

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



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

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BOARD OF LAND AND NATURAL RESOURCES

DEPUTY DIRECTOR
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FEB 13 1998

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

Mr. Gary Gill, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Mr. Gill:


Subject: Negative Declaration for Use of State Land for the Integrated Aquaculture and Agriculture Program Pursuant to Na Moku Aupuni O Ko'olau Hui, Tax Map Key: 1-1-04: 05, Portion Wailua Homesteads, Koolau, Hana, Maui.

The Department of Land and Natural Resources, Land Division's Land Management Branch has reviewed the comments received during the thirty (30) day public review period which began on November 23, 1997 and its responses for the subject project. Accordingly, it has been determined that this project will not have a significant environmental effect and a negative declaration will be issued. Please publish this notice in your next scheduled OEQC Bulletin.

We have enclosed a completed OEQC Bulletin Publication Form, four (4) copies of the final environmental assessment and a disk containing the project description. Should you have any questions regarding this matter, please contact the Maui District Land Office at (808) 984-8100.

Aloha,

"Hawaii, Earth's Best!"


MICHAEL D. WILSON, Chairperson
Board of Land and Natural Resources

Encl.

cc: Maui District Land Board Member
Maui District Land Office

16

1998-03-08-MA-*FEA*-Hawaiian
Escargot Project

MAR 8 1998

FILE COPY

FINAL DRAFT ENVIRONMENTAL ASSESSMENT

General Lease of TMK 1-1-004-005 for Community
Based Economic Development in Keanae-Wailuanui Ahupua`a,
Maui, Hawaii

Prepared for: Na Moku Aupuni O Ko`olau Hui

Prepared by: Patty Neal, A.C.S.W., L.S.W.
Community Development Coordinator
Queen Lili`uokalani Children's Center/Lili`uokalani Trust
1791 Wili Pa Loop
Wailuku, Hawaii 96793

ENVIRONMENTAL ASSESSMENT

This Environmental Assessment is submitted to the Maui District Office of the Department of Land and Natural Resources as part of an application for a general lease of TMK 1-1-004-005 located in Keanae-Wailuanui ahupua`a, Maui, Hawaii. A map designating the location is attached as Exhibit A. A Hawaiian Diversified Aquaculture Project is planned for community-based economic development in the ahupua`a. In the initial Draft Environmental Assessment submitted in mid-1997, the planned project was referred to as a Hawaiian Escargot Project. Since that time and with the assistance of the University of Hawaii College of Tropical Agriculture and Human Resources and University of Hawaii Sea Grant Extension Service, further research has been conducted into the economic feasibility of aquaculture in general and into integrated aquaculture and agriculture systems. The positive results of these inquiries coupled with the comments received regarding the initial focus on the golden apple snail alone have lead to expansion of the plan to a wider range of integrated aquaculture and agriculture efforts.

SUBJECT PARCEL

The land parcel under consideration is designated as TMK 1-1-004-005 and consists of 4.82 acres more or less. It is located on Wailuanui Road next to the County of Maui Camp and Stable Lot, Executive Order 235, where the Department of Water Supply tank and well are placed. According to several kupuna (Native Hawaiian elders), this parcel was at one time awarded to Kealoha Ku`iki under the Homestead Act of 1895 and is Crown Land. When Kealoha Ku`iki relocated to another parcel, the land was leased to individuals first for cattle, then for diversified agriculture. It has been vacant since 1982.

APPLICANT

The applicant organization is Na Moku Aupuni O Ko`olau Hui, EIN: 99-0326180, a 501 (c)(3) Kanaka Maoli indigenous corporation located in Keanae-Wailuanui ahupua`a, Maui, Hawaii. A copy of the Letter of Determination from the United States Internal Revenue Service is on file in the Maui District Office of the State of Hawaii Department of Land and Natural Resources.

Questions regarding this Environmental Assessment should be directed to Edward Wendt, President, Na Moku Aupuni O Ko`olau Hui at HC1 Box 62 Wailuanui Road, Haiku, Hawaii 96708. He can be reached by telephone at (808) 248-8658 or facsimile (808) 248-7097.

APPROVING AGENCY

The Department of Land and Natural Resources, State of Hawaii.

AGENCIES CONSULTED

The following agencies have been consulted in the process of preparing this Environmental Assessment.

County of Maui Planning Department

Department of Public Works and Waste Management, County of Maui

Office of Hawaiian Affairs, State of Hawaii

Department of Agriculture, State of Hawaii

Historic Preservation Division, Department of Land and Natural Resources, State of Hawaii

Natural Resources Conservation Service, United States Government

Department of Health, State of Hawaii

EXISTING SITE CONDITIONS

The topography of the existing site defined by TMK 1-1-004-005 is basically flat and is overgrown with California grass and hau. There are also mango, java plum and guava trees. None of these species are indigenous to the region.

In addition to the County of Maui Camp and Stable Lot, other adjacent parcels include G.L.S. 4192 which Harry and Pearl Pahukoa hold under a monthly revocable lease and G.R. 4949 which belongs to the Roman Catholic Church. An existing 'auwai enters TMK 1-1-004-005 from the above County and Pahukoa parcels and exits on the mauka side toward Wailuanui Road. On the makai side is TMK 1-1-008-14 which consists of 59.91 acres currently leased to Mike Adams of Haiku for cattle. No residences are adjacent to the parcel proposed for the Project.

GENERAL OBJECTIVES

1. To provide a land base for Na Moku Aupuni O Ko'olau Hui to create a Hawaiian Diversified Aquaculture Project which will serve the purposes of both controlling the golden apple snail (*Pomacea Canaliculata*) and economic development in the Keanac-Wailuanui ahupua'a.
2. To provide an opportunity for Na Moku Aupuni O Ko'olau Hui to utilize existing natural resources for the betterment of the 'aina and residents of the ahupua'a based on the research and recommendations published in Kalo Kanu O Ka'Aina, A Cultural Landscape Study of Keanae and Wailuanui, Island of Maui (County of Maui Planning Department, July, 1995, pgs. 142-146).

DESCRIPTION OF THE PROPOSED PROJECT

TECHNICAL CHARACTERISTICS

Na Moku Aupuni O Ko'olau Hui, a 501 (c)(3) Kanaka Maoli indigenous corporation (below referred to as "Na Moku"), plans to construct a Diversified Aquaculture Project on the above designated land parcel in order initially to control, contain, and market the golden apple snail (*Pomacea Canaliculata*) and to generate economic development through an integrated aquaculture and agriculture system. This plan is aimed at both economic development and control of the snail which has done extensive damage to taro production in the Keanae-Wailuanui ahupua'a in recent years. Materials for construction of the Project have already been obtained through funding provided by Queen Lili'uokalani Children's Center, so work can begin as soon as the above parcel is approved for use.

The specific plans for development of the 4.82 acre site follow and can be viewed on the construction drawing labeled Exhibit B. A cinder covered road twenty feet wide will be constructed to haul materials for construction of the snail confinement site, warehouse/office site and for the on-going processes of the Hawaiian Diversified Aquaculture Project. This road will connect the Project site with Wailuanui Road.

The Project site will consist of an area one hundred twenty (120) feet by sixty (60) feet under shade cloth roof supported by post and cable construction with turnbuckles securing the cable to concrete anchors. This roofing structure will house fifty (50) three-hundred (300) gallon aquaculture tanks for containment and feeding purposes and ten (10) one-hundred (100) gallon tanks for continuing research and development. The tanks will be supported by concrete block foundation. Water supply for the tanks will be accomplished through a simple irrigation pipe and tube system bringing fresh water from the 'auwai running through the proposed property site and re-depositing the effluent water back into the 'auwai system after screening it and passing it through a gravel filter thirty six (36) inches in height. Water flowing into the tanks has a pH of 7.96 and undetectable levels of total ammonia (<0.25 mg/L), nitrite (<0.1 mg/L) and nitrate (<12.5 mg/L). Water exiting the tanks varies with activity in the tanks but has a pH of between 6.75 and 7.00, and a total ammonia level of between 1.0 and 2.0 mg/L, nitrite levels below detection limits (<0.1 mg/L) and nitrate levels below detection limits (<12.5 mg/L). The ammonia exiting the tanks is not a toxic level because the pH is low. The change in pH simply shows there has been metabolic activity by the snails. Water analyses were done at the existing pilot project by Dr. Harry Ako, Ph.D., University of Hawaii College of Tropical Agriculture and Human Resources.

The Diversified Aquaculture Project anticipates feeding about 1300 gallons a day of effluent through the taro lo'i based on current use patterns. The double filtration system as well as a cinder apron eight (8) feet wide surrounding the Project area will ensure snail confinement. The 'auwai leads to the taro lo'i and observations by University of Hawaii personnel suggest that nutrients are rapidly stripped from the water by taro plants during passage through only one lo'i.

A significant improvement in taro growth appears to occur when effluent water is passed through the lo'i. A multitude of studies demonstrate the nutrient stripping capabilities of integrated systems of aquaculture and agriculture (Communication from Robert Howerton Ph.D., Sea Grant Extension Service, January, 1998). Crop irrigation with nutrient-rich aquaculture effluents is an example of sound resource management through the reuse of water and the recycling of nutrients. Furthermore, solid waste material from the pilot project located at St. Gabriel's Church property has been demonstrated by Na Moku personnel to be of value as a fertilizer.

Snail gathering has been done by farmers and approximately ninety-five (95) percent control of snails in the taro lo'i has been achieved according to College of Tropical Agriculture and Human Resources and Sea Grant personnel. The snails were collected from approximately 139 acres of taro lo'i currently under cultivation. There is twice this acreage under development. Snail aquaculture technology was developed by a University of Hawaii aquaculture project which is also attempting to provide marketing assistance for aquarium use of the snail through its ornamental fishes project. Given the above fact regarding the high degree of snail population control already achieved by the existing pilot efforts, in the foreseeable future this Project will be focusing more on diversified aquaculture.

A warehouse sixty (60) feet by forty (40) feet will be constructed next to the Project site to house a packing area and storage for feed, packaging and other materials for the on-going operation of the Hawaiian Diversified Aquaculture Project. An office for Na Moku Aupuni O Ko'olau Hui will be placed in the northeast corner of the warehouse structure. The building itself will be constructed on a concrete foundation and floor with conventional treated wood framing and T-11 siding. Structural design will be based on recommendations in Kalo Kanu O Ka'Aina, A Cultural Landscape Study of Keanae and Wailuanui, Island of Maui (County of Maui Planning Department, July, 1995, pgs.144,145). A professional designer and architect will be utilized to provide detailed construction drawings of the proposed building for the purpose of obtaining necessary building permits in the future.

SOCIO-ECONOMIC CHARACTERISTICS

The plan to create an economic development project based initially on the apple snail was prompted by a need to eliminate the snail from the lo'i kalo in Keanae-Wailuanui ahupua'a. In recent years, taro farmers have lost between thirty (30) and seventy (70) percent of their taro crop due to snail damage. By trapping, confining and selling the snails to Na Moku for market, the farmers have been able to recover some of their lost income while enabling their taro crop production to return to prior levels.

The membership of Na Moku Aupuni O Ko'olau Hui represents eighty (80) percent or more of the resident population of the Keanae-Wailuanui ahupua'a, which is predominantly Native Hawaiian. Local census has determined that the unemployment rate among the residents is approximately forty-seven (47) percent at this time. The Hawaiian Diversified Aquaculture Project will provide employment opportunities for some skilled personnel but mostly for

unskilled laborers which comprise the majority of the unemployed in the area. Na Moku Aupuni O Ko'olau Hui, its Board of Directors and Officers expect the Project to have a significantly positive impact on the socio-economic status of the residents and geneological descendants of the ahupua'a both by providing jobs and revenue for charitable funds earmarked for community use in the future.

To date (January, 1998), taro farmers have received one dollar (\$1.00) per pound for all snails turned into the pilot project. In addition, a part-time van driver has been hired to assist in the sales and delivery of both snails and other agricultural products. The overseer for the pilot project receives a percentage of sales and Na Moku is in the process of hiring a part-time bookkeeper to facilitate record keeping and reduce professional accounting fees.

The market demand for the golden apple snail was questioned in comments to the Draft Environmental Assessment. Due to the Department of Agriculture's classification of the species, the snails cannot be shipped interisland but are legal to be sold otherwise. Experimental shipments to Mainland aquarium suppliers have been made and local Maui sales have taken place. It is expected that continued removal at the current rate will eventually reduce the numbers of snails in the environment to sufficiently eliminate taro crop loss. Other efforts in integrated aquaculture and agriculture will then take precedence in the Project. Plans and research in collaboration with University of Hawaii and University of Arizona personnel are currently underway (January, 1998).

A perhaps more subtle social impact will be preservation of the Native Hawaiian tradition of taro cultivation and the enhancement of cultural identity through providing job opportunities within the traditional ahupua'a boundaries.

ENVIRONMENTAL CHARACTERISTICS

Traffic and Noise

The residents living along Wailuanui Road will not be impacted by project-related traffic in either the short or long term since the land parcel where the Hawaiian Diversified Aquaculture Project is planned is located near the entrance to Wailuanui and not near any homes. Any increased noise level will be limited to the construction period and will, therefore, be short term. In addition, the Project site and warehouse will both be located at the rear of the proposed parcel which further separate the site from residences along Wailuanui Road.

Flora and Fauna

The proposed land parcel is not a habitat for rare or endangered native plants or animals. As stated above, the existing flora are California grass, hau and other introduced plants, so removal of these plants in the clearing process for the project will not have an adverse impact on the local environment.

A question was posed during the comment period of the Draft Environmental Assessment regarding the effect of the proposed Project on native biota downstream. As described below in the Water Quality section, the water flow pattern from the Project does not allow re-entry into Waiokamilo Stream. Any effected native stream species would have to be within the 'auwai and taro lo'i system itself. Although there is no scientific data to confirm either negligible or detrimental effects on the native stream biota, it is anticipated that due to the volume of water flow there will be little if any effect on stream animals within the system (Communication from Robert Howerton, Sea Grant, January, 1998). If any detrimental effects occur (i.e., fish kills, algae blooms) a clarifying unit to remove suspended solids from the effluent water will be implemented in addition to the existing filtration and taro lo'i integration.

Archeology and Historic Preservation

According to Na Kupuna Hulu (oldest of Native Hawaiian elders of Keanae-Wailuanui ahupua'a), there are no historical/archeological or cultural sites on the property. As stated above in describing the subject parcel, the site now known as TMK 1-1-004-005 is Crown Land which was once awarded under the Homestead Act of 1895. Since then, it has been leased to individuals for cattle grazing and diversified agriculture and has been vacant since 1982.

Water Quality

The water source for the 'auwai system which runs through the subject parcel is Waiokamilo Stream. According to aquaculture and tropical agriculture specialists from the University of Hawaii, the apple snail exists throughout the wetland environment of Keanae-Wailuanui, not just in the taro lo'i. Therefore, utilization of stream water for the Hawaiian Diversified Aquaculture Project and releasing effluent from the Project tanks back into the 'auwai will make no significant change in the presence of waste materials in the general environment. In response to one comment received regarding the effluent water re-entering Waiokamilo Stream itself, the Project effluent will re-enter the 'auwai after the filtration process described above, will flow through taro lo'i with the results reported above and back into the 'auwai. This water flow pattern does not at any point re-enter Waiokamilo Stream.

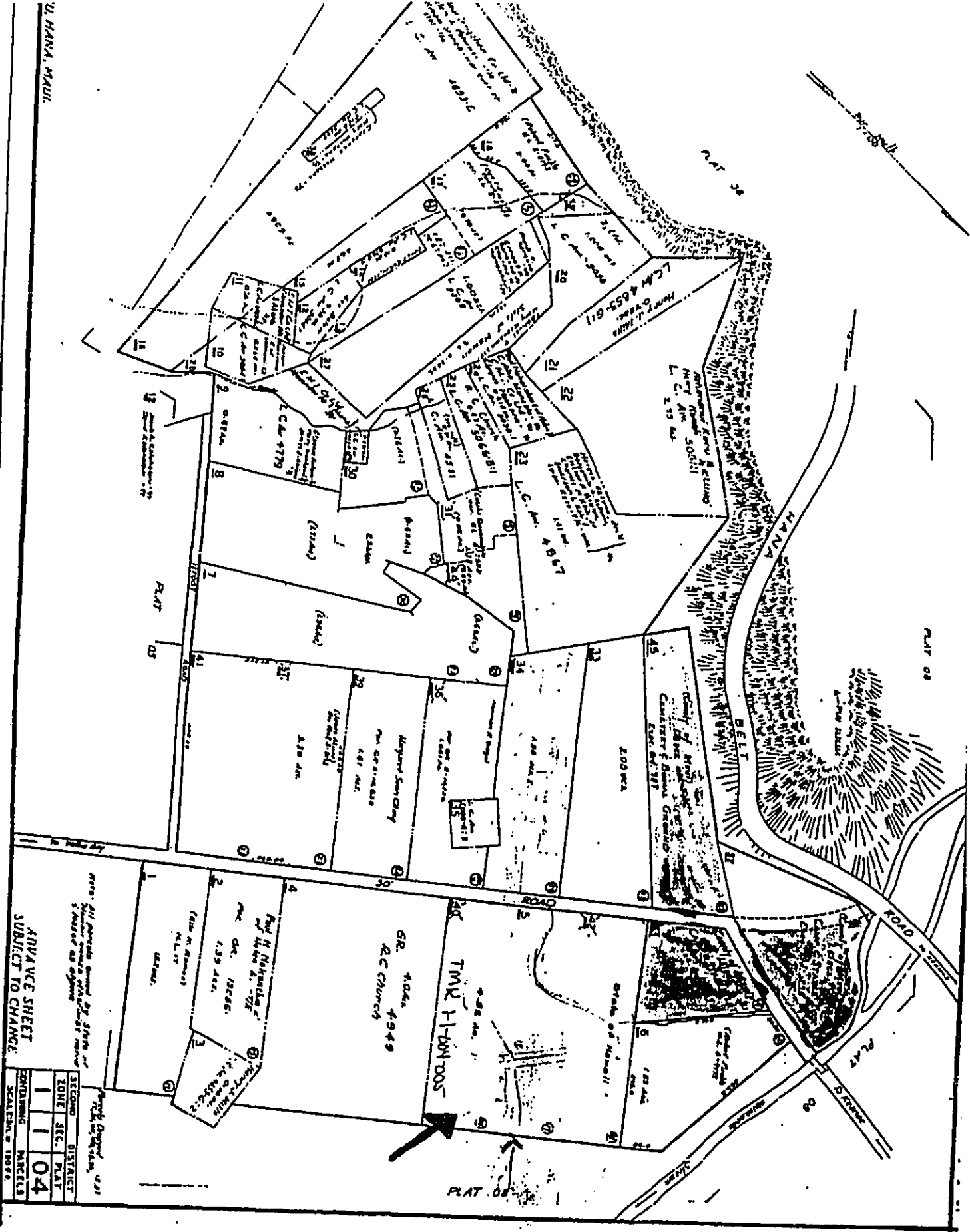
Na Moku is working closely with the University of Hawaii Sea Grant Extension Service on the permits regarding wastewater requirements. Na Moku and Sea Grant personnel are sensitive to the potential environmental impacts of wastewater and are working towards compliance with all State and Federal regulations regarding aquaculture discharge. According to the State of Hawaii Department of Health Clean Water Branch, a National Pollution Discharge Elimination System (NPDES) permit is unnecessary if production of marketable product is less than one hundred thousand (100,000) pounds per year. Na Moku does not anticipate annual production of the entire Diversified Aquaculture Project to exceed this level. Since no permanent construction will be done at the point source of discharge no other permits are needed from Department of Health Clean Water Branch.

The Department of Health Office of Solid Waste Management (OSWM) has been contacted regarding solid waste disposal requirements. At this point in time (January, 1998), OSWM is unaware of any permits needed for the discharge of solid waste generated from aquatic organisms. If indeed there exists some potential problems associated with solid waste discharge then a simple clarifying unit will be used as discussed above. The use of a clarifier will allow for the settling of suspended solids prior to discharge of effluent water.

DETERMINATION

Given the proposed use of the subject parcel for community-based economic development, together with its past use and present condition, no significant environmental impact is foreseen.

U. HANA, MAUI.



NOTE: All portions owned by State or Federal Government are shown in white.

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Exhibit A

NOTE: All portions owned by State or Federal Government are shown in white.

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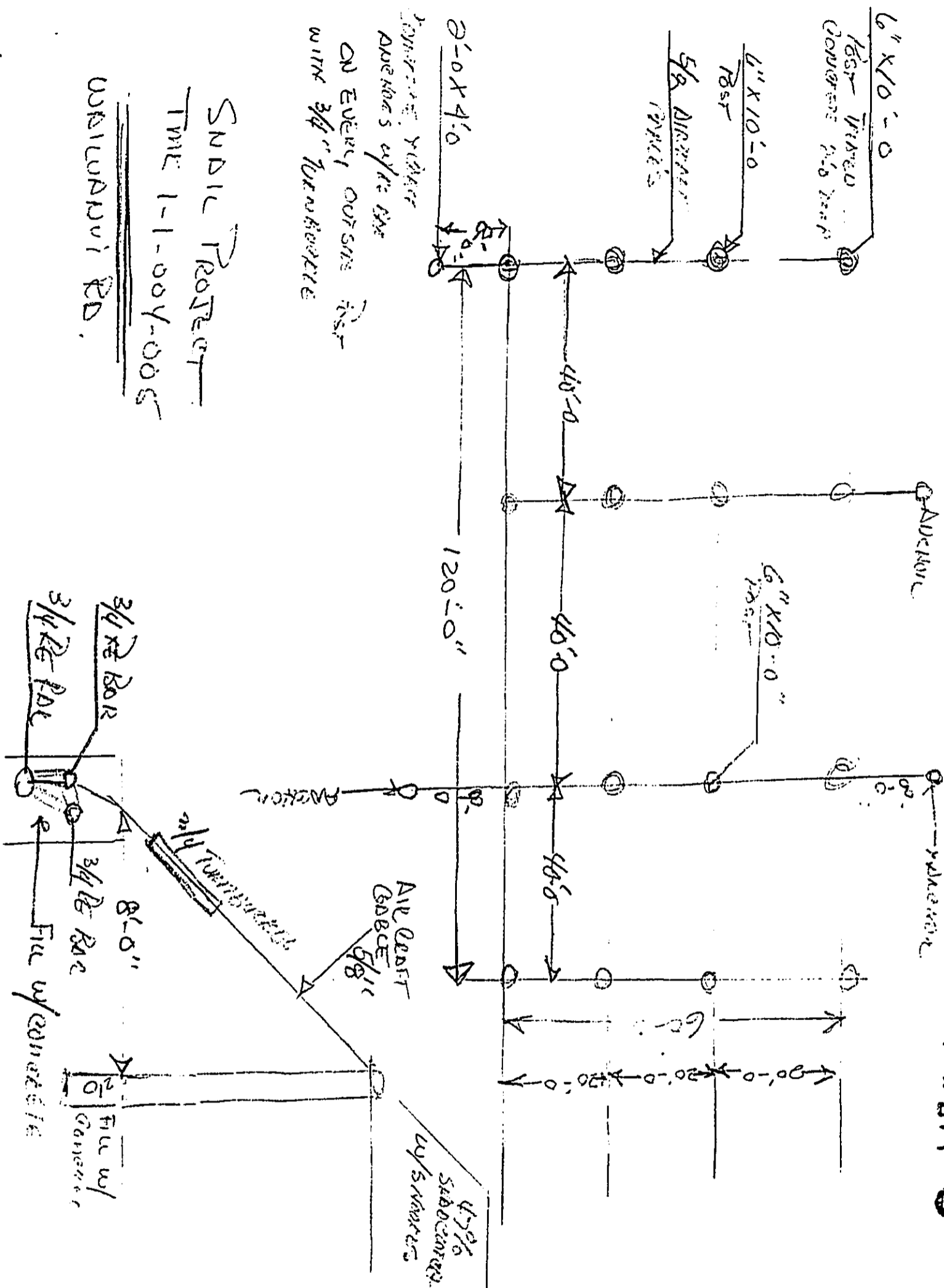
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Exhibit B

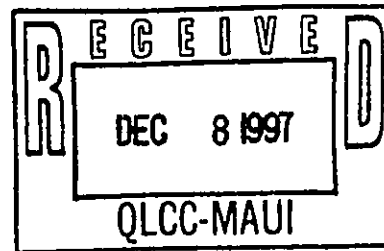


CONCRETE RISER
ADUCTS w/ re bar
ON EVERY OUTSIDE ROST
WITH 3/4" TURNBUCKLE

ATTACHMENTS

Comments on Draft Environmental Assessment and Responses to:

- 1. The Office of Hawaiian Affairs**
- 2. The Office of Environmental Quality Control**
- 3. Ms. Elaine S. Wender**



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813-5249
PHONE (808) 594-1888
FAX (808) 594-1865
December 04, 1997

Ms. Patty Neal
Na Moku Aupuni O Ko'olau Hui
Queen Lili'uokalani Children's Center/Lili'uokalani Trust
1791 Wili Pa Loop
Wailuku, HI 96793

Subject: Draft Environmental Assessment (DEA) for General
Lease of TMK 1-1-004-005 for Community Based
Economic Development in Keanae-Wailuanui Ahupua'a,
Island of Maui

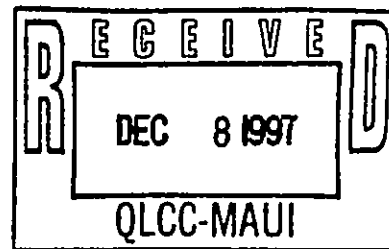
Dear Ms. Neal:

Thank you for the opportunity to review the Draft Environmental Assessment (DEA) for General Lease of TMK 1-1-004-005 for Community Based Economic Development in Keanae-Wailuanui Ahupua'a. Na Moku Aupuni O Ko'olau Hui is leasing 4.8 acres to develop a "Hawaiian Escargot Project". The intent is to commercialize golden apple snails infesting taro patches in the in Keanae-Wailuanui Ahupua'a.

The Office of Hawaiian Affairs (OHA) concurs with your efforts of strengthening the economic base of local taro cultivation. OHA is keenly aware of the adverse impacts of the golden apple snail on taro culture. Your proposal to develop the means to collect and commercialize snails certainly provides an innovative alternative of pest control. But OHA finds the DEA quite brief in describing key issues concerning the project's feasibility. There are several unanswered questions such as (i) the area under taro cultivation, (ii) availability of labor to collect snails, (iii) supply and demand analysis, and (iv) technology for snail management.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
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December 04, 1997

Ms. Patty Neal
Na Moku Aupuni O Ko'olau Hui
Queen Lili'uokalani Children's Center/Lili'uokalani Trust
1791 Wili Pa Loop
Wailuku, HI 96793

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Island of Maui

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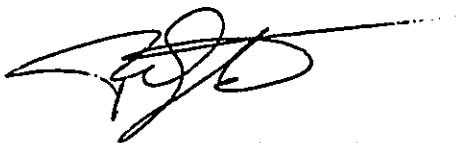
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Letter to Ms. Neal
December 04, 1997
Page 2


~~With regard to the project, OHA has some concerns about the water management plan.~~
According to the DEA, wastewater from the operation will be returned to nearby streams. A quick calculation of water usage (assuming that water in tanks will be replaced daily) indicates that the project will be releasing about 16,000 gallons of effluent per day. Taking into account that wastewater from this kind of operations normally contains organic and inorganic contaminants, OHA urges the applicant to develop mechanisms for disposal other than releasing the effluent into streams.

Overall, OHA believes a careful addressing of the above concerns will certainly improve the project's feasibility and will render the operation environmentally sound. Please contact Colin Kippen (594-1938), Officer of the Land and Natural Resources Division, or Luis A. Manrique (594-1758), should you have any questions on this matter.

Sincerely yours,



Randall Ogata
Administrator



Colin Kippen
Officer, Land and
Natural Resources
Division

cc Trustee Aiona
Trustee Akana
Trustee Apoliona
Trustee Beamer
Trustee DeSoto
Trustee Hee
Trustee Keale
Trustee Machado
Trustee Springer



QUEEN LILI'UOKALANI CHILDREN'S CENTER
LILI'UOKALANI TRUST

January 22, 1998

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Mr. Randall Ogata, Administrator
Mr. Colin Kippen, Officer, Land
and Natural Resources Division
State of Hawaii
Office of Hawaiian Affairs
711 Kapi'olani Blvd. Suite 500
Honolulu, Hi. 96813-5249

Re: Draft Environmental Assessment for General Lease of TMK 1-1-004-005 for
Community Based Economic Development in Keanae-Wailuanui Ahupua'a,
Maui, Hawaii

Dear Mr. Ogata and Mr. Kippen,

Thank you for commenting on the above Draft Environmental Assessment (DEA). All the comments have been very helpful in providing information necessary to more clearly describe the plans of Na Moku Aupuni O Ko'olau Hui (below referred to as "Na Moku"). Answers to all comments received have been incorporated into the Final Draft, but all concerned wished to respond directly to the Office of Hawaiian Affairs.

You listed several unanswered questions. The first referred to the area under taro cultivation. Currently, there are approximately one hundred and thirty-nine (139) acres of taro lo'i under cultivation. Twice this acreage is under development. Pertaining to the availability of labor to collect snails, the farmers themselves have been gathering the snails and selling them at \$1.00 per pound to Na Moku for marketing. At this time, University of Hawaii College of Tropical Agriculture and Human Resources and Sea Grant Extension Service personnel report that approximately ninety-five (95) percent control of the snails in the taro lo'i has been achieved by this process. Labor for the Hawaiian Diversified Aquaculture Project (see attached Final Draft) will be plentiful given the high level of unemployment in the ahupua'a.

The Department of Agriculture's classification of the golden apple snail prevents shipping it interisland, but the species can be legally sold otherwise. Local sales on Maui are occurring on a weekly basis and experimental shipments to Mainland aquarium suppliers have been made. Most importantly, it is expected that continued removal at the current rate will eventually reduce the numbers of snails

E'ONIPA'A . . . I KA 'IMI NA'AUAO . . . "BE STEADFAST IN THE SEEKING OF KNOWLEDGE"

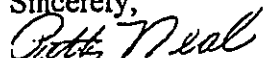
in the environment to sufficiently eliminate taro crop loss. Other efforts in integrated aquaculture and agriculture will then take precedence in the Project. Plans and research in collaboration with the University of Hawaii and University of Arizona personnel are currently underway.

Technology for snail management has been designed by Na Moku's aquaculture consultants from University of Hawaii. Effluent water from the tanks will be re-deposited into the 'auwai system after screening it and passing it through a gravel filter thirty-six (36) inches in height. To clarify the water flow pattern, the source for the 'auwai system from which the water will be taken for the Project is Waiokamilo Stream. However, after filtration, the effluent will re-enter the 'auwai which then flows through numerous taro lo'i and the 'auwai eventually empties into the ocean. At no point does the 'auwai re-enter Waiokamilo Stream.

Both Na Moku personnel and their consultants from University of Hawaii are concerned about the potential environmental impacts of wastewater and are working to guarantee compliance with all State and Federal regulations regarding aquaculture discharge. Both the State of Hawaii Department of Health Clean Water Branch and Office of Solid Waste Management have been consulted and no permits are necessary for the level of production expected by Na Moku's project. If any potential problems associated with solid waste discharge exist, then a simple clarifying unit will be used. Please refer to the attached Final Draft Environmental Assessment for further details.

Thank you again for this opportunity to respond to your comments.

Sincerely,

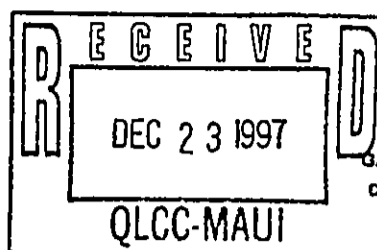


Patty Neal, A.C.S.W., L.S.W.

Community Development Coordinator

Queen Lili'uokalani Children's Center

BENJAMIN J. CAYETANO
GOVERNOR



GARY GILL
DIRECTOR

STATE OF HAWAII

OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4186
FACSIMILE (808) 586-4188

December 22, 1997

Mr. Ed Wendt
Na Moku Aupuni O Ko'olau Hui
c/o Queen Lili'uokalani Children's Center/Lili'uokalani Trust
1791 Wili Pa Loop
Wailuku, Hawai'i 96793

Dear Mr. Wendt:

The Office of Environmental Quality Control (OEQC) submits for your response the following comments on a draft environmental assessment (DEA) entitled "General Lease of TMK 1-1-004-005 for Community Based Economic Development in Ke'anae-Wailuanui Ahupua'a, Maui, Hawai'i". We understand that the proposed lease entails the use of the site as a land base for Na Moku Aupuni O Ko'olau Hui, Hawaiian Escargot Project, to control, contain and market the Golden Apple Snail, *Pomacea canaliculata*.

1. **EFFECT OF WASTEWATER EFFLUENT ON NATIVE BIOTA DOWNSTREAM.** Please discuss the physical and chemical characteristics of wastewater effluent from the snail culture tanks (i.e., total nitrogen, phosphates, temperature, etc.). Also, please discuss the effects of wastewater effluent discharge on native biota downstream (e.g. diadromous fishes such as 'o'opu, etc.).
2. **MARKET DEMAND FOR GASTROPODS.** Please discuss the demand for snails both locally and regionally.
3. **WASTEWATER REQUIREMENTS:** Please consult with the State Department of Health Clean Water Branch (telephone 586-4309) on possible requirements for the discharge of wastewater effluent from the snail culture tanks. Also, please consult with the State Commission on Water Resource Management (telephone 587-0214) for possible requirements.
4. **TANK SOLIDS DISPOSAL REQUIREMENTS:** Please consult with the Department of Health Office of Solid Waste Management (telephone 586-4225) regarding the disposal of solids from the snail culture tanks.
5. **ALIEN PEST REQUIREMENTS:** We understand that the Golden Apple Snail is classified by the Department of Agriculture as an alien pest (see, Hawai'i Administrative Rules, Chapter 4-69). Please consult with the State Department of Agriculture Plant Quarantine Branch (telephone 973-9522) Agriculture concerning possible requirements.

Please submit to the State Department of Land and Natural Resources a copy of this letter and your response for their inclusion in the final environmental assessment and notice of determination on this project.

Mr. Ed Wendt
Na Moku Aupuni O Ko'olau Hui
December 22, 1997
Page 2 of 2

If there are any questions regarding this letter, please call Les Segundo of my staff, toll-free at 984-2400, extension 64185. Thank you for the opportunity to comment.

Sincerely,



GARY GILL
Director of Environmental Quality Control

c: Mr. Philip Ohta, Maui Land District Office, DLNR
Ms. Patty Neal, Queen Lili'uokalani Childrens Center



January 22, 1998

Mr. Gary Gill
Director of Environmental Quality Control
State of Hawaii
Office of Environmental Quality Control
236 S. Beretania St. Suite 702
Honolulu, Hi. 96813

Re: Draft Environmental Assessment for General Lease of TMK 1-1-004-005 for Community Based Economic Development in Keanae-Wailuanui Ahupua'a, Maui, Hawaii

Dr. Mr. Gill,

Thank you for the comments submitted by your office regarding the above Draft Environmental Assessment (DEA). Answers to all comments received have been incorporated into the Final Draft, but we wished to respond to your office directly, also.

Re: 1. Effect of Wastewater Effluent on Native Biota Downstream: Effluent water from the Project will be screened and passed through a gravel filter thirty six (36) inches in height as it currently is in the pilot project at St. Gabriel's Church property. This system was designed by our consultants from the University of Hawaii College of Tropical Agriculture and Human Resources and Sea Grant Extension Service. Water analysis was done at the existing pilot project by Dr. Harry Ako, Ph.D. of University of Hawaii. Water flowing into the tanks has a pH of 7.96 and undetectable levels of total ammonia (<0.25 mg/L), nitrite (<0.1 mg/L) and nitrate (<12.5 mg/L). Water exiting the tanks varies with activity in the tanks but has a pH of between 6.75 and 7.00, and a total ammonia level of between 1.0 and 2.0 mg/L, nitrite levels below detection limits (<0.1 mg/L) and nitrate levels below detection limits (<12.5 mg/L). The ammonia exiting the tanks is not a toxic level because the pH is low. The change in pH simply shows there has been metabolic activity by the snails.

To clarify the water flow pattern, the water source for the 'auwai system which will feed the Project is Waiokamilo Stream. However, Project effluent will re-enter the 'auwai after the filtration process described above, will flow through numerous taro lo'i and back into the 'auwai which eventually empties into the ocean. This water flow pattern does not at any point re-enter

Waiokamilo Stream. Any effected native stream species would have to be within the `auwai and taro lo'i system itself. Although there is no scientific data to confirm either negligible or detrimental effects on the native stream biota, it is anticipated that due to the volume of water flow there will be little if any effect on stream animals within the system (Communication from Robert Howerton, Ph.D., Sea Grant, January, 1998).

Re: 2. Market Demand for Gastropods and 5. Alien Pest Requirements: The Department of Agriculture's classification of the golden apple snail prevents shipping it interisland, but the species can be legally sold otherwise. Local sales on Maui are occurring on a weekly basis and experimental shipments to Mainland aquarium suppliers have been made. Our consultants have stated that it is expected that continued removal at the current rate will eventually reduce the numbers of snails in the environment to sufficiently eliminate taro crop loss. Other efforts in integrated aquaculture and agriculture will then take precedence in the project, hence, the re-naming in the Final Draft (please see attached for further details) as the Hawaiian Diversified Aquaculture Project.

Re: 3. Wastewater Requirements and 4. Tank Solid Disposal Requirements: Na Moku Aupuni O Ko'olau Hui (below referred to as "Na Moku") is working closely with the University of Hawaii Sea Grant Extension Service on the permits regarding wastewater requirements. Na Moku and Sea Grant personnel are sensitive to the potential environmental impacts of wastewater and are working towards compliance with all State and Federal regulations regarding aquaculture discharge. According to the State of Hawaii Department of Health Clean Water Branch, a National Pollution Discharge Elimination System (NPDES) permit is unnecessary if production of marketable product is less than one hundred thousand (100,000) pounds per year. Na Moku does not anticipate annual production of the entire Hawaiian Diversified Aquaculture Project to exceed this level. Since no permanent construction will be done at the point source of discharge no other permits are needed from Department of Health Clean Water Branch.

The Department of Health Office of Solid Waste Management (OSWM) has been contacted regarding solid waste disposal requirements. At this point in time (January, 1998) OSWM is unaware of any permits needed for the discharge of solid waste generated from aquatic organisms. If indeed there exists some potential problems associated with solid waste discharge then a simple clarifying unit will be used. The clarifier will allow for the settling of suspended solids prior to discharge of effluent water.

Thank you again for the opportunity to respond to the comments.

Sincerely,



Edward Wendt, President
Na Moku Aupuni O Ko'olau Hui

cc: Mr. Philip Ohta, Maui Land District Office, DLNR

SR 93 Ke'anae
Ha'iku, Hawai'i 96708
December 23, 1997

SEND COPIES TO
APPROPRIATE PARTIES

Ed Wendt
Na Moku Aupuni O Ko'olau Hui
HCl, Box 62, Wailuanui Road
Ha'iku, Hawai'i 96708

RECEIVED

RE: Draft Environmental Assessment, Hawaiian Escarpment Project
TMK 1-1-004-005

Dear Mr. Wendt:

DEC 24 11:12
QUALITY CONTROL


Thank you for the opportunity to comment on this Draft Environmental Assessment (DEA). I have the following concerns.

1. The DEA lists a number of consulted agencies. Their comments, if any, should be included in the DEA.
2. This statement is made on p. 5: "There are no historical/archeological or cultural sites on the property." The DEA should provide whatever data was relied on in making this statement. If an archeological survey has been done, that information should be supplied.
3. The DEA speaks of the "need to eliminate the snail from the lo'i kalo" (p. 4). Elsewhere, the purpose of the proposed project is "to control, contain, and market the golden apple snail." (p. 3) It is proposed that the effluent from the project tanks will be released back into the 'auwai, which connects with Waiokamilo Stream. The DEA states that this will not affect water quality since "the apple snail exists throughout the wetland environment of Keanae-Wailuanui, not just in the taro lo'i." (p. 5)

These statements are contradictory. The snail will not, and probably cannot, be eliminated. There is no description of any sort of filtration system to stop snail eggs and tiny baby snails from entering the 'auwai in the effluent. It would appear that this constant influx of new snails into the 'auwai, and thus into the stream, will increase, rather than control and contain, the snail population. The snails do not currently exist along all reaches of Waiokamilo Stream in the Ke'anae-Wailuanui area.

Thank you for this opportunity to comment. Please send me copies of any future documents relating to this proposal.

Sincerely



Elaine S. Wender



January 21, 1998

Ms. Elaine S. Wender
SR 93 Keanae
Haiku, Hi. 96708

Re: Draft Environmental Assessment for General Lease of TMK 1-1-004-005 for Community Based Economic Development in Keanae-Wailuanui Ahupua'a, Maui, Hawaii

Dear Ms. Wender,

Thank you for your comments on the above Draft Environmental Assessment (DEA). Your comments and others have been quite helpful in providing us with information needed to more clearly define the intent of our plans. Answers to all comments have been incorporated into the Final Draft, but we wish to also respond to you directly.

The data supporting there being no historical/archeological or cultural sites on the above property was gathered from Na Kupuna Hulu (oldest of Native Hawaiian elders of Keanae-Wailuanui ahupua'a). Since these respected elders are keepers of the cultural knowledge, no further research was determined necessary.

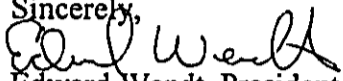
We are not certain we understood your comment about contradictory statements. However, if you are referring to the idea of eliminating the snails from the taro lo'i while there are still snails, unavoidably, in the environment, we can respond. The idea is to continuously remove the snails from the lo'i, thus "eliminating" the population which has been damaging the taro. According to Dr. Harry Ako, Ph.D. and Dr. Robert Howerton, Ph.D. of the University of Hawaii College of Tropical Agriculture and Human Resources and Sea Grant Extension Service, respectively, approximately ninety-five (95) percent control of the snails in the taro lo'i has been achieved by the snail gathering which has been done by farmers so far. The snail does still exist in the environment and can continue to invade the taro lo'i, but on-going gathering by farmers will ensure removal before damage to the taro crop can occur.

A description of the filtration process present in the existing pilot project which will be included in the eventual Hawaiian Diversified Aquaculture Project was left out of the DEA. Effluent is screened and then passed through a gravel filter thirty-six (36) inches in height, as designed by

our aquaculture consultants listed above. Regarding the effluent re-entering Waiokamilo Stream, the water flow pattern does not at any point re-enter Waiokamilo Stream. After the filtration process, the effluent will be discharged into the 'auwai, flow through numerous taro lo'i and back into the 'auwai which then flows into the ocean.

Thank you again for your comments.

Sincerely,



Edward Wendt, President

Na Moku Aupuni O Ko'olau Hui