BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

LETTER NO. (P)1585.9

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OFC OF
QUALITY

AUG 16 1999

TO: Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control

SUBJECT: Finding of No Significant Impact (FONSI)
Waihee Elementary School New Playfield, Classroom Building, Library and Administration Building
TMK: (2) 3-002-007: 0021, por 01
Waihee, Maui, Hawaii

The Department of Accounting and General Services, has reviewed the comments received during the 30-day public comment period which began on February 8, 1999. The agency has determined that this project will not have significant environmental effects and has issued a FONSI.

Please publish this notice in the September 8, 1999, OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and four (4) copies of the final EA.

Should you have any questions, please have your staff contact Mr. Allen Yamanoha of the Planning Branch at 586-0483.

GORDON MATSUOKA
Public Works Administrator

AY:mo
Attachments

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1999-09-08-MA-FEA-

FILE COPY

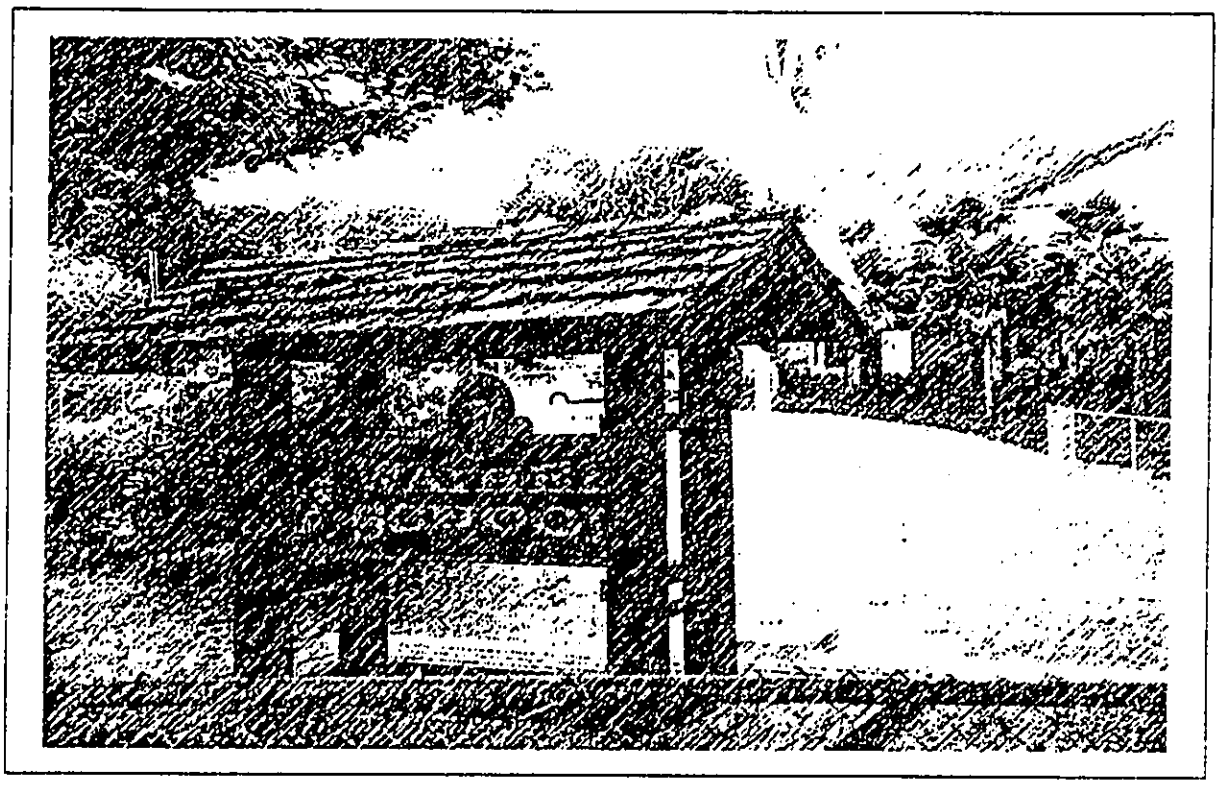
SEP 8 1999

FINAL ENVIRONMENTAL ASSESSMENT
for
WAIHEE ELEMENTARY SCHOOL

• NEW PLAYFIELD, CLASSROOM BUILDING, LIBRARY, AND ADMINISTRATIVE BUILDING •

TMK 3-02-07: 21, 01 (portion of)

The Department of Accounting and General Services
State of Hawaii
DAGS Job No. 15-16-1663



Prepared for:
SSFM Engineers, Inc.

Prepared by:
Wil Chee - Planning, Inc.

June 1999

FINAL ENVIRONMENTAL ASSESSMENT

for

Waihee Elementary School: New Playfield, Classroom Building, Library, Administration Building and Parking

Wailuku, Maui, Hawaii

Tax Map Keys:
3-02-07: portion of 01 (Playfield)
3-02-07: 21 (School Buildings)

Proposing Agency:

Department of Accounting and General Services
State of Hawaii
1151 Punchbowl Street
Honolulu, HI 96813

DAGS Job No. 15-16-1663

This Document is prepared pursuant to Chapter 343, Hawaii Revised Statutes

Responsible Official: Raymond H. Sato Date: 5/26/99

Raymond H. Sato
Comptroller
Department of Accounting & General Services

June 1999

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Appendices

1.0 INTRODUCTION AND SUMMARY

1.1 Overview.

The action (DAGS Job No. 15-16-1663) considered in this environmental assessment (EA) concerns the addition of new facilities to an existing public elementary school. These new facilities include a playfield, 8-classroom building, library building, administrative building and additional parking/roadway. These new educational facilities are not intended to increase the enrollment capacity of the school, but rather to alleviate existing deficiencies based on educational specifications and standards of the Department of Education (DOE), State of Hawaii. Addition of the new playfield, school buildings and parking is in partial fulfillment of a master plan prepared for Waihee Elementary School in 1992.

The school is located in the town of Waihee on the northwestern coast of the island of Maui, State of Hawaii. It is accessible via Kahekili Highway (Route 340). Waihee is part of the greater Wailuku-Kahului community, however, the surrounding area is rural and residential in character. The present Waihee community began in the mid-1800s as a sugar plantation town and residential area for plantation workers. It continues to be a predominantly residential and agricultural area.

1.2 Scope and Authority.

This EA is prepared pursuant to Chapter 343, HRS and associated Title 11, Chapter 200, Hawaii Administrative Rules. Uses of state or county land or funds require the preparation of an Environmental Assessment. The intent of the document is to ensure that systematic consideration is given to the environmental consequences of the proposed action.

1.3 Project Information.

General project information is listed below.

THE APPLICANT:	State of Hawaii Department of Accounting & General Services, Raymond H. Sato, Comptroller
TMK & RECORDED FEE OWNERS:	TMK 3-02-07: 1 (Playfield) Wailuku Sugar Company Wailuku Agribusiness Company P.O. Box 520 Wailuku, Hawaii 96793 (Note: The parcel will be subdivided and the portion covered by the new playfield will be dedicated to the State.) TMK 3-02-07: 21 (School) State of Hawaii
APPLICANT'S REPRESENTATIVE:	SSFM ENGINEERS, INC. 501 Sumner Street, Suite 502 Honolulu, Hawaii 96817 Ronald M. Uemura, P.E., Project Manager (808) 531-1308
PROPERTY USERS:	Department of Education State of Hawaii Waihee Elementary School 2125 Kahekili Highway Wailuku, Maui, Hawaii 96793
LOT AREA:	Playfield: 4 acres (approximate) School: 6.175 acres
LAND USE CLASSIFICATION:	State: Agriculture County Zoning: Interim (school) Agriculture (playfield) Community Plan: Public/Quasi Public; Agriculture SMA: None Special Use District: None

AGENCIES CONSULTED:	<u>County of Maui</u> Department of Planning Department of Public Works & Waste Management Department of Water Supply <u>State of Hawaii</u> Department of Accounting & General Services Department of Agriculture Department of Education Department of Land & Natural Resources Office of Hawaiian Affairs (OHA) <u>Federal Government</u> U.S. Department of the Interior, Fish and Wildlife Service
ACCEPTING AUTHORITY:	State of Hawaii Department of Accounting & General Services

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 Project Location.

Waihee Elementary School is located in the town of Waihee on the northwestern coast of the island of Maui in the State of Hawaii. The school lies approximately three-quarters of a mile south of Waihee Point. It is approximately 5 miles northwest of Kahului and Wailuku and is accessible via Kahekili Highway, route 340. (See Figures 1 and 2)

The surrounding land uses include agricultural fields to the west and single-family residences to the north and east. Bordering the school on the south is the United Church of Christ (Protestant). The church was founded in 1828 and is marked by the Hawaii Visitors Bureau. The school currently uses the church's access road, which runs along the southern boundary of the school, to gain access to the Cafetorium parking lot. There is no direct access on school property between this parking lot and Kahekili Highway.

2.2 Project Site Description. (See Figure 3)

The existing school site covers an area of 6.175 acres and is identified as TMK 3-02-07:21. The new playfield will be developed on a large agricultural parcel of 43.56 acres identified as TMK 3-02-07:01. This parcel will be subdivided so that an approximately 4 acre portion of the parcel can be dedicated to the State for use as a playfield. The dedicated land will be on the western end of the existing school site, immediately adjacent to Classroom Building "I".

The school was founded in 1879 as Waihee School to serve the surrounding plantation community. Today there are five permanent classroom buildings (Buildings "E" to "I") and ten portable or temporary classrooms for a total of 35 classrooms. The school has a severe deficiency in permanent classrooms for its current enrollment of 884 students. Buildings "A" and "C" provide the supporting services for the school (office, library, cafetorium, etc.)

2.3 Project Features.

The proposed action will mitigate existing facility deficiencies and enhance the quality of education at Waihee Elementary School

2.3.1 TECHNICAL CHARACTERISTICS.

See Figures 4 and 5 for location of new facilities on the school grounds. Since the new school buildings have not yet been designed, detailed descriptive information and illustrations are not available at this time.

A. New Playfield

Need and Justification:
The existing open space within the school grounds is severely inadequate for recreational purposes as it only includes an open playfield of about 200' x 160' and paved playcourts behind the temporary classroom buildings. This area is located east of Classroom Building "I". The existing playfield is undersized for softball, soccer, and football, and only gives students enough room to play dodge ball or other games requiring a small amount of space. At certain times of the day, children at recess must use the playfield at the same time that other groups of children are having physical education (PE). This situation can be very distracting for those who are attending PE classes. There are also tetherball posts scattered around the walkway areas. The only other large open space on the school grounds is between Building "A" and the existing Building "E". This is the planned site of the new Administrative Building "B".

Description:
SSFM Engineers, Inc. was retained by the State Department of Accounting and General Services (DAGS) to conduct a feasibility study for the new playfield. Eight alternative schemes were prepared from which one is being recommended as the "preferred" site plan. (See Figure 5)

The new playfield will contain the following features:

- access roadway for emergency & maintenance purposes
- concrete handicap access ramp
- concrete walkway and stairway system
- drinking fountains
- irrigation system
- a large playfield to adapt to football, soccer, or softball
- space for additional playcourts

The preferred scheme allows for the best use of the site at a modest cost. The improvements would include a gentle grassed sloped bank that can be used for spectator seating around the playfield. This sloped bank would be easy to maintain. Also, building a retaining wall next to school Building "I" would create more room for additional paved playcourts.

B. 8-Classroom Building

Need and Justification:
Waihee Elementary School currently has 39 classrooms including 10 portables and 2 temporary structures. There is currently a deficiency of 5 classrooms for the present enrollment of 858.

Description:
The new 8-classroom building will be 7,344 SF (net program area, does not include structure, circulation and utility space). The new facility will include 8 general classrooms, one Special Education itinerant room, student and staff restrooms, and an elevator. The new classroom building will be 2-stories high and will be designed with similar materials, finishing and color to match existing Classroom Buildings "H" and "I".

C. Library Media Center

Need and Justification:
Currently the school's library is located in an 840 SF classroom in the existing school office building (Building "A"). This space is entirely inadequate for an elementary school of this size. DOE standards require a library of 5,760 SF for a design enrollment of 750 students. A new library will provide the students and staff with a facility which will support their educational needs and which will assist them in advancing in the methods of modern day technology.

Description:
The Library will be 5,695 SF (net program area, does not include structure, circulation and utility space). The new Library will be one or two stories high and will be designed with similar materials, finishing and color to match the existing Cafetorium. The new facility is based on DOE standards for a design enrollment of 750. This portion of the project will include the renovation of the existing temporary library in Building "A" into a classroom.

D. Administrative Building and New Parking and Roadway

Need and Justification:

The school administration is presently housed in a single classroom space in Building "A". Conditions are extremely cramped and there is no conference space available.

Description:
The Administrative Building will be 4,207 SF (net program area, does not include structure, circulation and utility space). The new administrative building will be 1-story high and will be designed with similar materials, finishing and color to match the existing Cafetorium. The new roadway and parking will link Kahekili Highway directly with the

existing Cafetorium and will provide additional parking stalls. Presently the school must use a roadway in the neighboring church property to gain vehicular access to the Cafetorium. The master plan recommends a total of 127 parking stalls (including 7 handicapped stalls) to meet County requirements.

2.3.2 ECONOMIC CHARACTERISTICS.

Schedule & Funding

Figure 6 is a graphic representation of the CIP (Capital Improvement Projects) schedule for the new facilities, playfield, eight-classroom building and library, at Waihee Elementary School.

Design work for the playfield is scheduled to commence in June 1999. Bidding will run from December 1999 through March 2000. Construction will run from March 2000 through September 2000.

DAGS/DOE has begun initial negotiations with C. Brewer & Company, Ltd., for the acquisition of land immediately adjacent and mauka of the existing school for the new playfield. This property is presently being used by C. Brewer's subsidiary, the Wailuku Agri-Business Company, for macadamia nut production. The final terms and conditions of the acquisition will be pending the completion of the feasibility study and this environmental assessment.

Design for the eight-classroom building started in March 1999 and will be completed by June 2000. Bidding will run from June 2000 through September 2000. Construction will run from September 2000 through November 2001. Construction funds will be appropriated in FY 2000.

Design for the library is scheduled to commence in September 1999 (subject to funds being released) and will be completed by June 2000. Bidding will run from June 2000 through September 2000. Construction will run from September 2000 through June 2001.

The design and construction of the new administration building will be deferred until 2003/4 for design and 2004/5 for construction per the Capital Improvement Budget for the Fiscal Biennium 1999-2001 and the Capital Improvement Program for the Planning Period 1999-2005 document.

Estimated Project Costs:

New Playfield:
Estimated development cost for the new playfield is estimated to be $1,019,300. Adding a 10% contingency of $101,930, the total development cost would be $1,121,230.

New 8-Room Classroom Building:
Cost of the new 8-room classroom building includes $225,000 for design, $2,700,000 for construction and $245,000 for equipment. Total development cost for the new classroom building will be $3,470,000. Estimated annual operating costs for the proposed classroom building starting in FY 2001 will be $9,000 for maintenance and $13,406 for utilities.

New Library Media Center:
Cost of the Library building includes $145,000 for design, $2,140,000 for construction and $1,000 for equipment. Total development cost for the library will be $2,286,000. Estimated annual operating costs for the proposed library starting in FY 2001 will be $9,000 for maintenance and $13,406 for utilities.

New Administrative Building:
Cost of the new Administrative Building, new parking/roadway, and demolition of existing Building "E" is not available at this time.

2.3.3 SOCIAL CHARACTERISTICS.

Waihee Elementary School is part of the Baldwin Educational Feeder Complex. Students from Waihee Elementary and Wailuku Elementary feed into Iao Intermediate, which, in turn, feeds Baldwin High School. DOE Facilities and Support Services Branch projects the enrollment to increase by about 15% over the next five years to approximately 986 students. However, when the planned Wailuku II Elementary School is completed, Waihee's enrollment is expected to drop to 750 students. Current projections show that the Wailuku II Elementary School will be constructed beyond the 5-year period. At the same time a 100-unit residential development is being built in the vicinity of Waihee Elementary School by the Department of Hawaiian Home Lands (DHHL). If the project is successful an additional 100-unit increment will be built. These new developments may offset the expected decrease in Waihee's enrollment after Wailuku II Elementary School is completed.

Waihee Elementary School is run on a year-round school calendar (YRS). This scheduling system is a single-track modified 45-15 plan, which means that teachers and students attend school for a nine-week quarter (45 school days) and then take a short break (10-15 school days). This sequence of 45-day academic sessions and 10 to 15-day breaks is repeated four times each year and is structured to provide a break of about one month over the summer. This schedule thus provides the usual 36 weeks of

school and the usual 16 weeks of vacation, but the quarters and vacations are distributed more evenly throughout the year than in a traditional-calendar school (TCS). "Single track" refers to the fact that all students and teachers are in school and out of school at the same time, as opposed to multiple track systems in which different groups or "tracks" of students and teachers attend school on staggered schedules. (Greenfield, 1992)

The single-track plan at Waihee School allows the use of intersession time (the short breaks between school sessions) for additional, optional educational opportunities as an alternative to taking vacations. The classes are designed carefully to insure their inclusion of not only academic instruction but also of high-interest activities that make *the academic content more real and interesting to students. (Greenfield, 1992)*

Thus, the school facilities are in almost constant use, making the need for the proposed new facilities all the more urgent.

2.3.4 ENVIRONMENTAL CHARACTERISTICS.

Environmental concerns are primarily related to construction activities such as clearing, grading and grubbing. These activities involve earth-movement and the disturbance of on-site soils. Exposed soils are susceptible to erosion. Wind erosion will cause some limited soil loss, but the greater concern is silt runoff caused by storm rainfall events during construction.

Alterations to the topography are expected to be minimized to the extent necessary to accommodate construction of new playfield, school buildings and parking. The transportation of existing material off-site and the importation of material to the site are also expected to be minimized.

The proposed project will increase the amount of impermeable surface area at the project site. General on-site drainage patterns are expected to be maintained. Additional runoff generated by impermeable surfaces is expected to be controlled at the site.

3.0 AFFECTED ENVIRONMENT OF THE PROPOSED ACTION

3.1 Geology and Topography.

The existing sloping campus site was graded in phases of construction at the buildings, play, and parking areas. The land slopes gently downward from mauka to makai. Kahekili Highway, on the makai property line, fronts the school parking. Although the campus is not totally barrier-free, work will be accomplished in phases to provide accessibility to all facilities (Lou Chan & Associates, Inc., 1992)

Major topographic features in the vicinity are a dry stream channel to the south and a ridge, which approaches the northwest corner of the site (Masa Fujioka & Associates, 1998).

3.2 Soils.

According to the Department of Agriculture Soil Conservation Service map for Maui, the soil in the Waihee area consists of two soil associations. Association 1 is Pulehu-Ewa-Jaucas association: Deep nearly level to moderately sloping, well drained and excessively drained soils that have a moderately fine textured to coarse-textured subsoil or underlying material; on alluvial fans and in basins. And Association 2 is Waiakoa-Keahua-Molokai association: Moderately deep and deep, nearly level to moderately steep, well-drained soils that have a moderately fine textured subsoil on low uplands.

3.3 Hydrology.

The school lies between Waihee Stream to the northwest and Iao Stream to the southeast. Makai of the site, less than a mile distant is the Pacific Ocean. Waihee Marsh, a seasonal wetland is located downslope of the school.

3.4 Climate.

The school's climate is greatly influenced by northeasterly trade winds. Wind direction reverses daily between land and sea caused by the heating and cooling of the land between day and night. During the day, the heating of the land draws in a flow of air (a "sea breeze") from the sea that ascends the mountain slopes and produces clouds and showers in late morning and early evening. As the land cools after sunset, air flows down the mountain slopes out to sea (a "land breeze") clearing away the showers and clouds, so that on average, rain is much less frequent between midnight and noon. The median annual rainfall for Waihee is 32.1 inches. (Lou Chan & Associates, Inc., 1992)

3.5 Air Quality.

There are no airborne emission point sources on the school site or in the general vicinity. Airborne pollutants are created largely by vehicular exhaust from traffic along Kahekili Highway and in the school's parking lots and roadways. These sources of air pollution are intermittent and the prevailing winds disperse particulates generated by these temporary sources.

3.6 Noise Quality.

Source of existing background ambient noise levels at the project site is partially attributed to motor vehicle traffic along Kahekili Highway. Intermittent noise is created by school children in the existing open spaces during recess periods, physical education classes, and while moving between buildings.

3.7 Flora.

The school is extensively landscaped with grass, trees, shrubbery and ornamentals. Various fruit trees and aged deciduous trees are found throughout the campus. A central aesthetic feature of the school is the large "Elephant Ear" tree adjacent to Restroom Building "F". On the northern boundary of the site behind classroom Building "G", a small taro patch and banana trees have been planted to demonstrate traditional Hawaiian agricultural methods to the students.

Correspondence with the Fish and Wildlife Service (FWS) and the Hawaii State Department of Land and Natural Resources (DLNR) is expected to confirm that the subject site is not likely to contain listed or proposed to be listed threatened or endangered species of flora.

3.8 Fauna.

Correspondence with the Fish and Wildlife Service (The Service) of the U.S. Department of the Interior has confirmed that there are no federally endangered, threatened, or candidate species directly within the proposed project site. Birds, mammals, reptiles and amphibians that may frequent the project site are expected to be introduced or indigenous species that are commonly found in West Maui. The Service also noted that the project site is located up slope from Waihee Marsh, a seasonal wetland.

3.9 Historical and Archaeological Resources.

The high degree of cultivation within Waihee *ahupuaa* and its near neighbors gives evidence that a substantial population would have been established there during the pre-contact period. Historical documentation suggests that the present project area comprised a portion of the extensive system of taro *loi* (irrigated fields) that once covered the Waihee *ahupuaa*. (Hammatt and Chiogioji, 1998).

By the early 1860's the Waihee landscape was transformed as western commercial interests focused on the *ahupuaa*. The establishment of the sugar plantation spurred an increase in the population of Waihee. The Waihee School opened in 1879, likely in response to the growing plantation community. The Waihee Sugar Company apparently prospered independently throughout the remainder of the 19th century until 1894 when Wailuku, Waihee and Waikapu Plantations were combined as Wailuku Sugar Company (Kelly and Hee, 1978). The agricultural fields adjacent to the school site are now owned by a subsidiary of C. Brewer Company, Ltd. and have been planted in macadamia nut trees for the last ten years.

An archaeological assessment of the new playfield site was recently conducted. No surface archaeological sites were observed in any portion of the project site. The existing school grounds have been in continual use since 1879 and before that in sugar cane production. Thus, it is unlikely that any archaeological remains are likely to be encountered.

3.10 Land Use.

The school site (TMK 3-02-07: 21) is beyond Maui County's existing zoned areas. Therefore, the county zoning designation is "Interim." Schools are a permitted use within this district. The playfield site (TMK 3-02-07: 001, portion of) was zoned "Agriculture" on December 31, 1998. DOE consulted the Department of Planning of the County of Maui regarding discretionary land use permits for Agriculture lands. It was decided that development of the new playfield will require a Special Use Permit from the Maui Planning Commission and a public hearing.

The Waihee site is included in the county's Wailuku-Kahului Community Plan. Under this plan the school site is designated "Public/Quasi-Public" and the new playfield is in "Agriculture" land use.

The site is not in an SMA (Special Management Area) and will not require an SMA permit. The boundary for the SMA is Kahekili Highway and lands makai of the highway are in the SMA. Also, the school site is not in a flood/tsunami hazard area, and the school has been designated as an emergency center/shelter. The site is shown in Zone A and A2 on the FIRM Flood Insurance Rate Map published by the Federal Emergency Management Agency. This designation means that no base flood elevations have been determined.

The school site is not subject to any of the special design districts of the County of Maui.

The Agricultural Lands of Importance to the State of Hawaii (ALISH) classification system was adopted in 1977. It delineates those lands of the State, which are of agricultural importance, and, within this delineation, categorizes agricultural lands according to specific criteria. The site of the new playfield has been classified as "Prime Agricultural Land," meaning "land which has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed according to modern farming methods."

3.11 Aesthetic Considerations.

Although the town of Waihee is located less than five miles from urbanized Kahului and Wailuku, it has a rural character with lush vegetation and agricultural fields planted with macadamia nut trees. Mauka of the school, deep green mist-shrouded valleys in the West Maui Mountains form a dramatic scenic backdrop for the school.

3.12 Circulation and Traffic.

The two-lane Kahekili Highway runs parallel to the front of the campus, which is the eastern boundary of the school. This county highway is the major access used to reach the school and communities beyond. Kahekili Highway fronting the school has been widened to meet county ordinances. Within the campus are various walkways linking the buildings. A long concrete fire lane runs the length of the campus (east to west) from the makai parking area to Classroom Building "I".

The only vehicular access to the Cafetorium parking lot is currently through a church-owned roadway on the southern boundary of the school. When the existing Building "E" is demolished, this area will be directly connected to Kahekili Highway and additional parking stalls will be added.

A bus loading area above the southern makai parking lot and between existing Buildings "A" and "E" provides a covered drop-off and pick-up facility for students (see Figure 3). The majority of students are dropped off in the morning and picked up in the afternoon by their parents. A few use public transportation.

Since the school serves grades K to 5, student parking is not required. The school currently has 78 parking stalls on campus per the current DOE parking standard. The total number of parking stalls for the design enrollment of 750 is 78 (750/11 + 10 visitors).

3.13 Public Services and Facilities. (Lou Chan & Associates, 1992)

3.13.1 WATER SYSTEM.

An existing tandem domestic lateral consists of two 1-inch and one 2-1/2-inch water lateral with water meters (5/8-inch, 3/4-inch and 2-inch) connecting from the existing 8-inch water lateral in Kahekili Highway to a 2-1/2-inch and a 3-inch backflow preventor on-site. Domestic water laterals provide connections to the individual buildings.

The Department of Water Supply, County of Maui has offered the following information on water source: "This project is served by the Central Maui System. The major source of water for this system is the Iao Aquifer. Rolling annual average groundwater withdrawals from the Iao Aquifer as of March 11, 1999 were 17.357 MGD. The regulatory sustainable yield of this aquifer is 20 MGD. On August 13, 1997, the State Commission on Water Resource Management (CWRM) elected not to designate Iao Aquifer as a State Groundwater Management Area. However, if rolling annual average withdrawals exceed 20 mgd, CWRM will designate Iao Aquifer. The Department is implementing a plan to bring new sources on-line and to mitigate withdrawals. Two wells in North Waihee were brought on-line in July 1997. No moratorium is currently in effect. However, more source water will be needed. The timing of this project may be affected with possible delays until new sources can be brought on line. Water availability will be reviewed at the time of application for meter or meter reservation."

3.13.2 WASTEWATER SYSTEM.

Waihee is not served by a municipal sewage system. Cesspools are used for all buildings constructed prior to 1989. For buildings constructed after 1989, a leaching field was constructed beneath the parking and loading area.

3.13.3 SOLID WASTE DISPOSAL.

Solid waste collection for the project area is provided by the County of Maui.

3.13.4 DRAINAGE SYSTEM.

Site drainage for the existing campus is by means of surface drainage. The existing general water drainage flows towards the Makai portion of the campus, therefore special attention will be given when locating dry wells and re-directing the flow of drainage.

3.13.5 ELECTRICAL AND COMMUNICATION SYSTEMS.
(Lou Chan & Associates, 1992)

According the school's master plan, the three previously existing electrical services were to be consolidated into one service. The ultimate electrical service is provided by Maui Electric Company from an existing overhead line on the south side of the school complex. Electric service is underground from the overhead line to an Electric Company pad mounted transformer located in the middle of the school complex next to the Cafetorium, Building "C". The transformer provides 120/208 volt, three phase, and 4 wire service to a distribution switchboard located in an electrical room next to the transformer. From the distribution switchboard, power is distributed underground to all new buildings, Buildings "A", "G" and "H", and portable classrooms through a ductline and handhole system. All new buildings each have a panelboard rated for 120/208 volts, three phase, 4 wire from which branch circuit breakers distribute power to all power outlets, lights, and equipment.

Telephone service is provided by Hawaiian Telephone Company (HTCO) from a new telephone overhead line along the road on the south side of the school complex to a new telephone terminal board located in the Electric Room. From the terminal board, telephone service is distributed underground to buildings.

Cable television (CATV) service will be provided underground by Cablevision Company from existing television cable lines along the road on the south side of the school complex to a main cabinet in the new Electric Room. CATV will be distributed from the Electric Room via a signal system duct and pullbox system to buildings.

3.14 Socio-Economic Conditions.

Most residents find employment outside of the area and Waihee is largely a residential community. There are no large commercial developments in Waihee or in the adjoining community of Waiehu to the south. Nearby Waihee Park (baseball field), Waihee Beach Park, Waiehu Beach Park and Waiehu Municipal Golf Course provide outdoor recreational opportunities in the vicinity.

Waihee Elementary School provides an important social service to the surrounding community by providing publicly funded education for its children of the Kindergarten through 5th grade age group. The service area for the school runs from Iao and Happy Valley to the southeast and to Kahakuloa to the northwest.

4.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

4.1 Geology and Topography.

The proposed action involves the construction of a playfield and three school buildings with attendant parking and supporting infrastructure. Excavation and grading is expected to occur, but not to the extent that would affect the general geology or topography of the area. Since the project site is essentially flat for both the buildings and the playfield, the proposed action is expected to require no significant amount of grading or related alterations to the existing topography. The transport of existing material off-site and the importation of material to the site is expected to be minimal.

MITIGATION: County of Maui grading permit requirements would be adhered to by the *contractor.*

4.2 Soils.

Potential erosion could occur as a consequence of construction activities (e.g., clearing, grading and grubbing) that disturb the earth and soils. Exposed soils are susceptible to erosion, especially if it rains heavily during site work periods. Wind erosion is expected to cause some unavoidable soil loss, but the greater concern is silt runoff. Potential adverse impacts are expected to be short-term and temporary.

Completion of the project and its operation is expected to result in no adverse impacts to soils and would presumably reduce the total amount of erosion and sediment transport from the site. As a result of the proposed action, open areas would either be covered with impermeable surface area or bare subsoil areas would be covered with a layer of topsoil and landscaped.

MITIGATION: Both temporary and permanent erosion and sedimentation control measures would be implemented. Strict erosion control measures are specified in the reports and regulations of the County of Maui, State Department of Health, U.S. Department of Agriculture – Natural Resources Conservation Service, and U.S. Environmental Protection Agency. Typical erosion control measures applied during construction include the use of cut-off ditches and detention ponds to slow runoff, temporary ground cover vegetation, and the application of various soil stabilization and protection materials.

Dust control measures include the implementation of a watering program to minimize soil loss from fugitive dust particulate emissions. Other measures include good construction management practices at the job-site and the paving or planting of bare earth areas as soon as practicable.

Landscaping and long-term erosion control involves the placing of new ground cover plantings or other landscaping to generally re-establish the soil retention value of removed vegetation. Continuous long-term management of the property will reduce erosion from existing conditions.

4.3 Hydrology.

The loss of localized groundwater recharge due to the increase in paved surfaces at the project site is expected to be negligible and ultimately inconsequential to the overall function of the natural hydrological system. Impervious surfaces created as a result of the proposed action will increase localized runoff and decrease total time of concentration; however, this impact is also expected to be negligible in the context of the entire system such that its impact shall be insignificant.

The Waihee Marsh, a seasonal wetland, is located downslope of the school. Therefore, erosion and sedimentation are a particular concern for this project. The U.S. Fish and Wildlife Service (U.S. Department of the Interior) recommends that "the project must include adequate erosion control measures such as grading and revegetation of cleared lands. These erosion control measures need to be conducted promptly after clearing." (See also Section 4.2 above.)

4.4 Climate.

The proposed action is expected to generate no measurable adverse impacts to the climate in the short- or long-term. No mitigation measures with respect to the climate are warranted or proposed.

4.5 Air Quality.

Short-term air quality impacts generated by the proposed action are primarily attributed to construction activity. Pollutant concentrations from construction vehicle activity are expected to increase at the project site and along affected existing streets. Other short-term and temporary air quality impacts are anticipated from site preparation and earth moving activities that generate fugitive dust or particulate emissions.

Off-site stationary source impacts are attributed to increased electrical demand resulting from the proposed project which in turn causes more fuel to be burned and more pollutant emissions. Maui Electric Company facilities that provide power must continuously demonstrate compliance with all applicable ambient air quality standards and control regulations.

MITIGATION: Fugitive dust impacts can be effectively mitigated via the employment of adequate dust control measures during the construction period. A recommended method is the frequent watering of unpaved roads and areas of exposed soils. "The

EPA estimates that twice daily watering can reduce fugitive dust emissions by as much as 50 percent" (U.S. Environmental Protection Agency, 1996). It is also recommended that the landscaping of completed areas be accomplished as soon as possible.

Mitigation for offsite stationary source impacts associated with increased electrical demand include energy efficient design of the proposed project. Energy conservation design guidelines are reportedly available from the Department of Business, Economic Development and Tourism.

4.6 Noise Quality.

Unavoidable, short-term and temporary noise impacts are expected to occur during the construction period. Noise from construction activities is predicted to be audible. Actual work may also move from one location on the project site to another during this period.

Audible construction noise will probably be unavoidable during the entire project construction period. Adverse impacts from construction noise, however, are not expected to be in the "public health and welfare" category due to the temporary nature of work and the administrative controls available for its regulation.

MITIGATION: The contractor will be required to obtain a noise permit if noise levels are expected to exceed allowable levels as specified in the State Department of Health's Public Health Regulations, Title 11, Chapter 43. The contractor is responsible for properly maintaining construction equipment to minimize noise levels. All internal combustion engines will be required to have mufflers or other noise suppression devices in proper working order. Heavy vehicles required for construction must comply with the State Department of Health's regulations for vehicular noise control.

Addition of the new playfield outside the existing school grounds will help alleviate student noise during recess and physical education periods. Except for the adjacent school grounds, the new playfield is completely surrounded by agricultural fields. Therefore, noise due to student activities will not have a negative impact on surrounding land uses.

4.7 Flora.

The existing vegetation at the project site contains no federally threatened, endangered or candidate species (U.S Department of the Interior, Fish and Wildlife Service, October 1998). Potential short-term impacts including the loss of existing vegetation from clearing, grading and grubbing are expected to be offset by the long-term benefits of new landscaping and grassed play areas at the project site.

A large "Elephant Ear" (*Enterolobium cyclocarpum*) tree is located approximately 20 feet north of existing Restroom Building "F" and has a trunk girth of approximately 24 feet at ground level. Although the restroom building is scheduled to be demolished, every effort will be made to preserve this large old tree. The new roadway and parking that will replace existing Building "E" can be designed around the elephant ear tree. (See Figures 3 and 4)

Several small "Octopus" (*Brassaia actinophylla*) trees and ornamental shrubs adjacent to the existing Building "E" will need to be removed or relocated before the building is demolished.

MITIGATION: Trees and planting will be reintroduced around the new Administration Building and new parking area. The U.S. Department of the Interior's Fish and Wildlife Service recommends that revegetation and landscaping be done, to the extent possible, with native Hawaiian plants.

Development of the new playfield on dedicated land to the west of and adjacent to the existing school grounds will necessitate removal of a small grove of macadamia nut trees and two rows of pine trees.

MITIGATION: These trees will be replaced by grassed lawns and ornamentals. This will greatly enhance the educational programs of Waihee Elementary School by alleviating a serious shortage of open recreational space.

4.8 Fauna.

No known threatened or endangered faunal species or habitats have been identified at the project site (U.S Department of the Interior, Fish and Wildlife Service, October, 1998). However, the Fish and Wildlife Service has expressed a concern for seabird "fall-out." The Service has stated that, "While seabirds are not resident to the area of the proposed project site, endangered seabirds such as the dark-rumped petrel (*Pterodroma phaeopygia* ssp. *phaeopygia*), which nest in the mountains of Maui, may be affected by the proposed project-related overhead lighting for the new parking stalls and/or other lighting. The dark-rumped petrel and other seabirds often become disoriented by bright lights and collide with human structures that lie along their flight path."

MITIGATION: The Department of Land and Natural Resources of the State of Hawaii, Division of Forestry and Wildlife (DOFAW), has prepared a pamphlet entitled *The Newell's Shearwater Light Attraction Problem: A Guide for Architects, Planners, and Resort Managers*. Although this pamphlet specifically addresses the problems of another seabird, the Newell's Shearwater on the island of Kauai, the "fall-out" problem and mitigation measures proposed also apply to the seabirds of Maui. These measures include:

- Architects and planners should be aware of the light attraction problem during the planning stages of new developments.

- Every effort should be made to avoid lighting situations where light glare projects upwards or laterally. Avoid large high intensity floodlights located on building tops or poles whenever possible.

- Use shielded lights, cut-off luminaires, or indirect lighting whenever possible.

- Avoid locating bright lights near utility wires or other objects that could be difficult for birds to see at night.

4.9 Historical and Archaeological Resources.

No known historical or archaeological resources exist at the project site. Construction activities (i.e., grading, excavation, trenching, etc.) by nature have the potential to adversely impact archaeological or historical resources in the short- and long-term if any such resources are present at the project site. The Office of Hawaiian Affairs (OHA) has commented that, "Waihee was once the center of a thriving Hawaiian community and the *iwi* [bones] of many Hawaiian families remain buried in nearby sand dunes. Therefore, any ground disturbance associated with this project should be carefully monitored for the presence of subsurface archaeological deposits." If any human remains are inadvertently encountered, all operations in the immediate area of the find will cease. Hawaii State Historic Preservation Division and the Maui Island Burial Council will immediately be notified.

MITIGATION: Mitigation of any potential adverse impacts to historic/cultural resources will require coordination with the Hawaii State Historic Preservation Officer and the Advisory Council on Historic Preservation to determine the most appropriate actions.

4.10 Land Use.

The proposed action is consistent with existing land use on the school site and the surrounding properties. The exception is the use of agricultural land for the playfield. However, the 4 acres which will be changed from agriculture to outdoor recreation use is an insignificant loss considering the hundreds of acres of land already devoted to agriculture in the Waihee area. The proposed action is expected to be compatible with existing surrounding land uses and no short- or long-term adverse impacts are anticipated. No mitigation is proposed or considered to be warranted.

The subdivision of parcel 01 (TMK 3-02-07: 01) to obtain the area for the new playfield must comply with the provisions of Title 18, Maui County Code, "Subdivisions."

4.11 Aesthetic Considerations.

The action will not obstruct scenic views on the site or from outside the school grounds. The new buildings and attendant landscaping will improve the overall appearance of the school. No mitigation with respect to aesthetic conditions is proposed.

4.12 Circulation and Traffic.

Addition of the new facilities will not appreciably increase enrollment or staffing. The new facilities are intended only to mitigate existing facility deficiencies. Therefore, the new facilities are unlikely to cause a negative impact to existing traffic patterns in the area. Additional parking spaces for the school will benefit the neighborhood as a whole because faculty and staff will no longer have to park along Kahekili Highway and smaller residential roadways in the vicinity.

The new playfield will not have night lighting, nor will there be parking near the field. The closest parking area will be behind the Cafetorium, approximately 600 feet away from the new playfield. These conditions are likely to discourage extensive use of the playfield by the public after hours and on weekends and holidays. Therefore, community use of the playfield is unlikely to increase traffic and parking needs in the neighborhood.

4.13 Public Services and Facilities.

The extension and construction of water, wastewater, drainage, electrical and communication systems are necessary for the adequate provision of these services to the proposed development. No adverse short- or long-term impacts to the mentioned utilities and services are anticipated since coordination with the appropriate agency will be accomplished and is required from the County of Maui in order to implement the proposed action. Approvals and requirements are listed below:

Department of Public Works & Waste Management, County of Maui:

- A detailed final drainage report and an erosion Best Management Practices (BMP) plan shall be submitted with the construction plans for review and approval prior to issuance of grading or building permits. The drainage report shall include hydrologic and hydraulic calculations and the schemes for disposal of runoff waters. It must comply with the provisions of the "Rules for Design of Storm Drainage Facilities in the County of Maui" and must provide verification that the grading and runoff water generated by the project will not have an adverse effect on adjacent and downstream properties. The BMP plan shall show the location and details of structural and non-structural measures to control erosion.

- Building Permit for Buildings, Electrical, Plumbing, Sidewalk/Driveway Work
- Grading, Grubbing and Stockpiling Permit
- Wastewater Disposal
-

Department of Water Supply, County of Maui (DWS)
In response to the draft EA for this project, DWS offered the following information (see letter dated March 17, 1999 from DWS in Appendix B of this document):

Water System
Domestic, fire, and irrigation calculations will be reviewed in detail during the development process. Actual fire demand for structures is determined by fire flow calculations performed by a certified engineer. DWS-approved fire flow calculation methods are contained in "Fire Flow" - Hawaii Insurance Bureau, 1991.

Water Conservation
It is required by County Code that water conservation practices be incorporated into project design. As much of the water demand as possible should be delivered from non-potable sources (reclaimed or brackish). Where appropriate, the following measures should be considered:

- Eliminate Single-Pass Cooling: Single-pass, water-cooled systems should be eliminated per Maui County Code Subsection 14.21.20. Although prohibited by code, single-pass water cooling is still manufactured into some models of air conditioners, freezers, and commercial refrigerators.
- Utilize Low-Flow Fixtures and Devices: Maui County Code Subsection 16.20A.680 requires the use of low flow water fixtures and devices in faucets, showerheads, urinals, water closets and hose bibs. Water conserving washing machines, ice-makers and other units are also available.
- Maintain Fixtures to Prevent Leaks: A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. A regular maintenance program should be established for water fixtures.
- Use Climate-adapted Plants: Native plants adapted to the area, conserve water and further protect the watershed from degradation due to invasive alien species. The project site is located in "Maui County Planting Plan" - Plant Zone 4.
- Prevent Over-Watering By Automated Systems: Provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evapotranspiration rates at the site.

- For additional information on water conservation, the following references are available at the Department of Water Supply, County of Maui:

  "The Costly Drip"
  "Maui County Planting Plan"
  "Hawaiian Alien Plant Studies - Pest Plants of Native Hawaiian Ecosystems"
  "Ordnance 2108 - An ordinance amending Chapter 16.20 of the Maui County Code, pertaining to the plumbing code"
  "XERISCAPE - Water Conservation through Creative Landscaping"
  "A Checklist for Water Conservation Ideas for Cooling"
  "A Checklist for Water Conservation Ideas for Schools and Public Buildings"

Water Protection

The project overlies the Iao aquifer. The Department of Water Supply strives to protect the integrity of surface water and groundwater resources by encouraging applicants to adopt best management practices (BMPs) relevant to potentially polluting activities. BMPs should be adopted for clearing, grading and grubbing during construction to minimize soil erosion and runoff to the Waihee Marsh downslope of the school. The following BMP references may be obtained from the Department of Health, State of Hawaii.

"Water Quality Best Management Practices Manual for Commercial and Industrial Business," prepared for the City of Seattle by Resource Planning Associates, June 30, 1989.

"The Megamanual - Nonpoint Source Management Manual - A Guidance Document for Municipal Officials," Massachusetts Department of Environmental Science.

"Guidance Specifying Management Measures For Sources of Nonpoint Pollution in Coastal Waters," U.S. Environmental Protection Agency, Office of Water.

4.14 Socio-Economic Conditions.

Completion of the proposed project will add greatly to the quality of education by mitigating deficiencies in educational facilities. The action thereby offers great socio-economic benefit to the Waihee community and environs.

Construction during the estimated two-year period from September 1999 through September 2001 is likely to be disruptive to classroom and school activities. In addition to the mitigation measures proposed for air and noise quality, careful scheduling of construction can help to mitigate disruption during this period. Movement of construction vehicles on and off-site should be scheduled so as not to coincide with morning drop-off and afternoon pick-up of students. Barricades should be constructed to prevent students from wandering into active construction areas, and faculty and staff should be vigilant to this occurrence at all times that children are on school property.

In the short-term, construction employment and material expenses are expected to generate general excise tax and income tax revenues to the State of Hawaii. Other than a small reduction of the tax base resulting from the dedication of privately owned lands to the State for the new playfield, the proposed action is not expected to generate significantly adverse socio-economic impact.

5.0 ALTERNATIVES TO THE PROPOSED ACTION

5.1 Alternative A.

Since the school is basically "landlocked" by existing land uses on all sides, the only other alternative to allow an increase in educational facilities would be moving the school to a new and larger site elsewhere. The socio-economic cost of such an alternative including land acquisition costs would be much greater than adding facilities to the existing site. Abandoning the existing site would result in the loss of a substantial investment already made for existing school facilities, and it would be extremely disruptive to the existing educational programs, students and staff at Waihee Elementary School.

5.2 No Action.

No action would mean the continuation of cramped conditions, inadequate educational facilities for the given enrollment, deterioration of older wooden structures, and continued deficiency in parking that affects the surrounding neighborhood.

6.0 FINDINGS AND DETERMINATIONS

The results of this assessment are that the negative impacts that have been identified in this document shall be adequately minimized by the suggested mitigation measures. Therefore, the proposed action should not result in significant impacts on the environment. It is suggested that an Environmental Impact Statement (EIS) is not required for the proposed projects. A Finding of No Significant Impact (FONSI) is anticipated, and a Negative Declaration is determined to be in order.

A review of the "Significance Criteria" used as a basis for the above determination is presented below. An action is determined to have a significant impact on the environment if it meets any one of the thirteen (13) criteria.

(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.

The development of the existing school property and playfield site is not expected to result in loss or destruction of natural or cultural resources identified in Chapters 3.0 and 4.0 of this document because such resources are limited. Mitigation measures that will be implemented to control erosion and runoff in the short- and long-term will also prevent, control or minimize potential impacts from the project. Measures to prevent, control and/or minimize impacts to historical and archaeological resources, if these are found to exist at the site, will also be implemented.

(2) Curtails the range of beneficial uses of the environment.

Addition of educational facilities to a site that has been in school use for over a century will not curtail the range of beneficial uses of the environment.

(3) Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.

The proposed project is consistent with the environmental policies established in Chapter 344, HRS.

(4) Substantially affects the economic or social welfare of the community or state.

The new school facilities will substantially increase the social welfare of the Waihee community be enhancing the quality of education for its elementary school-age children. In the short-term construction of the new facilities will provide additional employment for the community and state. The action will have no negative impacts on the economic or social welfare of the community or state.

(5) Substantially affects public health.

Anticipated water quality, air quality, noise quality and traffic impacts that may affect public health will be short-term and temporary. These impacts are generally unavoidable and necessary for construction. Mitigation measures will be employed to control and reduce unavoidable impacts. The overall long-term water quality, air quality, noise quality and traffic impacts resulting from the proposed projects are expected to be minimal.

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

The new school facilities are intended to alleviate a shortage of facilities for the existing school population. They will not create excess capacity that would tend to increase school enrollment. Changes to population in the area are driven by availability of homes, property values, employment and other factors not related to school activities. The proposed action will definitely improve public facilities in the area and therefore has a positive effect on the community.

(7) Involves a substantial degradation of environmental quality.

Unavoidable short-term construction related impacts have been discussed in Chapters 3.0 and 4.0 of this document and mitigation measures proposed. In the long-run, the proposed action is not expected to involve a substantial degradation of environmental quality.

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

Addition of facilities to an existing school is not expected to have cumulative effects on the environment, and the proposed action is not tied to any larger action.

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

There are no known rare, threatened, or endangered species on the school site. The Fish and Wildlife Service (FWS) of the U.S. Department of the Interior has expressed a concern for "seabird fall-out" (see section 4.8 of this document for a more detailed discussion of this topic). Although endangered seabirds are not resident in the Waihee area, their flight path between the West Maui Mountains and the Pacific Ocean may cross over the school property FWS is concerned that bright lights from the school may disorient the seabirds causing them to collide with tall objects. To counteract this occurrence, mitigation measures involving the proper design of exterior school lighting have been proposed. Also,

there are few, if any, school activities at night, therefore, the chances of "seabird fallout" occurring on school property are much reduced.

(10) Detrimentally affects air or water quality or ambient noise levels.

Short-term and temporary impacts to water quality, air quality and noise quality are anticipated. These impacts are generally unavoidable and necessary for construction. Mitigation measures will be employed to control and reduce unavoidable impacts. The overall long-term water quality, air quality, and noise quality impacts resulting from the proposed action are expected to be minimal.

(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;

Waihee Elementary School and adjoining playfield site are not situated in environmentally sensitive areas.

(12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

The new facilities will not be taller than two stories in keeping with the existing school structures. Viewplanes will not be affected.

(13) Requires substantial energy consumption.

The construction of new school facilities is not expected to require substantial energy consumption relative to other similar school facilities.

7.0 REFERENCES CITED

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SSFM Engineers, Inc. 1998. *Waihee Element*

8.0 LIST OF PREPARERS

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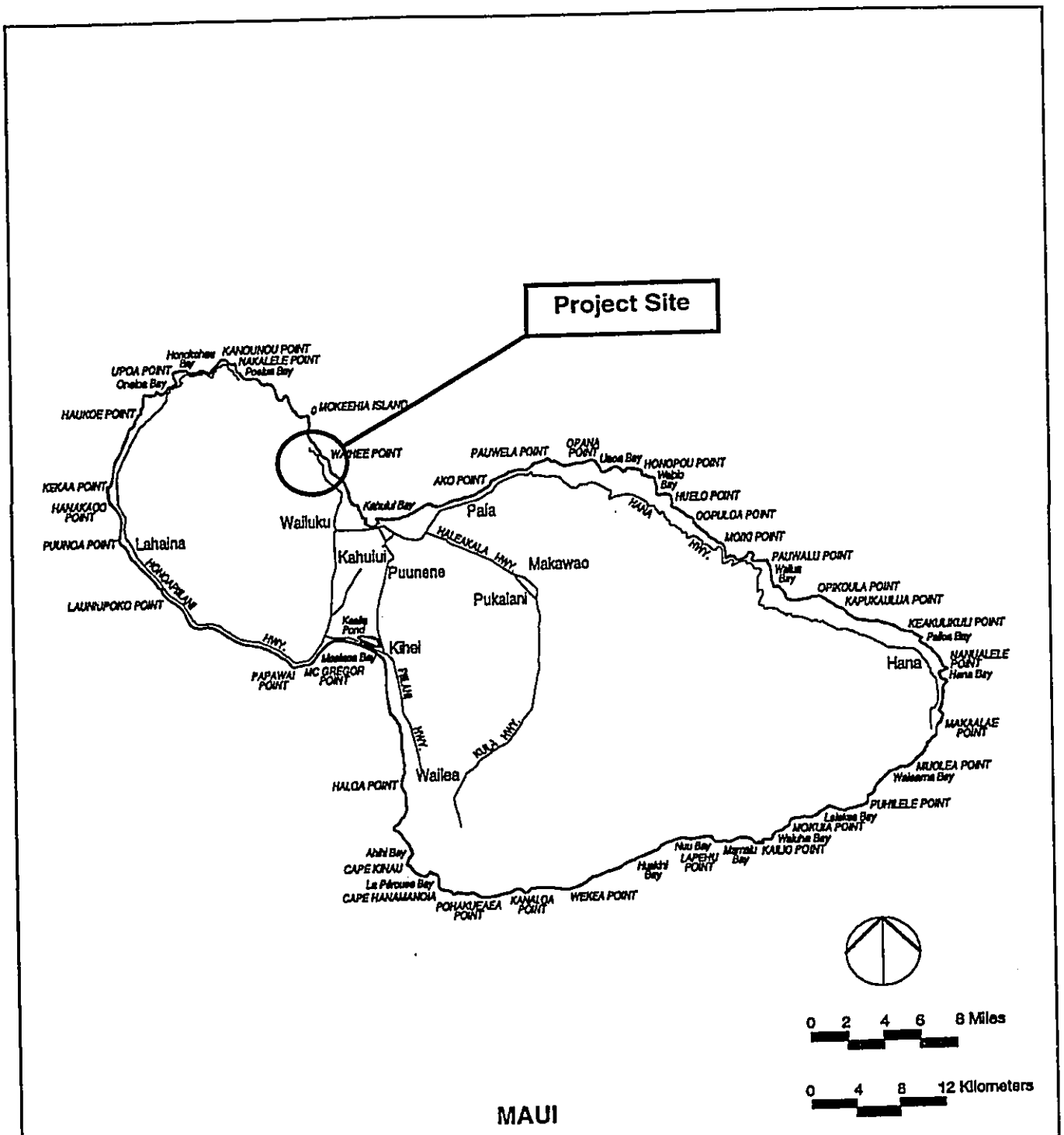
Agencies

County of Maui
- Department of Planning
- Department of Public Works & Waste Management
- Department of Water Supply

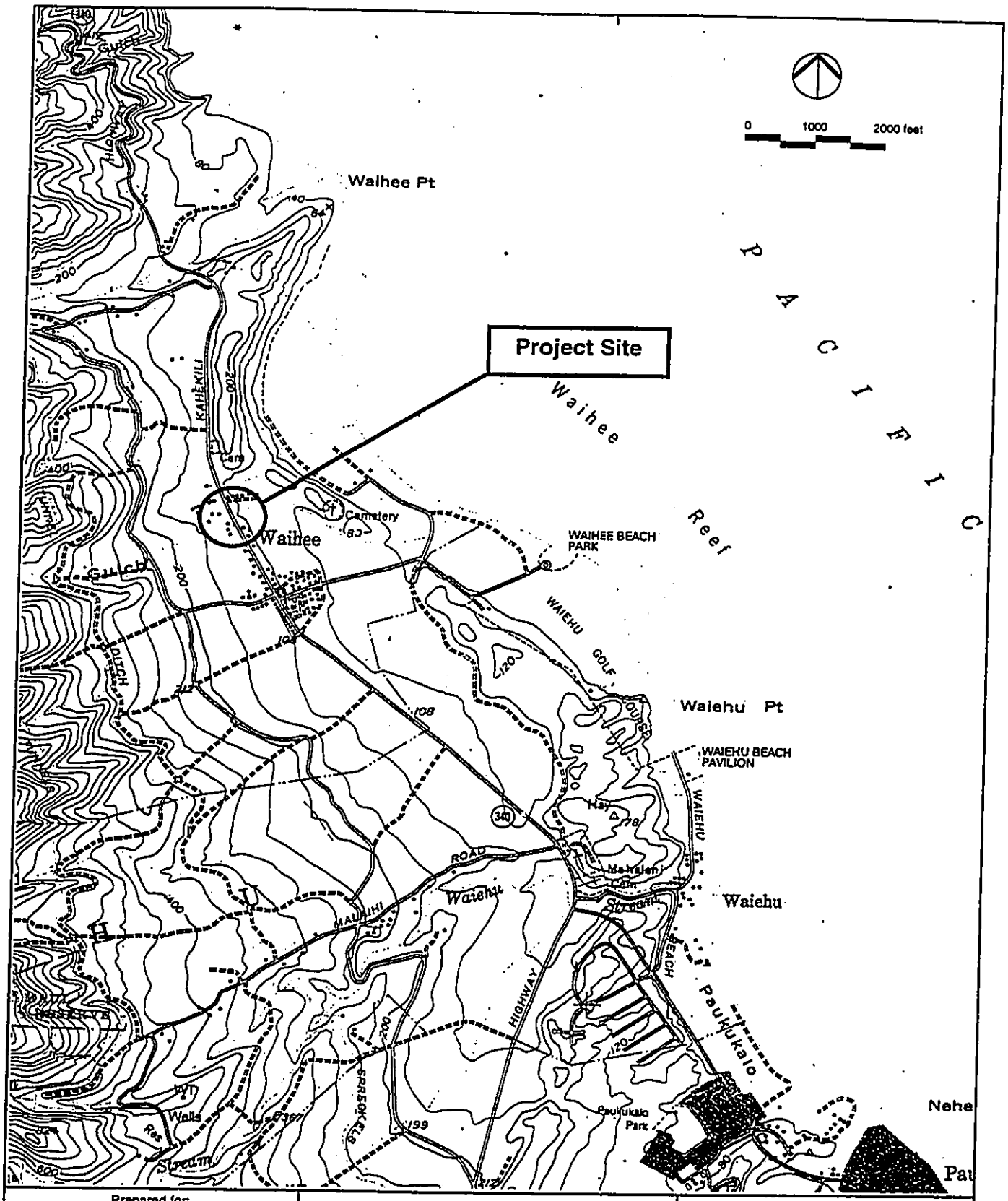
State of Hawaii
- Department of Accounting & General Services
- Department of Agriculture
- Department of Education
- Department of Land & Natural Resources
- Office of Hawaiian Affairs (OHA)

Federal Government
- U.S. Department of the Interior, Fish and Wildlife Service

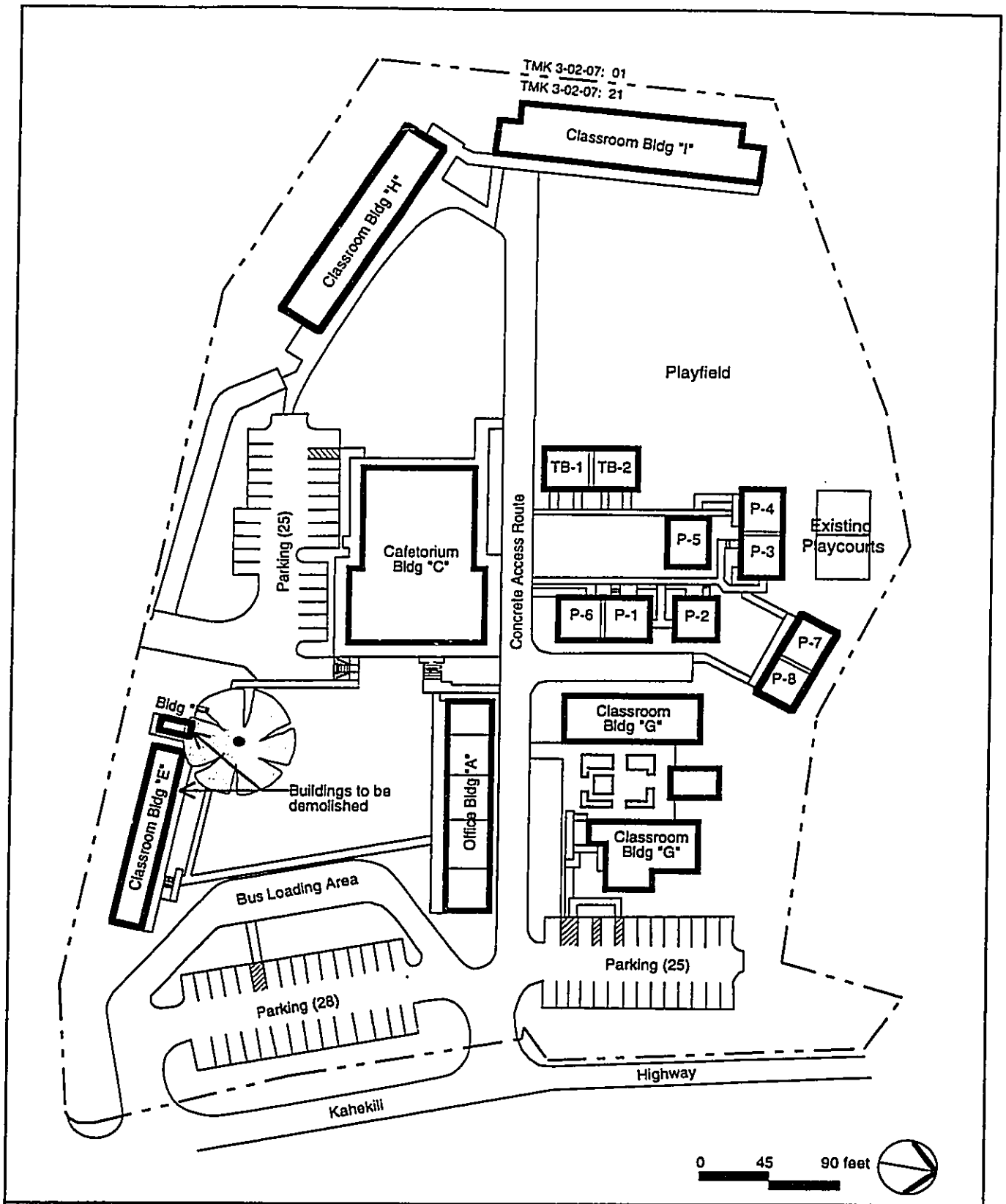
FIGURES



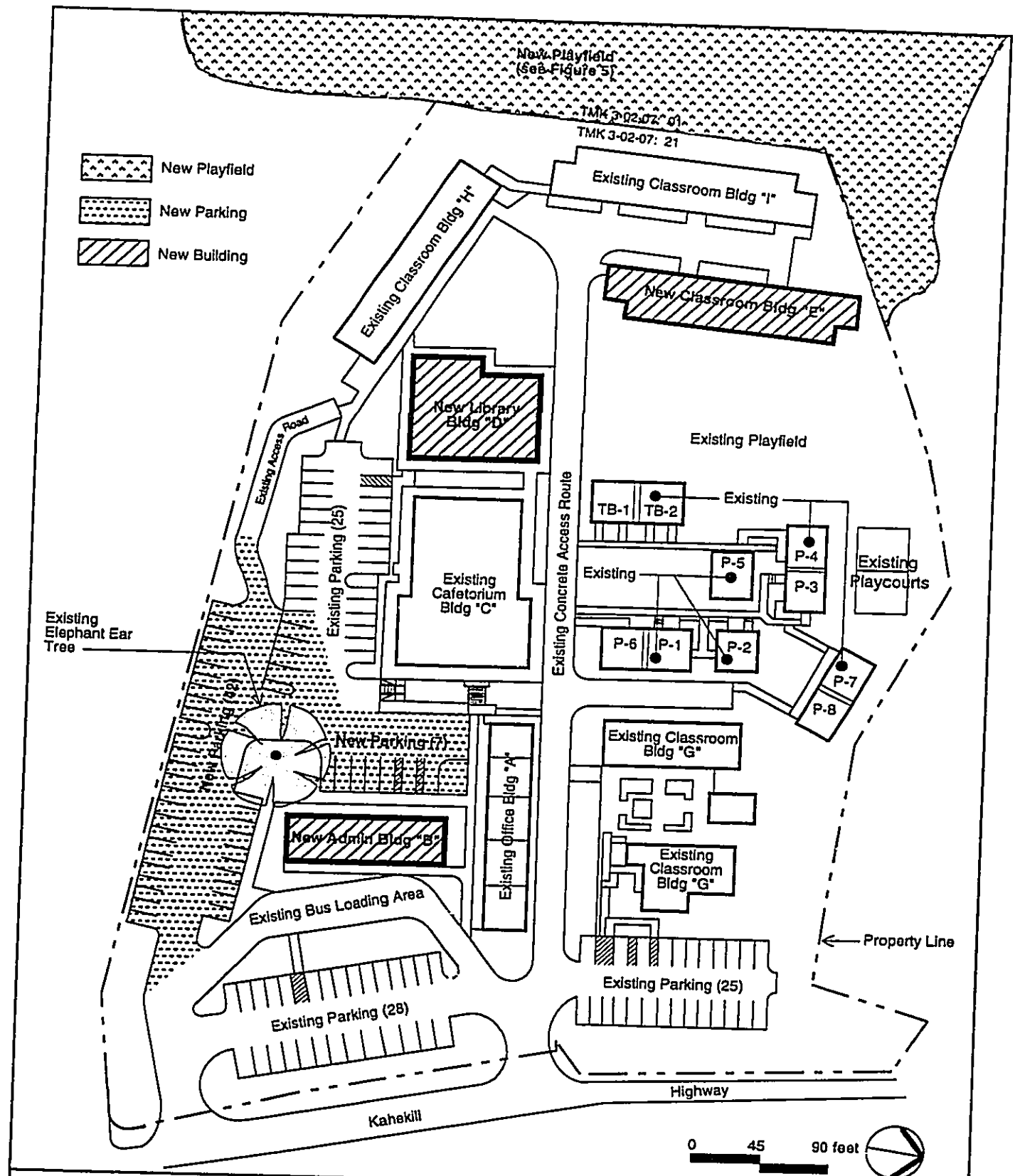
Prepared for: SSFM Engineers, Inc. Prepared by: Wil Chee - Planning, Inc. Honolulu, Hawaii	**Figure 1** **LOCATION MAP**	ENVIRONMENTAL ASSESSMENT **Waihee Elementary School** New Playfield, Classroom Building, Library, and Administrative Building Wailuku, Maui, Hawaii TMK 3-02-07: 1, 21



Prepared for: SSFM Engineers, Inc. Prepared by: Wil Chee - Planning, Inc. Honolulu, Hawaii	**Figure 2** **VICINITY MAP**	ENVIRONMENTAL ASSESSMENT **Waihee Elementary School** New Playfield, Classroom Building, Library, and Administrative Building Wailuku, Maui, Hawaii TMK 3-02-07: 1, 21



Prepared for: SSFM Engineers, Inc. Prepared by: Wil Chee - Planning, Inc. Honolulu, Hawaii	Figure 3 **EXISTING SITE PLAN**	ENVIRONMENTAL ASSESSMENT **Waihee Elementary School** New Playfield, Classroom Building, Library, and Administrative Building TMK 3-02-07: 01, 21



Prepared for: SSFM Engineers, Inc. Prepared by: Wil Chee - Planning, Inc. Honolulu, Hawaii	**Figure 4** **NEW SITE PLAN**	ENVIRONMENTAL ASSESSMENT **Waihee Elementary School** New Playfield, Classroom Building, Library, and Administrative Building TMK 3-02-07: 01, 21

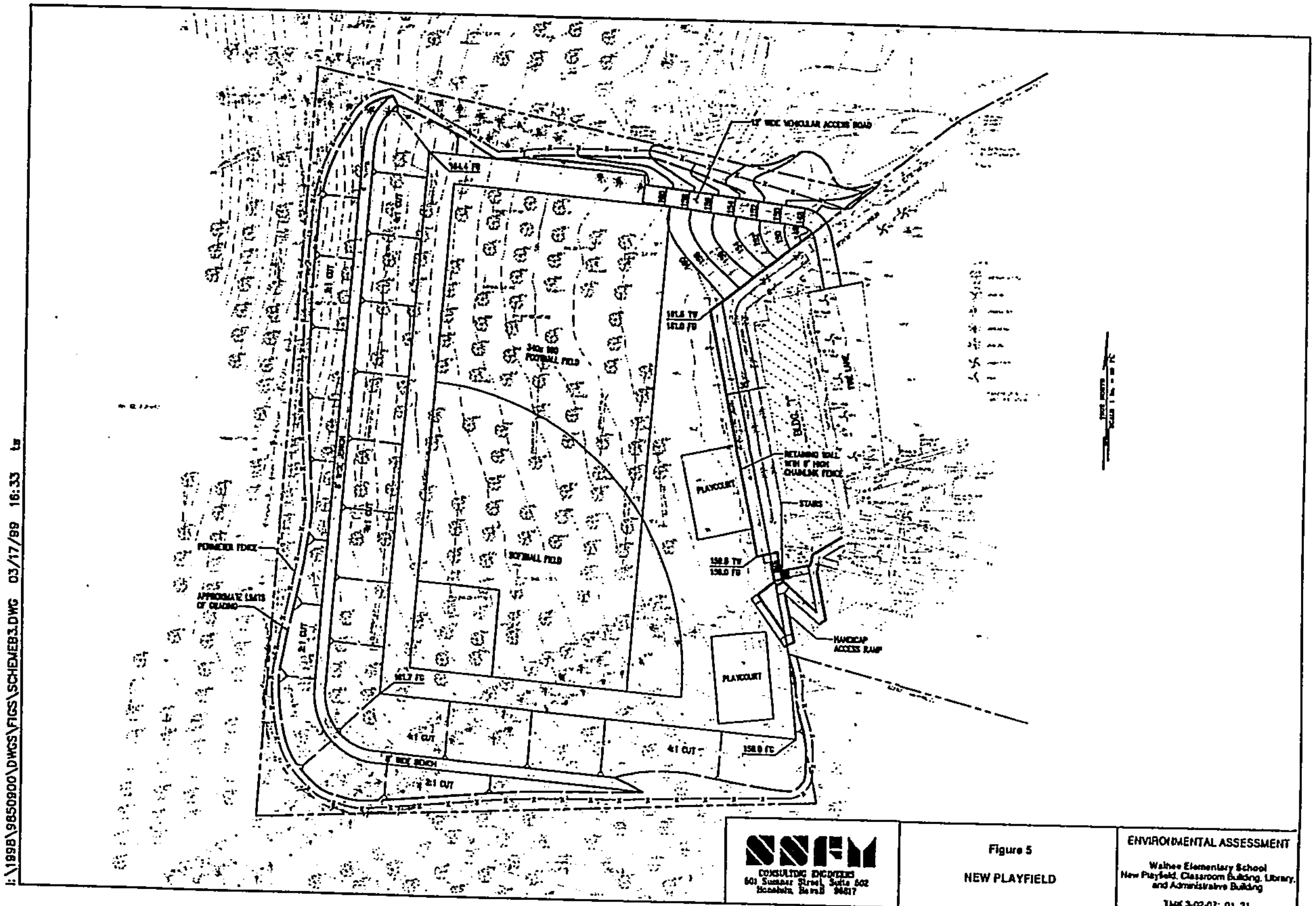


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Figure 5

NEW PLAYFIELD

ENVIRONMENTAL ASSESSMENT

Waihee Elementary School
New Playfield, Classroom Building, Library, and Administrative Building

TMK 3-02-07: 01, 21

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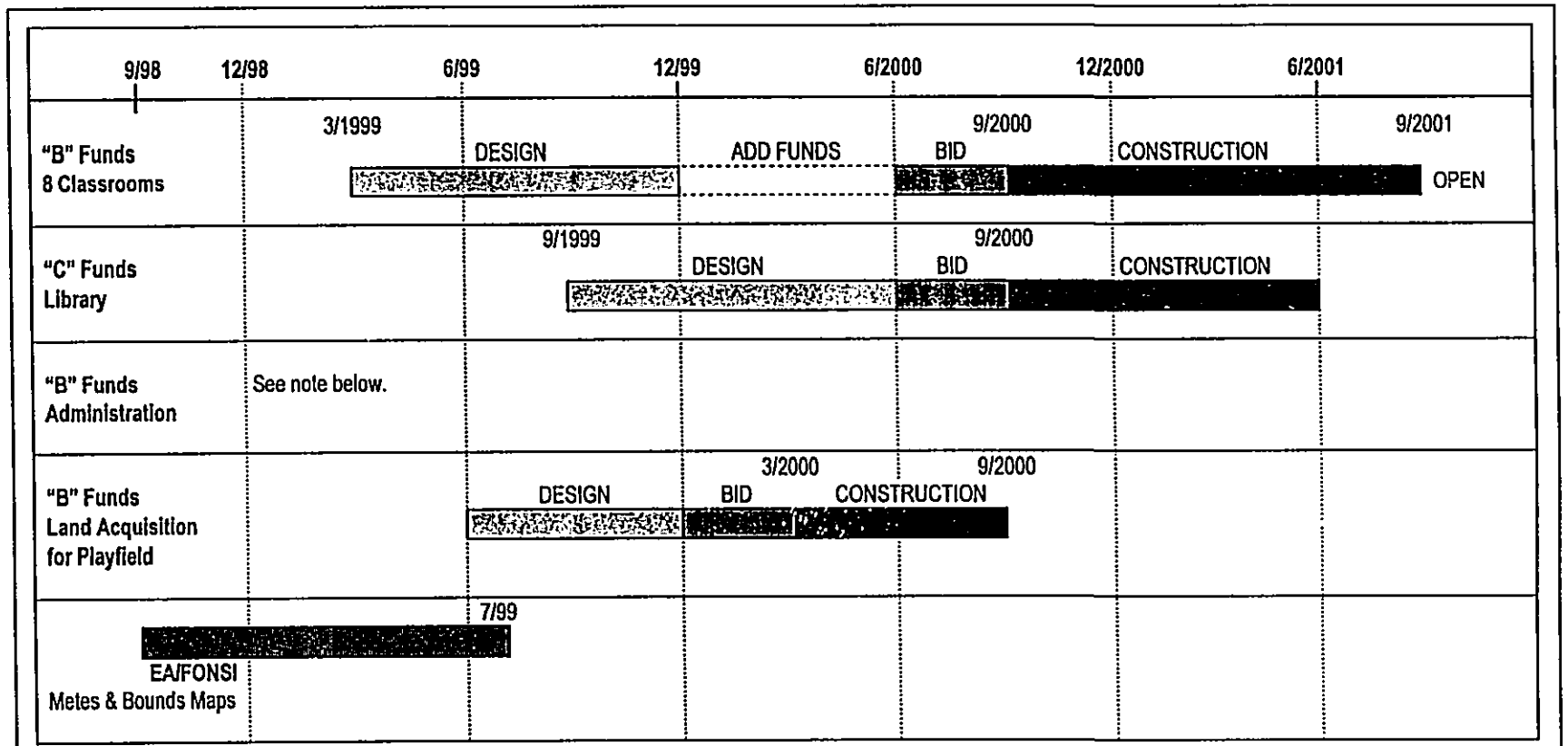

Note: The design and construction of the Administration Building will be deferred until 2003/4 for design and 2004/5 for construction.
The design and construction of the Library will depend on the release of the appropriated funds.

Prepared for: SSFM Engineers, Inc. Prepared by: Wil Chee – Planning, Inc.	**Figure 6** **PROJECT SCHEDULE AND FUNDING**	ENVIRONMENTAL ASSESSMENT **Waihee Elementary School** **New Playfield, Classroom Building, Library, And Administrative Building** **TMK 3-02-07: 01, 21**

APPENDIX - A
Technical Reports

FINAL SUBMITTAL
WAIHEE ELEMENTARY SCHOOL

WAIHEE, MAUI, HAWAII

TMK: 3-2-07: 21 & Por. 01

PLAYFIELD SITE FEASIBILITY STUDY

for

DEPARTMENT OF ACCOUNTING & GENERAL SERVICES
STATE OF HAWAII
DAGS Job No. 15-16-1663

January, 1999

Prepared By:

SSFM ENGINEERS, INC.
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1 EXECUTIVE SUMMARY

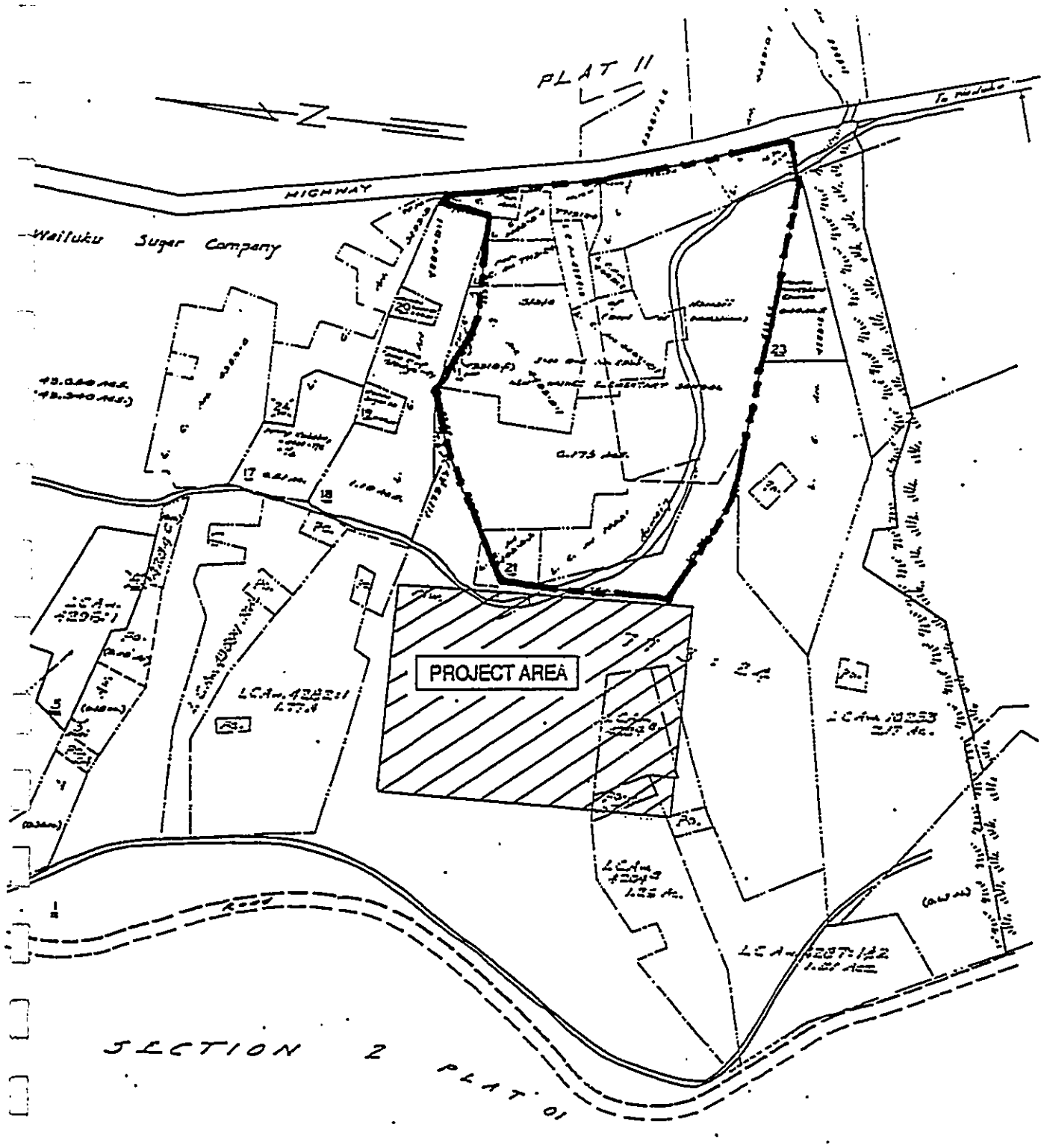
This report describes the existing conditions at the Waihee Elementary School. It also outlines the planned building improvements for the school over the next five years. Because of this, additional land will be required to build a new playfield to fulfill the Department of Education's (DOE) physical education requirements. See Figure A for location of the proposed playfield with the existing school site.

SSFM Engineers, Inc. was retained by the State Department of Accounting and General Services (DAGS), under DAGS Job No. 15-16-1663, to conduct a feasibility study for the new playfield. Two basic layouts were prepared, each with four alternatives, for a total of eight schemes. Common to both basic layouts are the following proposed improvements:

- Access roadway for emergency & maintenance purposes
- Concrete handicap access ramp
- Concrete walkway and stairway system
- Drinking fountains
- Irrigation system
- A large playfield to adapt to football, soccer, or softball
- Space for additional playcourts

The only changes in the schemes were in the construction of the slope banks to create the playfield - using the standard 2:1 cut slope or a flatter 4:1 cut slope to allow for spectator seating. Also, near the existing Classroom Building "I" - the option of constructing a 2:1 fill slope or a retaining wall to provide a larger area for additional playcourts was examined.

Scheme B3 is recommended for use. While it is not the most economical scheme, it allows for the best use of the site at a modest cost. The improvements would include a gentle grassed slope bank that can be used for spectator seating around the playfield. This slope bank would be easy to maintain. Also, building a retaining wall next to Building "I" would create more room for additional paved playcourts.



SSFM ENGINEERS, INC. CONSULTING ENGINEERS 501 Sumner Street, Suite 502 Honolulu, Hawaii 96817	WAIHEE ELEMENTARY SCHOOL PLAYFIELD SITE FEASIBILITY STUDY **Location of Proposed Playfield**	FIGURE A

2 INTRODUCTION

2.1 PURPOSE OF THE REPORT

The purpose of this report is to identify and evaluate a playfield site to meet the recreational needs of the Waihee Elementary School. The report will be used to aid in the acquisition of the property, to help the design of the proposed facility, and to process an Environmental Assessment (EA), revealing the environmental concerns associated with the construction of the proposed facility.

2.2 EXISTING CONDITIONS

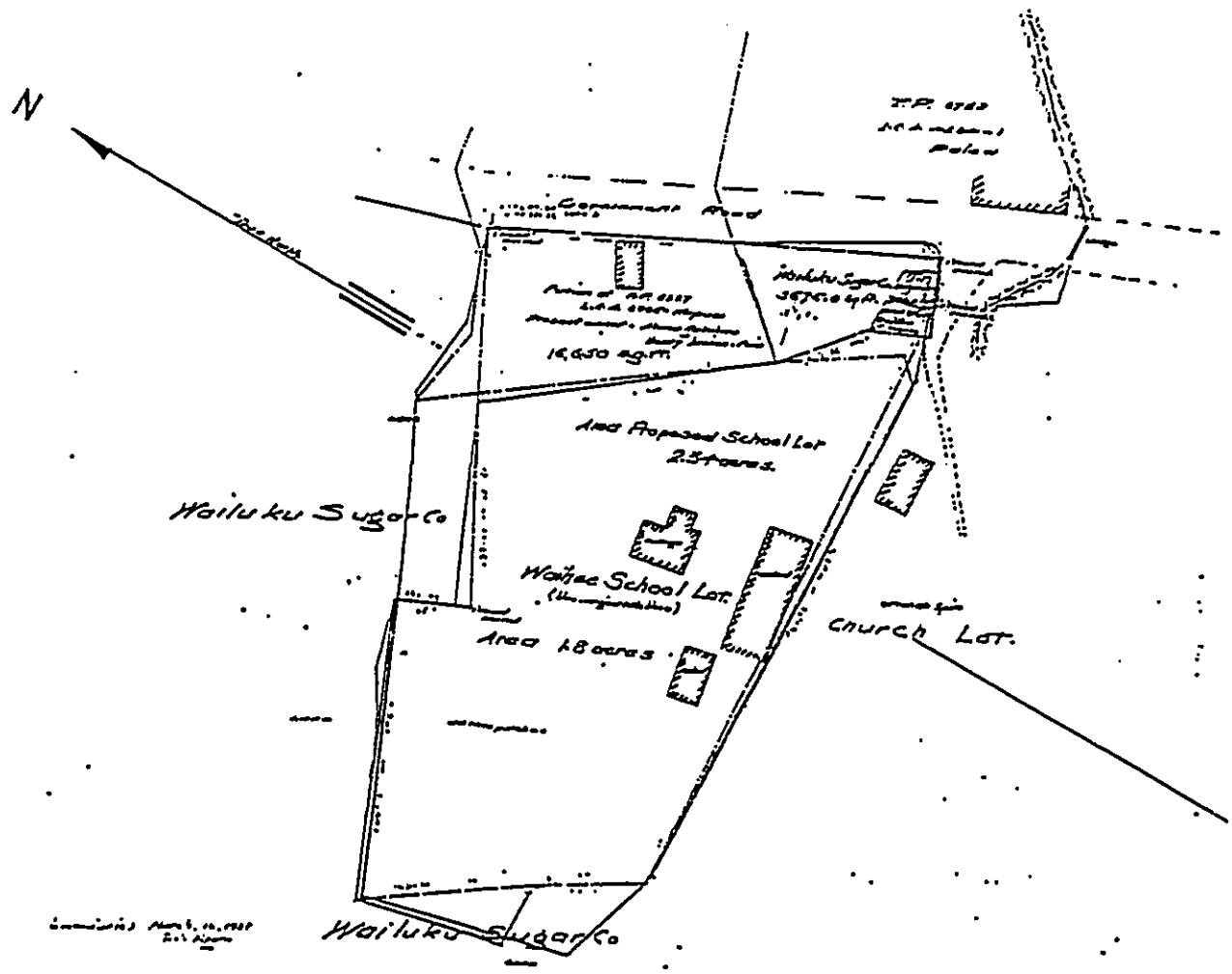
Waihee Elementary School was built in 1879. See Figure B - a 1906 Hawaii Territory Survey Map depicting the school lot and surrounding areas.

Since then, this rural school has grown, like most schools in other communities in the state. Today, there are five permanent classroom buildings (Buildings "E" to "I") and 10 portables for a total of 39 classrooms. This is severely deficient in number of permanent classrooms for the current enrollment of about 858 students. Buildings "A" and "C" provide the supporting services for the school (office, library, etc.). Figure C shows the existing school site plan.

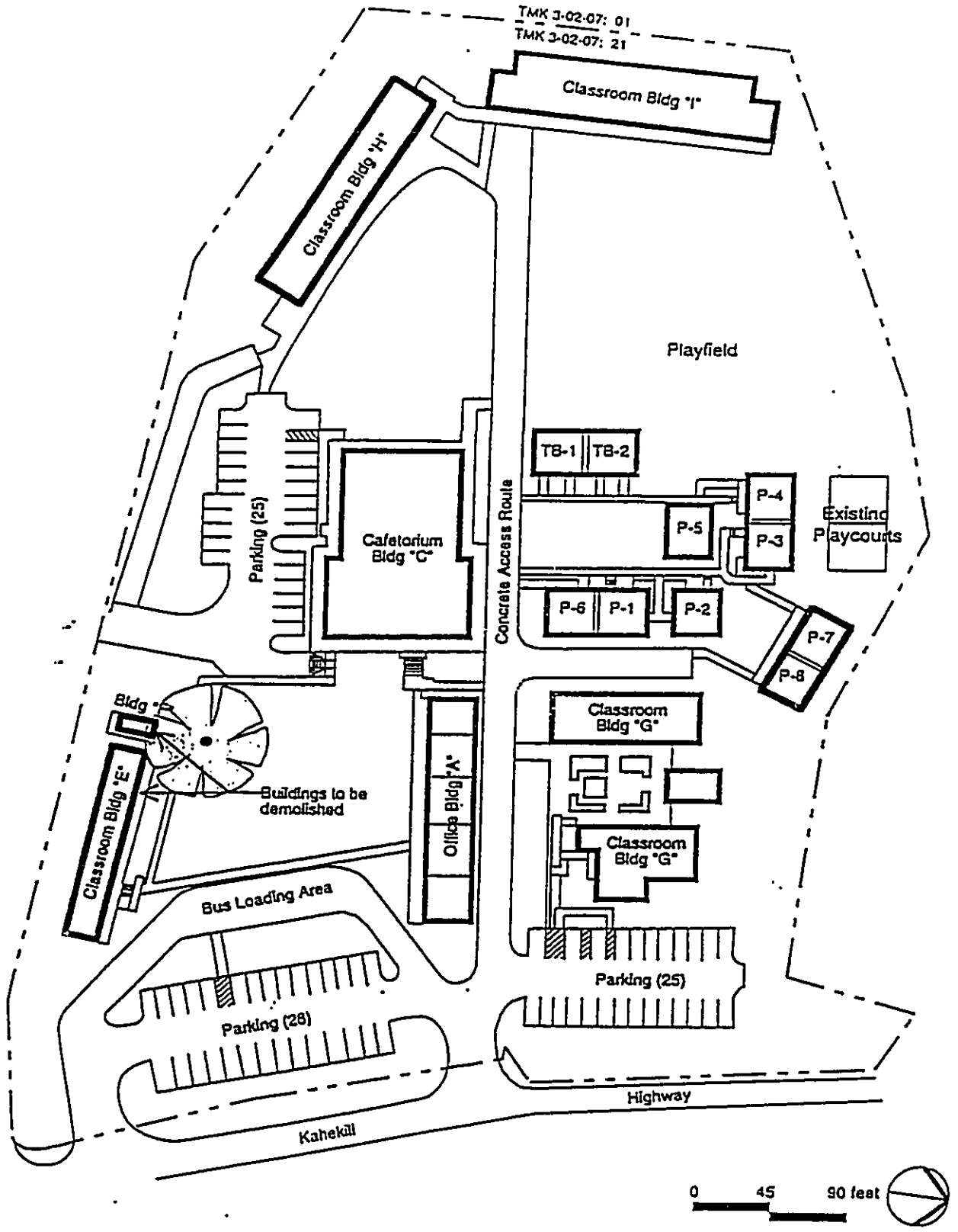
The DOE Facilities and Support Services Branch projections suggest that the enrollment will increase about 15% over the next five years to approximately 986 students. However, this enrollment is expected to drop to about 750 students when the Wailuku II Elementary School is built. Current projections show that the Wailuku II Elementary School will be constructed beyond the 5-year period.

To serve the current enrollment, and with the projected increase, the DAGS/DOE Program Goals & Objectives are to design and construct some additional buildings. These Goals and Objectives include a new administration building ("B"), separate library ("D"), and another classroom building ("E") to replace the existing dilapidated Building "E"; eventually replacing all of the portables. Parking stalls for an additional 60 cars and a passenger loading/unloading area are also planned.

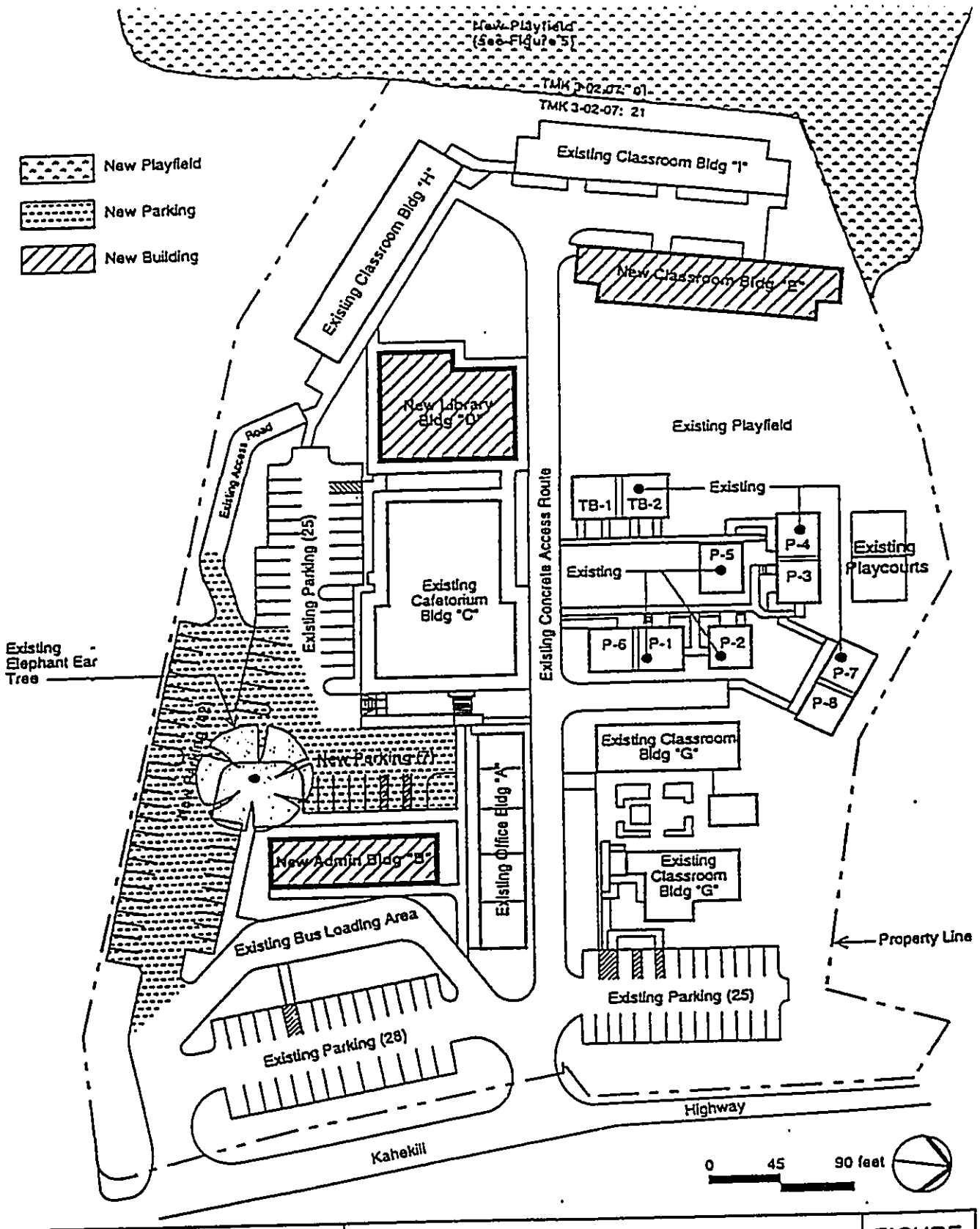
Besides the lack of adequate classrooms, the existing recreational facilities are severely inadequate as they only include an open playfield about 200' X 160' and 1 paved playcourt. The playfield is undersized for softball, soccer, or football, and only gives the students enough room to play dodge ball or other games requiring only a small amount of space. Also, there are a few tether ball posts scattered around the walkway areas.



SSFM ENGINEERS, INC. CONSULTING ENGINEERS 501 Sumner Street, Suite 502 Honolulu, Hawaii 96817	WAIHEE ELEMENTARY SCHOOL PLAYFIELD SITE FEASIBILITY STUDY 1906 Hawaii Territory Survey Map	FIGURE B



SSFM ENGINEERS, INC. CONSULTING ENGINEERS 501 Sumner Street, Suite 502 Honolulu, Hawaii 96817	WAIHEE ELEMENTARY SCHOOL PLAYFIELD SITE FEASIBILITY STUDY Existing School Site Plan	FIGURE C



SSFM ENGINEERS, INC. CONSULTING ENGINEERS 501 Sumner Street, Suite 502 Honolulu, Hawaii 96817	WAIHEE ELEMENTARY SCHOOL PLAYFIELD SITE FEASIBILITY STUDY **Current School Master Plan**	FIGURE D

3. PROPOSED IMPROVEMENTS

3.1 DESIGN REQUIREMENTS

The design of the playfield would have to follow the requirements outlined in Page 104 - Structural (Physical Education); Section IV, Special Classroom Facilities, of the DOE Educational Specifications and Standards for Facilities, Volume I: Elementary Schools.

3.1.1 Playfield Requirements

The planning guidelines call for a grassed field about 380' X 260', large enough to superimpose a softball field over a football field. The playfield is to be graded at a very flat slope - no more than 1.5% in either direction.

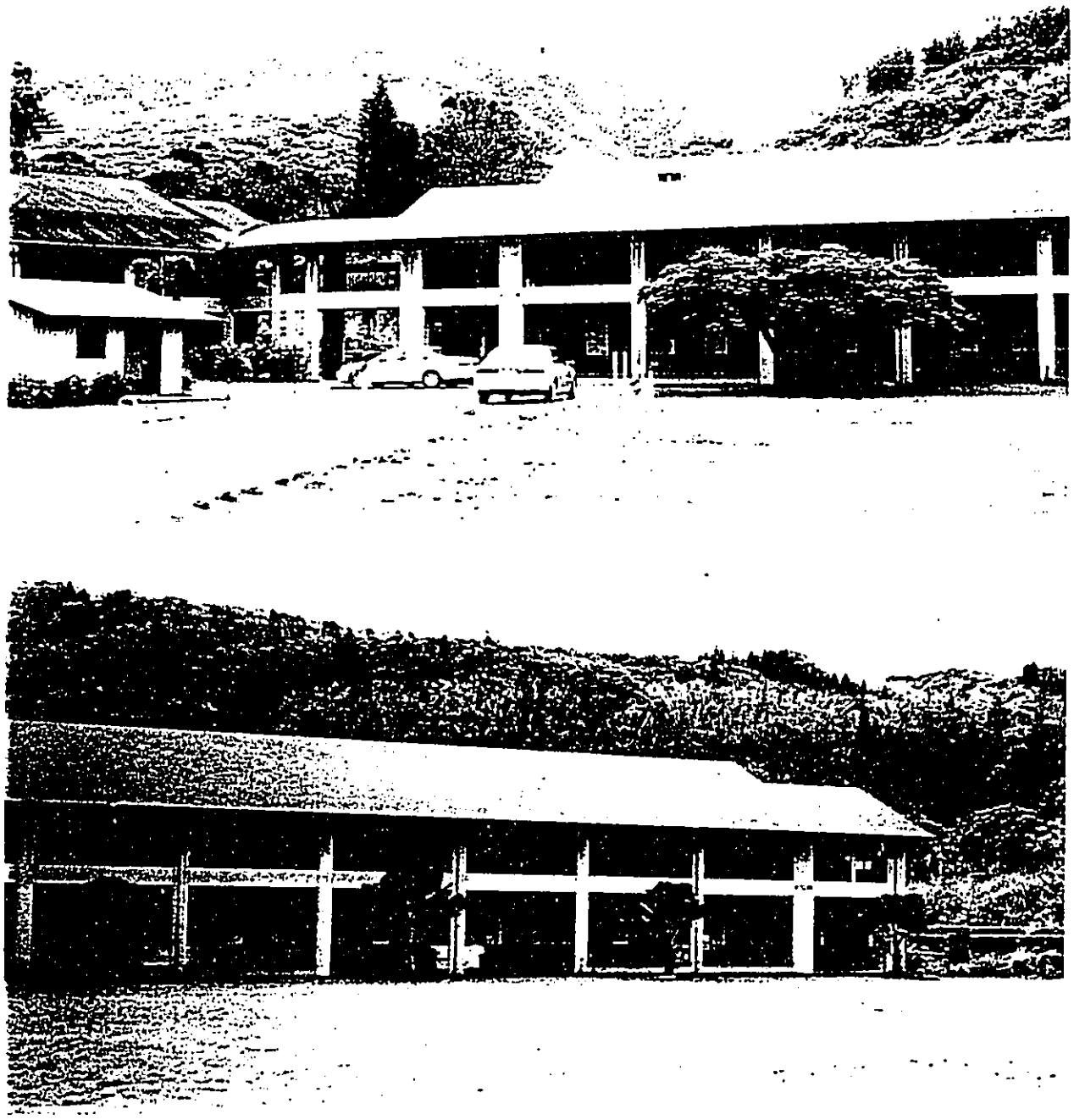
In addition, a paved area should be provided for 2-basketball courts 40' X 60', 2-volleyball courts 25' X 50', and 2-badminton courts 29' X 44'; all superimposed over the two basketball courts and with color-coded lines.

3.1.2 Accessibility Requirements

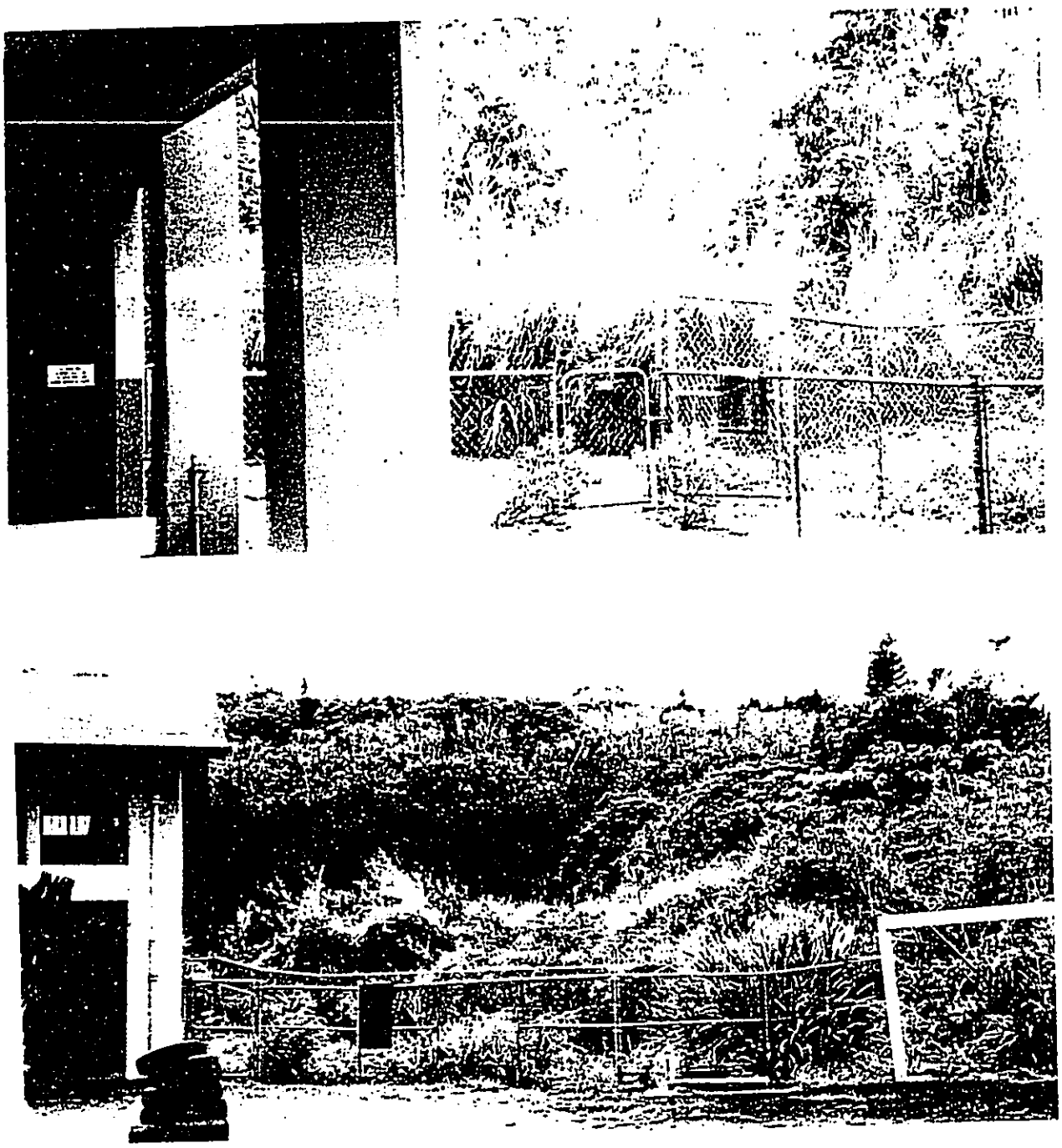
Access to the playfield must be provided for emergency vehicles and for maintenance purposes. Also, access ramps for the handicapped, as well as the standard walkways and stairs must be provided. The maximum vertical rise and horizontal length for a handicap ramp is 30" in 30' (1:12). The minimum clear ramp width is 36".

3.1.3 Location of Playfield

With all of the proposed building improvements on the limited school property, the new playfield must be constructed offsite. The DAGS/DOE has begun initial negotiations with C. Brewer & Company, Ltd., for the acquisition of land immediately adjacent and mauka of the existing school. This property is presently being used by C. Brewer's subsidiary, the Wailuku Agri-Business Company, for macadamia nut production. The final terms and conditions of the acquisition will be pending the completion of this feasibility study and environmental assessment. See Figures E-G for pictures of the existing campus, access points to the proposed playfield, and existing macadamia nut field.



SSFM ENGINEERS, INC. CONSULTING ENGINEERS 501 Sumner Street, Suite 502 Honolulu, Hawaii 96817	WAIHEE ELEMENTARY SCHOOL PLAYFIELD SITE FEASIBILITY STUDY **Front View of Classroom Building "I"**	FIGURE E



SSFM ENGINEERS, INC. CONSULTING ENGINEERS 501 Sumner Street, Suite 502 Honolulu, Hawaii 96817	WAIHEE ELEMENTARY SCHOOL PLAYFIELD SITE FEASIBILITY STUDY **View of Access Connections to the Playfield**	FIGURE F

SSFM ENGINEERS, INC. CONSULTING ENGINEERS 501 Sumner Street, Suite 502 Honolulu, Hawaii 96817	WAIHEE ELEMENTARY SCHOOL PLAYFIELD SITE FEASIBILITY STUDY **Existing Ditch Behind Bldg "I" and Typical View of the Macadamia Nut Field**	FIGURE G

3.2 SCHEME A1

3.2.1 Description

The basic layout for this scheme (Figure 1) is for the playfield to be set parallel to the existing Building "I". The existing concrete ditch next to the building would be kept intact and the ground filled with a 2:1 slope bank from the existing property boundary to a maximum height of 15' to create the playfield. A 6' high chain link fence would be placed at the top of slope for safety reasons. A 12' wide paved access road would be built on the north side of the field for emergency vehicles and maintenance purposes. This roadway would connect to the fire lane between Building "I" and the future Building "E". A 5' wide concrete handicap access ramp and walkway with stairs would be extended on the south side from the existing walkway serving Buildings "H" and "I".

The main playfield area would slope westwardly at a maximum of 1.2%. The field would also slope at 1.2% maximum in the north/south direction. The field would be "flat" for playing purposes but also "sloping" to minimize puddling of stormwater. The first level of the cut bank around the field would be graded at 4:1 slope to a height of 10'. The remaining cut banks would be sloped at 2:1 and kept at 15' maximum heights with 8' wide benches until the cut banks daylights with the existing grades. The existing swale at the perimeter of the project would be maintained or improved to direct the stormwater runoff from the macadamia nut field away from the proposed playfield.

The entire cleared, grubbed, and graded area would be landscaped - grass on the playfield and 4:1 slopes, and ground cover on the steeper slopes. An irrigation system would be installed and drinking fountains would be placed around the playfield. A 4-feet high chain link fence would be installed along the perimeter of the improvements for safety reasons and to delineate the playfield property.

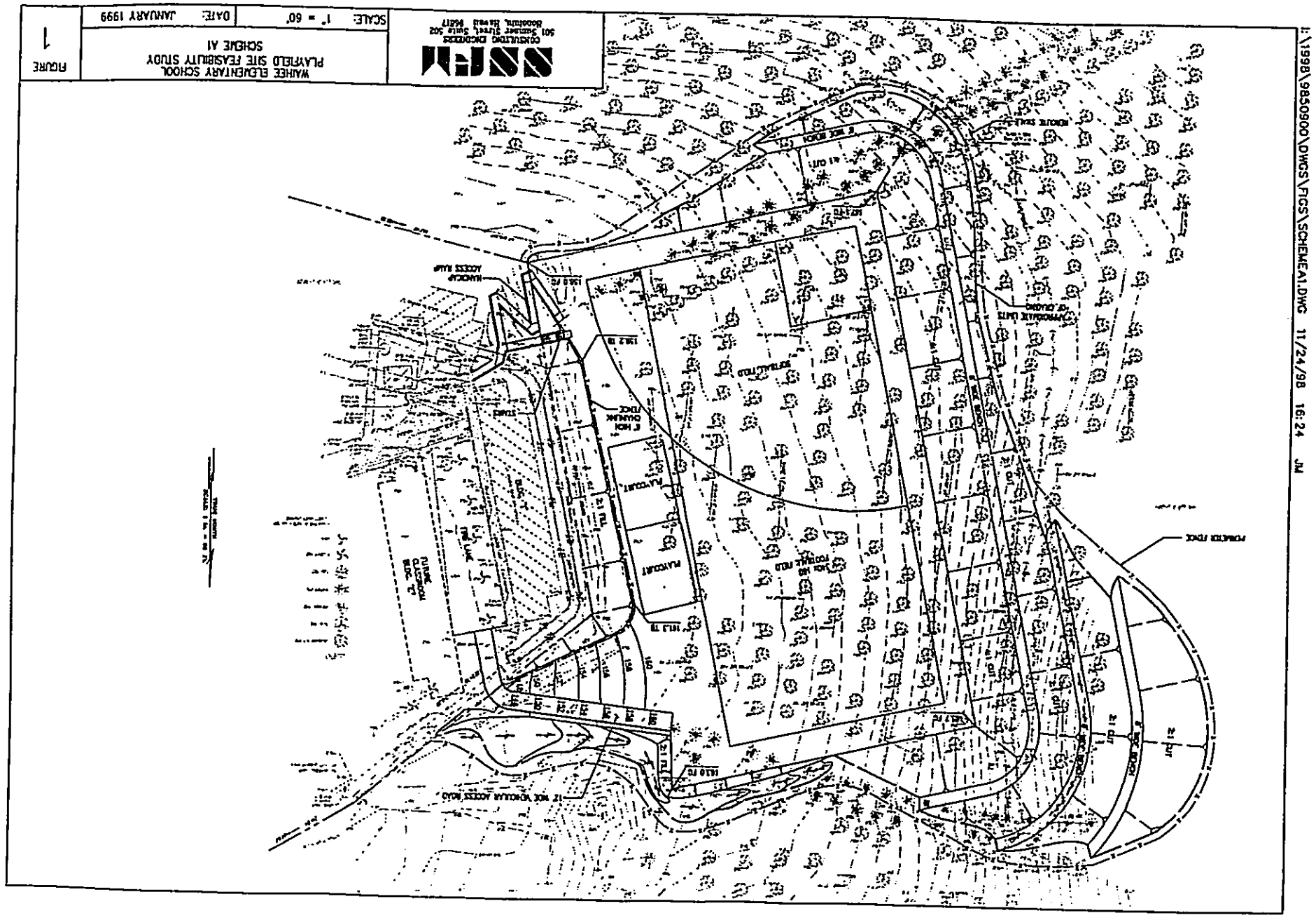
3.2.2 Advantages

This scheme provides for a standard softball field to be superimposed over a 340' X 160' football field. It would also be large enough to play soccer. The remaining strip on the east side of the playfield could be used for playcourts.

The 4:1 cut bank around the playfield could be used for spectator seating. Maintenance of the grassed bank would also be easy due to the gentle slope.

3.2.3 Disadvantages

The extreme excavation on the northwest corner of the playfield would create a bad visual scar. Also, the high construction cost is 2nd only to Scheme A3 of the eight schemes examined. It would also require the most land takedown from the Wailuku Agri-Business.


WAHKEE ELEMENTARY SCHOOL
PLAYFIELD SITE FEASIBILITY STUDY
SCHEME A1
SCALE: 1" = 60'
DATE: JANUARY 1999
FIGURE
1
CONSULTING ENGINEERS
501 Sumner Street, Suite 502
Boonville, Hawaii 96817
I:\1998\9850900\DWGS\FIGS\SCHEMEA1.DWG 11/24/98 16:24 JM

3.3 SCHEME A2

3.3.1 Description

Layout of the playfield and improvements is the same as for Scheme A1. As shown in Figure 2, the only exception is that the cut banks would all be at 2:1 slope with height intervals of 15' and with 8' wide benches.

3.3.2 Advantages

The advantages are the same as in scheme A1 except for using the 2:1 cut banks for spectator seating.

3.3.3 Disadvantages

Excavation on the northwest corner of the playfield is also excessive (+45' high). The 2:1 cut banks would make it difficult for use as spectator seating and maintenance of the grassed banks would not be easy.

3.4 SCHEME A3

3.4.1 Description

This scheme is the same as Scheme A1 except that a retaining wall would be constructed next to the concrete ditch instead of a 2:1 fill slope (Figure 3).

3.4.2 Advantages

A retaining wall would add about 20' more usable space than in Scheme A1 for the play courts or other uses.

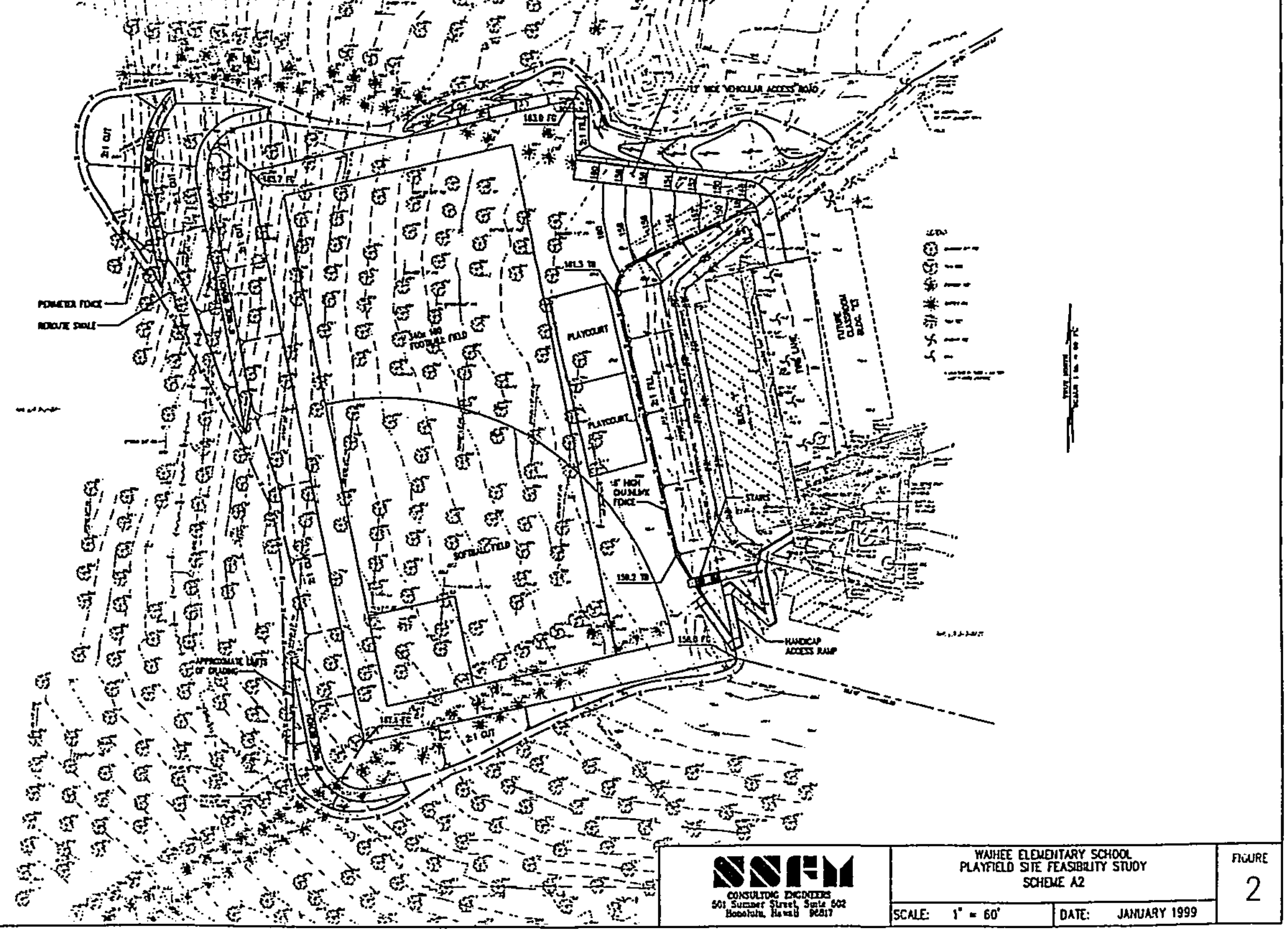
3.4.3 Disadvantages

This scheme is the costliest of all the eight schemes investigated.

3.5 SCHEME A4

3.5.1 Description

Note that in Figure 4, this scheme is the same as Scheme A2 but with the addition of the retaining wall.



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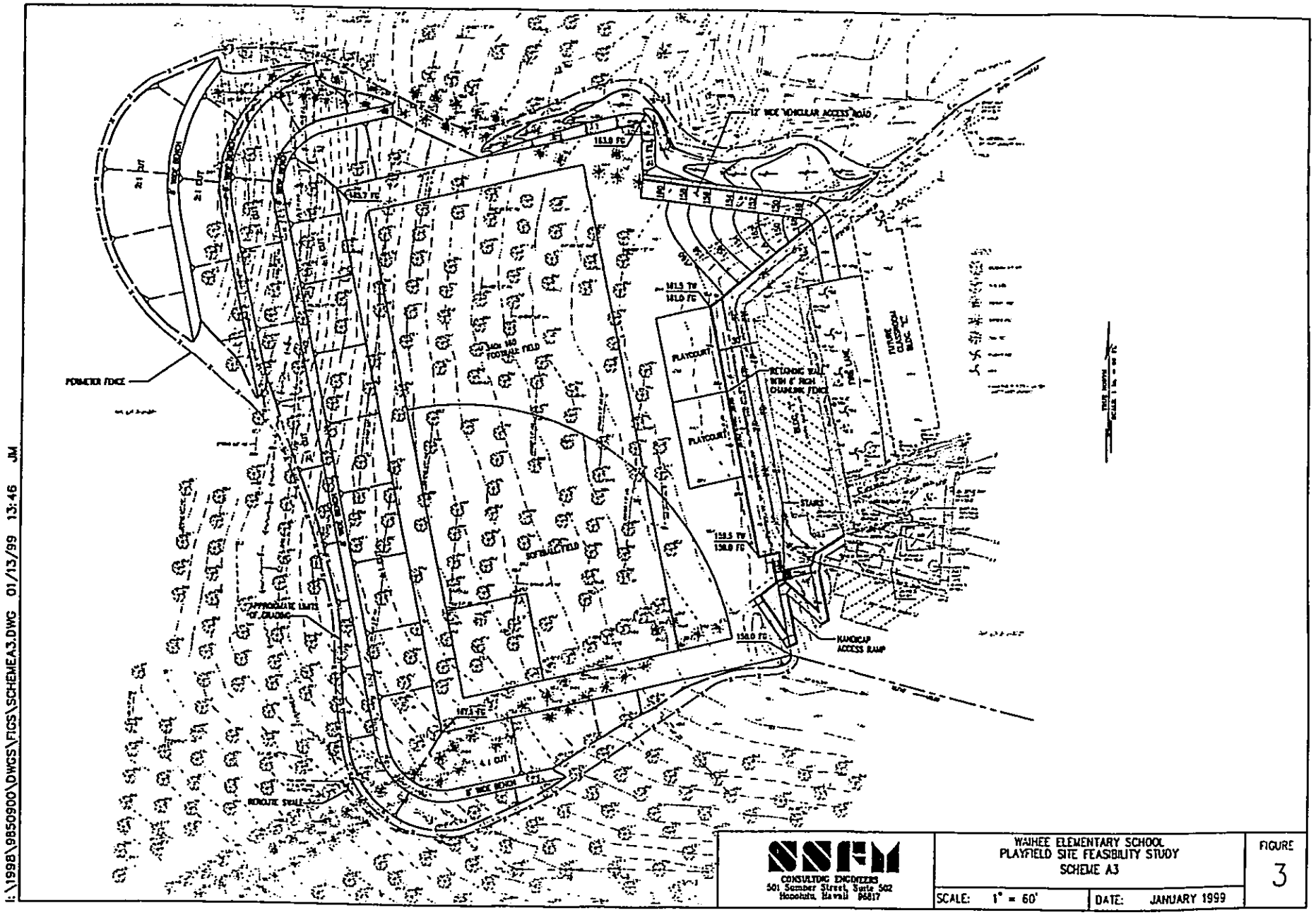
WAIHEE ELEMENTARY SCHOOL
PLAYFIELD SITE FEASIBILITY STUDY
SCHEME A2

SCALE: 1" = 60'

DATE: JANUARY 1999

FIGURE
2

I:\1998\9850900\DWGS\FIGS\SCHEMEA2.DWG 11/24/98 16:28 JM



I:\1998\9850900\DWGS\FIGS\SCHEMEA3.DWG 01/13/99 13:46 JM

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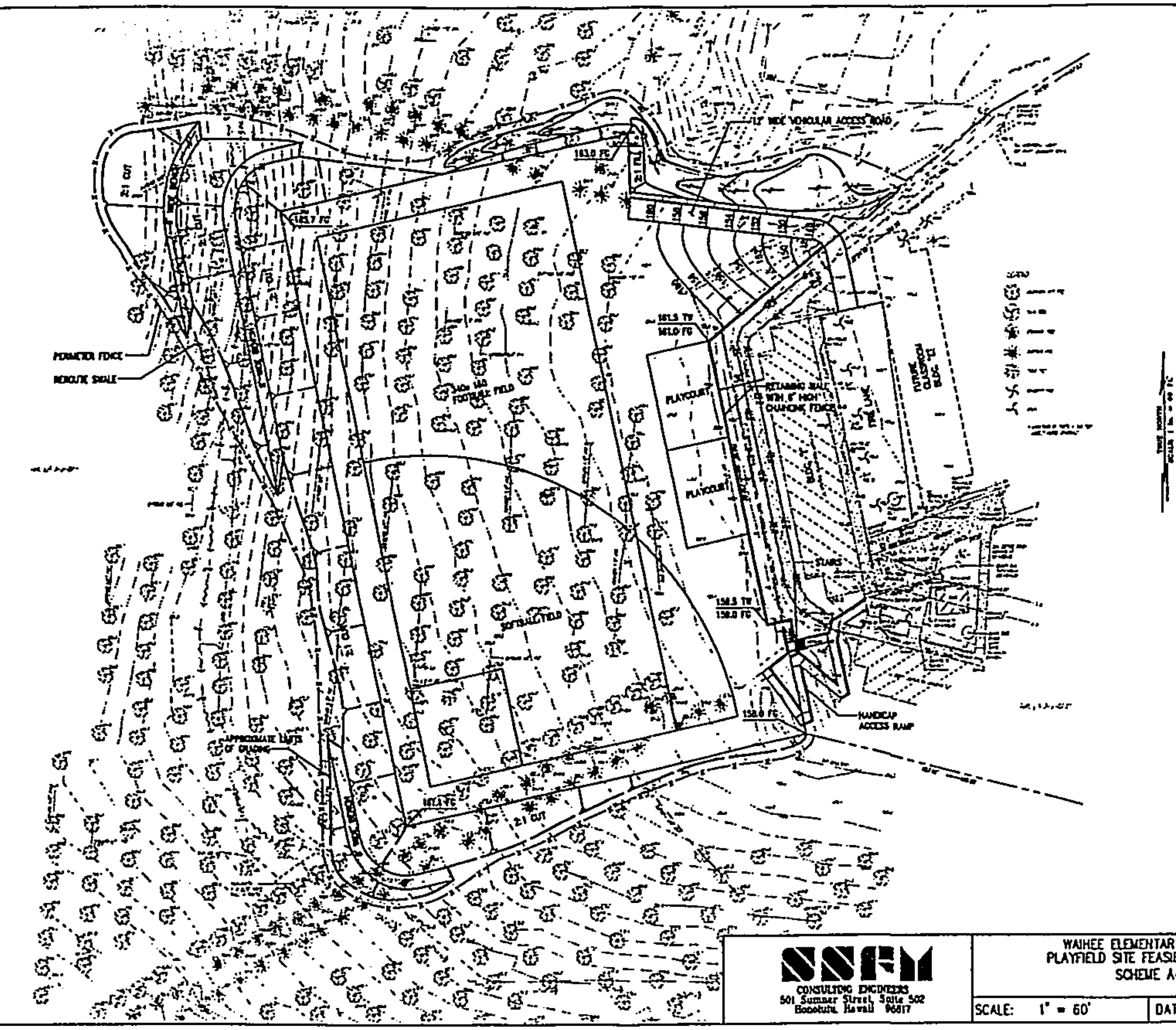
WAIHEE ELEMENTARY SCHOOL
PLAYFIELD SITE FEASIBILITY STUDY
SCHEME A3

SCALE: 1" = 60' | DATE: JANUARY 1999

FIGURE 3



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501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

WAIHEE ELEMENTARY SCHOOL
PLAYFIELD SITE FEASIBILITY STUDY
SCHEME A4

SCALE: 1" = 60'

DATE: JANUARY 1999

FIGURE 4

I:\1998\9850900\DWGS\FIGS\SCHEMEA4.DWG 01/13/99 13:49 JM

3.5.2 Advantages

Creates more additional usable land for the play courts or other uses than Scheme A2.

3.5.3 Disadvantages

Increases the cost of the improvements in Scheme A2 to gain the additional space.

3.6 SCHEME B1

3.6.1 Description

The basic layout in Figure 5 sets the playfield roughly parallel to the rows of macadamia nut trees and in a more north/south alignment than in Schemes A1-4. All of the improvements noted in Schemes A1-4 are the same for the following Schemes B1-4 (access road, handicap access ramp, walkway with stairs, grading concepts, drinking fountains, irrigation system, etc.). And, as in Scheme A1, a 4:1 slope was created to allow for spectator seating on the first row of cut bank. The remaining cut banks were set at 2:1.

3.6.2 Advantages

Besides providing the same amenities as in Scheme A1, this scheme reduces the excavation work by about one-third and the land takedown area by about 10%.

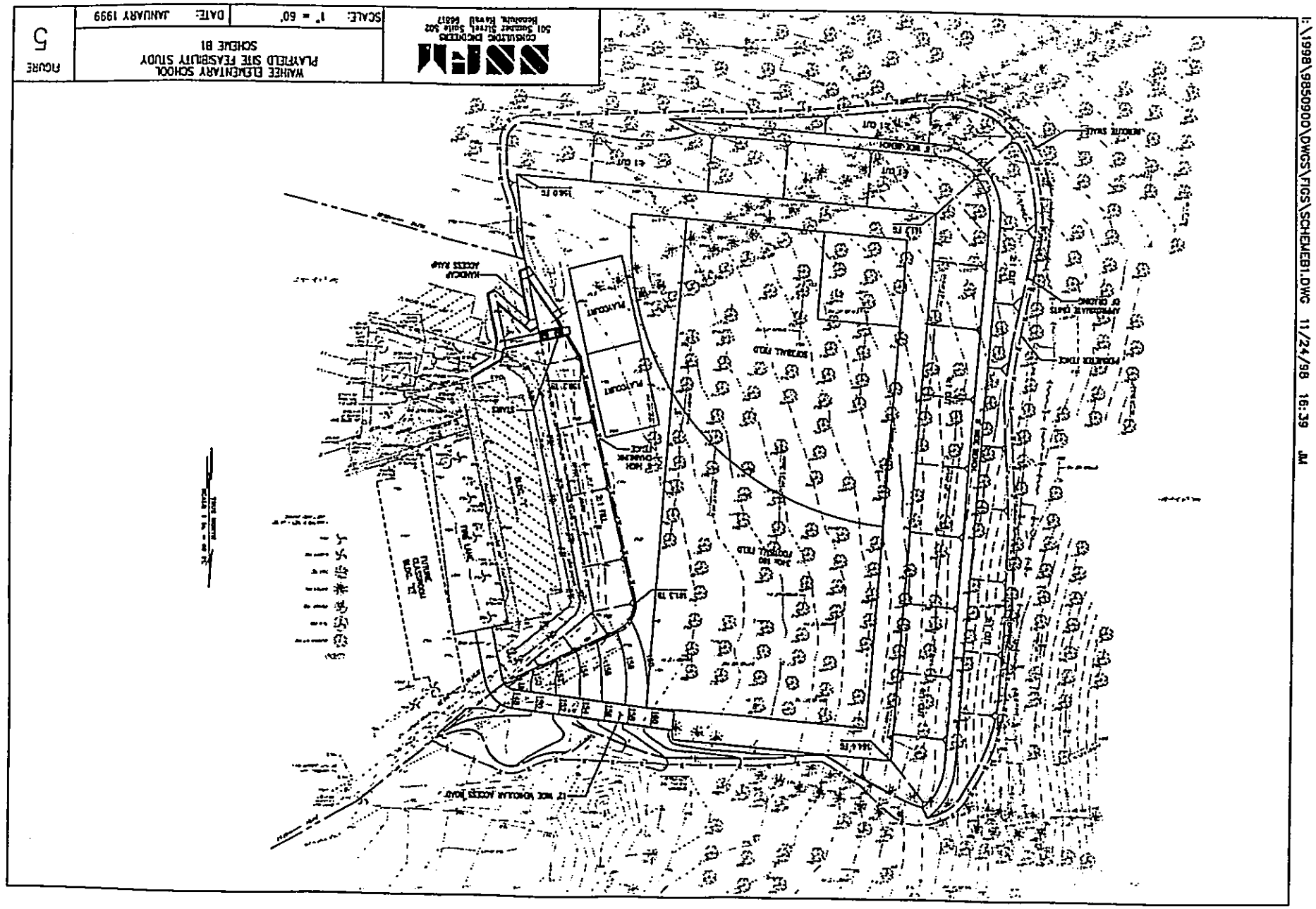
3.6.3 Disadvantages

Usable space for additional playcourts is limited because of the slope bank near the existing Building "I".

3.7 SCHEME B2

3.7.1 Description

Follows the same layout as in Scheme B1, except that the cut bank is set at 2:1 (Figure 6).



S:\1998\985090\DWGS\FIGS\SCHEMEB1.DWG 11/24/98 16:39 JM

FIGURE 6

WAHEE ELEMENTARY SCHOOL
PLAYFIELD SITE FEASIBILITY STUDY
SCHEME B2

SCALE: 1" = 60'

DATE: JANUARY 1999

CONSULTING ENGINEERS
501 Sunset Street, Suite 302
Honolulu, Hawaii 96817

I:\1998\9850900\DWGS\FIGS\SCHEMEB2.DWG 11/24/98 16:47 JM

3.7.2 Advantages

It is the least expensive of the eight schemes studied while still providing the same essential amenities. May be able to use the flatter existing ground above the 2:1 cut bank for spectator seating.

3.7.3 Disadvantages

Would be difficult to sit on the 2:1 cut bank for any spectator seating. Would also have to landscape beyond the clearing and grubbing limits to use the existing flatter ground to sit on. This would also expand the land takedown area.

3.8 SCHEME B3

3.8.1 Description

This scheme is identical to Scheme B1 except for the inclusion of a retaining wall instead of the 2:1 fill slope near Building "I" (see Figure 7).

3.8.2 Advantages

It allows for spectator seating and maximizes the usable playfield space for little additional cost.

3.8.3 Disadvantages

Requires about 40% more excavation than Schemes B2 or B4 and about 25% more land.

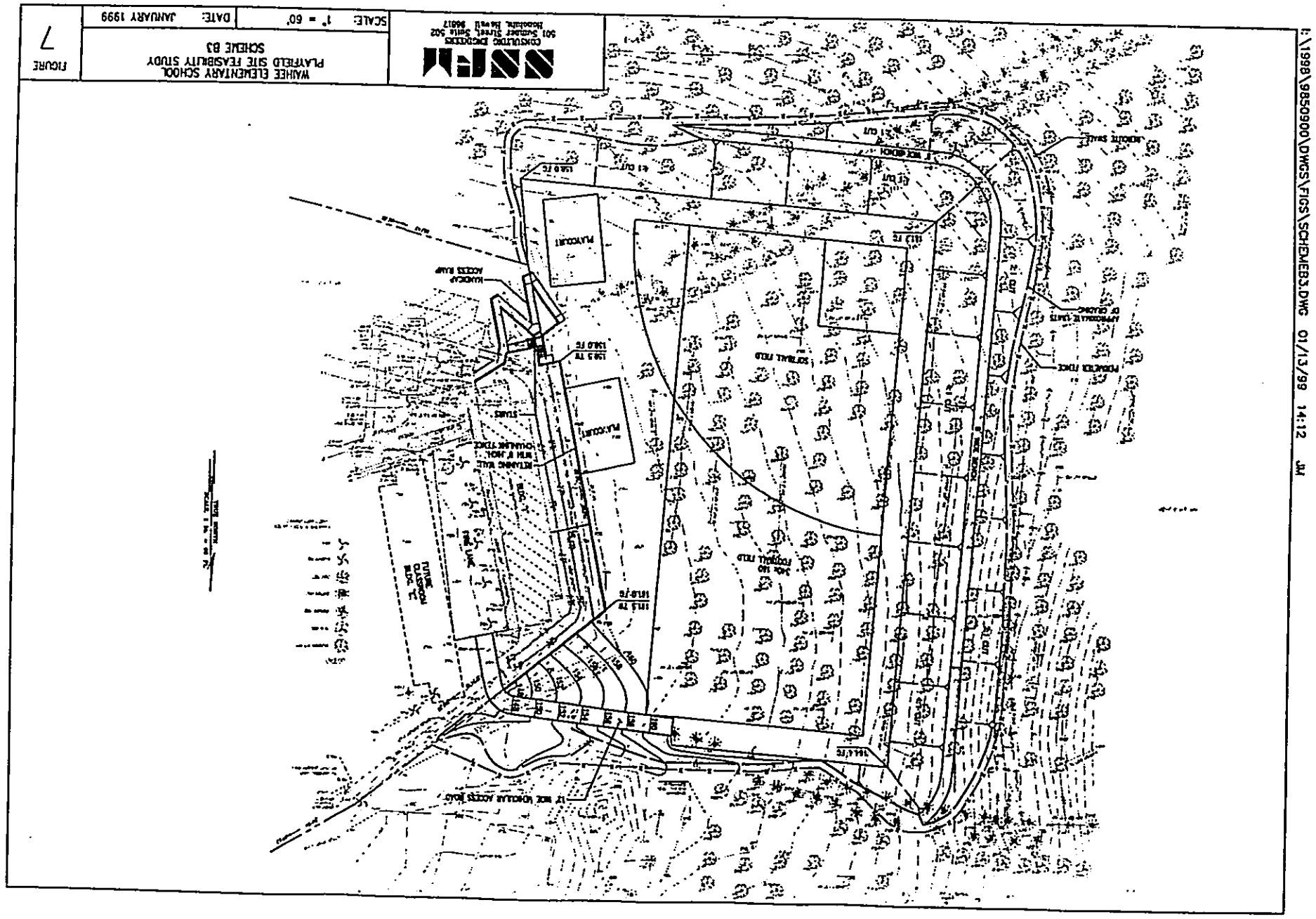
3.9 SCHEME B4

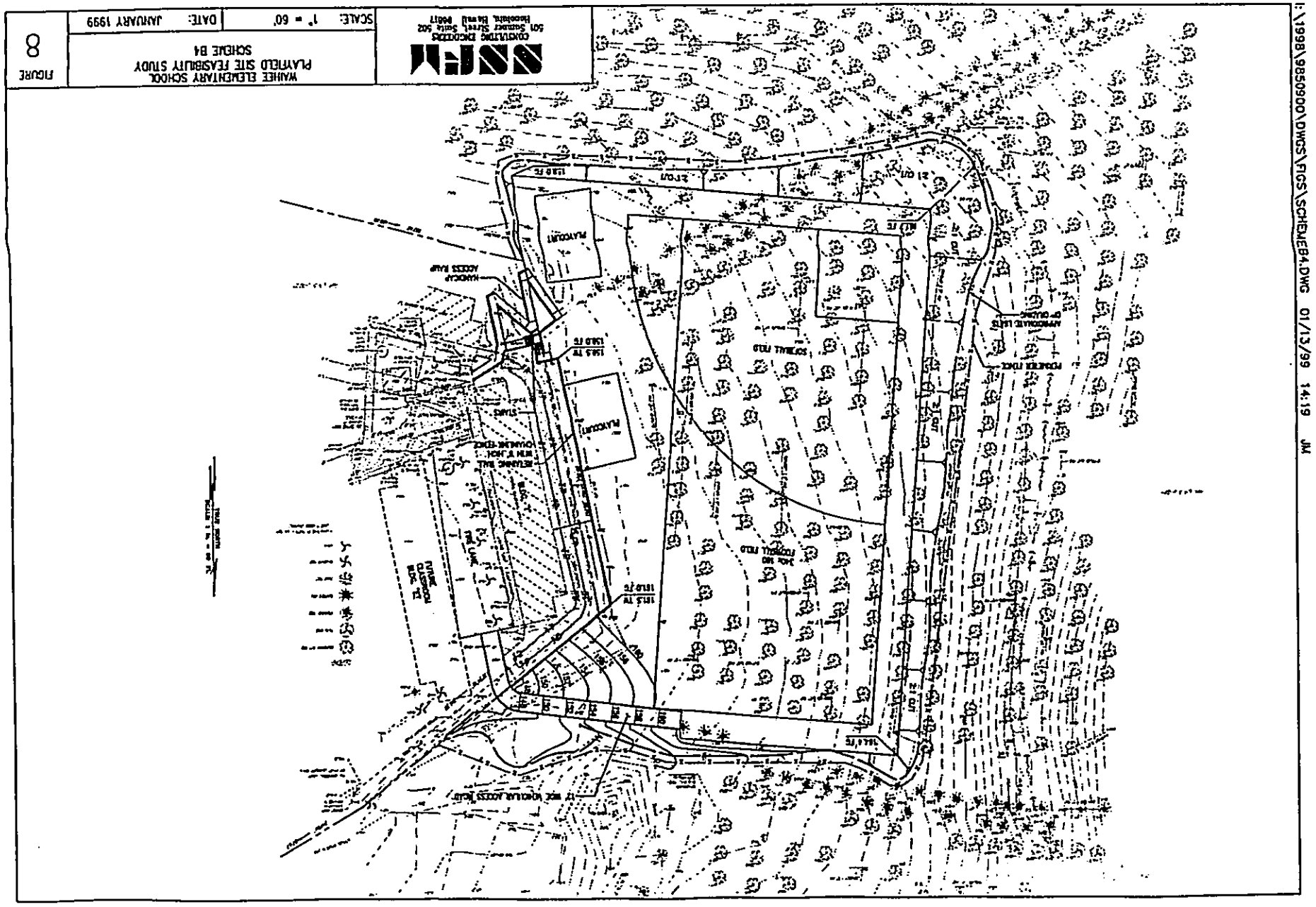
3.9.1 Description

Identical to Scheme B2 except for the retaining wall (Figure 8).

3.9.2 Advantages

The 2nd less costliest scheme but adds more room for additional playcourts than Scheme B2.


SCALE: 1" = 60'
DATE: JANUARY 1999
WAHEE ELEMENTARY SCHOOL
PLAYFIELD SITE FEASIBILITY STUDY
SCHEME B3
FIGURE
7
CONSULTING ENGINEERS
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
I:\1998\98590000\DWGS\FIGS\SCHEMEB3.DWG 01/13/99 14:12 JM


WAHEE ELEMENTARY SCHOOL
PLANNED SITE FEASIBILITY STUDY
SCHEME B4
SCALE: 1" = 60'
DATE: JANUARY 1999
FIGURE
8
I:\1998\985900\DWGS\FIGS\SCHEMEB4.DWG 01/13/99 14:19 JM

3.9.3 Disadvantages

Essentially the same disadvantages as discussed for Scheme B2.

4 COST COMPARISON

A quantity takeoff and construction cost estimates were prepared for the eight schemes. See Appendix: Detailed Construction Cost Estimates and Table 1 below:

DESCRIPTION	A1	A2	A3	A4
A. EARTHWORK	$687,250	$384,800	$676,750	$374,050
B. SITEWORK	$537,650	$454,850	$604,850	$522,050
SUBTOTAL COST	$1,224,900	$839,650	$1,281,600	$896,100
10% CONTIGENCY	$122,490	$83,965	$128,160	$89,610
TOTAL COST	$1,347,390	$923,615	$1,409,760	$985,710
ROUNDED COST	$1,350,000	$925,000	$1,410,000	$990,000

DESCRIPTION	B1	B2	B3	B4
A. EARTHWORK	$467,800	$266,950	$457,050	$256,200
B. SITEWORK	$495,050	$411,950	$562,250	$479,150
SUBTOTAL COST	$962,850	$678,900	$1,019,300	$735,350
10% CONTIGENCY	$96,285	$67,890	$101,930	$73,535
TOTAL COST	$1,059,135	$746,790	$1,121,230	$808,885
ROUNDED COST	$1,060,000	$750,000	$1,125,000	$810,000

Table 1: Construction Cost Comparison

5 EVALUATION OF ALTERNATIVES

Because essentially the same amenities can be provided for all of the schemes examined, the obvious considerations should be the construction cost, the usable area, and the minimum takedown area for the selected Scheme.

However, another important consideration should be the "value" of the finished product - what will be gotten for the amount spent. While Scheme B2 is the least expensive scheme, Scheme B4 provides more usable room for a little more money and with the same takedown area. However, a "value" that is hard to assess but obviously very tangible, would be in Scheme B3, where spectator seating can also be provided very easily in the grading process.

COMPARISON OF LAND ACQUISITION AREAS								
Scheme	**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**
Area (Acres)	4.19	3.38	4.22	3.43	3.78	3.00	3.77	3.02

6 RECOMMENDATIONS

Both Schemes B1 and B3 offer the possibility of spectator seating, which would be appreciated during any school functions or community events. Although Scheme B1 provides for a 30' buffer zone from the playcourts to the existing classroom building, Scheme B3 eliminates the need to maintain the slope bank. Therefore, Scheme B3 is the recommended choice.

APPENDIX

DETAILED CONSTRUCTION COST ESTIMATES

TABLE OF CONTENTS

DETAILED CONSTRUCTION COST ESTIMATES

PROJECT: WAIHEE ELEMENTARY SCHOOL PLAYFIELD SITE QUANTITY TAKEOFF

Date: January 1999
Prepared by: K. Namoca

DESCRIPTION	UNITS	SCHEMES							
		A1	A2	A3	A4	B1	B2	B3	B4
A. EARTHWORK									
1. Clear & Grub	Acres	3.9	3.2	3.9	3.2	3.5	2.8	3.5	2.8
2. Excavation	CY	28,370	16,320	28,160	16,100	19,880	11,900	19,660	11,680
3. Embankment	CY	6,740	6,560	7,790	7,610	7,940	7,790	8,990	8,840
4. Disposal	CY	21,630	9,760	20,370	8,490	11,940	4,110	10,670	2,840
B. SITE IMPROVEMENTS									
1. Access Roadway	LF	180	180	180	180	180	180	180	180
2. Walkway, Ramp, Stairs	SF	1,250	1,225	1,250	1,225	1,250	1,225	1,250	1,225
3. Fencing	LF	310	310	290	290	310	310	290	290
4. Retaining Wall	CY	0	0	150	150	0	0	150	150
5. Grassing, Groundcover	SF	171,000	139,300	171,000	139,300	154,400	122,400	154,400	122,400
6. Water Supply	LS	1	1	1	1	1	1	1	1
7. Irrigation System	LS	1	1	1	1	1	1	1	1
8. Perimeter Fencing	LF	1,500	1,400	1,500	1,400	1,400	1,300	1,400	1,300
9. Playcourt	LS	1	1	1	1	1	1	1	1
10. Drinking Fountains	EA	2	2	2	2	2	2	2	2

PROJECT: WAIHEE ELEMENTARY SCHOOL
PLAYFIELD SITE COST ESTIMATE

Date: January 1999
Prepared by: K. Namoca

SCHEME A1

DESCRIPTION	UNITS	ESTIMATED QUANTITIES	UNIT PRICE	SUBTOTAL
A. EARTHWORK				
1. Clear & Grub	Acres	3.9	$3,000	$11,700
2. Excavation	CY	28,370	$15	$425,550
3. Embankment	CY	6,740	$5	$33,700
4. Disposal	CY	21,630	$10	$216,300
B. SITE IMPROVEMENTS				
1. Access Roadway	LF	180	$200	$36,000
2. Walkway, Ramp, Stairs	SF	1,250	$4	$5,000
3. Fencing	LF	310	$15	$4,650
4. Retaining Wall	CY	0	$450	$0
5. Grassing, Groundcover	SF	171,000	$1	$171,000
6. Water Supply	LS	1	$5,000	$5,000
7. Irrigation System	LS	1	$260,000	$260,000
8. Perimeter Fencing	LF	1,500	$10	$15,000
9. Playcourt	LS	1	$40,000	$40,000
10. Drinking Fountain	EA	2	$500	$1,000
TOTAL COST				$1,224,900
10% CONTIGENCY				$122,490
TOTAL IMPROVEMENT COST				$1,347,390

SCHEME A2

DESCRIPTION	UNITS	ESTIMATED QUANTITIES	UNIT PRICE	SUBTOTAL
A. EARTHWORK				
1. Clear & Grub	Acres	3.2	$3,000	$9,600
2. Excavation	CY	16,320	$15	$244,800
3. Embankment	CY	6,560	$5	$32,800
4. Disposal	CY	9,760	$10	$97,600
B. SITE IMPROVEMENTS				
1. Access Roadway	LF	180	$200	$36,000
2. Walkway, Ramp, Stairs	SF	1,225	$4	$4,900
3. Fencing	LF	310	$15	$4,650
4. Retaining Wall	CY	0	$450	$0
5. Grassing, Groundcover	SF	139,300	$1	$139,300
6. Water Supply	LS	1	$5,000	$5,000
7. Irrigation System	LS	1	$210,000	$210,000
8. Perimeter Fencing	LF	1,400	$10	$14,000
9. Playcourt	LS	1	$40,000	$40,000
10. Drinking Fountain	EA	2	$500	$1,000
TOTAL COST				$839,650
10% CONTIGENCY				$83,965
TOTAL IMPROVEMENT COST				$923,615

PROJECT: WAIHEE ELEMENTARY SCHOOL
PLAYFIELD SITE COST ESTIMATE

Date: January 1999
Prepared by: K. Namoca

SCHEME A3

DESCRIPTION	UNITS	ESTIMATED QUANTITIES	UNIT PRICE	SUBTOTAL
A. EARTHWORK				
1. Clear & Grub	Acres	3.9	$3,000	$11,700
2. Excavation	CY	28,160	$15	$422,400
3. Embankment	CY	7,790	$5	$38,950
4. Disposal	CY	20,370	$10	$203,700
B. SITE IMPROVEMENTS				
1. Access Roadway	LF	180	$200	$36,000
2. Walkway, Ramp, Stairs	SF	1,250	$4	$5,000
3. Fencing	LF	290	$15	$4,350
4. Retaining Wall	CY	150	$450	$67,500
5. Grassing, Groundcover	SF	171,000	$1	$171,000
6. Water Supply	LS	1	$5,000	$5,000
7. Irrigation System	LS	1	$260,000	$260,000
8. Perimeter Fencing	LF	1,500	$10	$15,000
9. Playcourt	LS	1	$40,000	$40,000
10. Drinking Fountain	EA	2	$500	$1,000
TOTAL COST				$1,281,600
10% CONTIGENCY				$128,160
TOTAL IMPROVEMENT COST				$1,409,760

SCHEME A4

DESCRIPTION	UNITS	ESTIMATED QUANTITIES	UNIT PRICE	SUBTOTAL
A. EARTHWORK				
1. Clear & Grub	Acres	3.2	$3,000	$9,600
2. Excavation	CY	16,100	$15	$241,500
3. Embankment	CY	7,610	$5	$38,050
4. Disposal	CY	8,490	$10	$84,900
B. SITE IMPROVEMENTS				
1. Access Roadway	LF	180	$200	$36,000
2. Walkway, Ramp, Stairs	SF	1,225	$4	$4,900
3. Fencing	LF	290	$15	$4,350
4. Retaining Wall	CY	150	$450	$67,500
5. Grassing, Groundcover	SF	139,300	$1	$139,300
6. Water Supply	LS	1	$5,000	$5,000
7. Irrigation System	LS	1	$210,000	$210,000
8. Perimeter Fencing	LF	1,400	$10	$14,000
9. Playcourt	LS	1	$40,000	$40,000
10. Drinking Fountain	EA	2	$500	$1,000
TOTAL COST				$896,100
10% CONTIGENCY				$89,610
TOTAL IMPROVEMENT COST				$985,710

PROJECT: WAIHEE ELEMENTARY SCHOOL
PLAYFIELD SITE COST ESTIMATE

Date: January 1999
Prepared by: K. Namoca

SCHEME B1

DESCRIPTION	UNITS	ESTIMATED QUANTITIES	UNIT PRICE	SUBTOTAL
A. EARTHWORK				
1. Clear & Grub	Acres	3.5	$3,000	$10,500
2. Excavation	CY	19,880	$15	$298,200
3. Embankment	CY	7,940	$5	$39,700
4. Disposal	CY	11,940	$10	$119,400
B. SITE IMPROVEMENTS				
1. Access Roadway	LF	180	$200	$36,000
2. Walkway, Ramp, Stairs	SF	1,250	$4	$5,000
3. Fencing	LF	310	$15	$4,650
4. Retaining Wall	CY	0	$450	$0
5. Grassing, Groundcover	SF	154,400	$1	$154,400
6. Water Supply	LS	1	$5,000	$5,000
7. Irrigation System	LS	1	$235,000	$235,000
8. Perimeter Fencing	LF	1,400	$10	$14,000
9. Playcourt	LS	1	$40,000	$40,000
10. Drinking Fountain	EA	2	$500	$1,000
TOTAL COST				$962,850
10% CONTIGENCY				$96,285
TOTAL IMPROVEMENT COST				$1,059,135

SCHEME B2

DESCRIPTION	UNITS	ESTIMATED QUANTITIES	UNIT PRICE	SUBTOTAL
A. EARTHWORK				
1. Clear & Grub	Acres	2.8	$3,000	$8,400
2. Excavation	CY	11,900	$15	$178,500
3. Embankment	CY	7,790	$5	$38,950
4. Disposal	CY	4,110	$10	$41,100
B. SITE IMPROVEMENTS				
1. Access Roadway	LF	180	$200	$36,000
2. Walkway, Ramp, Stairs	SF	1,225	$4	$4,900
3. Fencing	LF	310	$15	$4,650
4. Retaining Wall	CY	0	$450	$0
5. Grassing, Groundcover	SF	122,400	$1	$122,400
6. Water Supply	LS	1	$5,000	$5,000
7. Irrigation System	LS	1	$185,000	$185,000
8. Perimeter Fencing	LF	1,300	$10	$13,000
9. Playcourt	LS	1	$40,000	$40,000
10. Drinking Fountain	EA	2	$500	$1,000
TOTAL COST				$678,900
10% CONTIGENCY				$67,890
TOTAL IMPROVEMENT COST				$746,790

PROJECT: WAIHEE ELEMENTARY SCHOOL
PLAYFIELD SITE COST ESTIMATE

Date: January 1999
Prepared by: K. Namoca

SCHEME B3

DESCRIPTION	UNITS	ESTIMATED QUANTITIES	UNIT PRICE	SUBTOTAL
A. EARTHWORK				
1. Clear & Grub	Acres	3.5	$3,000	$10,500
2. Excavation	CY	19,660	$15	$294,900
3. Embankment	CY	8,990	$5	$44,950
4. Disposal	CY	10,670	$10	$106,700
B. SITE IMPROVEMENTS				
1. Access Roadway	LF	180	$200	$36,000
2. Walkway, Ramp, Stairs	SF	1,250	$4	$5,000
3. Fencing	LF	290	$15	$4,350
4. Retaining Wall	CY	150	$450	$67,500
5. Grassing, Groundcover	SF	154,400	$1	$154,400
6. Water Supply	LS	1	$5,000	$5,000
7. Irrigation System	LS	1	$235,000	$235,000
8. Perimeter Fencing	LF	1,400	$10	$14,000
9. Playcourt	LS	1	$40,000	$40,000
10. Drinking Fountain	EA	2	$500	$1,000
TOTAL COST				$1,019,300
10% CONTIGENCY				$101,930
TOTAL IMPROVEMENT COST				$1,121,230

SCHEME B4

DESCRIPTION	UNITS	ESTIMATED QUANTITIES	UNIT PRICE	SUBTOTAL
A. EARTHWORK				
1. Clear & Grub	Acres	2.8	$3,000	$8,400
2. Excavation	CY	11,680	$15	$175,200
3. Embankment	CY	8,840	$5	$44,200
4. Disposal	CY	2,840	$10	$28,400
B. SITE IMPROVEMENTS				
1. Access Roadway	LF	180	$200	$36,000
2. Walkway, Ramp, Stairs	SF	1,225	$4	$4,900
3. Fencing	LF	290	$15	$4,350
4. Retaining Wall	CY	150	$450	$67,500
5. Grassing, Groundcover	SF	122,400	$1	$122,400
6. Water Supply	LS	1	$5,000	$5,000
7. Irrigation System	LS	1	$185,000	$185,000
8. Perimeter Fencing	LF	1,300	$10	$13,000
9. Playcourt	LS	1	$40,000	$40,000
10. Drinking Fountain	EA	2	$500	$1,000
TOTAL COST				$735,350
10% CONTIGENCY				$73,535
TOTAL IMPROVEMENT COST				$808,885

M F A **MASA FUJIOKA & ASSOCIATES**
A PROFESSIONAL PARTNERSHIP
ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS
99-1205 Halawa Valley Street, Suite 302 • Aiea, Hawaii 96701-3281
Phone 808 484-5366 • Fax 808 484-0007

August 4, 1998
Fax: 521-7348
98086-013

SSFM Engineers, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Attention: Mr. Ronald M. Uemura, P.E.

Subject: **Letter Report**
Geotechnical Engineering Consultation
Waihee Elementary School Playground
Waihee, Maui, Hawaii

Dear Mr. Uemura:

Masa Fujioka & Associates (MFA) is pleased to submit this consultation letter report. We understand that the Education Planning Branch of the Division of Public Works, DAGS has contracted SSFM to conduct a Site Assessment Study for the proposed playfield. We proposed and performed the following scope of geotechnical services for this project.

SCOPE OF WORK

MFA researched and investigated the existing soil conditions at the site using readily available resources, such as geological and soil survey studies, maps and available geotechnical information from projects in the vicinity of the site. We used this information to prepare a letter report which provides preliminary recommendations for the proposed site grading and retaining walls. Our research included a site visit by the undersigned.

We understand that an actual soils investigation and report will be required at a later date, as part of the design phase of the project.

PROJECT CONSIDERATIONS

We understand that DAGS has contracted a Site Assessment Study to provide a minimum area 260 ft. x 380 ft. for a playfield. Because of the intended use, the field would have to be relatively flat (probably no more than approximately 2% slope in any direction). Because of the approximately 50 foot elevation difference between the high and low end of the site, excavation/backfill in excess of 25 feet or more and very high retaining walls are anticipated. The approximate layout of the playfield is depicted on Exhibit "C" - CONCEPTUAL DRAINAGE DESIGN (attached).

Major geotechnical considerations would appear to include the following:

1. Suitability of excavated materials for use as fill. Special fill placement requirements.

2. Overall slope stability.

3. Stability of high retaining walls, foundation considerations to maintain stability. Design lateral pressures and friction factors.

4. Excavation conditions in deep cut areas.

FINDINGS

Site Conditions

The site appears to consist of former sugar cane fields which have been cleared and are now planted with macadamia nut trees. The site slopes moderately with steeper slopes at the upper end of the site. The total slope is approximately 50 feet over 300 feet. Major topographic features in the vicinity are a dry stream channel to the south and a ridge which approaches the northwest corner of the site. The site itself is relatively featureless, other than the slope.

Surface soils, according to the Soil Conservation Service (SCS) mapping, consist of Wailuku series soils. See Exhibit "B" attached, for the SCS mapping. The Wailuku series consists of well-drained soils on alluvial fans. These soils developed in alluvium derived from weathered basic igneous rock.

Two soils of the Wailuku series are mapped. Wailuku silty clay (WvC) and Wailuku cobbly silty clay (WwC). The two soils are similar except that WwC is cobbly in the surface layer. The surface soil is a dark reddish-brown silty clay and is underlain by gravelly and cobbly alluvium.

An indication of deeper subsurface conditions is visible within the dry stream channel to the south. The stream channel has been cut up to 10 feet deeper than the adjacent slopes and soil exposures on the bank indicate that the surface soils are underlain by alluvium which consists largely of cobbles and boulders within a silty clay matrix. Large boulders are clearly commonly present within the subsurface as they are abundantly present within the stream channel and within the exposed banks.

An indication of still deeper subsurface conditions is visible within the ridge to the northwest. A relatively recent roadcut in the ridge indicates approximately a five foot thick layer of residual silty clay (soil which formed in place from basaltic rock) overlying saprolite with large basaltic corestones (cobbles and boulders). It is likely that a similar soil and saprolite profile underlies the alluvium on the site, although the depth of the saprolite cannot be determined without exploratory borings. The saprolite likely grades into hard basaltic rock.

Preliminary Soils (Geotechnical) Recommendations

1. Suitability of excavated materials for use as fill. Special fill placement requirements.

Much of the excavated material will likely contain boulders and cobbles. This material can form a high strength fill but can have settlements due to the creation of many subsurface voids which could allow migration of fine materials. This may not be a major problem for a playfield, but can be mitigated by special placement considerations. Generally the larger boulders and cobbles could be placed at the bottom of the fill and a sealing layer of graded material could be placed and compacted over the boulders and cobbles prior to placing a surface layer of silty clay. A geotechnical membrane could also be used in lieu of the sealing layer of graded material.

For preliminary assessment purposes, we recommend assuming that excavated materials can be used for fill.

2. Overall slope stability.

Information on deeper subsurface conditions must by obtained by borings to evaluate the overall slope stability following the proposed grading. Generally, it appears that the key to maintaining overall slope stability will be placing the foundations for the high retaining walls deep enough to be on competent and stable soils.

For preliminary assessment purposes, we recommend assuming that overall stability can be maintained assuming the retaining walls are founded approximately five feet below grade.

3. Stability of high retaining walls, foundation considerations to maintain stability. Design lateral pressures and friction factors.

These design criteria will be developed following availability of boring data and following design of the fill placement (type of materials to be placed and fill procedures), which will have a major effect on the design lateral pressures. Drainage considerations will also be important.

For preliminary assessment purposes, we recommend the following lateral pressures, bearing capacity and friction factors:

active pressure	40 PCF equivalent fluid
passive pressure	300 PCF equivalent fluid
bearing capacity	3000 PSF
friction factor	0.4

The upper retaining wall should be assumed to be backfilled with gravel to maintain drainage. The lower retaining wall should be assumed to be backfilled with boulders and cobbles to maintain drainage. The walls should be drained by weepholes or by drainage piping. Grading to the walls should avoid ponding at the top of the wall.

A high capacity drainage channel should be constructed above the upper retaining wall to route surface runoff around the wall.

4. Excavation conditions in deep cut areas.

Excavation conditions will be checked by the boring information but, based on available data will likely consist of bouldery and cobbly alluvium. The deepest excavations may encounter residual soils, saprolite, and possibly hard basaltic rock.

LIMITATIONS

This consultation letter is based on review of available data and a brief site reconnaissance. The information provided in this report is for site assessment purposes only and should not be used for design or to develop construction bids.

Respectfully submitted,

MASA FUJIOKA & ASSOCIATES
A Professional Partnership

Masanobu R. Fujioka, P.E.
Principal-In-Charge

MRF

Attachments: Exhibit "C" Conceptual Drainage Design (by others)
Exhibit "B" - Runoff Map Tributary Area "B" (by others)

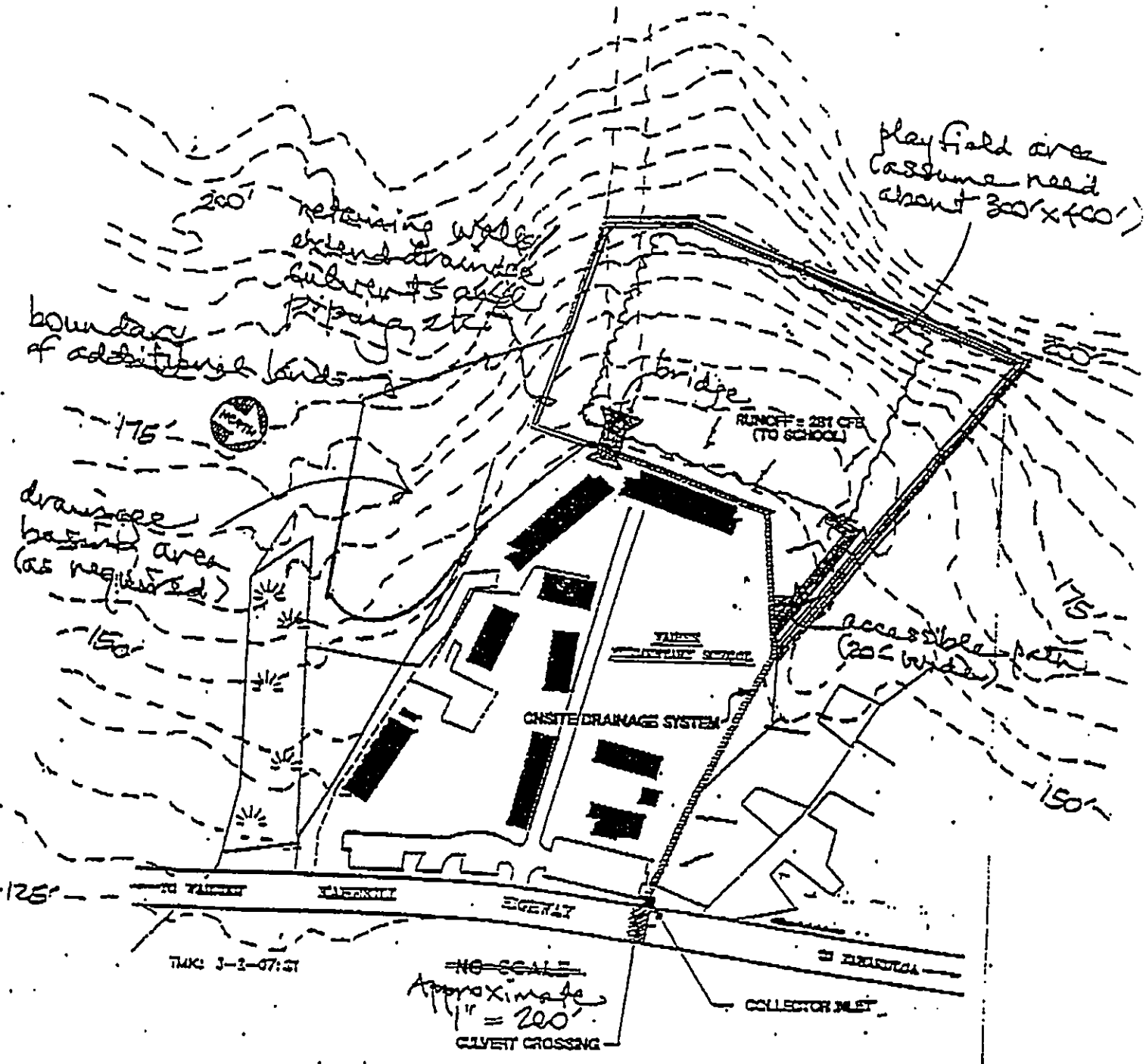
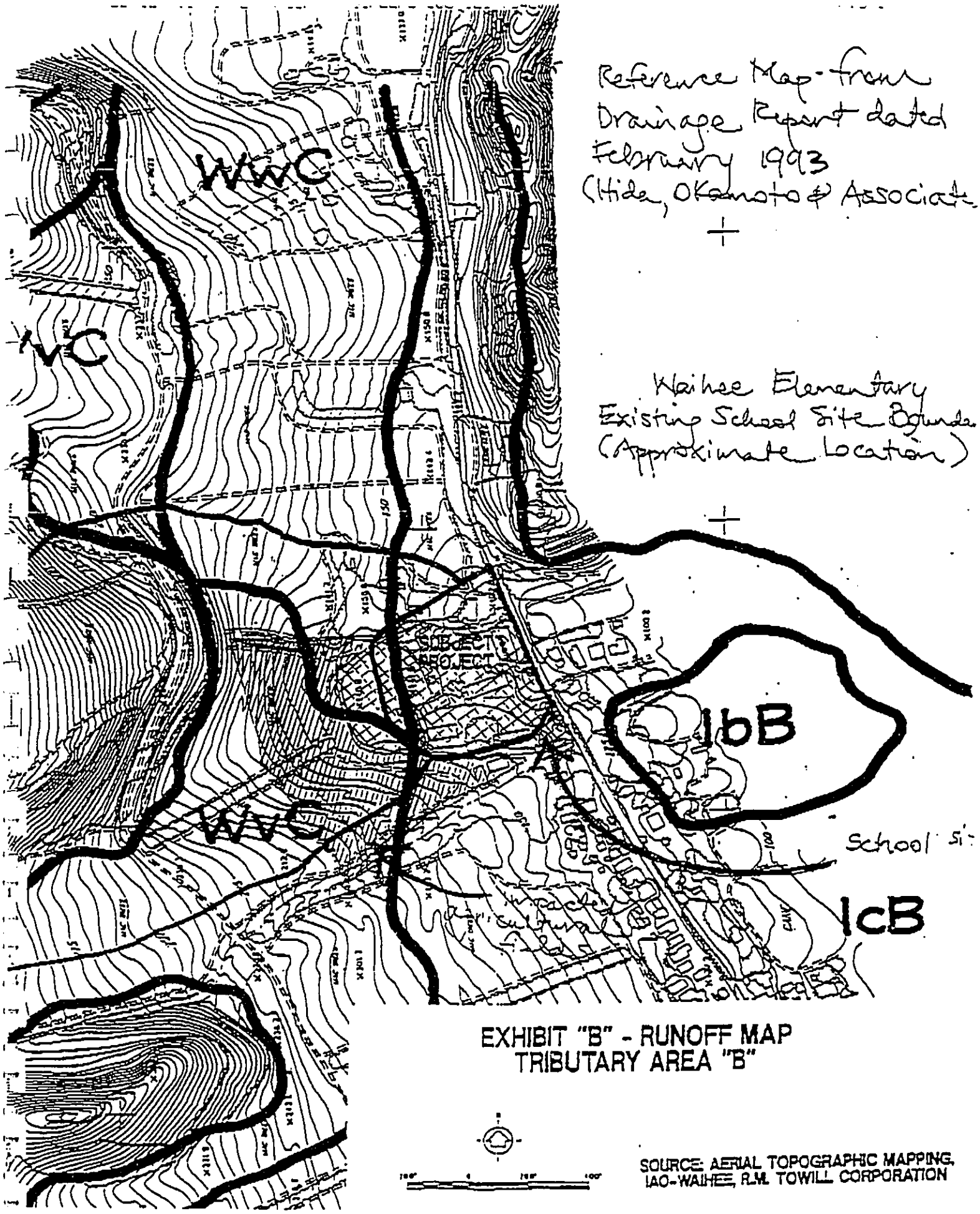


EXHIBIT "C" - CONCEPTUAL DRAINAGE DESIGN
Waihee Elementary School
Alternative No. 3
(Preliminary Location of Playfield)

8/96 PCW



Reference Map - from Drainage Report dated February 1993 (Hida, Okamoto & Associate

Waihee Elementary
Existing School Site Bdunda
(Approximate location)

EXHIBIT "B" - RUNOFF MAP
TRIBUTARY AREA "B"

SOURCE: AERIAL TOPOGRAPHIC MAPPING,
IAO-WAIHEE, R.M. TOWILL CORPORATION

ARCHAEOLOGICAL ASSESSMENT FOR AN APPROXIMATELY 2.5-ACRE PROPOSED PLAYFIELD *MAUKA* OF THE WAIHE`E ELEMENTARY SCHOOL, WAIHE`E *AHUPUA`A*, ISLAND OF MAUI

by

Hallett H. Hammatt, Ph.D.
and
Rodney Chiogioji, B.A.

Prepared for

SSFM ENGINEERS, INC.

Cultural Surveys Hawaii
September 1998

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I. INTRODUCTION

A. Project Description

At the request of SSFM Engineering, Inc., Cultural Surveys Hawaii has conducted an archaeological assessment of an approximately 2.5-acre parcel immediately *mauka* of Waihe`e Elementary School, Waihe`e *ahupua`a*, island of Maui (Figure 1). The parcel is proposed for development of a playfield.

B. Scope of Work

The scope of the work for the archaeological assessment comprised:

1. Historic background research including study of historic maps, archival documents, previous archaeological and historical studies, and other sources for the purpose of identifying previous and present land use within the parcel, and to determine if archaeological sites have previously been recorded in the area.

2. Inspection of the parcel to confirm its present use and to inspect the ground surface for any archaeological materials or sites that may be present.

3. Preparation of a report detailing the results of the historic research and fieldwork, and including recommendations.

C. Work Accomplished

Inspection of the parcel was accomplished on July 23, 1998.

Background research included: a review of previous archaeological studies on file at the State Historic Preservation Division of the Department of Land and Natural Resources; 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 Archives of the Bishop Museum; study of historic photographs at the Hawai`i State Archives and the Archives of the Bishop Museum; and study of historic maps at the Survey Office of the Department of Land and Natural Resources.

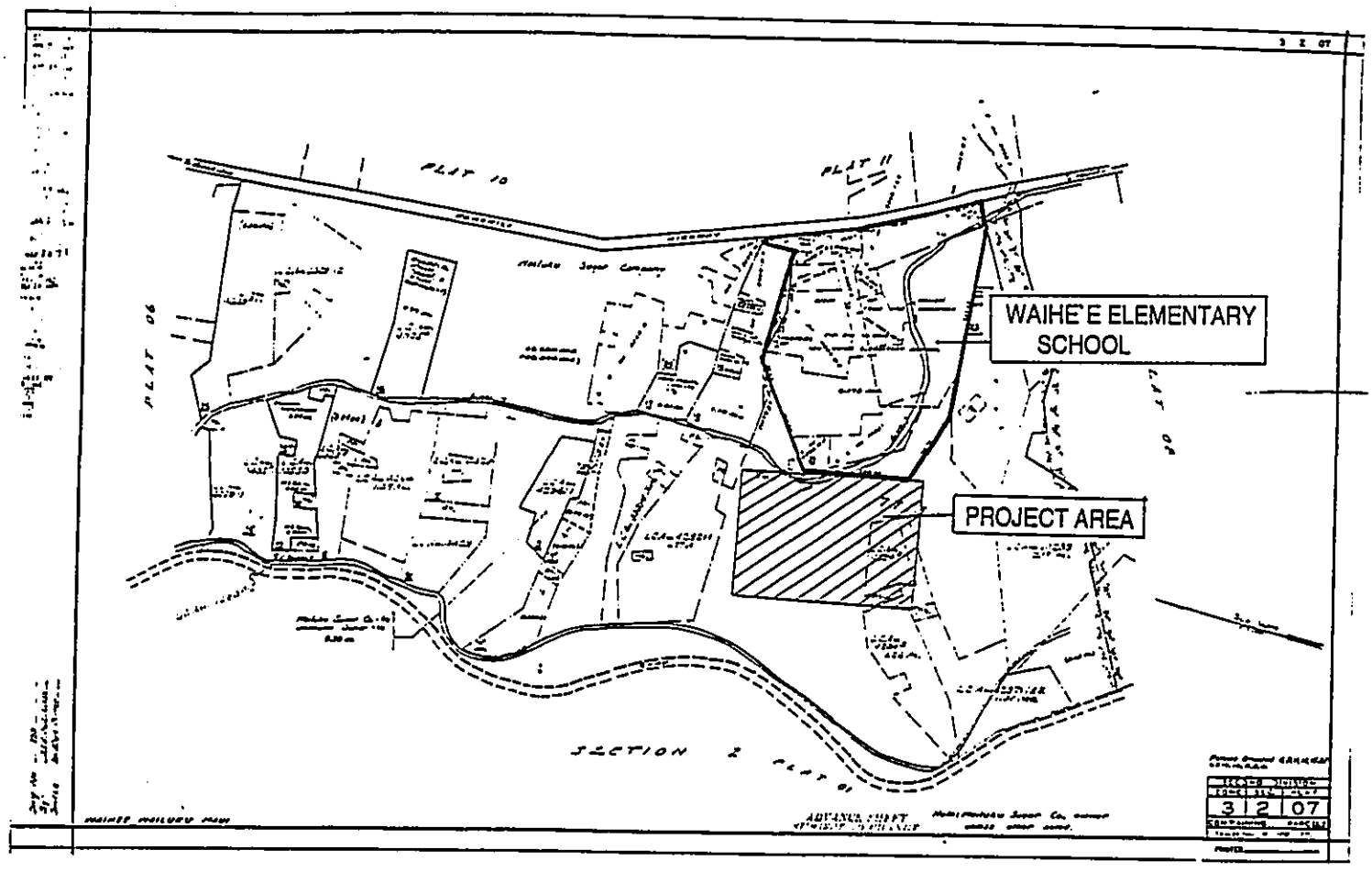

Figure 1 Tax map showing project area

II. WAIHE`E *AHUPUA`A* AND THE PRESENT PROJECT AREA: CULTURAL AND HISTORICAL DOCUMENTATION

> From Waihe`e to Wailuku Valley, in ancient times was the largest continuous area of wet-taro cultivation in the islands...Waihee, like Kahakuloa, takes its name from historic *lo`i*. This patch, named Waihee, formerly belonged to the alii and is a large patch near the sea. (Handy and Handy 1972:496)

The high degree of cultivation within Waihe`e *ahupua`a* and its near neighbors gives evidence that a substantial population would have been established there during the pre-contact period. According to Cordy, the settlement of Waihe`e represented one of two (or perhaps three) population concentrations on Maui:

> The Kaupo, Kipahulu, Hana, Koolau, and Hamakua districts of northeast Maui form a wet, fertile contiguous area that would have been a dominant population center early in Maui's settlement. On West Maui, the large valleys of Waihee and Wailuku would have been another fertile focus, and to the southwest, the permanent streams of Lahaina and Olowalu would have been conceivably another early population area. (Cordy 1981:198-199)

East Maui and the Wailuku district, which includes Waihe`e *ahupua`a*, comprised the two rival the two rival societies on Maui. It was only in the mid-16th century, during the reign of the Wailuku chief Piilani, that the "Hana chiefs finally acknowledged the West Maui king's rule" (Cordy 1981:210). While Hawaiian traditions do not disclose the size of the Waihe`e population or its disposition within the *ahupua`a*, they do associate Waihe`e *ahupua`a* and the district of Wailuku - *i.e.* West Maui - with notable *ali`i*, suggesting that Waihe`e shared in the district's importance as a center of political power and substantial population in the pre-contact and early contact periods. An indication of the *ahupua`a*'s importance during the pre-contact period are the ten *heiau* which have been recorded there in the present century.

The earliest census on Maui taken by Protestant missionaries recorded a total population of 827 in Waihe`e Valley in 1831, comprising 317 adult males, 299 adult females, 107 male children, and 104 female children (Schmitt 1973:18). That population was evidently substantial enough to warrant the establishment of a church at Waihe`e as

> ...an outstation of the mother church in Wailuku. About 1830 Reverend Jonathan Green built a pole and thatch meeting house on the site. Rueben Tinker joined Jonathan Green in 1832 and together they made plans for the establishment of a permanent church in Waihee. Records indicate that between 100 and 300 Hawaiians attended these early meetings. (Gowans and Penkiunas 1993:127)

(In 1848, construction began on a stone-walled church building which continues standing today.)

The Organic Acts of 1845 and 1846 initiated the process of the *Mahele* - the division of Hawaiian lands - which introduced private property into Hawaiian society. In 1848 the crown and the *ali`i* (royalty) received their land titles. The *ahupua`a* of Waihe`e was awarded to Victoria Kamāmalu, sister of Alexander Liholiho (King Kamehameha IV) and Lot Kamehameha (King Kamehameha V).

Kuleana awards for individual parcels within the *ahupua`a* were subsequently granted in 1850. These awards were presented to tenants - native Hawaiians, naturalized foreigners, non-Hawaiians born in the islands, or long-term resident foreigners - who could prove occupancy on the parcels before 1845. Approximately 190 Land Commission Awards (LCAs) for individual parcels were recorded in Waihe`e *ahupua`a*. The current tax map shows the disposition of these LCAs in the vicinity of the present project area (Figure 2). Records associated with these awards indicate that the project area was likely a portion of the extensive system of taro *lo`i* (irrigated fields) that formerly characterized Waihe`e.

By the early 1860s, the Waihe`e landscape was transformed as western commercial interests focused on the *ahupua`a*. In 1862 T.H. Hobron purchased land in Waihe`e Valley for the cultivation of sugar cane. "Christopher Lewis became the first owner of the Waihe`e Plantation, and L.L. Tolbert was its first manager" (Kelly and Hee 1978:12). The establishment of the sugar plantation spurred an increase in the population of Waihe`e. The Waihe`e School (adjacent to the present project area) opened in 1879, likely in response to the growing plantation community. The Waihe`e Sugar Company apparently prospered independently throughout the remainder of the 19th century until 1894 when "Wailuku, Waihe`e, and Waikapu Plantations were combined as Wailuku Sugar Company" (*Ibid.*:13).

A Hawaii Territory Survey map of 1906 shows the Waihe`e School lot (the present Waihe`e Elementary School) adjacent to the Government Road (Figure 3). The map indicates that the present project area, *mauka* of the school lot, was by then planted in sugar cane. The map also confirms that a portion of the school lot (and, likely, the adjacent lands) comprised "old taro patches".

The project area continued to be planted in sugar cane throughout the 20th century, as shown on a 1977 orthophotoquad map of Waihe`e (Figure 4). As will be discussed below in this report, the project area was subsequently replanted in macadamia nut trees. These trees remain on the project area at present.

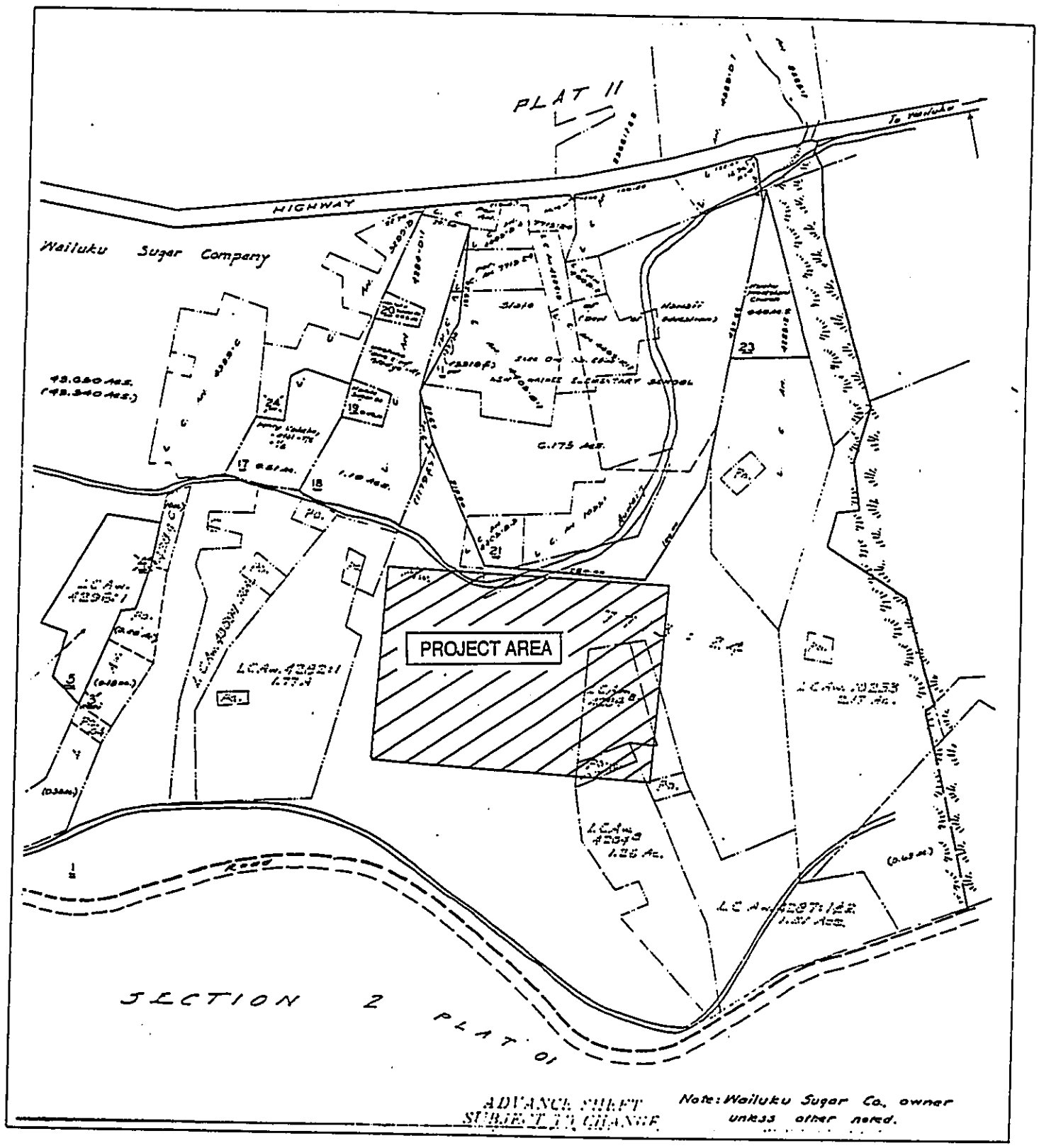

Figure 2 Tax map showing Land Commission Awards in vicinity of project area

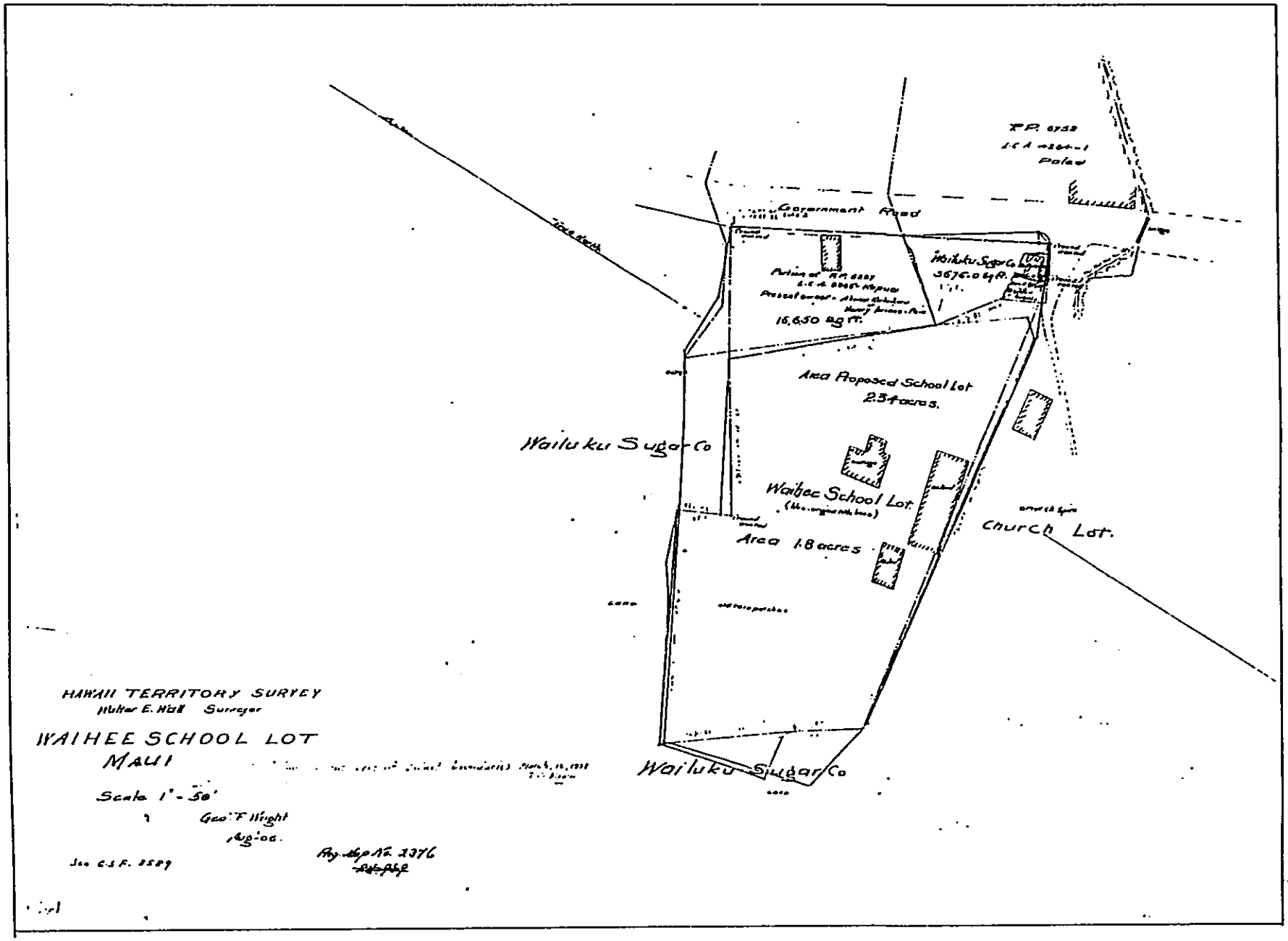

Figure 3 1906 Hawaii Territory Survey map by Walter E. Wall showing Waihee School lot and indicating surrounding cane lands (including the present project area) of Wailuku Sugar Co.

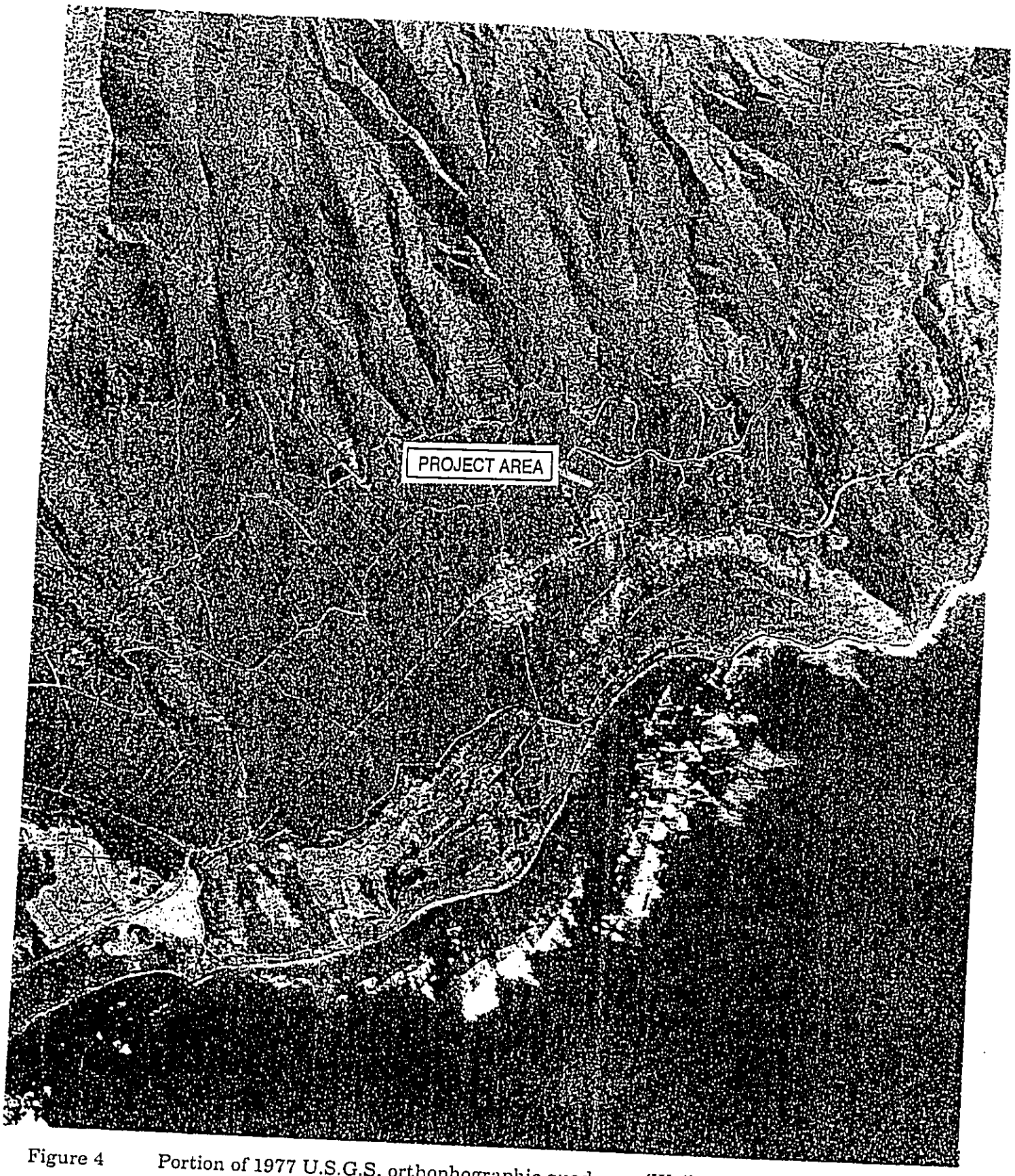

Figure 4 Portion of 1977 U.S.G.S. orthophographic quad map (Wailuku Quadrangle) showing Waihe`e Elementary School and present project area planted in sugar cane

III. PREVIOUS ARCHAEOLOGICAL RESEARCH

Two archaeological surveys conducted in Waihe`e by Theresa K. Donham (1989) and Ross Cordy (1978) have contributed the bulk of data on site patterning and land use in the *ahupua`a* prior to the 20th century. Earlier archaeological studies on Maui include the descriptive lists of religious sites by Thomas Thrum and John Stokes in the early 1900s and the first island wide site survey by Winslow Walker (1931).

The interim period from about 1930 to 1978 saw only sporadic archaeological activity in the Waihe`e area. The work of this period consisted of the identification of the "Waihe`e Midden" site on the shore at the southern extreme of Waihe`e *ahupua`a* by the Bishop Museum in 1966 (Bishop Museum site no. Ma-C11-10; State of Hawaii site no. 50-50-04-1796) and the assignation of State site numbers, with limited additional recording, to selected sites previously recorded by Walker (1931). This latter work was conducted by Robert Connolly and Robert Hommon for the State of Hawai`i Inventory of Historic Places.

Cordy (1978) conducted a reconnaissance survey of a *mauka* section of the Waihe`e River Valley from about the 800 ft. contour to the 250 ft. contour along the valley floor within forest reserve lands. Cordy located 13 site areas that include an estimated 121 features (*Ibid.*:50) consisting primarily of irrigated agricultural terraces constructed upon natural alluvial terraces on both sides of the river. Only 7 of the 121 features are considered to have functioned as habitation structures. Since 2 of the 7 features were identified as components of one site, there was a total of 6 habitation sites in Cordy's study area.

In constructing a model for predicting the distribution of six site types in Waihe`e, Cordy (1978:56-59) first summarizes general Hawaiian settlement models formulated from historical records of the period of initial contact with Western culture (A.D. 1778-1820) in conjunction with archaeological data and Land Commission Award data for other Hawaiian valleys. These models divide the Hawaiian valleys into two parts: the upper (inland portion) valley and the lower (seaward portion) valley. To conform with the earlier models, Cordy uses a natural narrowing – or constriction – of the valley within his study area as a dividing line between "the lower and upper valley". His basis for the geographical distinction is that in the lower valley the alluvial terraces are "large in area" while in the upper valley they are "much narrower and smaller in area" (*Ibid.*:51).

Cordy's model then predicts, as do the earlier models, that most permanent housing (habitation sites) will be found distributed on the coast and at the base of lower valley slopes, and that temporary habitation sites will be distributed in the upper valley on slopes and stream flats (alluvial terraces). Dryland agricultural sites are predicted to occur on lower and upper valley slopes and non-valley slopes, with irrigated agriculture occurring on lower and upper valley stream flats and in swamps. Using archaeological data, Cordy expands on the early models based on historical data to predict that burials will occur near permanent housing and in caves in valley cliffs, and that *heiau* will occur near permanent housing and on valley ridges and slopes. These predictions are corroborated in other geographical areas by the data Cordy reviews in constructing his model.

An hypothesis on the age of sites in Waihe`e is also included in Cordy's (1978:65-66) survey report. He predicts that the coastal and lower valley regions of Waihe`e were occupied as early as *circa* A.D. 300 to 600: consequently, coastal and lower valley sites should yield earlier material.

He bases this prediction on dates derived from archaeological excavations at the Bellows Dune site on O`ahu, at the Halawa Dune site on Moloka`i, and on a determination that the optimal areas for initial settlement are windward areas with good soil for cultivation.

Relatively early dates of *circa* A.D. 1000 have in fact been recovered from test excavations at two coastal habitation sites (50-50-04-1796 and -2417) in Waihe`e (Donham, 1989; Clark and Balicki, 1988). Although this age does not fit Cordy's early settlement period (*circa* A.D. 300 to 600) both sites are extensive midden deposits and it is quite possible that further excavation will yield much earlier dates for initial occupation of these sites.

Donham's (1989) survey area comprised the 270-acre proposed Waihe`e Golf Course. The northern edge of Donham's study area includes the northernmost section of the high sand dune containing sites 50-50-04-2429 through -2435 and -2800, and the Waihe`e River Valley south bank alluvial terrace site-2453. On the high dune, sites -2429 through -2434 are lithic and midden scatters with fire-altered rocks and remnant surface features. Donham (1989:111) states that the function of these deflated and eroded sites is not fully understood at this time, no doubt a consequence of the level (survey) of her investigation.

Donham's (1989) sites -2435 and -2800 are, respectively, an isolated sand dune burial and an historic cemetery. Site -2453, located on an alluvial terrace of the Waihe`e River, is identified as an agricultural complex, possibly integrated with habitation and ceremonial features (*Ibid.*).

Folk and Hammatt (1992) conducted an archaeological survey with subsurface testing of a parcel on the south side of Waihe`e River; within the parcel were portions of alluvial terraces, the river valley wall, and the ridge crest surmounted by a sand dune formation. A total of four (4) archaeological sites were identified. Two (2) were surface sites – including a post-Euro-American contact period cemetery (50-50-04-2704) located on the valley wall, and the beginning portion of an ancient irrigation ditch or *`auwai* (50-50-04-2705), located on an alluvial terrace in the valley bottom. And two (2) were buried cultural layers, sites 50-50-04-2706 and 50-50-04-2707.

Burgett and Spear (1995) conducted an archaeological inventory survey of two areas totalling 3.91 acres on the north side of the Waihe`e River, 0.75 miles inland from the coast. Two sites - an *`auwai* and *lo`i* areas - were recorded. Associated historic features included enclosures, a wall alignment and a rock pile.

IV. FIELD INSPECTION RESULTS

Field inspection of the project area was accomplished on July 23, 1998. The area was inspected on foot by one archaeologist. The project area was accessed from the adjoining grounds of the Waihe`e Elementary School. Boundaries of the project area were readily discernible as they generally continued along alignments of the adjoining school's boundaries (see Figure 1 above). above). The inspection was documented by field notes and photographs (Figures 5-8).

The project area is almost entirely planted in rows of macadamia nut trees. The area planted in these trees continues well beyond the bounds of the project area (except for the *makai* boundary adjoining the elementary school). Evidences of a subsurface irrigation system were noted throughout the project area.

An official of the elementary school informed the archaeologist that the area has been planted in macadamia nut trees for at least ten years.

No surface archaeological sites were observed in any portion of the project area.

V. SUMMARY AND RECOMMENDATIONS

Historical documentation presented above suggests that the present project area *mauka* of the Waihe`e Elementary School formerly comprised a portion of the extensive system of taro *lo`i* (irrigated fields) that once covered Waihe`e *ahupua`a*. By the late 19th century and well into the 20th century, the project area was incorporated into sugar cane field lands of the Waihe`e Sugar Company and, subsequently, the Wailuku Sugar Company.

Previous archaeological research within Waihe`e *ahupua`a* has not identified any archaeological sites or features within, or in the near vicinity of, the project area.

The project area is presently entirely planted in macadamia nut trees which, according to a local informant, have been in place for at least ten years. Field inspection confirmed that these modern agricultural pursuits - sugar cane and macadamia nuts - have destroyed or disturbed any surface archaeological sites or features which may have existed formerly within the project area..

No further archaeological investigation is recommended, given the absence of potential site areas documented in the present investigation.

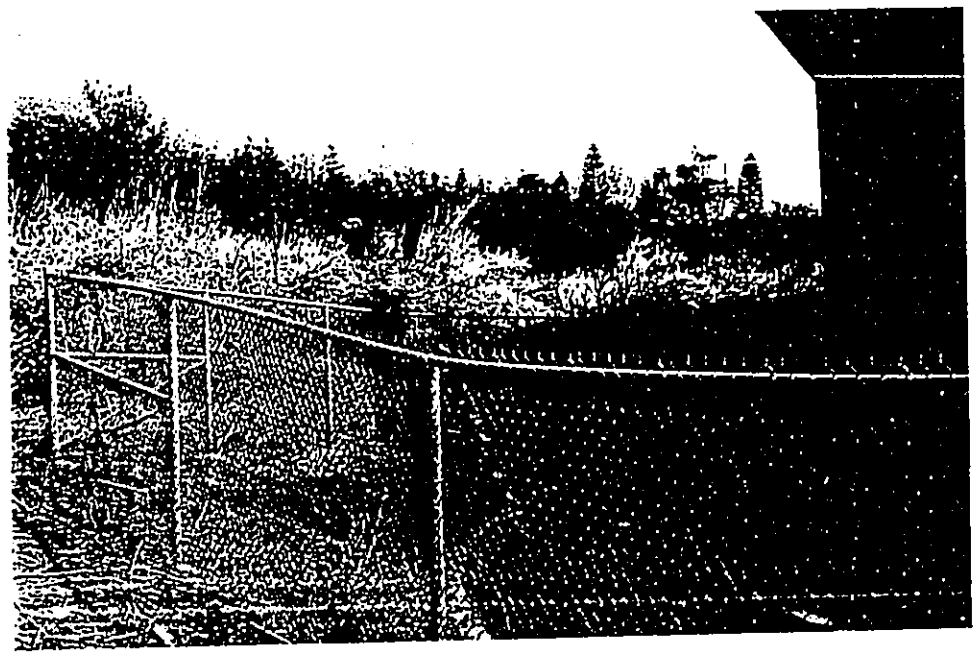

Figure 5 Project area beyond fence *mauka* of Waihe`e Elementary School; view northwest

Figure 6 Roadway and macadamia nut trees in project area; view northeast

Figure 7 Rows of macadamia nut trees in project area; view southeast

Figure 8 Irrigation system in project area; view northeast

VI. REFERENCES

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APPENDIX - B
Correspondence, Comments & Responses

September 21, 1998

Wesley Wong, District Manager
Department of Land and Natural Resources
Division of Forestry and Wildlife
Maui District Office
54 South High Street
Wailuku, Hawaii 96793

Subject: Waihee Elementary School:
New Playfield, 8-Classroom Building, Library, Administrative Building and Parking

Dear Mr. Wong:

The State of Hawaii (DAGS/DOE) proposes to add new facilities to Waihee Elementary School, located on the northwest coast of Maui. The new 8-classroom building, library, administrative building and parking will be built on the existing school grounds (TMK 3-2-07: 21). See Figure 4. The new playfield (Figure 5) will be built on an adjacent property to the west of the school (TMK 3-2-07: 01). This parcel (43.56 acres) is in agricultural use and planted in macadamia nut trees. The parcel will be subdivided and a portion of it (approximately 3.5 acres) will be acquired by the State for the new Waihee School playfield.

Wil Chee - Planning, Inc. has been selected to prepare an environmental assessment (EA) for the proposed Waihee Elementary School improvements. We would greatly appreciate any information you could supply us regarding the proposed project site.

We request that the Division of Forestry and Wildlife identify the listed and proposed to be listed threatened and endangered species in the vicinity of Waihee Elementary School. Figures showing the location and proposed action of the EA are attached for your reference.

Your early response to our request would be very much appreciated. If you have any questions or need additional information please call me at 955-6088. Thank you for your time and cooperation.

Sincerely,

Richard S. McGerrow
Senior Planner

Enclosures:

WIL CHEE - PLANNING, INC.
Land Use Planners and
Environmental Consultants
HMSA Center
1600 Kapiolani Street
Suite # 925
Honolulu, Hawaii 96814
Phone 808-955-6088
Fax 808-942-1851

September 21, 1998

Mr. Robert P. Smith
U.S. Fish and Wildlife Services
Pacific Island Office
P.O. Box 50167
Honolulu, Hawaii 96850

Subject: Waihee Elementary School:
New Playfield, 8-Classroom Building, Library, Administrative Building and Parking

Dear Mr. Smith:

The State of Hawaii (DAGS/DOE) proposes to add new facilities to Waihee Elementary School, located on the northwest coast of Maui. The new 8-classroom building, library, administrative building and parking will be built on the existing school grounds (TMK 3-2-07: 21). See Figure 4. The new playfield (Figure 5) will be built on an adjacent property to the west of the school (TMK 3-2-07: 01). This parcel (43.56 acres) is in agricultural use and planted in macadamia nut trees. The parcel will be subdivided and a portion of it (approximately 3.5 acres) will be acquired by the State for the new Waihee School playfield.

Wil Chee - Planning, Inc. has been selected to prepare an environmental assessment (EA) for the proposed Waihee Elementary School improvements. We would greatly appreciate any information you could supply us regarding the proposed project site.

We request that the U.S. Fish and Wildlife Services, Pacific Island Office, identify the listed and proposed to be listed threatened and endangered species of flora and fauna in the vicinity of Waihee Elementary School. Figures showing the location and proposed action of the EA are attached for your reference.

Your early response to our request would be very much appreciated. If you have any questions or need additional information please call me at 955-6088. Thank you for your time and cooperation.

Sincerely,

Richard S. McGerrow
Senior Planner

Enclosures:

WIL CHEE - PLANNING, INC.
Land Use Planners and
Environmental Consultants
HMSA Center
1600 Kapiolani Street
Suite # 925
Honolulu, Hawaii 96814
Phone 808-955-6088
Fax 808-942-1851

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3122
Box 50088
Honolulu, Hawaii 96850

In Reply Refer To: DH

OCT 18 1998

Richard S. McGerrow
Wil Chee Planning, Inc.
HMSA Center
1400 Rycroft St., Suite 928
Honolulu, HI 96814

Re: Waihee Elementary School, Waihee, Maui, Hawaii

Dear Mr. McGerrow;

The U.S. Fish and Wildlife Service (Service) has reviewed your letter requesting information on species in the area of Waihee Elementary School that are either federally listed as endangered or threatened or are proposed for listing. The project sponsor is the State of Hawaii Department of Education (DOE). The proposed project is to construct a new 8-classroom building, library, administrative building, parking areas, and a new playing field. All of the buildings as well as the parking areas are to be built on the existing school grounds (TMK 3-02-07: 21), while the new playing field will be built on adjacent lands (TMK 3-02-07: 01) which are currently under cultivation with macadamia nut trees. The 43.56 acres which now comprises the agricultural land will be subdivided and 3.5 acres will be acquired by the state for the new Waihee School playing field. You have requested that the Service provide any biological information that we may have to assist you in preparing a draft Environmental Assessment (EA). The Service offers the following comments for your consideration.

Based on our review of information contained in our files, including maps prepared by the Hawaii Heritage Program of The Nature Conservancy and the Service's Wetland Inventory Program, there are no federally endangered, threatened, or candidate species directly within the proposed project site. Based on this review, the Service does not anticipate any adverse effects to listed species as a result of the proposed project. However, the proposed project site is located up slope from Waihee Marsh, a seasonal wetland. Thus, the project must include adequate erosion control measures such as grading and revegetation of cleared lands. These

erosion control measures need to be conducted promptly after clearing. The Service also recommends that revegetation and landscaping be done, to the extent possible, with native Hawaiian plants.

The Service recommends that the biological surveys to be performed at the proposed project site be conducted by qualified biologists and that the results of those surveys be included in the draft EA. Also, we recommend the draft EA address potential project-related impacts to these and other native species and their habitats.

The Service encourages the early review of proposed projects and we appreciate the opportunity to provide early input on this proposal. We hope this information is of use to you in the completion of the draft EA and look forward to receiving a copy of the draft EA when it is completed. If you have questions regarding our comments, please contact Fish and Wildlife Biologist David Hopper by phone at (808) 541-3441 or by facsimile transmission at (808) 541-3470.

Sincerely,

Donald Palaski
for Robert P. Smith
Pacific Islands Manager

cc: Maui DOFAW

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

Paul G. LeMahieu, Ph.D.
Superintendent

OFFICE OF BUSINESS SERVICES

February 16, 1999

MEMO TO: Mr. Gordon Matsuoka, Public Works Engineer
Division of Public Works, DAGS

A T T N: Mr. Allen Yamanoha, Project Coordinator

F R O M: Lester H. T. Chuck, Director
Facilities and Support Services Branch

SUBJECT: Waihee Elementary School
Draft Environmental Assessment

The Department of Education supports the expansion of Waihee Elementary School and the construction of a new classroom, library, and administration facilities.

As noted in the environmental assessment, the school is presently experiencing severe overcrowding with continued increases in the projected enrollment. The proposed projects are necessary to help alleviate the overcrowding, thereby substantially improving the learning environment for students.

We have no other comment to offer at this time.

Thank you for the opportunity to respond.

LHTC:SB:hy

cc: P. LeMahieu, Ph.D., Supt.
OBS
Principal, Waihee Elem.
W. Chee, Planning, Inc.

No response necessary.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Blvd., Room 3-122
P.O. Box 50088
Honolulu, Hawaii 96850

In reply refer to: DH

MAR 10 1999

Richard S. McGerrow
Wil Chee Planning, Inc.
1400 Rycroft St, Suite # 928
Honolulu, HI 96814

Re: Draft Environmental Assessment for Waihee Elementary School Expansion/Improvements, Waihee, Maui, Hawaii

Dear Mr. McGerrow:

The U.S. Fish and Wildlife Service (Service) has reviewed the Draft Environmental Assessment for Waihee Elementary School Expansion/Improvements, Waihee, Maui (DEA). The sponsor of the proposed project is the Department of Accounting & General Services, State of Hawaii Division of Public Works. The proposed project involves construction of a new 8-classroom building, a library, an administrative building, additional parking areas, and a new playing field. The buildings and additional parking will be constructed on lands currently occupied by Waihee Elementary School, while the new playing field will be built on 3.5 acres of adjacent land that will be purchased by the State. Lands to be purchased for the new playing field are currently planted with macadamia nut trees. The Service offers the following comments for your consideration.

The DEA does not adequately describe the wildlife resources of the area, or the potential impacts from the proposed project on these resources. Sections 4.7 and 4.8 of the DEA identify the Service as stating that the project site contains no federally threatened, endangered, or candidate species. The Service's letter to Wil Chee Planning, Incorporated (dated October 18, 1998), stated that, "based on our review of information contained in our files," there were no threatened, endangered, or candidate species present within the proposed project site. Our letter recommended that biological surveys be conducted at the proposed site by a qualified biologist(s). While the Service does not anticipate the presence of or adverse effects to such species, we recommend that surveys be conducted to better assess the wildlife resources in the area and that the survey results be included in the Final Environmental Assessment (FEA).

An additional concern that is not addressed in the DEA is that of seabird "fall-out." While seabirds are not resident to the area of the proposed project site, endangered seabirds such as the dark-rumped petrel (*Pterodroma phaeopygia* ssp. *phaeopygia*), which nest in the mountains of Maui, may be affected by the proposed project-related overhead lighting for the new parking stalls and/or other lighting. The dark-rumped petrel and other seabirds often become disoriented by bright lights and collide with human structures that lie along their flight path. The FEA should note potential impacts to seabirds from the proposed project and outline measures that will reduce or eliminate these negative impacts (e.g., special outdoor, overhead lighting). Potential solutions to problems associated with seabird "fall-out" are available in a brochure published by the Division of Forestry and Wildlife, State Department of Land and Natural Resources (DOFAW). We recommend contacting Dr. Fern Duvall of the Maui DOFAW (871-2929) regarding this matter.

We hope these comments are of use to you in your preparation of the FEA, and we look forward to receiving a copy of the document when it is completed. If you have any questions regarding these comments, please contact Fish and Wildlife Biologist Dave Hopper by phone at (808) 541-3441 or by facsimile at (808) 541-3470.

Sincerely,

Robert P. Smith
Pacific Islands Manager

cc: DPW, Hawaii
DOFAW, Hawaii

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119 HONOLULU, HAWAII 96810

LETTER NO. (P)1212.9

MAR 22 1999

Mr. Robert P. Smith
Pacific Islands Manager
United States Department of Interior
Fish and Wildlife Service
Pacific Islands Ecoregion
300 Ala Moana Blvd., Room 3-122
P. O. Box 50088
Honolulu, Hawaii 96850

Dear Mr. Smith:

Subject: Draft Environmental Assessment (DEA)
Waihee Elementary School, New Playfield and
Classroom, Library, and Administration Buildings
TMK (2) 3-02-07: 21, por. 01
Waihee, Maui, Hawaii

Thank you for your March 10, 1999 comments regarding the subject project. Our response to your comments are as follows:

1. Biological Survey: While we appreciate your recommendation to conduct biological surveys to better assess the wildlife resources in the project area, we would like to note that the site of Waihee Elementary School was cleared and in continuous use as a school since 1879, over 120 years ago. Likewise, the adjoining area which will be used for the playfield is cleared agricultural land which has been in constant use for over a century, first for sugarcane and presently macadamia nut trees. For these reasons it is unlikely that threatened or endangered species exist nor would such species be affected by the proposed project. Therefore, we feel that a full biological survey of the area is not warranted.

2. Seabird "Fall-Out": Your concern for the seabird "fall-out" is acknowledged. The information provided will be included in the FEA. Mitigation measures to reduce or eliminate the negative impacts of lighting that affect seabird "fall-out" will be considered during the design phase of the project.

We appreciate your input for this project.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

AY:jy
c: Mr. Ron Uemura, SSFM Engineers, Inc.
Mr. Richard McGerrow, Will Chee-Planning, Inc.
Mr. Lester Chuck, DOE Facilities Branch

Rec'd 3/15/99

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPIOLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

March 11, 1999

Department of Accounting & General Services
State of Hawaii
Division of Public
P.O. Box 119
Honolulu, Hawai'i 96810-0119
Attention: Allen Yamanoha

Eis (99) 273

Re: Draft Environmental Assessment (DEA) for Waihee Elementary School: New Playfield, Classroom Building, Library and Administrative Building, Waihee, Maui TMK: (2) 3-2-07: por. 1.

Thank you for the opportunity to review the draft Environmental Assessment (DEA) for Waihee Elementary School. The new facilities will include a new playfield, new classroom building, new library and administrative building. The new building will be built on land currently within the school boundary. The new playfield will be on land acquired from Wailuku Sugar Company, which currently grows macadamia trees in the parcel. There are no surface archaeological features in the project area and no endangered species are known to exist in this area.

At this time, the Office of Hawaiian Affairs has no objection to the proposed project. However, we caution that Waihee was once the center of a thriving Hawaiian community and the iwi of many Hawaiian families remain buried in nearby sand dunes. Therefore, any ground disturbance associated with this project should be carefully monitored for the presence of subsurface archaeological deposits.

If you have any questions, please contact Lynn Lee, EIS Planner at 594-1936.

Sincerely

Colin Kippen
Deputy Administrator

C. Sebastian Aloot
Land and Natural Resources Division Officer

cc: Board of Trustees
Maui Community Affairs Office

MAR 15 1999

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

LETTER NO. (P)1242.9

APR 6 1999

Mr. C. Sebastian Aloot
Land and Natural Resources Division Officer
Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Dear. Mr. Aloot:

Subject: Draft Environmental Assessment for
Waihee Elementary School
New Playfield, and New Classroom,
Library and Administration Buildings
TMK: (2) 3-02-07: 21, por. 01
Waihee, Maui, Hawaii

Thank you for your March 11, 1999, comments regarding the subject project. Your concern for the iwi of Hawaiian families buried in nearby sand dunes will be noted in the Final Environmental Assessment.

We appreciate your input for this project.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

AY:jy
c: Mr. Ron Uemura, SSFM Engineers, Inc.
Mr. Richard McGerrow, Wil Chee-Planning, Inc.

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR -9 [illegible]

Ref: PS:EH

Mr. Allen Yamanoha
Division of Public Works
Department of Accounting and General Services
State of Hawaii
P.O. Box 119
Honolulu, Hawaii 96810-0119

Dear Mr. Yamanoha:

Subject: Draft Environmental Assessment (DEA) for
Waihee Elementary School, Waihee, Maui

We have reviewed the subject document and have no comments to offer on the proposed project.

Thank you for the opportunity to comment on this matter.

Very truly yours,

Dean Uchida,
Administrator

c.c. ~~Richard S. McGerrow~~
Wil Chee Planning

No response necessary.

JAMES "KIMO" APANA
Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING
March 31, 1999

Mr. Richard S. McGerrow
Wil Chee Planning, Inc.
1400 Rycroft Street, Suite 928
Honolulu, Hawaii 96814

Dear Mr. McGerrow:

RE: Draft Environmental Assessment (DEA) for the Waihee Elementary School Ballfield, Classroom Building, Library, and Administrative Building, TMK: 3-2-007:021, 001 (Por.), Wailuku, Island of Maui, Hawaii

Thank you for the opportunity to review this document. The Maui Planning Department's (Department) comments are limited to the land use section of the document on Page 12.

The document is correct in stating that the school site is Interim zoned. Schools are a permitted use within this district. The document is incorrect, however, in stating that the proposed ballfields are Interim zoned. On December 31, 1998, the previous Mayor signed an ordinance that rezoned all of the lands designated in the County's community plans as "Agriculture," which includes the proposed ballfields. A copy of the ordinance (No. 2749) is enclosed.

The proposed ballfields may require discretionary permits depending on the details of their administration by the Department of Education (DOE). If they are to be considered a public park, Maui County Code (MCC), (Section 19.30A.050.B.12), the use is permitted. If they are considered "Open Land Recreation" MCC, (Section 19.30A.060.H), a Land Use Commission Special Use Permit is necessary, and a public hearing is required before the Maui Planning Commission (MPC). If the ballfields are an expansion of the school, a Conditional Permit may be necessary which requires a hearing before the MPC and the approval by Maui County Council.

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 243-7735; ZONING DIVISION (808) 243-7253; FACSIMILE (808) 243-7634

While the Department has no objections to the proposed use, the Department recommends that the DOE meet with our staff, so that a final determination on the required permits be made. The DOE should provide additional information regarding how they will manage the ballfields with regard to public access, hours of use, etc.

If you have any questions, please contact Mr. William Spence, Staff Planner, of this office at 243-7735.

Very truly yours,

JOHN E. MIN
Director of Planning

JEM:WRS:osy
Enclosure
c: Clayton I. Yoshida, AICP, Deputy Director of Planning
Aaron Shinmoto, PE, Planning Program Administrator
William R. Spence, Staff Planner
Project File
General File
S:\ALL\WILL\AACORESP\WAIHEE.WPD

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

LETTER NO. (P)1271.9

APR 13 1999

Mr. John E. Min, Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Maui, Hawaii 96793-7109

Dear Mr. Min:

Subject: Draft Environmental Assessment
Waihee Elementary School
New Playfield, and New Classroom,
Library, and Administration Buildings
TMK (2) 3-02-07: 21, Por. 01
Waihee, Maui, Hawaii

Thank you for your March 31, 1999, comments regarding the subject project. Regarding the zoning for the playfield, the design consultant will be consulting with your department regarding the use and administration of the playfield and necessary permit for such use.

We appreciate your input for this project.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

AY:jy
c: Mr. Ron Uemura, SSFM Engineers, Inc.
Mr. Richard McGerrow, Wil Chee - Planning, Inc.
Mr. Lester Chuck, Director, FSSB

JAMES "KIMO" APANA
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

Telephone: (808) 243-7845
Fax: (808) 243-7955

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND WASTE MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

ANDREW M. HIROSE
Solid Waste Division

4/13/99

April 7, 1999

Mr. Allen Yamanoha
Department of Accounting and General Services
State of Hawaii, Division of Public Works
P. O. Box 119
Honolulu, Hawaii 96810-0119

Dear Mr. Yamanoha:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
WAIHEE ELEMENTARY SCHOOL - NEW PLAYFIELD, CLASSROOM BUILDING, LIBRARY, AND ADMINISTRATIVE BUILDING
TMK: (2) 3-2-007:021 AND 001

We reviewed the subject application and have the following comments.

1. The subdivision of parcel 1 to obtain the area for the new playfield shall comply with the provisions of Title 18, Maui County Code, "Subdivisions."

2. A detailed final drainage report, and an erosion Best Management Practices (BMP) plan shall be submitted with the construction plans for review and approval prior to issuance of grading or building permits. The drainage report shall include hydrologic and hydraulic calculations and the schemes for disposal of runoff waters. It must comply with the provisions of the "Rules for Design of Storm Drainage Facilities in the County of Maui" and must provide verification that the grading and runoff water generated by the project will not have an adverse effect on adjacent and downstream properties. The BMP plan shall show the location and details of structural and non-structural measures to control erosion.

APR 12 1999
DEPT OF PUBLIC WORKS
RECEIVED

If you have any questions, please call David Goode at 243-7845.

Sincerely,

DAVID GOODE
Deputy Director of Public Works
and Waste Management

DG:ms/mt
S:\LUCA\CZM\WAIHEE.WPD

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

LETTER NO. (P)1281.9

APR 20 1999

Mr. David C. Goode, Deputy Director
Department of Public Works and Waste Management
County of Maui
200 South High Street
Wailuku, Maui, Hawaii 96793-7109

Dear Mr. Goode:

Subject: Draft Environmental Assessment for
Waihee Elementary School: New Playfield, and New
Classroom, Library and Administration Buildings
TMK: (2) 3-02-07: 21, por. 01
Waihee, Maui, Hawaii

Thank you for your April 7, 1999, comments regarding the subject project. Your information regarding Title 18, Maui County Code, "Subdivisions," and requirements for construction plan review and approval will be noted in the Final Environmental Assessment.

We appreciate your input for this project.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

AY:jy
c: Mr. Ron Uemura, SSFM Engineers, Inc.
Mr. Richard McGerrow, Wil Chee - Planning, Inc.

BENJAMIN A CAYETANO
GOVERNOR

Paul G. LeMahieu, Ph.D.
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
WAIHEE SCHOOL
2125 KAHEKILI HIGHWAY
WAILUKU, MAUI, HAWAII 96793

February 9, 1999

To: Department of Accounting & General Services
State of Hawaii, Division of Public Works
P.O. Box 119
Honolulu, Hawaii 96810-0119
ATT: Allen Yamanoha

From: Lawrence T. Joyo
Principal

Re: Draft Environmental Assessment (DEA) For Waihe'e Elem. School

As Principal of Waihe'e School for the past twelve years, it is with much joy and appreciation that comes with reading such a thorough document and the anticipated timelines for the much needed projects.

I would like to share a few items with you and they are the following:

1. Enrollment: The document lists as 858 students; we now have 884 students.
2. Library: Listed as being one story; I don't think a one story building would fit in the space available and identified.
3. Additional Parking and Right Of Way: It calls for this phase to come in with the construction of the new administration building. We would like for it to come right after the completion of the new eight classroom building because we presently employ over 80 employees and with parents and handicapping needs, we definitely have a shortage of adequate parking stalls.

In closing, I wish to thank all of the personnel and departments for their professionalism and help in supporting Waihe'e School's and its community's efforts in trying to provide a quality place to educate Hawaii's children.

cc: Richard S. McGerrow
Lester Chuck

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

LETTER NO. (P)1163.9

MAR 10 1999

Mr. Lawrence T. Joyo, Principal
Waihee Elementary School
2125 Kahekili Highway
Wailuku, Maui, Hawaii 96793

Dear Mr. Joyo:

Subject: Draft Environmental Assessment (DEA)
Waihee Elementary School, New Playfield and
Classroom, Library, and Administration Buildings
TMK: (2) 3-02-07: 21, por. 01
Waihee, Maui, Hawaii

Thank you for your February 9, 1999 comments regarding the subject project. Our response to your comments are as follows:

1. Enrollment: September 1998 official enrollment was 873 students. The present enrollment as reported by the Principal is 884 students. The DEA will be revised accordingly.

2. Library: Your concern that a one story library building will not fit in the space shown in Figure D in the DEA is acknowledged. The type of building, single story or two story building, will be determined during the design phase of the project.

3. Additional Parking and Right-of-Way: As scheduled, the administration building and the additional parking and right-of-way were to be constructed simultaneously to avoid interference with the construction of the administration building. Should the additional parking and right-of-way be constructed before the administration building is constructed, the additional parking and right-of-way may be damaged by the heavy equipment being used by the contractor. However, the Department of Education will consider constructing partial additional parking stalls to provide some relief to your parking problem.

We appreciate your input for this project.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

AY:jy
c: Mr. Ron Uemura, SSFM Engineers, Inc.
Mr. Richard McGerrow, Wil Chee-Planning, Inc.
Mr. Lester Chuck, DOE Facilities Branch

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 243-7816 • Fax (808) 243-7833

March 17, 1999

Mr. Allen Yamanoha
Department of Accounting & General Services
State of Hawaii, Division of Public Works
P.O. Box 119
Honolulu, Hawaii 96810-0119

SUBJECT: Waihee Elementary School: New Playfield, Classroom Building, Library and Administrative Building, Waihee, Maui, TMK: 3-2-07. .., 01 (portion of)

Dear Mr. Yamanoha,

Thank you for the opportunity to provide comments in preparation of the draft environmental assessment (DEA).

Water Source

The DEA should include the sources and expected potable and non-potable water usage. This project is served by the Central Maui System. The major source of water for this system is the Iao Aquifer. Rolling annual average groundwater withdrawals from the Iao Aquifer as of March 11, 1999 were 17.357 MGD. The regulatory sustainable yield of this aquifer is 20 MGD. On August 13, 1997, the State Commission on Water Resource Management (CWRM) elected not to designate Iao Aquifer as a State Groundwater Management Area. However, if rolling annual average withdrawals exceed 20 mgd, CWRM will designate Iao Aquifer. The Department is implementing a plan to bring new sources on-line and to mitigate withdrawals. Two wells in North Waihee were brought on-line in July 1997. No moratorium is currently in effect. However, more source water is still needed. The applicants should be made aware that the timing of this project may be affected with possible delays until new sources can be brought on line. No guarantee of water is granted or implied as a result of these comments or the approval of the requested permits. Water availability will be reviewed at the time of application for meter or meter reservation.

Water System

Enclosed is a portion of our water system map pertaining to the project area. Domestic, fire, and irrigation calculations will be reviewed in detail during the development process. Actual fire demand for structures is determined by fire flow calculations performed by a certified engineer. DWS-approved fire flow calculation methods are contained in "Fire Flow" - Hawaii Insurance Bureau, 1991.

Water Conservation

It is required by County Code that water conservation practices be incorporated into project design. As much of the water demand as possible should be delivered from non-potable sources (reclaimed or brackish). Where appropriate, the applicants should consider these measures:

Eliminate Single-Pass Cooling: Single-pass, water-cooled systems should be eliminated per Maui County Code Subsection 14.21.20. Although prohibited by code, single-pass water cooling is still manufactured into some models of air conditioners, freezers, and commercial refrigerators.

Utilize Low-Flow Fixtures and Devices: Maui County Code Subsection 16.20A.680 requires the use of low flow water fixtures and devices in faucets, showerheads, urinals, water closets and hose bibs. Water conserving washing machines, ice-makers and other units are also available.

Maintain Fixtures to Prevent Leaks: A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. Refer to the attached handout, "The Costly Drip". The applicant should establish a regular maintenance program.

Use Climate-adapted Plants: Native plants adapted to the area, conserve water and further protect the watershed from degradation due to invasive alien species. The project site is located in "Maui County Planting Plan" - Plant Zone 4. Please refer to the attached documents, "XERISCAPE: Water Conservation Through Creative Landscaping", "Maui County Planting Plan", and "Hawaiian Alien Plant Studies."

Prevent Over-Watering By Automated Systems: Provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evapotranspiration rates at the site.

Water Protection

The project overlies the Iao aquifer. The Department of Water Supply strives to protect the integrity of surface water and groundwater resources by encouraging applicants to adopt best management practices (BMPs) relevant to potentially polluting activities. The applicant should adopt BMPs for clearing, grading and grubbing during construction to minimize soil erosion and runoff to the Waihee Marsh downslope of the school. We list a few BMP references here. Additional information can be obtained from the State Department of Health.

"Water Quality Best Management Practices Manual For Commercial and Industrial Business", Prepared for the City of Seattle by Resource Planning Associates, June 30, 1989.
"The Megamanual - Nonpoint Source Management Manual - A Guidance Document for Municipal Officials." Massachusetts Department of Environmental Protection.
"Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters." United States Environmental Protection Agency, Office of Water.

If you have any other questions or need additional information, please call our Water Resources and Planning Division anytime at (808) 243-7199.

Sincerely,

David Craddick
Director
emb

cc: engineering division
Will Chee Planning, Inc.

attachments:
Portion of DWS Fire Protection Map
"The Costly Drip"
"Maui County Planting Plan"
"Hawaiian Alien Plant Studies - Pest Plants of Native Hawaiian Ecosystems"
Ordinance 2108 - An ordinance amending Chapter 16.20 of the Maui County Code, pertaining to the plumbing code"
"XERISCAPE - Water Conservation through Creative Landscaping"
"A Checklist for Water Conservation Ideas for Cooling"
"A Checklist for Water Conservation Ideas for Schools and Public Buildings"

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BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

LETTER NO. (P)1245.9

APR 6 1999

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

Dear Mr. Craddick:

Subject: Draft Environmental Assessment for
Waihee Elementary School
New Playfield, and New Classroom,
Library and Administration Buildings
TMK: (2) 3-02-07: 21, por. 01
Waihee, Maui, Hawaii

Thank you for your March 17, 1999, comments regarding the subject project. The information and recommendations in your March 17, 1999, letter concerning water source, water system, water conservation and water protection will be included in the appropriate sections of the Final Environmental Assessment.

We appreciate your input for this project.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

AY:jy
c: Mr. Ron Uemura, SSFM Engineers, Inc.
Mr. Richard McGerrow, Wil Chee-Planning, Inc.