikele (Hammatt et al. 1993). Two historic properties, SIHP #s 50-80-09-0530 and -4660, were identified. SIHP # -0530 comprises four clusters of petroglyphs, and SIHP # -4660 comprises the remnants of the former Oahu Sugar Company plantation camp and management residences, which developed after the 1920s.

3.2.2.11 Spear 1993, 1994

Spear (1993, 1994) conducted archaeological reconnaissance at the site of the proposed rezoning and development of the Oahu Sugar Mill. No significant historic properties were located, and no further investigation was recommended.

3.2.2.12 Tomonari-Tuggle and Erkelens 1995

Tomonari-Tuggle and Erkelens (1995) conducted an inventory survey on a 1.5-mile long, 100-ft wide corridor for a proposed transmission line through NAVMAG-Waikele. It was observed that the corridor had been impacted previously by bulldozing, natural erosion, and colluvial deposition. Two historic properties were identified. SIHP # 50-80-08-4935 comprises a rock shelter and adjacent cave, while SIHP # -4936 is a narrow terrace, interpreted as the remnant of a railroad bed.

3.2.2.13 Cleghorn 1996

Cleghorn (1996) conducted an inventory survey on 23 acres surrounding and including the Oahu Sugar Mill in Waipahu. The mill and associated buildings comprised 60% of the project area. The remainder comprised Skill Village, a plantation supervisors’ residential area. No surface historic properties were observed.

3.2.2.14 Landrum et al. 1997

The Landrum et al. (1997) survey of the U.S. naval facilities on the island of O‘ahu included the Oahu Naval Magazine, Lualualei Headquarters Branch, West Loch Branch, and Waikele Branch. The report documented previously identified historic properites SIHP #s 50-80-08-4935 and -4936 and SIHP #s 50-80-09-2919, -2920, and -2921 (rock shelters), -2922 (historic basalt quarry), and -2923 (historic rock wall built with dressed basalt). Landrum et al. (1997) proposed that the SIHP # -2922 basalt quarry may be the source for stone in the construction of the SIHP # -2923 wall.

3.2.2.15 Wolforth et al. 1998

In 1988 and 1989, PHRI conducted archaeological data recovery at the West Loch Estates, golf course and shoreline park project area in Honouliuli (Wolforth et al. 1998). The work included excavations at SIHP #s 50-80-13-3319 through -3321 (subsurface cultural deposits), -3322 (buried fishpond), and -3324 (extensive pondfield system), as well as monitoring of construction activities. Radiocarbon data indicated the pondfields were used from the tenth to seventeenth centuries AD.

Over time, the filling of the lower valley with erosional soils changed the environmental setting from a wet, lowland setting to a relatively dry one. Pondfield technologies therefore changed from widespread, contiguous fields to a patchwork of fields scattered among houses, pastures, and gardens.

3.2.2.16 Cleghorn 2000

In 1999, Pacific Legacy, Inc. conducted a pedestrian survey for a proposed 20-inch irrigation line for the Waipio Peninsula Soccer Park (Cleghorn 2000). The survey area consisted of a 100-ft wide corridor extending approximately 400 ft from residential housing adjacent to and west of Waipahu Depot Street. The northern portion of the corridor, between the residential area and Kapakahi Stream, was extensively disturbed, having undergone widespread clearing and land modification; recent trash and debris were observed scattered throughout the area. Although the remains of an OR&L right-of-way were easily identified, its boundary had been encroached upon by at least one landowner, who had extended their property into the right-of-way for use as a garden. The southern portion of the corridor crossed the stream and extended parallel to Waipahu Depot Street. Inspection of the erosional banks of Kapakahi Stream yielded no evidence of subsurface cultural deposits. Therefore, Cleghorn (2000) concluded the OR&L right-of-way was the only historic property that could be affected by the proposed irrigation line.

3.2.2.17 Magnuson 1999

In 1999, an archaeological reconnaissance survey was completed by IARII at the Farrington Highway Expansion project area (Magnuson 1999). “The survey revealed six concrete bridges, a railroad track, and a set of unidentified concrete features” (Magnuson 1999:17). Two of the bridges observed were listed in the National Register of Historic Places (NRHP), but no SIHP numbers were assigned; neither was recommended for in situ preservation. No other historic properties were identified.

3.2.2.18 Hammatt and Shideler 1999

In 1999, CSH conducted an archaeological inventory survey (negative results recorded as an archaeological assessment) for two small remnant parcels immediately adjacent to the Saint Francis Medical Center West and the West Loch Golf Course (Hammatt and Shideler 1999). One parcel is along the small *pali* (cliff) separating the study area from the low-lying lands that were formerly a part of the Honouliuli Taro Lands. Due to this parcel’s location along the edge of the *pali* and within 25 m of SIHP # 50-80-12-03321, it was recommended that a subsurface archaeological inventory survey be conducted in this area prior to any development that would impact sediments below 24 inches.

3.2.2.19 Hammatt et al. 2000

Also in 1999, CSH performed an inventory survey of a 40-acre parcel along Manager’s Drive in Waipahu, approximately 1.2 km northeast of the current project area. Hammatt et al. (2000) documented a group of traditional Hawaiian petroglyphs (SIHP # 50-80-09-0530) along the edge of a steep cliff, as well as the dilapidated remains of Higashi Camp (SIHP # 50-80-09-4660), a plantation housing camp for employees of the Oahu Sugar Company. The camp, originally constructed in the 1920s and utilized until the 1980s, was in the southern half of that study area.

3.2.2.20 Tulchin et al. 2001

In 2001, CSH performed an inventory survey for the proposed ‘Ewa Shaft Renovation project, approximately 2 km southwest of the current project area (Tulchin et al. 2001). The survey revealed a stone wall alignment (SIHP # 50-80-08-6370), likely constructed in association with cattle ranching or the nearby pumping station. Subsurface testing adjacent to the wall revealed no additional historic properties.

3.2.2.21 Ostroff et al. 2001

Also in 2001, human remains were inadvertently discovered at the Filipino Community Center in Waikele, about 2 km east of the current project area. Upon examination, Ostroff et al. (2001) determined one burial was present; it was designated as SIHP # 50-80-09-5882. The remains were hypothesized to be of Hawaiian ethnicity and dating to the pre-Contact period, due to the flexed position and absence of post-Contact cultural materials. The remains were disinterred.

3.2.2.22 Collins and Jourdane 2005

In 2005, SHPD archaeologists documented an inadvertent discovery of human remains on private property along Old Fort Weaver Road, within the area of the former Honouliuli taro fields (Collins and Jourdane 2005). The skeletal remains, likely of an adult female, were positioned in a flexed/semi-flexed burial position. The area of the inadvertent discovery had previously been in sugarcane cultivation and most recently had been used as an open field adjoining animal pens.

3.2.2.23 O’Hare et al. 2006

From 2005–2006, CSH conducted an inventory survey for the East Kapolei project, approximately 0.5 km west/southwest of the current project area (O’Hare et al. 2006). Four additional features (three walls and a concrete ditch) of SIHP # 50-80-12-4344 (plantation infrastructure) were identified.

3.2.2.24 Rasmussen and Tomonari-Tuggle 2006

In 2006, an archaeological monitoring investigation was conducted along the Waiau Fuel Pipeline corridor, extending from the Hawaiian Electric Company’s Barbers Point Tank Farm to the Waiau Generating Station (Rasmussen and Tomonari-Tuggle 2006). The Waiau Fuel Pipeline corridor follows Farrington Highway to Kunia Road, angles *makai* near Kunia Road, then continues east along the OR&L right-of-way near the Pearl Harbor coast. It appears no archaeological monitoring was conducted west of Waipi‘o Peninsula, as the corridor to the west had been determined not to be archaeologically sensitive.

3.2.2.25 Groza et al. 2009

In 2006, CSH conducted a pedestrian survey of approximately 1,200 m of existing road for the Ho‘opili Project Elevation Reservoir and Waterline (Groza et al. 2009). The entire northern portion of the project area appeared to have been bulldozed, and no historic properties were encountered.

3.2.2.26 Altizer et al. 2010

In 2009, CSH conducted an archaeological inventory survey for the Hale Kipa project (Altizer et al. 2010). In addition to several surface features related to mid-1900s housing units (SIHP # 50-80-14-7084), natural dark clay loam sediments with charcoal flecking and iron staining likely

associated with the traditional Hawaiian wetland taro agriculture around Honouliuli Stream were documented below various layers of fill. This subsurface cultural layer was designated SIHP # 50-80-14-7085. A sample of this cultural layer was submitted for radiocarbon analysis and yielded a date range of 1270 to 1400 AD.

3.2.2.27 Hammatt 2010

In 2009 and 2010, CSH conducted an archaeological inventory survey for Construction Section 1 of the Hawai‘i Rapid Transit Project. Pedestrian survey revealed no surface historic properties. Excavation of 92 test excavations revealed a single subsurface historic property comprising buried agricultural sediment.

3.2.2.28 Sroat and McDermott 2012

In 2012, CSH conducted a literature review and field inspection at Hawaii Medical Center West (formerly Saint Francis West). No historic properties were identified during the field inspection. Due to extensive historic and modern land disturbances and development, Sroat and McDermott (2012) concluded the likelihood for subsurface cultural materials or features within the survey area was low.

3.2.2.29 Sroat et al. 2016

In 2013, CSH conducted archaeological data recovery at SIHP # 50-80-09-7751 at the Waipahu Transit Station (Sroat et al. 2016). SIHP # -7551 comprises a subsurface agricultural deposit, which was recommended eligible for listing on the National Register of Historic Places under Criterion D. The research objective of the data recovery was two-fold:

1. To investigate the initial development of the irrigated taro fields and their history of use; and
2. To research whether buried pondfield sediments, or other low energy alluvial sedimentary deposits within the project area, preserve an environment record, and if so, how the greater Pearl Harbor environment has changed over time.

The data recovery investigation consisted of two test excavations, approximately 10 m long by 1 m wide. Within the trenches, two substrata (Strata IIa and IIb) were identified as agricultural deposits, or episodes. Stratum IIa was interpreted as taro *lo‘i* converted to rice fields during the late 1800s/ early 1900s. The underlying Stratum IIb was interpreted as *lo‘i kalo* sediment associated with pre- to early post-Contact agriculture.

3.2.2.30 Stark et al. 2017

In 2014, CSH conducted an archaeological inventory survey of 150 acres in Hō‘ae‘ae for the Kunia Agricultural Park project. One historic property, SIHP # 50-80-08-7758, was identified. SIHP # -7758 consists of five features related to agricultural activity associated with the Oahu Sugar Company, with each feature representing an activity area related to contemporaneous agricultural activity. The features include a retaining wall, portions of a historic irrigation ditch, the structural remnant of a headworks feature, and a historic lithics workshop. Although SIHP # -7758 was assessed as significant under Criterion d, no further work was recommended.

3.3 Background Summary and Predictions

Based on research of the traditional and historical background and an analysis of historical maps and previous archaeological studies, early Hawaiian settlement in the ‘Ewa region focused on the rich cultivated lands of Hō‘ae‘ae and Honouliuli. These *ahupua‘a* were nearest the marine resources of Pearl Harbor’s West Loch, which was used for extensive wetland taro cultivation. The uplands around Pu‘u Ku‘ua and in the vicinity of Pōhākea Pass were utilized for forest resource procurement and possibly lithics; however, the richest forest land for foraging would have been the east slope of the Wai‘anae Range.

By the 1920s, the lands of Hō‘ae‘ae and Honouliuli were used primarily for commercial sugarcane and pineapple cultivation, as well as ranching (Frierson 1972:18). The main residential communities were on the northeast edge of the ‘Ewa Plain, while the largest community was still at Honouliuli village. Additional settlement was focused in Waipahu, centered around the Waipahu sugar mill, operated by the Oahu Sugar Company. Based on historic maps, the current project area was within the Oahu Sugar Company land (see Figure 13). The maps indicate a gradual transition from strictly agriculture and ranching to residential and commercial development within Hō‘ae‘ae and Honouliuli. By the 1950s, residential subdivisions had spread to the shore of Pearl Harbor and eventually north along Kunia Road from Waipahu. The Oahu Sugar Company ceased operations in 1995, by which time both the mill and plantation were surrounded by urban growth.

Traditional Hawaiian historic properties, including petroglyphs, rock shelters, overhangs, and at least one Native Hawaiian burial, have been found in the vicinity of the project area (Hammatt et al. 2000; Ostroff et al. 2001; Riford and Cleghorn 1986). However, archaeologists have more often documented historic features, particularly those relating to plantation infrastructure. These include historic bridges, quarries, walls, ditches, and plantation camp remnants (Hammatt et al. 2000; O’Hare et al. 2006; Riford and Cleghorn 1986; Tomonari-Tuggle and Erkelens 1995). Given the location of the project area within Oahu Sugar Company lands, it is possible infrastructure associated with the former plantation still exists in the vicinity.

Land within the project area was altered initially for commercial sugarcane cultivation and again more recently for the construction of Honowai Elementary School. Historical research and previous archaeological studies suggest this immediate area was little utilized by Native Hawaiians and subsequent land alterations may have removed any evidence of traditional land usage that once existed.

Section 4 Results of Fieldwork

The fieldwork component of this archaeological investigation was conducted on 17 April 2017 by CSH archaeologist David Shideler, M.A. This work required approximately 3 hours to complete. The archaeologist's track log is shown in Figure 32. Foci of the fieldwork were the location of proposed traffic improvements including a U-shaped pull off area off Honowai Street and an adjacent proposed small parking area (Figure 33 through Figure 35), the area for the proposed new classroom building in the northeast corner of the campus (Figure 35 through Figure 37), and an area in the southeast portion of the campus proposed for a headwall and gabion rock work (a wirework container filled with rock, broken concrete, or other material, used in the construction of dams, retaining walls, etc.) (Figure 38).

No historic properties were observed. The prospect of subsurface cultural deposits was regarded as low. An anomalous basalt boulder, known to the school as "a female stone," was observed under a portable classroom building in the northwest corner of the campus (Figure 39). There was no obvious modification. The boulder and its deposition within the present campus may be natural.

In the course of the fieldwork, inquiry was made of the faculty and staff of Honowai Elementary School regarding a different basalt boulder encountered during excavation in November 2015. According to the records of CSH, Regina Hilo, SHPD burial sites specialist, and Kimi Matsushima, SHPD lead O'ahu archaeologist, visited the Honowai Elementary School campus on 16 November 2015. CSH email of 18 November 2015 reports,

> I am not quite sure if Regina officially pronounced it as an artifact but she did a GPS recording of its location. Both specialists seemed to be quite interested in the female stone under our Portable 4.
>
> Regina was worried that the male or kane stone would be stolen or defaced if we displayed him. As for the female stone, both were intrigued by the triangular shape, the natural pitting etc. [our local lore here is that the female stone is upside down or something and is not happy, which is why we were told to plant ti leaf around her]. We are going to rebury the male stone by next week and mark the site with ti plants. The female stone is larger and more deeply rooted and they did not think that anyone would try to move it. They did say that should we need to move or destroy the Portable 4 for new construction, to let them know about what we can to ensure that we take care of the female stone. [Email "RE: Honowai El - Rock Situation" from Terri Runge to David Shideler 18 November 2015]

The *kāne* or male stone was not actually observed but the location where it remains buried in the central northwest side of the campus was pointed out (Figure 40). Photographs of the circumstance and nature of the find and subsequent treatment were provided by Ms. Terri Runge of the school (Figure 41 and Figure 42). The boulder understood as a *kāne* or male stone certainly could have been a *pōhaku o kāne* as suggested by its distinctive shape. Kamakau (1991:33; see Appendix B) relates, "There were very many Stones of Kane in every *ahupua‘a* . . ." No information was developed in this study to support or refute the possibility.

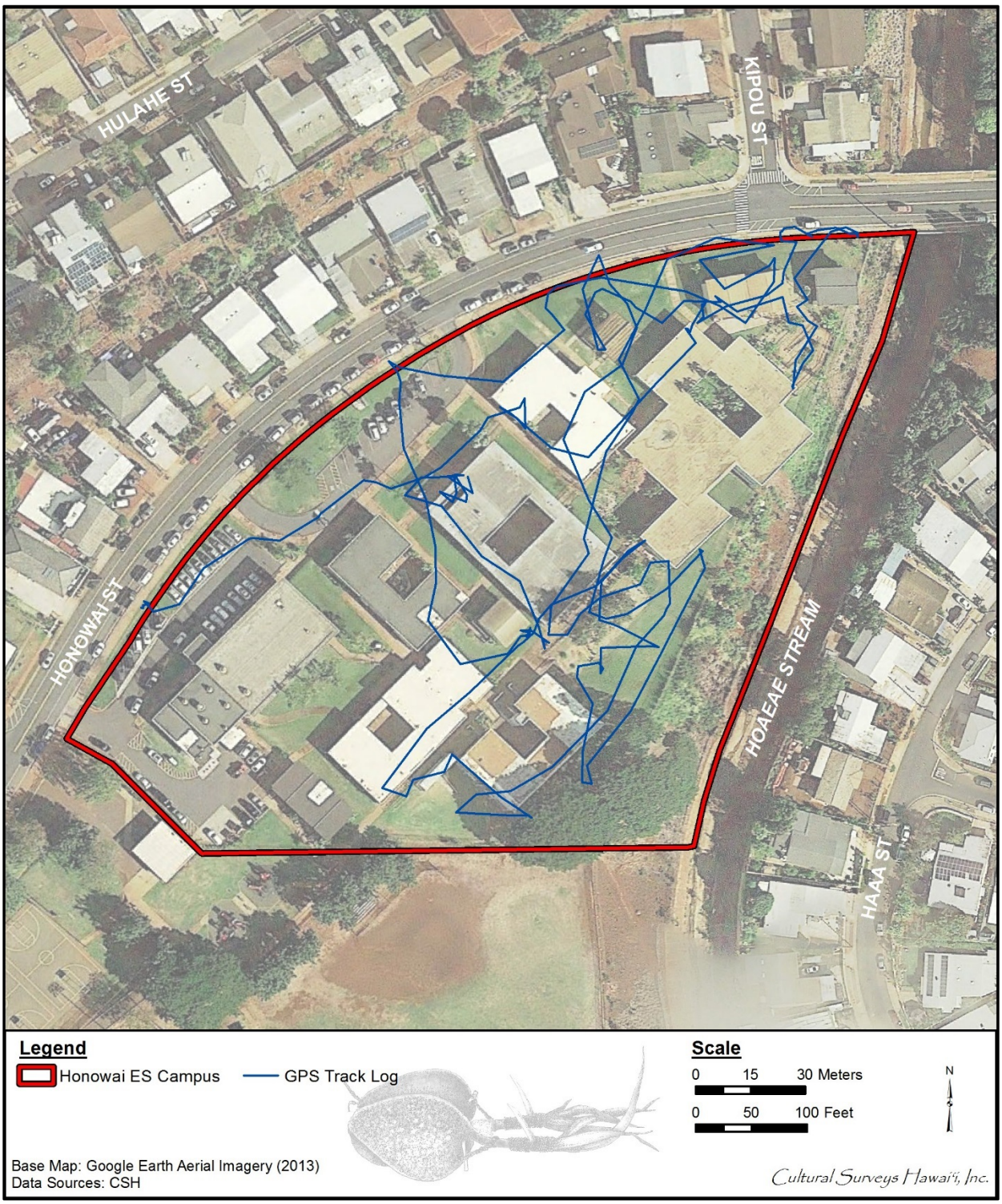

Figure 32. Archaeologist’s track log for the field inspection at Honowai Elementary School

Figure 33. General view of Honowai Elementary School proposed improvement area fronting Kipou Street planned for new driveway, view to north

Figure 34. General view of Honowai Elementary School proposed new driveway area fronting Honowai Street (at upper right) from near the northeast corner of the campus; the portable classrooms at left fronting Honowai Street are to be removed, view to west

Figure 35. General view of Honowai Elementary School proposed new driveway area fronting Honowai Street (at upper left); the portable classrooms at left fronting Honowai Street are to be removed and replaced by a new eight-classroom building, view to east

Figure 36. General view of new classroom building area showing ramps and stairs (foreground) and portable classroom (background) to be removed along east side of Honowai Elementary School campus, view to northeast

Figure 37. General view of proposed new eight-classroom building area in the northeast corner of the campus, view to east

Figure 38. General view of proposed area for a headwall and gabion rocks in the southeast corner of the campus, view to northeast

Figure 39. View of a basalt boulder (*pōhaku*) understood as a “female stone” under a portable building (Portable 4) in the northeast corner of the campus (2 m of tape exposed for scale)

Figure 40. Location of find of an unusual boulder (*pōhaku*) find, understood as a “male stone” on the central northwest side of the campus, Honowai Street in background, view to northwest

Figure 41. Circumstance and treatment of unusual boulder (*pōhaku*) find, understood as a “male stone,” on the central northwest side of the campus, Honowai Street in background, view to northwest

Figure 42. Close-up view of unusual boulder (*pōhaku*) find, understood as a “male stone,” on the central northwest side of the campus

Section 5 Summary and Interpretation

CSH completed background research and a field inspection for this project. Background research indicates the project area was unlikely to have been a focus of traditional Hawaiian activity as it was well back from the coast and was not within a *kuleana* Land Commission Award (see Figure 10, Figure 12, and Figure 17). The project area is believed to have been in intensive commercial sugarcane cultivation for nearly a century (see Figure 26). No historic properties have been identified in the vicinity (see Figure 31).

No historic properties were identified in the background research or in the field inspection and none are believed to be present; with the possible exception of two stones of some note.

There is a belief held by some that two distinctive stones on the campus have religious associations. Regarding the basalt boulder (*pōhaku*) understood as a “female stone” under a portable building (Portable 4; see Figure 39) in the northeast corner of the campus, the local lore is that the female stone is upside down and is not happy.

The male stone in the central northwest side of the campus has been suggested as a *pōhaku o kāne* due to its distinctive shape (Figure 41 and Figure 42). Kamakau (1964:33; see Appendix B) relates: “There were very many Stones of Kane in every *ahupua‘a* . . . ” No information was developed in this study to support or refute the possibility. There was a famous marker stone located on the boundary of Honouliuli and Hō‘ae‘ae Ahupua‘a to the west of the project area known as “*Pōhaku Pālaha”* but neither of the stones in the present area appears to be that boundary marker boulder.

It is recommended that the DOE initiate obtaining a determination letter from the SHPD as per HAR §13-275-3 and that this study be attached to the request to provide background information. No further archaeological work is recommended for this eight-classroom construction project but this is not a clearcut matter given local perceptions of the import of two *pōhaku* on the campus.

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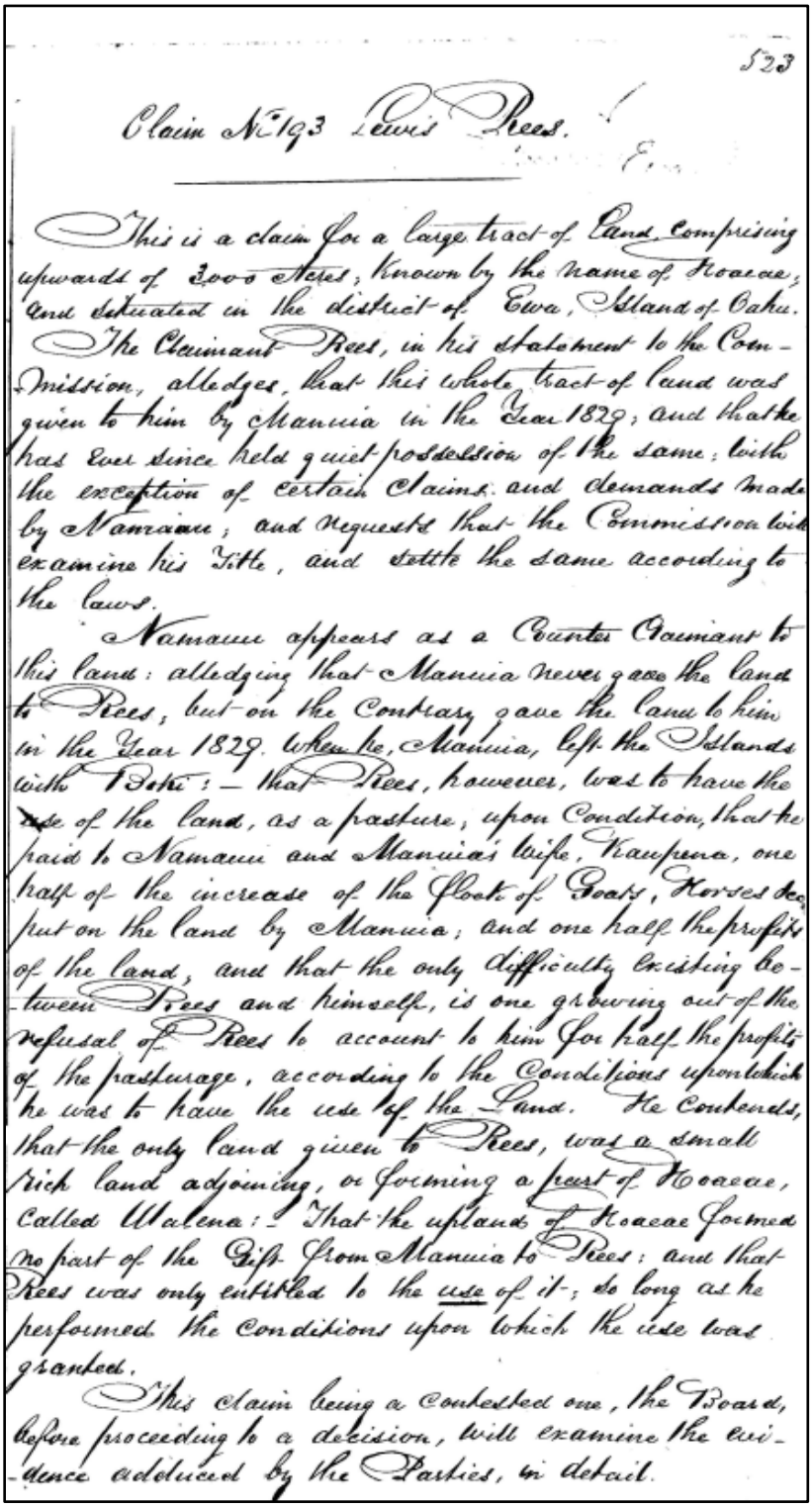
Appendix A LCA Claim 193



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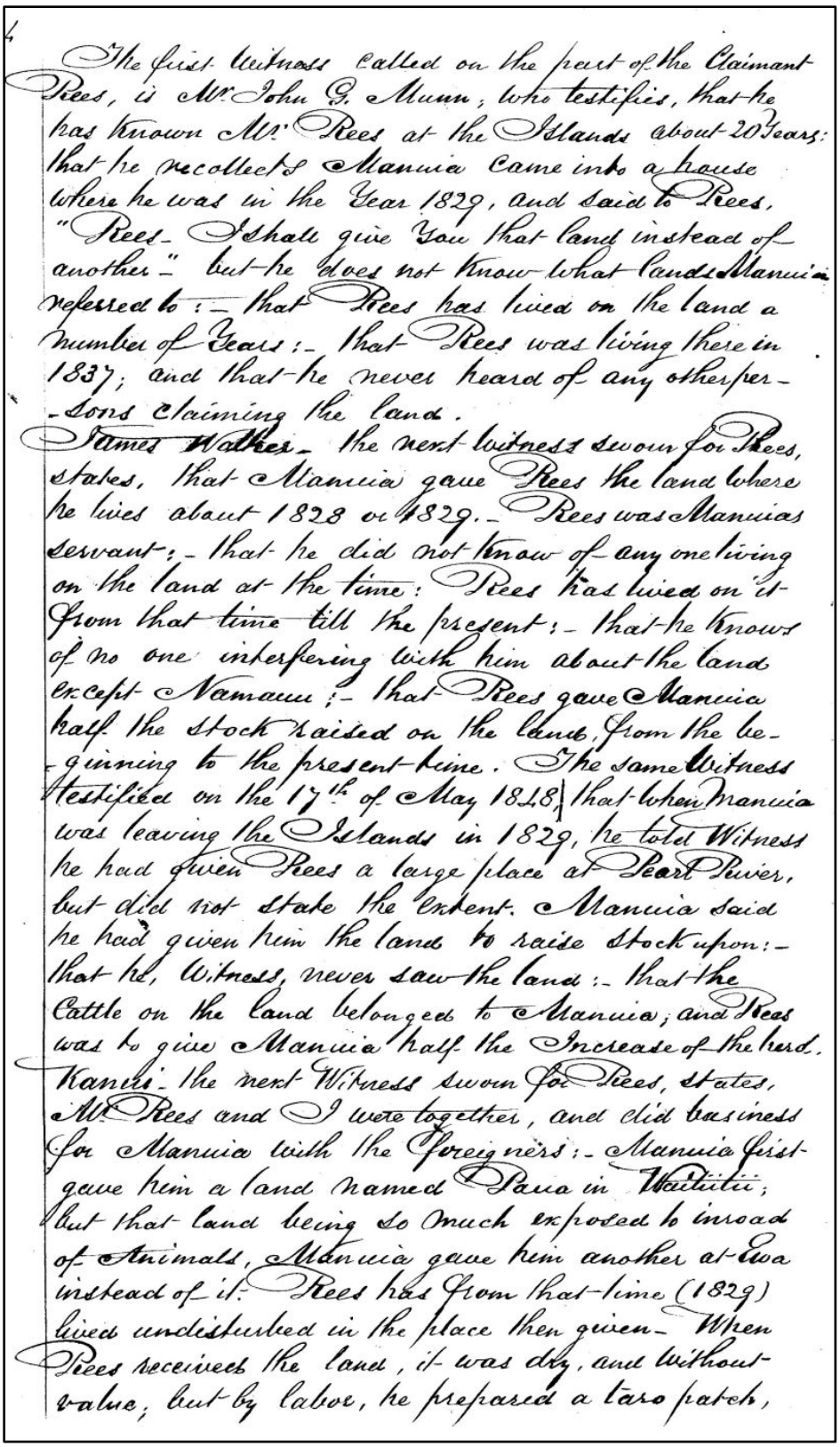
Claim № 193 Lewis Rees.

This is a claim for a large tract of Land, comprising upwards of 3000 Acres, known by the name of Koaeae, and situated in the district of Ewa, Island of Oahu.

The Claimant Rees, in his statement to the Commission, alledges, that this whole tract of land was given to him by Manuia in the Year 1829; and that he has ever since held quiet possession of the same; with the exception of certain Claims and demands made by Namauu; and requests that the Commission will examine his Title, and settle the same according to the laws.

Namauu appears as a Counter Claimant to this land: alledging that Manuia never gave the land to Rees, but on the Contrary gave the land to him in the Year 1829. when he, Manuia, left the Islands with Boki: — that Rees, however, was to have the use of the land, as a pasture, upon Condition, that he paid to Namauu and Manuia's Wife, Kaupena, one half of the increase of the Flock of Goats, Horses &c put on the land by Manuia; and one half the profits of the land, and that the only difficulty existing between Rees and himself, is one growing out of the refusal of Rees to account to him for half the profits of the pasturage, according to the Conditions upon which he was to have the use of the Land. He contends, that the only land given to Rees, was a small rich land adjoining, or forming a part of Koaeae, called Waiena: That the uplands of Koaeae formed no part of the Gift from Manuia to Rees: and that Rees was only entitled to the use of it; so long as he performed the conditions upon which the use was granted.

This claim being a contested one, the Board, before proceeding to a decision, will examine the evidence adduced by the Parties, in detail.



The first Witness called on the part of the Claimant Rees, is Mr. John G. Munn, who testifies, that he has known Mr. Rees at the Islands about 20 Years: that he recollects Manuia came into a house where he was in the Year 1829, and said to Rees, "Rees. I shall give You that land instead of another." but he does not know what lands Manuia referred to:— that Rees has lived on the land a number of Years:— that Rees was living there in 1837; and that he never heard of any other persons claiming the land.

James Walker. the next witness sworn for Rees, states, that Manuia gave Rees the land where he lives about 1828 or 1829.— Rees was Manuias servant:— that he did not know of any one living on the land at the time: Rees has lived on it from that time till the present:— that he knows of no one interfering with him about the land except Namaau:— that Rees gave Manuia half the stock raised on the land, from the beginning to the present time. The same Witness testified on the 17th of May 1848, that when Manuia was leaving the Islands in 1829, he told Witness he had given Rees a large place at Pearl River, but did not state the extent. Manuia said he had given him the land to raise stock upon:— that he, Witness, never saw the land:— that the Cattle on the land belonged to Manuia; and Rees was to give Manuia half the Increase of the herd.

Kaneli. the next Witness sworn for Rees, states, Mr. Rees and I were together, and did business for Manuia with the Foreigners:— Manuia first gave him a land named Paua in Waikiki; but that land being so much exposed to inroad of Animals, Manuia gave him another at Ewa instead of it. Rees has from that time (1829) lived undisturbed in the place then given. When Rees received the land, it was dry, and without value, but by labor, he prepared a taro patch,

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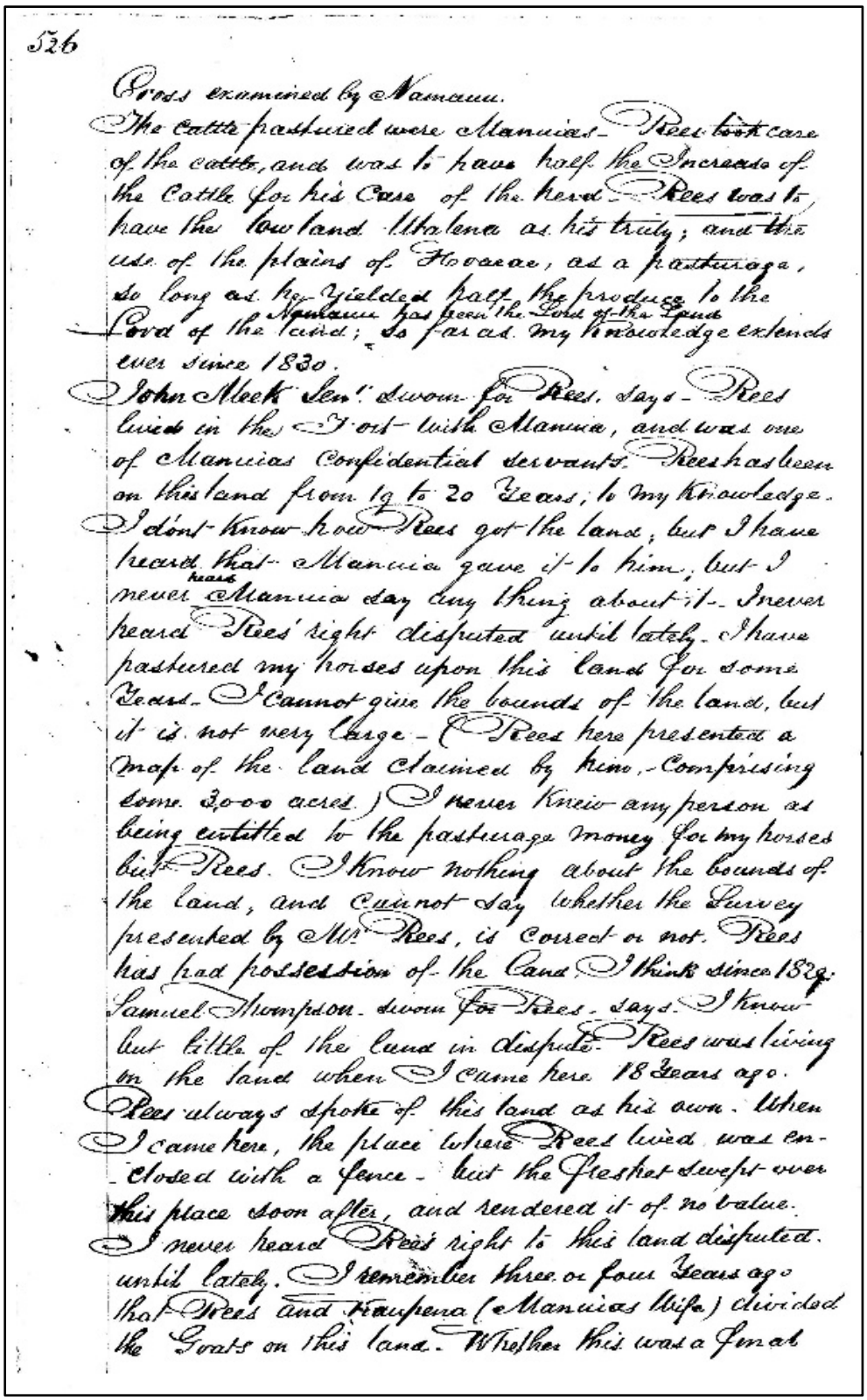
and made it valuable. I do not know the precise boundaries of the land: its name is Hoaeae. The taro ground has been since covered by a Keehee. The particular reason why Rees wished to go there, was, that he might have better pasture; and he has pastured Goats, Horses and Cattle there, the pasturing of animals being his business. Manuia did not give him the whole of Hoaeae: he gave him none of the taro ground. The next Witness sworn for Rees, was Kaupena. Manuias Widow. She testifies, she knows that Manuia let Rees have some pasture ground to feed Goats, upon the condition that Rees gave him one half of the produce: - that when Manuia left in 1829, he gave the land to Namauu. The next Witness called for Rees was Kekeni, who testified, that he was a Relative of Manuias, and a servant under him. Rees was also a servant of Manuias, being his herdsman. Rees and myself attended upon Manuias call. Rees did some other work, besides attending to Manuias Cattle. Before Manuia sailed for Manilla (in 1827 or 1828) he gave Rees a small piece of dry, uncultivated upland in Pawaa Waikiki; fit only for the raising of Potatoes. Rees did not like the land; and after a while, wished to give it up because it was so small. Manuia took it back, and gave him a larger land in Ewa. Malena, is the name of the land Manuia gave Rees at Ewa, and not Hoaeae. It was a piece of low-land, surrounded with a fence; but the fence is now broken down. I could point out where the fence was. It was a place for growing Kalo. Outside of this, was the pasture land of Hoaeae. and Rees was permitted to pasture his Cattle upon it. I went down to Ewa with Rees and Manuia when the land was given, and witnessed the Gift - he gave Rees the land inside of the fence - that is - Malena - but not the land outside of the fence - that is - Hoaeae. The outside land Rees was to have the use of - for the Cattle to run on.



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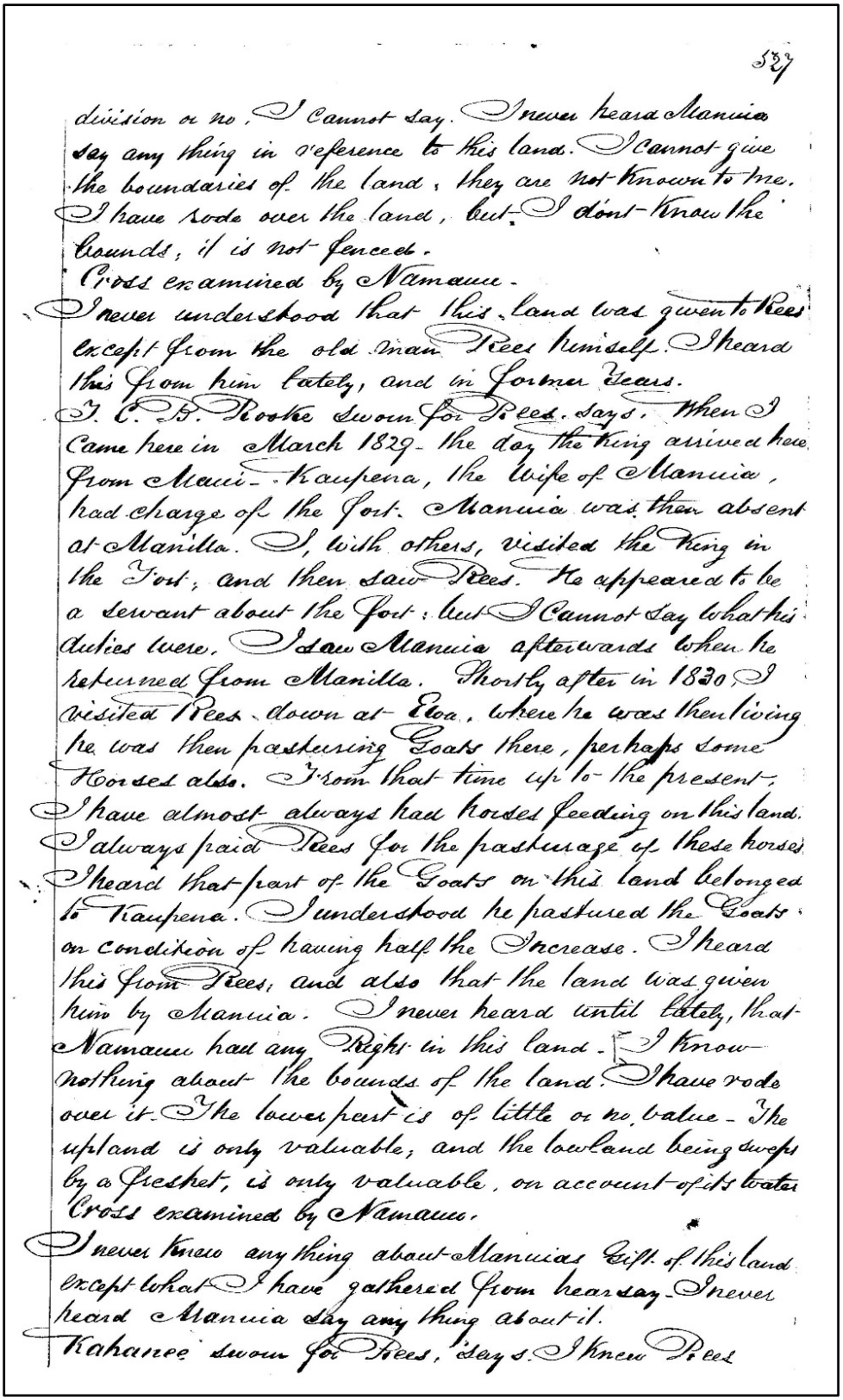
Cross examined by Namauu.

The cattle pastured were Manuias - Rees took care of the cattle, and was to have half the Increase of the Cattle for his Care of the herd - Rees was to have the low land Waiakea as his truly; and the use of the plains of Hoaeae, as a pasturage, so long as he yielded half the produce to the Lord of the land; Ngahaau has been the Lord of the Land So far as my knowledge extends ever since 1830.

John Meek Jen! sworn for Rees. says - Rees lived in the Fort with Manuia, and was one of Manuias confidential servants. Rees has been on this land from 19 to 20 Years, to my knowledge. I dont know how Rees got the land, but I have heard that Manuia gave it to him, but I never heard Manuia say any thing about it - I never heard Rees' right disputed until lately. I have pastured my horses upon this land for some Years. I cannot give the bounds of the land, but it is not very large - Rees here presented a map of the land claimed by him, - Comprising some 30 00 acres.) I never Knew any person as being entitled to the pasturage money for my horses but Rees. I know nothing about the bounds of the land, and cannot say whether the Survey presented by Mr Rees, is Correct or not. Rees has had possession of the Land I think since 1829.

Samuel Thompson. sworn for Rees. says. I know but little of the land in dispute. Rees was living on the land when I came here 18 Years ago. Rees always spoke of this land as his own. When I came here, the place where Rees lived was enclosed with a fence - but the freshet swept over this place soon after, and rendered it of no value. I never heard Rees's right to this land disputed until lately. I remember three or four Years ago that Rees and Kaupena (Manuias Wife) divided the Goats on this land. Whether this was a final



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division or no. I cannot say. I never heard Manuia say any thing in reference to this land. I cannot give the boundaries of the land; they are not known to me. I have rode over the land, but I dont know the bounds, if it is not fenced.

Cross examined by Namauu.

I never understood that this land was given to Rees except from the old man Rees himself. I heard this from him lately, and in former years.

J. C. B. Rooke sworn for Rees. says. When I came here in March 1829 the day the King arrived here from Maui - Kaupena, the wife of Manuia, had charge of the Fort. Manuia was then absent at Manilla. I, with others, visited the King in the Fort, and then saw Rees. He appeared to be a servant about the Fort: but I cannot say what his duties were. I saw Manuia afterwards when he returned from Manilla. Shortly after in 1830 I visited Rees down at Ewa, where he was then living he was then pasturing Goats there, perhaps some Horses also. From that time up to the present, I have almost always had horses feeding on this land. I always paid Rees for the pasturage of these horses. I heard that part of the Goats on this land belonged to Kaupena. I understood he pastured the Goats on condition of having half the Increase. I heard this from Rees, and also that the land was given him by Manuia. I never heard until lately, that Namauu had any Right in this land. I know nothing about the bounds of the land. I have rode over it. The lower part is of little or no value. The upland is only valuable, and the lowland being swept by a freshet, is only valuable, on account of its water.

Cross examined by Namauu.

I never knew any thing about Manuias Gift of this land except what I have gathered from hearsay. I never heard Manuia say any thing about it.

Kahanee sworn for Rees, says. I knew Rees

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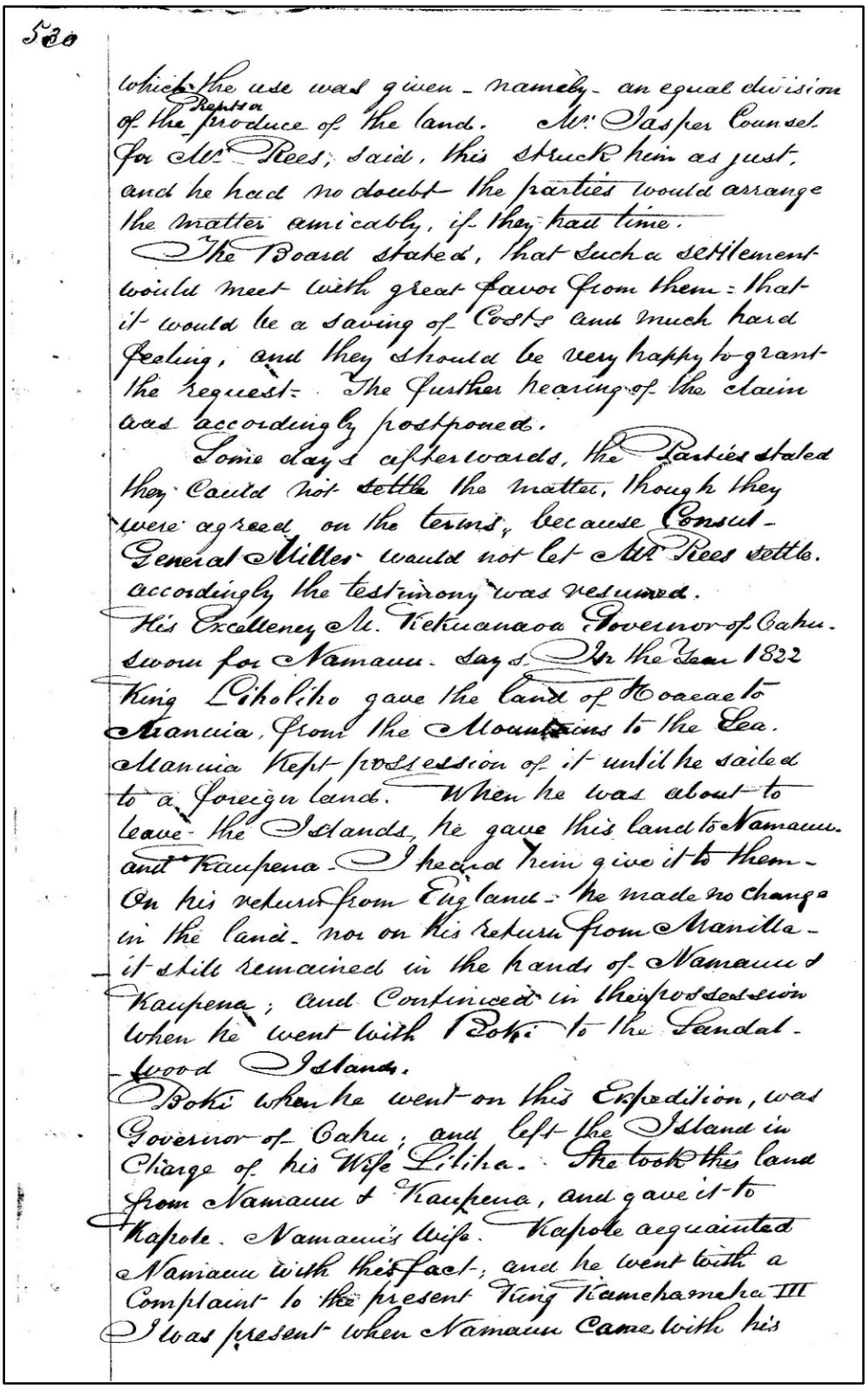
by Captain Lewis. It was not pleasant for him to live on the ship, and he came on shore, he was a kind of Steward or Waiter, under Mahuia in Feasts, where foreigners were present. Sometime before Manuia sailed for Manilla. I know Manuia gave him a piece of land at Pawaa. After this a piece of land was given to Rees as I heard, at Ewa. I always understood the Gift to have been as stated by the Witness Kekeni. When Manuia went away in 1829 on the Sandal-wood expedition in which he was lost, he had Goats feeding on the Kula Land (Upland) above Rees land. And he gave this land to his Wife Kaupena & Namauu. This Kula land (upland) is called Koaeae; and is bounded on the Waeanae side by Honoulili on the Honolulu side by Waiketa, and mauka it extends to where the two valleys meet. In 1841 I was at this place and the fence surrounding the land given to Rees, was fallen down. I then saw that the cattle of Rees were running far inland on the Kula land (uplands). I always understood that the lowland belonged to Rees, and the upland to Namauu and Kaupena. In 1841 or 1842 there was a difficulty between Rees and Namauu on account of the alledged appropriation by Rees of all the profits of this land to himself. Namauu Complained, and objected to Rees pasturing any Cattle on this upland but his own. Namauu Complained that Rees did not pay over his share of the Increase and profits. Rees and Namauu mutually Complained to me concerning their difficulty, and I told Rees, I thought he ought to pay over half the profits of this land; and then, all would be quiet & right. Mr. Rees, I believe did not do so.

At this stage of the Testimony, both parties requested, that the claim might be postponed, as they thought, they could settle the same amicably.

Namauu said, he had no objection to Mr Rees having the Land, if he only kept the Condition on



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which the use was given - namely - an equal division of the produce of the land. Mr Jasper Counsel for Mr Rees, said, this struck him as just, and he had no doubt the parties would arrange the matter amicably, if they had time.

The Board stated, that such a settlement would meet with great favor from them: that it would be a saving of Costs and much hard feeling, and they should be very happy to grant the request. The further hearing of the claim was accordingly postponed.

Some days afterwards, the Parties stated they could not settle the matter, though they were agreed on the terms, because Consul-General Miller would not let Mr Rees settle. accordingly the testimony was resumed.

His Excellency M. Kekuanaoa Governor of Oahu. sworn for Namauu. says. In the Year 1822 King Liholiho gave the land of Hoaeae to Manuia, from the Mountains to the Sea. Manuia Kept possession of it until he sailed to a foreign land. When he was about to leave the Islands, he gave this land to Namauu and Kaupena. I heard him give it to them. On his return from England - he made no change in the land. nor on his return from Manilla - it still remained in the hands of Namauu & Kaupena; and Continued in their possession when he went with Boki to the Sandal-wood Islands.

Boki when he went on this Expedition, was Governor of Oahu; and left the Island in Charge of his Wife Liliha. She took this land from Namauu & Kaupena, and gave it to Kapole. Namauu's Wife. Kapole acquainted Namauu with this fact; and he went with a Complaint to the present King Kamehameha III I was present when Namauu came with his

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Complaint; and I verified the statement made.
The King said, "Let the land be given back to the Persons who owned it." From that time the joint ownership of Kaupena and Namauu ceased; and it was given back to Namauu only, with the understanding, that he held it under the King.
Afterwards, when I was in conversation with the King about this land, the King said - "I have given it to Namauu, and he holds it under me." In the division of lands, this has been recognized as Namauu's; and there is no other Konohiki (Lord of the Land) but Namauu.
Cross examined by Mr. Jaspet. Rees counsel - I know of the fact of Mr. Rees' living on this land. First under Namauu and Kaupena, and when Kaupenas title ceased. Then under Namauu. At first Claimant Rees had some land given him by Manuia at this Place. I only know this by hearsay. After being there awhile, a flood filled up the Kalo patches, and the land was rendered almost useless. Mr. Rees came to me, and represented this, and wished me to remit the tax on this land; which was about $3 or $4 dollars, and I reduced it to two dollars: - This was the Government tax. It remained at two dollars P! Ann.m until 1844. I believe: Since which time Rees has paid no tax, on account of the injury done by the flood. I saw the land: and told the tax gatherer not to Enforce the tax. This tax was for the Ili - or Cultivated land only - Namauu has always paid $17 per Year - the Ahupua tax - that is - the tax for Koaeae, which is upland and uncultivated.
The Evidence adduced in this Case is clear and conclusive. It is shown by Mr. Rees', own Witnesses, that while the Lowland of Mulena which forms a part of Koaeae, upon which Mr. Rees has lived, and which was enclosed with a fence,

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was given to him to be truly his; only the use of the Uplands of Hoaeae was given to him, upon the Condition of his paying to the Lord of the Land, the one half of the produce.

Kekeni, Mr Rees' own Witness, who was present, and heard the Gift from Manuia, upon which Mr Rees bases his claim, testifies that he went down to Ewa with Rees and Manuia, when the Land was given, and witnessed the Gift. He gave Rees the Land inside of the Fence, that is Ulalena, but not the Land outside of the Fence, that is Hoaeae;- the outside Land Rees was to have the use of for the Cattle to run on.

Rees was to have the lowland, Ulalena as his taxes; and the use of the Plains of Hoaeae as a pasturage, so long as he Yielded half the produce to the Lord of the Land.

Kaupena, the Widow of Manuia, another witness of Mr Rees, testifies, that she knows her husband gave Rees some Land to feed Goats upon; but the gift was upon the condition stated by Kekeni. Namely- that he paid half the produce and that when Manuia left the Islands in 1829 he gave the land to Namauu.

Kahanee- sworn for Rees. testifies to nearly the same facts as Kekeni. stating. that he knows of no upland having been given to Rees; but that a lowland was given to Rees in a circular shape. and that he once heard Manuia say to Rees; "There is a place for your Goats, and Namauu is to be your Lord." He understood the absolute Gift of Manuia to be confined to the lowland.

The Evidence of these witnesses is sustained by that of Mr Ii and Governor Kekuanaoa. The latter of whom gives the history of this Land, from the Year 1822; and testifies that he heard Manuia give Hoaeae to Kaupena & Namauu, and that it Continued in their possession until

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shortly after the departure of Governor Boki to Manoa in 1829 when Governor Boki's Wife, Liliha, wrested it from their hands; - That by order of his Majesty it was restored to them; and soon after passed into the hands of Namauu; - that Mr Rees lived under Namauu and Kaupena so long as they jointly owned the land, and afterwards under Namauu alone: - that while Mr Rees, as tenant of the lowland or Cultivated ground, has paid the annual tax of the same, up to the time when it was remitted on account of its being swept by a flood, Namauu has been the recognized Lord of the upland of Koaeae, and paid the annual tax of the same, from the Year 1829.

The only Evidence which militates in the least, if any, against the views of ~~the views of~~ the above-mentioned Witnesses, is that of James Walker and Kauai.

The first of these two Witnesses, Walker, testifies, that he knows that Manuia gave Rees the land where he lives: Now Mr Rees has always lived at Waiakea the lowland; and whether the witness means, that he gave Rees the lowland, or both lowland and upland, cannot be told: for this witness says, he never saw the land. However taking the most favorable view of his testimony for Mr Rees, it will be seen that he supports the testimony of Kekeni and others.

He testifies that Rees was to give Manuia half the Cattle raised on the land; and that he has done so from the beginning to the present time.

Kauai, the other witness, in speaking of the land given to Rees, says, that when Rees received the land it was dry and without value; but by labor, Rees prepared a Kalo patch, and made it valuable: showing clearly, that he had reference to the lowland where Rees lived; and which is the only land Cultivated by Rees, or prepared with a Kalo patch. This Witness says, that Manuia did not give Rees the whole of Koaeae; though he states the name of the land given to him was Koaeae. Beyond question the land

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given to Rees absolutely, was that part of the lowlands of Kaeaea - which was enclosed with a fence, and called Ulakua. And when we scan the testimony of this Witness, and Consider that the Counter Claimant was not present; and had no opportunity of Cross examining him, we shall find, that so far as it runs counter to the testimony of Kekeni, Kaupena, Kahanea, Governor Kekuanaoa and others, it is entitled to but little weight.

: Mr. Meek, Mr. Thompson, Mr. Rooke and Mr. French, who testify that Mr. Rees has lived on the land since 1829, all ~~frankly~~ state that they know nothing of the manner, or conditions upon which, Mr. Rees obtained this land: - that they never heard Manuia say a word in relation to the subject; - and that their Evidence on this point is entirely hearsay Evidence, for the most part based upon Mr. Rees' own assertions. They know he has possessed the land, and received pasturage money for horses, but upon what terms he has possessed the land, they do not know. - Certainly it has not been a quiet possession, according to Mr. Rees own statement.

Mr. Meek testifies that the land was not very large, but he knows nothing of the bounds. Mr. Thompson knows of Rees dividing the Goats raised on the land, with Manuias' Widow. Mr. Rooke and Mr. French testify that Rees told each of them that Manuia gave him the land, and Goats, and he was to have half the Increase.

This evidence so far as the Witnesses speak from knowledge, and not from hearsay, strongly Corroborates the positive and lucid testimony of Gov'. Kekuanaoa, Kekeni and others; and in the opinion of the Board, the Case is too plain to be misapprehended.

We do therefore Award to Lewis Rees this land, upon the same terms and conditions, upon which he received it from Manuia: - That is to

See translation into Hawaiian Page 630

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that part of
say We do award to him the lowland upon which he
has lived, and was formerly enclosed with a fence
namely, Alaena, to have and to hold to
him and his heirs for ever. There can be no doubt
but that the absolute Gift of this lowland was
confined to a life Estate in Rees; But having
first obtained the consent and authority of the King
in Privy Council, we do award the same to him in
fee-simple.

And we do hereby further award to the aforesaid
Lewis Rees, his heirs, and assigns, the Use of the
Plains or upland of Hoaeae, to have and to hold
the same for ever, upon the following terms namely
upon condition that the said Rees, his Heirs or
assigns, shall annually account in writing, to the
heirs or assigns of Namauu, for all the Rents,
or Produce arising, from the use of said Upland,
and shall make annual payment to the Heirs or
Assigns of Namauu, of the one half of all such
Rents or Produce: the first payment to be made
one Year from the date of this Award.

And this Award is upon this express condition
that upon the failure of the said Rees, his heirs,
or assigns, to make the aforesaid annual account
and payment as above mentioned, the Rights of
the said Rees, his Heirs or Assigns, in said
Upland, shall determine; and the same shall
revert to the said Namauu, his Heirs or Assigns.

Namauu insisted that all the rights of
Rees in the upland of Hoaeae had terminated, upon
the grounds, that he had forfeited the condition upon
which he held the Land. But the Board have
been spared the trouble of discussing and deciding
this point, by obtaining the consent of the Heirs of
Namauu to the above Award.

The claimant Rees has handed to the Board
a printed and sworn statement, made by him before
Consul General Miller, excepting to the Constitution
of this Commission, in its Capacity to decide this
Case.

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from the circumstance, of Namauu's being one of the Members of this Board, and he expresses his fears, that he will be able to deceive the Board:- or in other words - that the Board are so deficient in purity of motive or judgment, that they are capable of being warped in their decisions, by the influence of one of its members.

Without regarding such insinuations we would simply remark that Namauu died and another Commissioner was appointed to fill his place in this Board, some months previous to the making of this Award.

The following Survey will shew the correct bounds of Hoaeae; and includes, though it does not particularly define, the bounds of that portion ~~of the Land~~ of Waiena, awarded in Fee-simple.

The law requires existing possessory rights of tenants to be respected.

"Notes of Survey of Hoaeae in Ewa "Oahu"

"Commencing at pile of stones by Sea (Kalahina bay) at Makai S. E. corner of this Land, joining Waikele, and running S. 18° 45 W. 15 Ch. 6 7/12 ft. along Sea to stake, near end of wall on top of Pali by Sea at Namauus' land. Then following along wall seperating this from Namauus' land to Mauka N.E. corner of Wall. Thence N. 29° 15' W 1 Ch. 20 1/2 ft. to stake by path at the N. E corner of Namauus' land (where wall formerly was) Thence S. 70° W. 6 Ch. 7 3/12 ft. across Ravine or flats to Rock on Makai edge of new Gulch about 1 Ch. easterly of L. Rees' dwelling house. Thence S. 50° 15' W. 3 Ch. 11 1/2 ft. to large Rock at head (at present) of new Gulch. Thence S. 45° 30' W. 5 1/2 Ch. to W. corner of old stone pig pen. Thence S 55° 15' W. 12 Ch 3 1/2 ft. always along where old wall stood to wall again. Then following along around wall and Ka Pali to stake at-

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Makai S. W. corner of this land at or in place Called Kaulu (the Kula land ends here, but the Sea of this land extends down to point marked P on Map.) Thence N. 45° 30' W. 51 Ch. 13 1/2 ft. to point in old Road on mauka side of Gulch. near Mauka N. W. Corner of Namauu's land - along land Called Konouliuli' leased by J. M. Meek Jr. Thence N. 47° 15' W. 42 Ch. 59 5/12 ft. to Rock by Road Called Pohaku Palahalaha - Thence N. 29° 45' W. 29 Ch. 20 ft. to stone marked + by Road - Thence N. 31° 15' W. 71 Ch to Rock marked + by Road - Thence N. 33° 15' W. 97 Ch. 20 ft. to large Wili with tree - Thence N. 44° 45' W. 57 ch. 26 ft. to old Kukui tree - angle - Thence N. 29° 30' W. 64 Ch. 13 ft. always along Konouliuli to pile stones on N upper bank of Ekahanui Gulch at Mauka N. W corner of this land - Thence N. 32° 15' E. 45 Ch. 20 ft. to Kukui tree marked A in clump of Kukui's - Thence N. 36° 15' E. 55 Ch. 20 ft. always along land called Lihui in Konouliuli to large Kukui tree marked B on bottom W. edge of Waikele Gulch at Mauka N. W. corner of this land - Thence S. 76° 15' E. 12 Ch. 6 1/2 ft. along bottom Gulch to small single Kukui tree - Thence S. 38° 15' E. 17 Ch 26 1/2 ft. along bottom Gulch to point - angle - Thence S. 37° 45' E. 40 1/2 ch. along bottom Gulch to Rock marked + angle Thence S. 26° E. 46 3/4 ch. along bottom Gulch and up Pali to small Koa tree marked + on right upper edge - Thence S. 26° 30' E. 22 Ch. across dry Gulch to high peaked Rock marked +. N. of Ekahanui Gulch - Thence S. 24° E. 19 Ch. 46 ft. across Ekahanui Gulch to stake - Thence S. 31 1/2 E. 43 1/2 Ch to stake on Ridge - angle - Thence S. 25° E. 226 1/2 Ch always along Waikele to Place of Commencement Including an area of Acres 324.53

Sept 3. 1848. J. Melcalf Sur.

See diagram Page 539.

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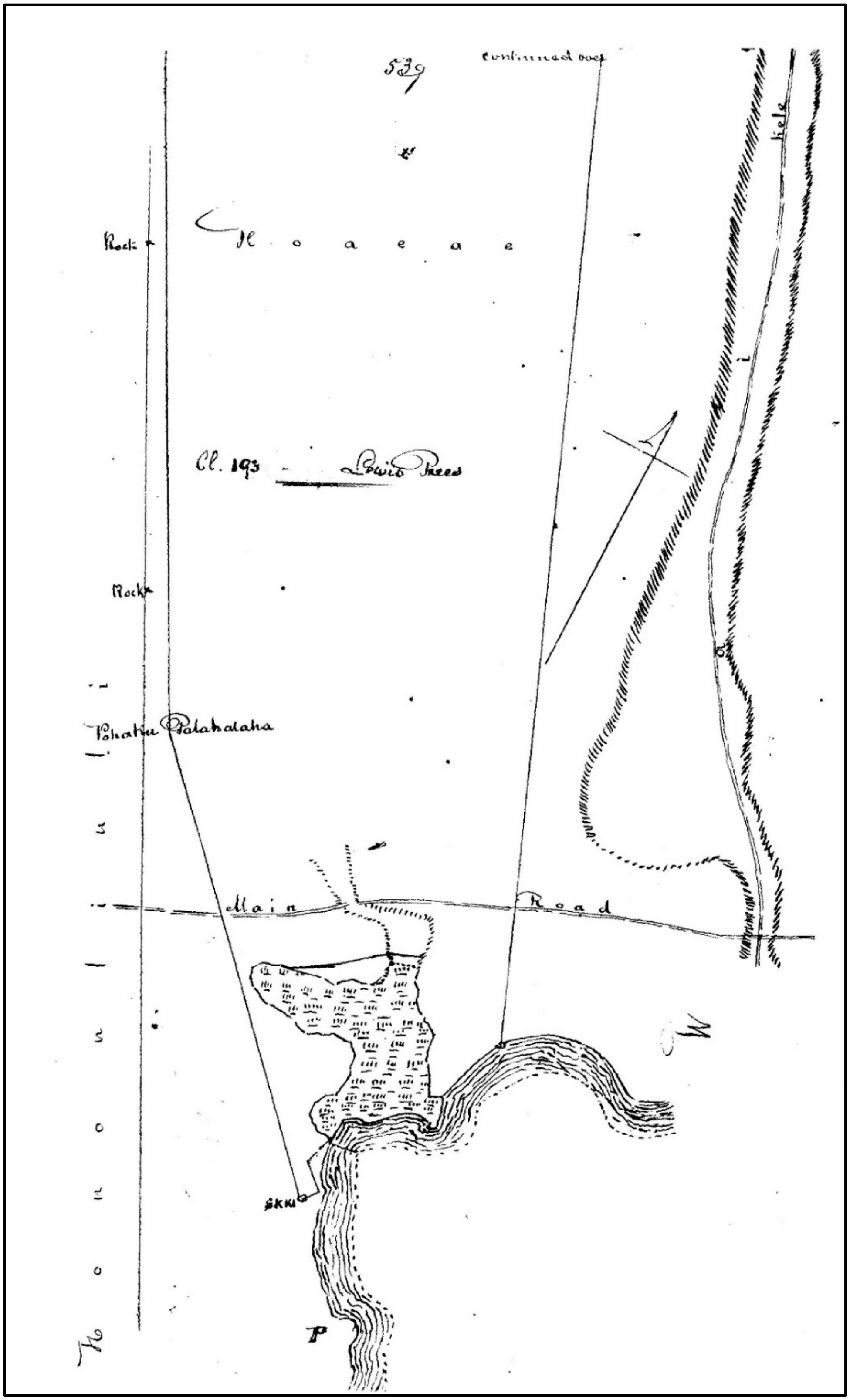
Costs. Adjudication of Cl. No. 193 Lewis Rees Dr

To Incidental Expences Ja		1	
Action of the Board on 26 May 1847		1	
Citation for attend^ce			50
deposition of Claim reduced	f 1		50
draft Testimony reduced and Engrossed			
on 26 May 1847	f 1	3	
do do on 26 April 1848	f 12	9	
do do " 17 May "	f 2	1	50
do do " 22 " "	f 3	2	25
Engrossing survey made by T Metcalf			
for Claimant	f 10	5	
Report of Commissioners this day rendered			
on the above Claim		5	
		28	75
deduction made by order of the Board of		3	75
		$25	

Hale Kauwila. Honolulu.
Oahu
15th February 1849

William L. Lee
J.H. Smith Sec.
Z. Kaauwai
S.M. Kamakau
Ioane Ii

Page 630 — Literal Copy of above Award delivered to Lewis Rees Feb 20th 1849 & Hawaiian Copy of the last Part to Kekuanaoa. J.H. Smith Sec


continued over
Rock
Cl. 193
Main Road

Appendix B Pōhaku o Kāne

POHAKU 0 KANE (*Ka Po‘e Kahiko: The People of Old* Sameuel M. Kamakau 1991:32-33)

The *Pohaku o Kane*, the Stone of Kane, was a place of refuge, a *pu‘uhonua*, for each family from generation to generation. It was not a heiau; it was a single stone monument (*he wahi ‘eo‘eo pohaku ho‘okahi*) , and a *kuahu* altar with ti and other greenery planted about. There the family went to obtain relief. All the men and the boys who belonged to the same family went there if the god [that is, the family's *‘aumakua* god] had stricken the family with death, with illness, or with misfortune because they had been irreligious (*‘aiahulu*), or had been careless about the kapus (*‘aia*), or had eaten or had drunk water with persons who were defiled; also, if they had worn the tapas, or slept in the same sleeping place, or girded on the loincloth, or put on (*peu*) the clothing of a person who was defiled with blood. All these things were defiling, and the people had done wrong against the gods who were their ‘aumakua if they did any of them. The Hawaiians are said to be a people consecrated to the gods; the *‘aumakua* gods were "born," and from them man was born (*he lahui la‘a i ke akua, hanau ke akua hanau mai ke kanaka*).

When trouble came upon a family for doing wrong against an *‘aumakua* god, by being irreligious, or doing any of these defiling things, the cause for this trouble was shown to them by dreams, or visions, or through other signs sent by the god. It was pointed out to them what sacrifices· to offer, and what gifts to present, to show their repentance for the wrong committed by the family. They were to go to the *Pohaku o Kane*, their *pu‘uhonua*, where they were to make offerings to atone for their wrongdoing (*mohai hala*) and to pacify the god (*mohai ho‘olu‘olu*).

In the evening the fire-making sticks (*‘aunaki*) were made ready, and in the morning the family went with a pig, red fish, tapas (*a‘ahu*) , and some *kohekohe* grass. Very early in the morning the imu was lighted for the pig in front of the Stone of Kane, and the red fish and tapas buried in front of the stone, as a peace offering to the god. The pig and the *‘oloa* tapa were the offerings for forgiveness (*mohai kalahala*). The pig was put to bake, then the *‘awa* was chewed. This was done in silence; no one went to relieve nature or did any other defiling thing; no one moved about until the *‘awa* was chewed and covered with straining fiber (*pau ka ‘awa i ka mama, a uhi ka ‘awa i ka mau‘u*). Then the kapu was lifted (*noa ke kapu*) and they would open the imu; the group would be seated, the pig cut up, the *‘awa* strained. When the pig had been cut up, the *‘awa* would be poured into cups and a prayer offered for forgiveness and repentance for the wrong done by the family. Then a prayer of praise (*pule ho‘onani*) to the gods was uttered, and at the end of the prayer the [family] kahuna said, "*‘Amama*." The *‘awa* was drunk, and the feast eaten, under kapu. When one was satisfied, he must sit still until the kapu upon the eating was lifted. When it was lifted, the ti leaves used as coverings (*kauwewe*) in the imu, and the trash and stones of the imu, were covered over. The remains of the feast were buried in front of the stone. Some part of the offerings might be taken home, but it was not to be shared with those who had remained at home and not "sat in the smoke" for the purifying of the family.

When this purification of the family was ended, no medicine need be given to cure sickness, nor anything done for the misfortune and troubles that had come to the family. The family would be multiplied by the births of descendants, blessed with bodily health and freedom from accident;

they would obtain good crops, and an abundance of fish and of all things. There would be no further trouble or misfortune.

The Stone of Kane was called a *pu‘uhonua*, and "a gate to heaven," *puka no ka lani*. It was the *kuahu* altar where men talked to the [family] gods; where men were freed from defilement and wrongdoing; a place at which to ask the gods for blessings. One, two, or three persons could go to their stone altar of Kane and make their offerings for freedom from defilement and wrongdoing. The Stone of Kane was a stone pointed out by the god, not one just set up by men. The god indicated the stone, perhaps in a dream, or in a vision, or by leading someone to the spot.

There were very many Stones of Kane in every *ahupua‘a* from Hawaii to Kauai. The Pohaku o Kane were different from heiaus; different from the *ko‘a* shrines set up for the increase of deep sea fishes (*ko‘a ku‘ula ho‘oulu i‘a*) and the *ko‘a* to the god Kaneko‘a set up along the banks of rivers, streams, and shore and inland ponds (*kuapa me na loko*) for the increase of ‘o‘opu fishes (*ko‘a ho‘oulu ‘o‘opu*); they were different from the heiaus to Kanepua‘a and to Lana to increase food crops, the *unuunu ho‘oulu ‘ai*, and the *ipu-o-Lono* heiaus; and different from the heiaus for Kukeolo‘ewa [the Maui chiefs' "state" god, whose services were held in *luakini* heiausl '"

APPENDIX B

DRAFT Honowai Elementary School 8 Classroom Building, Phase 1A
Tax Map Key 9-4-053:117 Traffic Impact Analysis Report
Waipahu, Island of Oahu, Hawaii, August 15, 2017

DRAFT

Honowai Elementary School

8 Classroom Building, Phase 1A
Tax Map Key 9-4-053:117

Traffic Impact Analysis Report

Waipahu, Island of Oahu, Hawaii

August 15, 2017

Prepared for

Lionakis

Prepared by

SSFM International

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I. PROJECT DESCRIPTION

The Department of Education is proposing improvements at Honowai Elementary School, located at 94-600 Honowai Street in Waipahu, Oahu, Hawaii (see Figure 1). The property is identified as Tax Map Key (TMK) (1) 9-4-053:117. The improvements will include a new three-story classroom building and a new 12 stall parking lot. Additional improvements include relocating an ADA ramp to the lower play field, demolishing three portable classrooms, and adding a new drop-off area, especially for students that are medically fragile. Access to the new three-story building and parking lot will be through a future ingress and egress driveways off of Honowai Street. The proposed development site plan is shown in Figure 2.

This traffic impact analysis report (TIAR) will evaluate existing (2017) conditions, assess future (2027) changes for the study area and impacts to the surrounding area as a result of the proposed development. This TIAR will be in support of an Environmental Assessment (EA) for the Honowai Elementary School Improvements.

Figure 1: Project Location Map

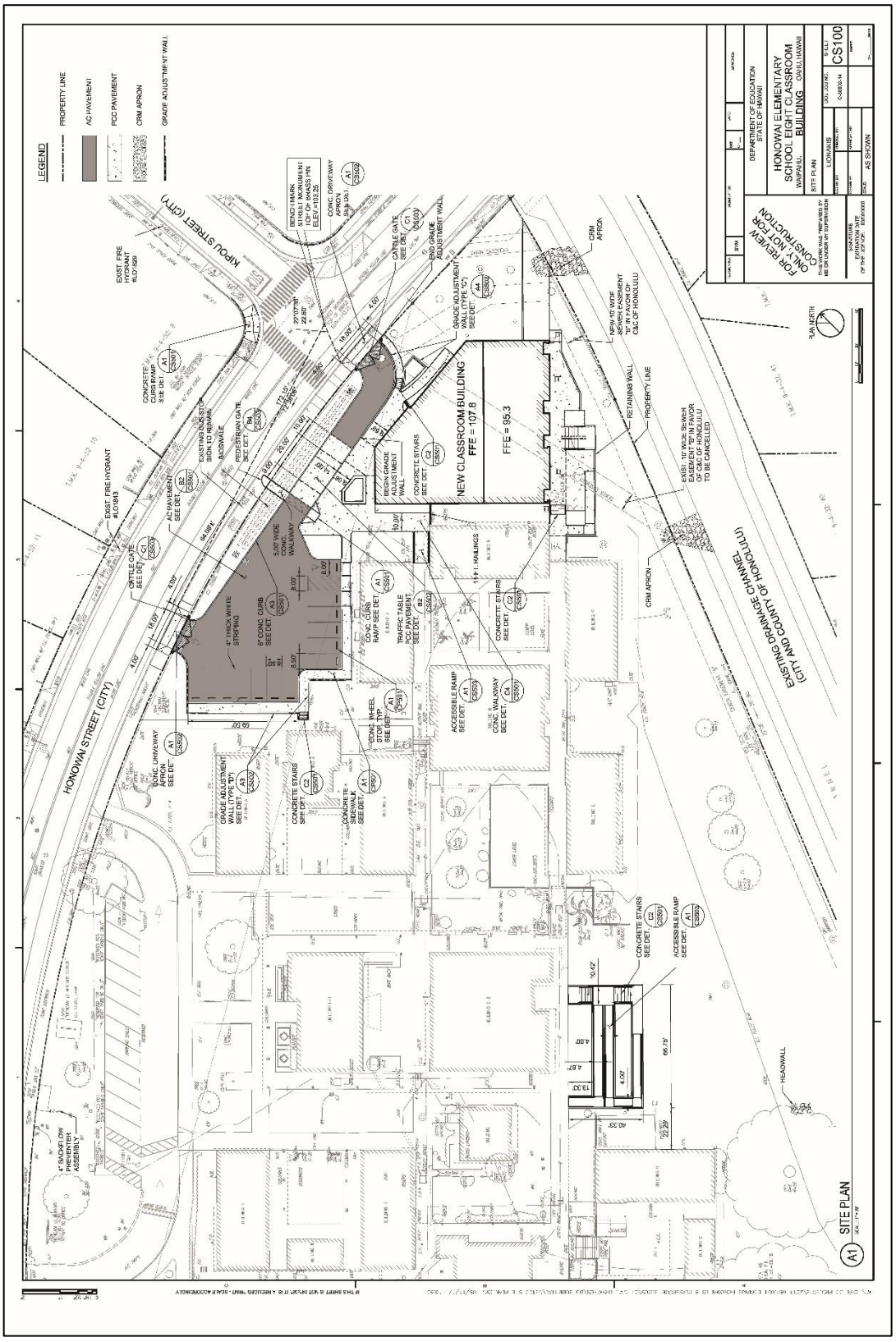

Figure 2: Project Site Plan

II. EXISTING CONDITIONS

A. Geometric Configuration

1. Roadway Configuration

Honowai Street is a two lane, undivided County-owned roadway with an east-west orientation near Honowai Elementary School. Fort Weaver Road is approximately 0.25 miles west of Honowai Elementary School and is the western terminus of Honowai Street. Honowai Street is oriented in the north-south direction on the east side of Loaa Street and terminates at Waipahu Street. This roadway primarily provides access to residential areas and Honowai Elementary School. The posted speed limit is 25 miles per hour (mph). There are paved shoulders of approximate 7 feet wide on both sides of Honowai Street for street parking. There is a paved concrete sidewalk on each side of Honowai Street. There are no designated bicycle facilities along Honowai Street.

2. Intersection Configuration

The study intersections include the following:

1. Honowai Street and School Entrance
2. Honowai Street and School Exit
3. Honowai Street and Kipou Street

Existing (2017) lane configurations, marked pedestrian crosswalks, and traffic controls at the study intersections are shown in Figure 3.

The intersection of Honowai Street at the school's entrance is a three-legged unsignalized intersection. The eastbound and westbound approaches are on Honowai Street. The eastbound approach has a shared through/right turn lane, and the westbound approach has a shared left turn/through lane. The south leg is only for ingress. There are no marked crosswalks at this intersection.

The intersection of Honowai Street at the school's exit is a three-legged unsignalized intersection with a stop sign for exiting traffic. The westbound and eastbound approaches are on Honowai Street. There is one through lane for each direction. The northbound approach is one lane for left and right turn movements. There are no marked crosswalks as this intersection.

The intersection of Honowai Street and Kipou Street is also a three-legged unsignalized intersection with a stop control for Kipou Street. Kipou Street is the southbound approach which has one shared left turn/right turn lane. The eastbound and westbound approaches are on Honowai Street. The eastbound approach has a shared lane for left turn/through movements, and the westbound approach has a shared lane for through/right turn movements. There are marked crosswalks crossing the west and north legs.

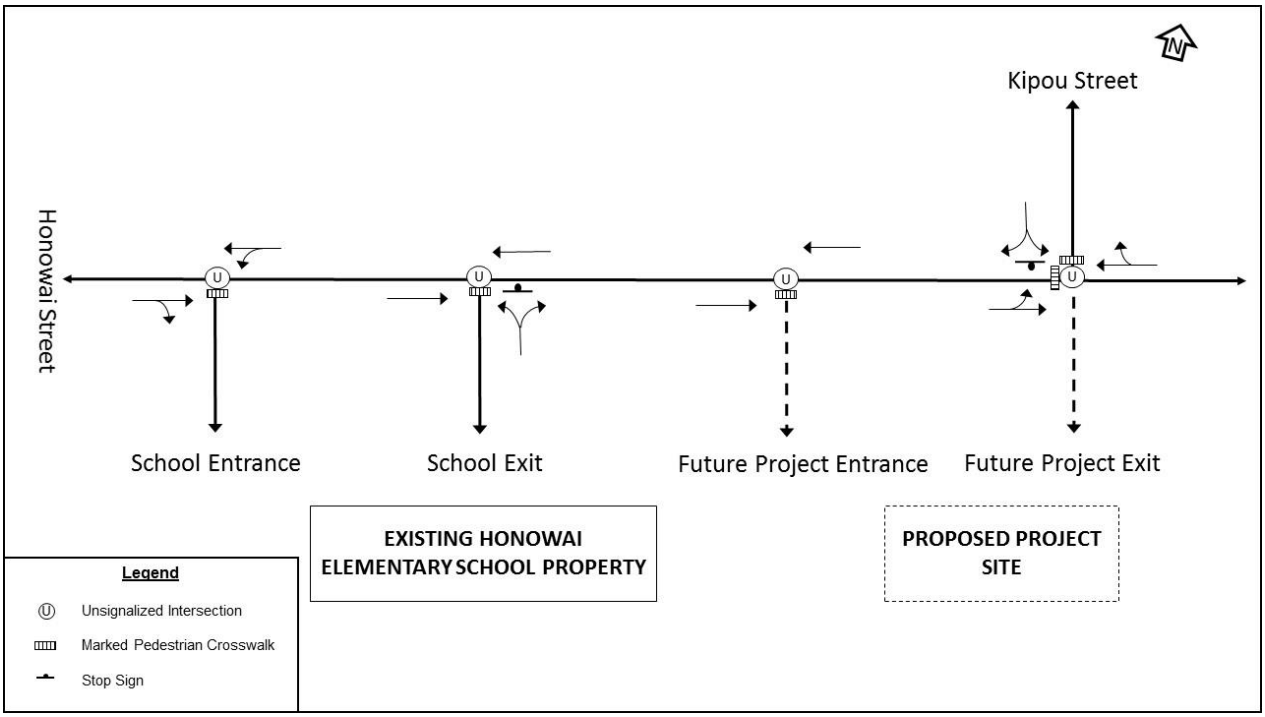

Figure 3: Existing (2017) Lane Configurations

B. Volumes

1. Intersection Volumes

Manual intersection turning movement traffic counts were taken at the three study intersections on Tuesday, May 2, 2017 for the AM and PM peak periods from 7:00 – 9:00 AM and 3:00 – 5:00 PM. An accident occurred along H-1 freeway during the morning peak period on May 2, 2017 which may have skewed the traffic along Honowai Street, thus a recount was done for the AM peak period on May 9, 2017. The AM peak hour was 7:00 – 8:00 AM and the PM peak hour was 3:15 – 4:15 PM for all three intersections. The Existing (2017) peak hour volumes are shown in Figure 4. Detailed peak period counts are included in Appendix A.

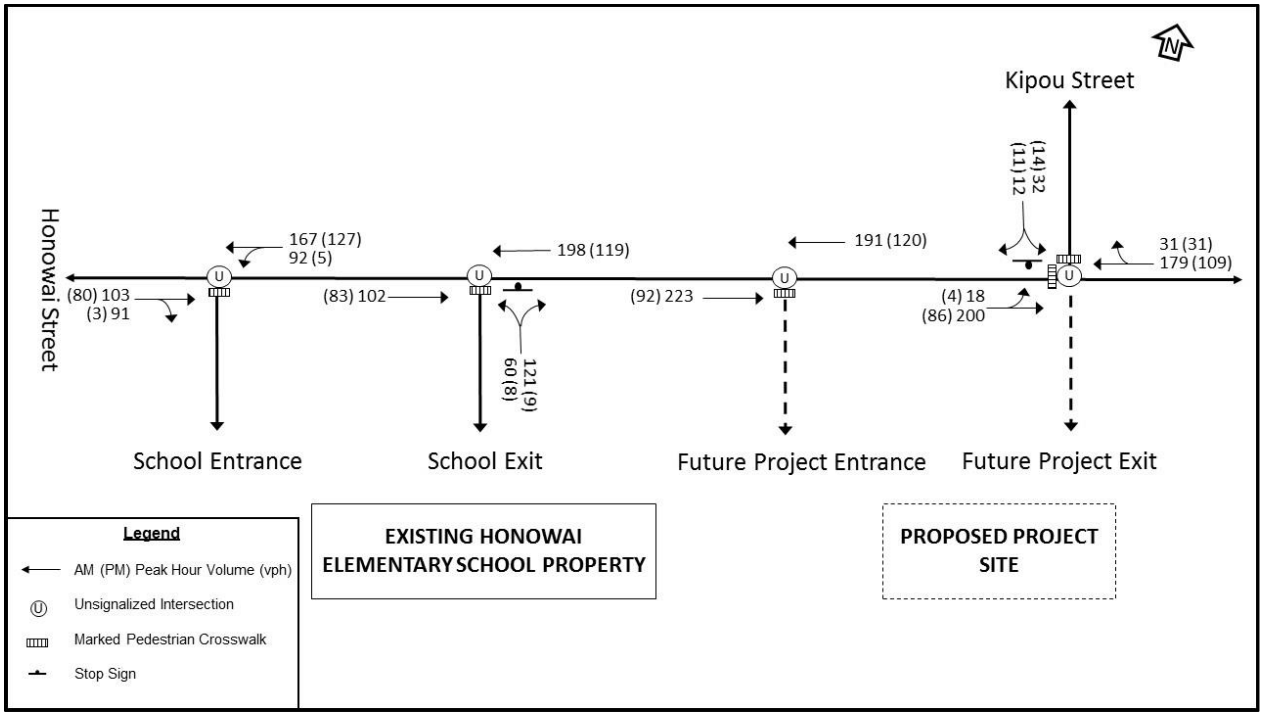

Figure 4: Existing (2017) Peak Hour Volumes

2. Bus Transit Volumes

The City of Honolulu transit system (TheBus) has three bus routes passing the Honowai Elementary School. The three bus routes are: 1) Route 43: Waipahu Street-Honolulu-Alapai, 2) Route 81: Waipahu Express and 3) Route 432: East-West Waipahu.

Route 43 typically runs from Monday through Friday and state holidays. The bus traveling from Honolulu to Waipahu is in service from 7:01 AM to 6:07 PM, and the bus traveling from Waipahu to Honolulu is in service from 7:09 AM to 6:12 PM. There are two buses that pass the project site during the AM peak hour and no buses that pass the project site during PM peak hour.

Route 81 typically runs from Monday to Friday and state holidays. Route 81 provides service from Waipahu to Downtown during the morning from 4:24 AM to 8:39 AM and provides service from Downtown to Waipahu in the afternoon from 3:00 PM to 7:25 PM. There are two buses and one bus that pass the project site during AM and PM peak hour, respectively.

Route 432 typically runs from 4:39 AM to 12:44 AM from East to West Waipahu and from 4:36 AM to 1:21 AM from West to East Waipahu on Monday through Saturday, and state holidays. There are three buses and two buses that pass the project site during the AM and PM peak hours, respectively. Appendix B includes the detailed bus route schedule and map for these routes.

3. Pedestrian and Bicycle Volumes

Pedestrian and bicycle volumes were counted at the three intersections during the AM and PM peak hours. The bicycle volumes at the three intersections are minimal. The pedestrian count was higher in the

morning peak hour than in the afternoon peak hour. The highest pedestrian count was 65 pedestrians crossing Honowai Street using the west crosswalk at the intersection with Kipou Street. Figure 5 shows the peak hour volumes for pedestrians and bicycles.

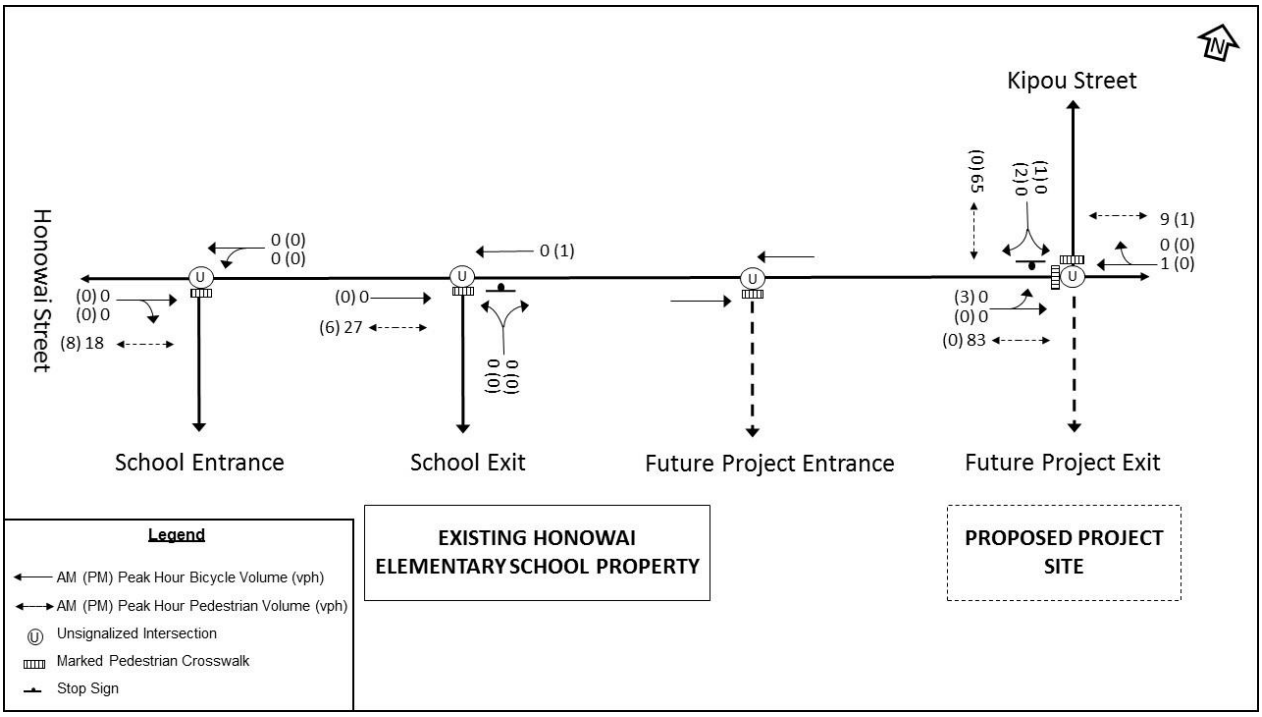

Figure 5: Existing (2017) Pedestrian and Bicycle Peak Hour Volumes

C. Level of Service

1. Methodology

Level of service (LOS) is an operational analysis rating system used in traffic engineering to measure the effectiveness of roadway operating conditions. There are six LOS ranging from A to F. LOS A is defined as being the least interrupted flow conditions with little or no delays, whereas LOS F is defined as conditions where extreme delays exist. Honowai Street is classified as a collector within an urban area. Guidelines from *A Policy on Geometric Design of Highways and Streets* (AASHTO, 2011) state that an appropriate LOS for an urban collector road is LOS D or better. Thus, LOS D or better is the standard for operations at the intersections.

Two-Way Stop Controlled Intersection LOS

As stated in the *Highway Capacity Manual 6th Edition (HCM6)* (TRB, 2016), LOS for a two-way stop controlled (TWSC) intersection is determined by the measured control delay (see Table 1). Delay at a TWSC intersection is defined by each minor movement, not for the intersection as a whole. Vehicles traveling along the major, free-flow road of a TWSC intersection proceed through with minimal delay. Those vehicles approaching the intersection along the minor movement (side-street) are controlled by a stop sign and thus experience delay attributable to the volume of vehicles passing along the free-flow road and the gaps available.

Table 1: LOS Criteria for Unsignalized Intersections

Average Control Delay (s/veh)	LOS by v/c Ratio	
	<=1.0	>1.0
≤ 10.0	A	F
>10 and ≤15	B	F
>15 and ≤25	C	F
>25 and ≤35	D	F
>35 and ≤50	E	F
>50	F	F

Source: *HCM6* (TRB, 2016)

2. Existing (2017) Intersection Level of Service Results

Existing (2017) movement LOS and delays (in seconds per vehicle) were determined for the study intersections for the AM and PM peak hours. All movements resulted in appropriate LOS B or better, which suggests acceptable operations at all intersections (see Table 2). Appendix C provides the detailed analysis reports for the Existing (2017) conditions.

Table 2: Existing (2017) Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour		
	Approach	Movement	Delay	v/c	LOS	Delay	v/c	LOS
Honowai Street and School Entrance	No Control		-	-	-	-	-	-
	WB	Left-Thru	8.0	0.09	A	7.4	0.00	A
Honowai Street and School Exit	Two-Way Stop Controlled		-	-	-	-	-	-
	NB	Left -Right	12.0	0.31	B	9.5	0.03	A
Honowai Street and Kipou Street	Two-Way Stop Controlled		-	-	-	-	-	-
	EB	Left	7.8	0.02	A	7.5	0.00	A
	SB	Left-Right	12.9	0.11	B	9.7	0.04	A

III. FUTURE CONDITIONS

The Department of Education (DOE) is proposing to expand Honowai Elementary School with a new three story building and a 12-stall parking facility. Full build-out and occupancy are expected by 2027. With the development of the project, a new drop-off/pick-up area will be added along Honowai Street as shown in Figure 2. This will result in a new three-leg intersection, Honowai Street and Project Entrance, between the intersection of Honowai Street at School Exit and the intersection of Honowai Street at Kipou Street. The previous three-leg intersection of Honowai Street and Kipou Street will become a four-leg intersection.

A. Surrounding Area Conditions

The surrounding area is a residential area, and no additional significant developments or construction are expected in the area that would affect the roadway geometrics or traffic volumes at the study intersections. This is based on research at the State of Hawaii Office of Environmental Quality Control library and Statewide Transportation Improvements Program (STIP).

B. Volumes

1. Future Without Project Volumes

According to Hawaii DOT *Historical Traffic Maps*, Kunia Road and Waipahu Street around the project site showed a general increase in ADT from 2007 to 2014. There were no traffic stations along Honowai Street near Honowai Elementary School. Based on the residential attributes in the area surrounding the project, a 1.0% annual growth rate (resulting in a growth factor of 1.1 from 2017 to 2027) was applied to all the traffic movements at each study intersection to account for the background growth in the surrounding area. Since there will be no significant developments in the surrounding areas, the background growth will be the resulting Future (2027) Without Project volume forecasted at the four intersections, which are shown in Figure 6.

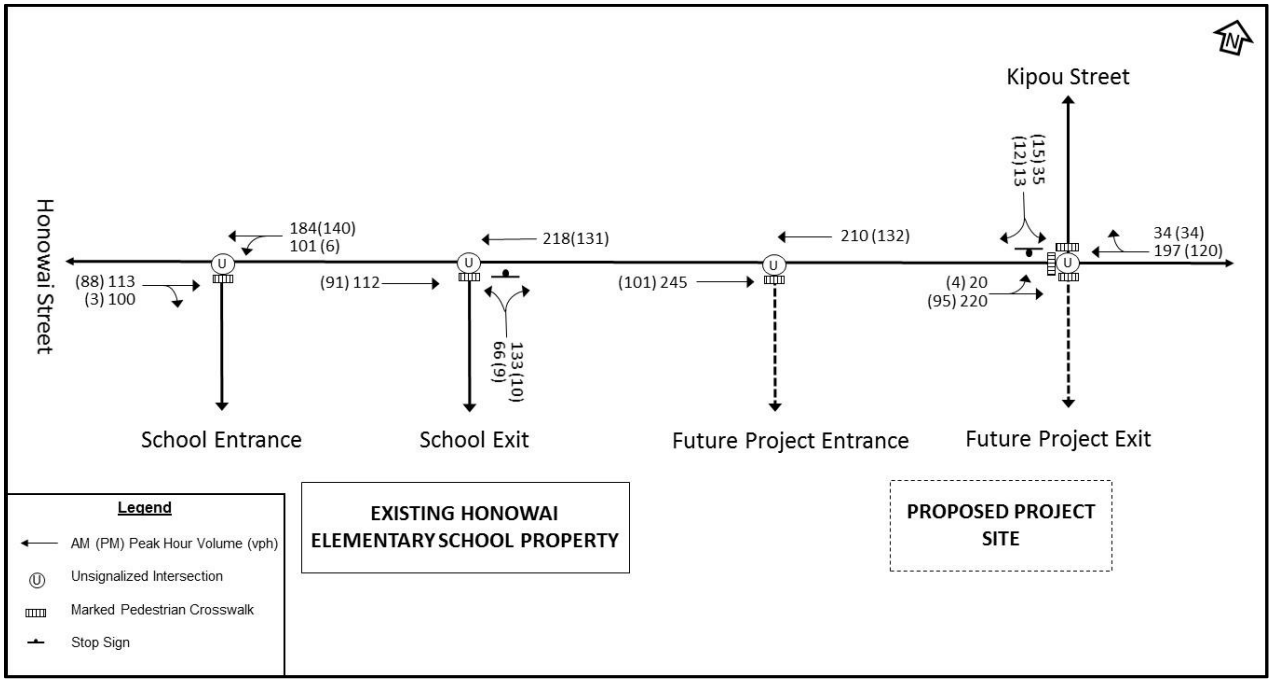

Figure 6: Future (2027) Without Project Peak Hour Volumes

2. Project Related Volumes

The Honowai Elementary School 8 Classroom Building will be a three-story structure with a building footprint of 8,500 square feet. It is designed to provide service to the current elementary school for accommodating the Medically Fragile, the Special Education program, and the Science, Technology, Engineering, Art and Math (STEAM) program. Therefore, it is anticipated that there will be no new trips generated by project development. Adding a new drop-off area will reroute some of the trips generated by the current Honowai Elementary School. It is expected that 50% of the current trips generated by Honowai Elementary School will use the new drop-off/pick-up area in front of the new classroom building. Trips to and from the new entrance were distributed based on the existing distribution of trips at the intersection of Honowai Street and Kipou Street. The anticipated project related peak hour volumes are shown in Figure 7.

3. Future With Project Volumes

The turning trip volumes resulting from the new distribution were added to the Future (2027) Without Project volumes to estimate the Future (2027) With Project peak hour volumes (see Figure 8).

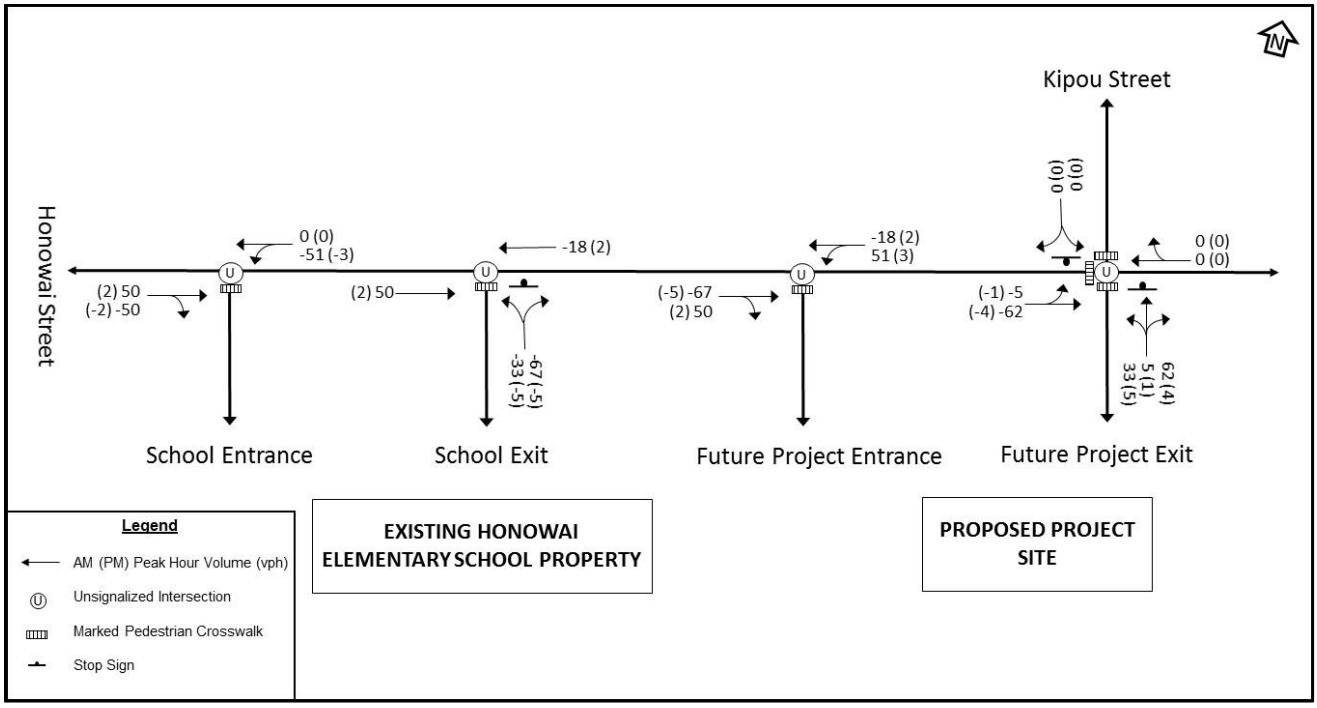

Figure 7: Project Related Peak Hour Volumes

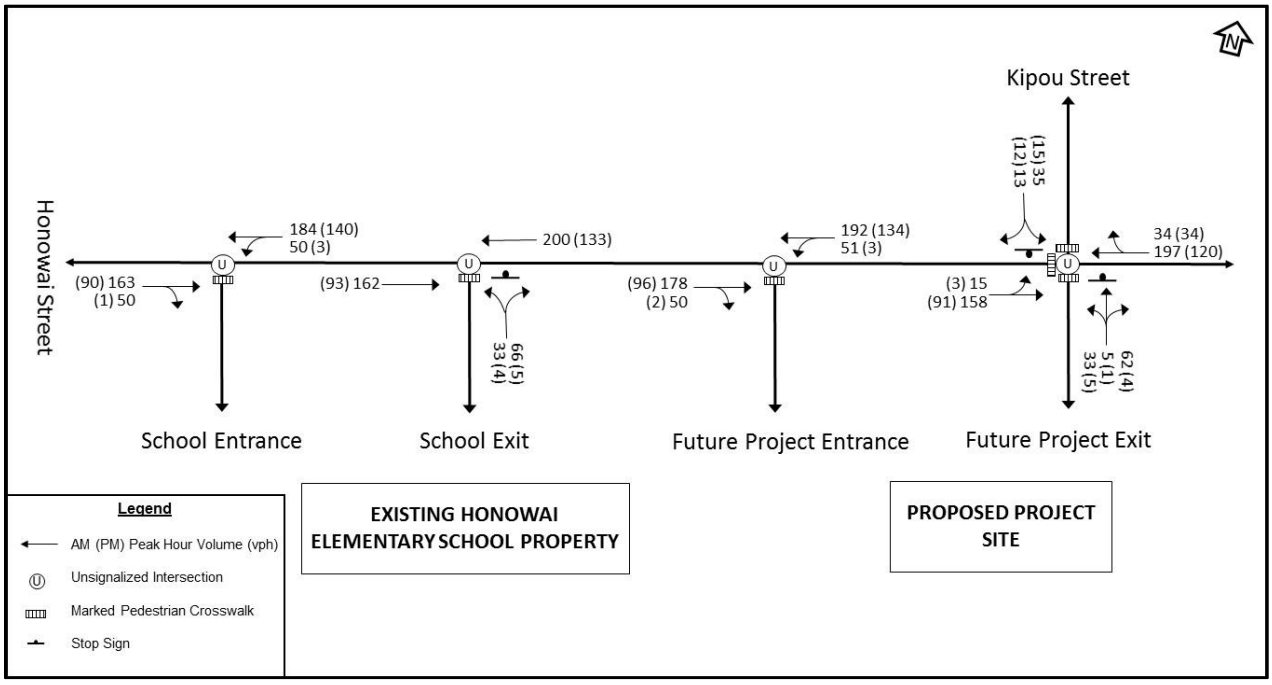

Figure 8: Future (2027) With Project Peak Hour Volumes

C. Future Level of Service

1. Intersection LOS Results

All movements for Future (2027) Without Project conditions resulted in appropriate LOS B or better, which suggests acceptable operations (see Table 3). Appendix D provides the detailed analysis reports for the Future (2027) Without Project conditions.

Table 3: Future (2027) Without Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour		
	Approach	Movement	Delay	v/c	LOS	Delay	v/c	LOS
Honowai Street and School Entrance	No Control		-	-	-	-	-	-
	WB	Left-Thru	8.1	0.10	A	7.4	0.00	A
Honowai Street and School Exit	Two-Way Stop Controlled		-	-	-	-	-	-
	NB	Left -Right	12.7	0.36	B	9.6	0.03	A
Honowai Street and Kipou Street	Two-Way Stop Controlled		-	-	-	-	-	-
	EB	Left	7.9	0.02	A	7.6	0.00	A
	SB	Left-Right	13.6	0.13	B	9.8	0.04	A

All movements for Future (2027) With Project conditions resulted in appropriate LOS C or better, which suggests acceptable operations (see Table 4). Appendix E provides the detailed analysis reports for the Future (2027) With Project conditions.

Table 4: Future (2027) With Project Intersection Level of Service

Intersection	Traffic Control		AM Peak Hour			PM Peak Hour		
	Approach	Movement	Delay	v/c	LOS	Delay	v/c	LOS
Honowai Street and School Entrance	No Control		-	-	-	-	-	-
	WB	Left-Thru	7.9	0.05	A	7.4	0.00	A
Honowai Street and School Exit	Two-Way Stop Controlled		-	-	-	-	-	-
	NB	Left -Right	11.6	0.19	B	9.5	0.01	A
Honowai Street and Project Entrance	No Control		-	-	-	-	-	-
	WB	Left-Thru	8.0	0.05	A	7.4	0.00	A
Honowai Street and Kipou Street	Two-Way Stop Controlled		-	-	-	-	-	-
	EB	Left	7.9	0.02	A	7.6	0.00	A
	NB	Left-Thru-Right	12.6	0.21	B	9.8	0.02	A
	SB	Left-Right	14.9	0.14	B	10.0	0.04	A

D. Dedicated Turn Lanes

Traffic turn movements to the proposed classroom building will come through the intersection of Honowai Street and the proposed Future Project Entrance. With the proposed driveway, a three-leg intersection will be created. Factors included in the determination of whether turn lanes are needed include:

- Travel speed - Posted speed limits in this section are 25 mph.
- Sight distance – There are no sight distance concerns in this area.
- Corridor design consistency – There are three adjacent intersections along Honowai Street, including the intersection of Honowai Street and School Entrance, Honowai Street and School Exit, and Honowai Street and Kipou Street, all in the study area. They are all three-leg intersections and none of them have dedicated turn lanes.
- Vehicle type – Most traffic expected at these intersections will be standard passenger vehicles.
- Vehicular volumes – Anticipated volumes were substantially below capacity and resulted in LOS C and better, which is acceptable.

Another way to analyze the need for dedicated turn lanes is through technical warrants. Therefore, the need for dedicated left and right-turn lanes were analyzed using guidelines from *NCHRP Report 745, Left-Turn Accommodations at Unsignalized Intersections* (TRB, 2013) and *NCHRP Report 457, Evaluating Intersection Improvements: An Engineering Study Guide* (TRB, 2001). It is noted that while technical warrants are an important element of the decision-making process, other factors should also be considered when deciding whether to install a dedicated left or right-turn lane, including sight distance and design consistency within the corridor.

1. Dedicated Left Turn Lane

Graphs provided in *NCHRP 745* can be used for determining the need for dedicated left-turn lanes along an urban and suburban arterial at unsignalized intersections with three legs. The projected number of vehicles making a left-turn during the AM and PM peak hours are 51 and three vehicles, respectively. The AM peak hour turn volume falls above the trend line, while the PM peak hour turn volume falls below the trend line. The level of service for the intersection of Honowai Street and Project Entrance westbound in the future 2027 is LOS A, indicating the left turn movement at this intersection does not significantly affect intersection level of service. Considering the design consistency along Honowai Street, and the width constraints, the westbound approach is not recommended to include a dedicated left-turn lane (see Figure 9).

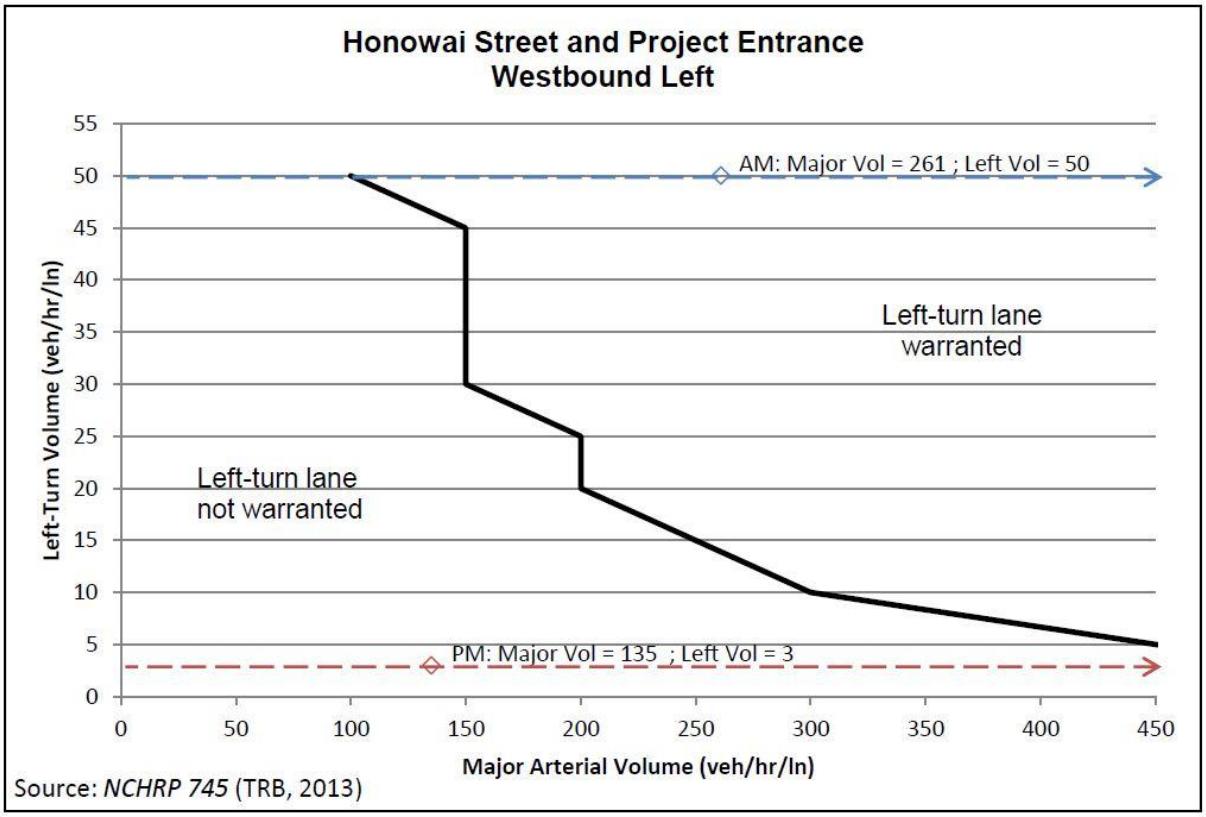

Figure 9: Determining Need for Left-Turn Lane

2. Dedicated Right Turn Lane

Guidance provided in *NCHRP Report 457* states that if the combination of major-road approach volume and right-turn volume intersects above or to the right of the trend line corresponding to the major-road operating speed, then a right-turn bay is a viable alternative.

Honowai Street is a two-lane roadway. Using the posted speed of 25 mph, the maximum number of vehicles making a right-turn during a given hour does not fall above the trend line during the AM or PM peak hours (see Figure 10). Therefore, a dedicated right-turn lane is not warranted in the eastbound approach along Honowai Street.

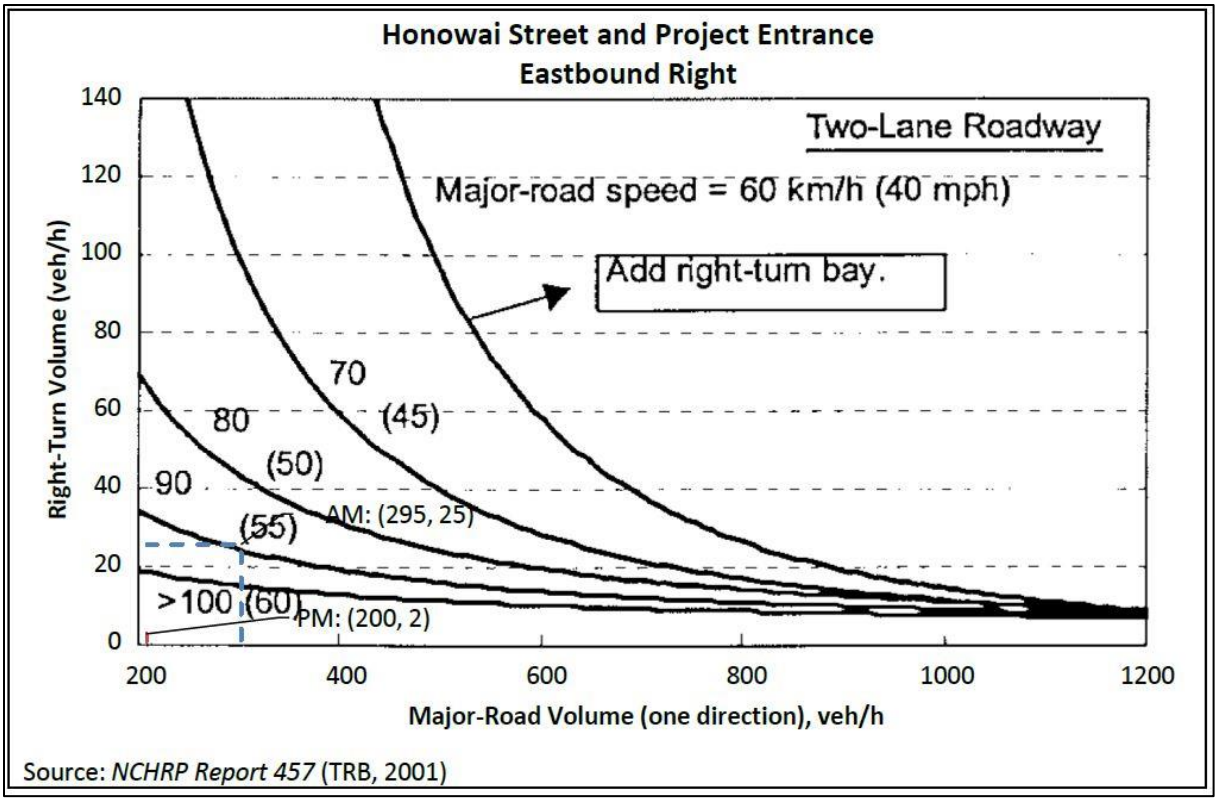

Figure 10: Determining Need for Right-Turn Lane

IV. SUMMARY AND RECOMMENDATIONS

The Department of Education is proposing improvements at Honowai Elementary School located at 94-600 Honowai Street in Waipahu, Oahu, Hawaii. The improvements will include a new three-story classroom building, a 12-stall parking lot and additional improvements such as relocating an ADA ramp to the lower play field, demolishing three portable classrooms, and adding a drop-off area. Access to the new classroom building will be through a new entrance driveway off of Honowai Street. An exit driveway will be located across from Kipou Street.

Existing AM and PM peak hour LOS at the study intersections of Honowai Street and School Entrance, Honowai Street and School Exit, and Honowai Street and Kipou Street resulted in LOS B or better for all movements.

The resulting LOS for Future (2027) Without Project and Future (2027) With Project conditions were LOS C or better for all movements. The total number of students attending Honowai Elementary School would remain similar to existing conditions even after the completion of the school's new classroom building. Half of all trips associated with the school were rerouted to use the new drop-off/pick-up area. Further analysis determined that there is no need to add a dedicated left-turn or right-turn lane along Honowai Street at the intersection of Honowai Street and Project Entrance. The proposed new classroom building will have negligible impact on the traffic in the surrounding areas.

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