

State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Engineering Division
Honolulu, Hawaii 96813

September 23, 2022

Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

STAFF REPORT

Regarding: Dam Safety Enforcement Action on Mauka Dam (KA-0119) for Failure to Comply with Notice of Deficiency Issued September 15, 2021, and to make a finding of violations sufficient to support a specified fine on the owners. Koloa, Kauai, Tax Map Keys (4) 2-7-002: 01

Dam Owner: Eric A. Knudsen Trust
John Horwitz

Lessee: Mahipapa LLC (Current Tenant) and Green Energy Team LLC (Former Tenant)

Location: Koloa, Kauai
TMKS: (4) 2-7-002: 01

Background on Dam

Mauka Reservoir was constructed approximately 1910 for plantation irrigation. The reservoir receives water from the Waihonuhonu Stream, Kola Ditch, and runoff from the surrounding watershed. The property is owned by Eric A. Knudsen Trust (hereafter referred to as Knudsen Trust) and was leased by Green Energy Team LLC (hereafter referred to as Green Energy), who also acted as operators, from 2019-2022. Recently, Mahipapa LLC purchased Green Energy.

Hazard Potential: High Hazard Potential Dam
Population at Risk: 855 people, including a school and Fire Station per Pacific Disaster Center (PDC) assessment (see Figure 1 for current evacuation area)
Overall Condition: Poor
DLNR Restriction: Water level restricted to below 5.5 feet (staff gage) on October 28, 2017
Dam Embankment: Earthen
Dam Height: 19 feet
Dam Length: 550 feet
Maximum Storage: 345 acre-feet

DLNR Staff Report – Mauka Dam (KA-0119)

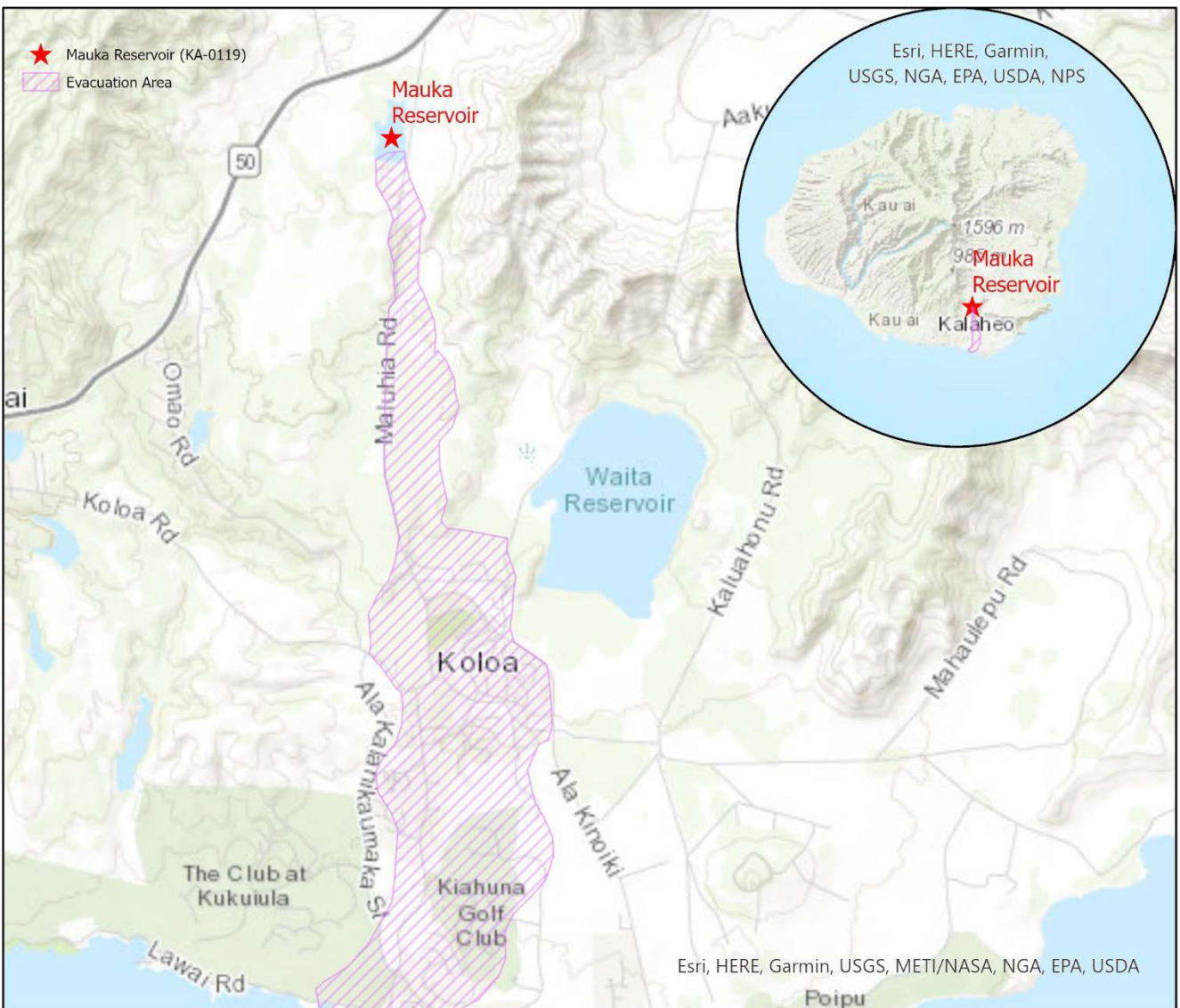


Figure 1. Location Map showing evacuation area

Primary Safety Issues

Mauka Reservoir has a poor overall condition based on long standing deficiencies. A Phase I Investigations were performed for Mauka Reservoir in 2018 which identified the following PRIORITY 1 RECOMMENDATIONS:

1. Revise Hydrology and Hydraulic Study to Assess Spillway Capacity (based on current standards)
2. Seepage Monitoring
3. Perform Site Survey
4. Perform Slope Stability Analysis
5. Perform Remote Inspection of Outlet Tunnel

Items (2) Seepage Monitoring; and (5) Perform Remote Inspection of Outlet Tunnel have been performed and documented. The other items have not been performed. The recommendations to revise the Hydrology and Hydraulic Study, monitor seepage, and to perform a Slope Stability Analysis were also previously identified as priorities in the 2009 Phase I Investigation.

DLNR Staff Report – Mauka Dam (KA-0119)

The Knudsen Trust and Green Energy have asserted that they do not feel that the high hazard classification of the dam is justified, as they disagree that the individual assessment report created by the Pacific Disaster Center accurately portrays the potential damage. However, to date, the owners have not provided the Department for our review and consideration an alternative study that can support a different hazard potential classification.

Enforcement Actions and Owner Responses

The DLNR has issued three Notice of Deficiency (NOD) letters to the Owner dating back to 2012 and have also sent inspection reports noting deficiencies back to 2009. Below is a brief summary of the correspondence and owner actions. A copy of all the NOD letters to the Owner are included in Attachment A.

- December 2009 - The Knudsen trust was sent a copy of the 2009 Phase I report by Kleinfelder West, Inc., which had a priority 1 recommendation to update the 1981 hydrologic and hydraulic study to determine if the existing spillway was capable of passing the probable maximum flood, and to monitor seepage, as seepage was a major concern.
- April 16, 2012 - An NOD was sent because of the inability to inspect or monitor suspected seepage due to overgrown vegetation. A follow up inspection in June 2012 noted that the reservoir water level was lowered, some vegetation had been removed and the ponded water area downstream had been reduced.
- May 2015 & Feb 2016 - Inspections noted that reservoir water levels had risen back to near spillway levels. No seepage monitoring logs were established and vegetation along the toe needed to be cleared back further.
- October 28, 2016 - Another NOD was sent restricting the water level to the present restriction (5 feet below the spillway), because mitigative actions to control and monitor the seepage were not being taken. The restricted water level was put in place due to seepage concerns, and because the spillway was believed to be undersized to handle the probable maximum flood.
- May 2017 and October 2017 – Inspection noted water levels above the restriction, and conditions either the same or worse than previous inspections. No response had been provided to the 2016 NOD.
- April 17, 2018 – A Phase I inspection was performed. Priority 1 recommendations such as updating the hydrologic and hydraulic study and seepage monitoring were still not performed at this time. Following this inspection, a Screening Level Risk Analysis (SLRA) was performed. The results of the study indicated several realistic potential failure modes including overtopping and internal erosion, and the risk score for the structure was in the medium to high range.
- January 15, 2019 - the Department was notified that a new tenant, Green Energy Team LLC (Green Energy), was responsible for the reservoir. Shortly after this, a plan was sent to the Department by Green Energy with a detailed schedule for catching up on various maintenance items including both on-site maintenance and various administrative activities such as Updating the Emergency Action Plans and creating Operation and Maintenance Plans as well as an Inspection, Monitoring, and Reporting Plan. Photos, follow-up documentation, and subsequent reporting show that maintenance and operation of the reservoir significantly improved over the following year. However, no formal studies were begun to address the long-time structural deficiencies.
- On September 15, 2021, an NOD was sent by the Department. Details of the NOD and the response to this NOD are discussed in the following section.

DLNR Staff Report – Mauka Dam (KA-0119)**September 2021 NOD and Owner Response Status**

The requirements of the NOD dated September 15, 2021 and the status of the owners responses are summarized in the Table 1. Letters from Green Energy dated 10/31/2021 and 3/8/2022 responding to the September 15, 2021 NOD and the Department's responses are included in Attachment B. Knudsen Trust responded in writing on 7/7/2022, indicating that they had scheduled a site survey which would allow them to determine whether DLNR Dam Safety had jurisdiction over the reservoir and whether it should be classified as high hazard. This was in accordance to a meeting on 5/24/2022 held with the Owner and DLNR. However, the Department has not yet received an alternative study justifying a different hazard classification.

Table 1 – September 15, 2022 NOD requirements and Responses

NOD Requirement Status	NOD Deadline	Owner Response to Date
Send Site Survey to the Department Status: Not Received	11/1/2021	Green Energy indicated that they had done an in-house survey. This was not sufficient to meet the requirements, but since a full topographic survey would be required to do a hydrological review (see technical studies), the Department accepted this until the technical studies were completed.
Engage a consultant to perform technical studies Status: No Evidence of Consultant Retained	11/1/2021	Green Energy responded in a letter dated 10/31/2021 that they had retained Gannett Fleming to conduct a Hydrological review. This was accepted by the department as meeting the deadline, though no further evidence was produced of the contract.
Submit Technical Studies Status: Not Received	5/1/2022	No technical studies have been submitted. In a letter dated 3/8/2022 Green Energy indicated that they had decided to change the scope of work for the contract to assess categorization as a high hazard dam instead of doing the hydrological review, but they didn't expect this to be done by the deadline. In a meeting on 5/24/2022 the Knudsen Trust stated that they were finalizing a contract to do the topography which they were going to complete prior to engaging a consultant to perform additional studies. At the time of the meeting, the owners were still looking for a consultant to do the technical studies.
Submit complete Dam Safety Permit Application for Remediation	12/1/2022	Not yet due.
Start Construction	12/1/2023	Not yet due.
Submit Logs of seepage measurements and observation Status: Received	Monthly	Minimal Logs have been submitted monthly, satisfying compliance.
Maintain reservoir level at 5.5 ft Status: Lowered and Maintained	Continuous	Full compliance. However, due to the restricted water level, Green Energy has stated that they cannot maintain the vegetation in the reservoir. The Department encouraged Green Energy to suggest alternatives with engineering justification, but none were submitted.

Discussion

Since 2009 the owner has been non-responsive to the priority recommendations and NODs issued by the Department. Of particular concern, the owner has not yet started any studies to evaluate the spillway capacity as required by the HAR §13-190.1-4, nor have they done any studies to evaluate the nature of the seepage reported since 2009. Maintenance and operations have improved significantly since Green Energy has become a tenant, but that does not negate the backlog of unaddressed structural issues and deferred maintenance prior to their tenancy.

Knudsen Trust and Green Energy have indicated that their current plan is to reclassify the structure as low or significant hazard instead of high hazard. While the Department supports efforts to reclassify the structure if there is engineering justification, no documentation has been submitted to date. Considering that the 2016 Pacific Disaster Center study showed the total population at risk to be 855 people including a school and a Fire Station, convincing evidence would need to be submitted to show that this evaluation was in error and failure of the dam would not likely result in loss of life. Even if the structure is reclassified, that reclassification would not significantly change the requirement to do technical studies (though it could affect subsequent improvements), and the reclassification work could have been done simultaneously to the necessary technical studies that were due May 1, 2022.

As the delay in the technical studies does not appear to be justified, the recommendations include a moderate fine for missing the technical studies deadline on May 1, 2022. We are also recommending a new deadline for technical studies be set with additional penalties in the event the owner misses the new deadline. As missing the original deadline to do technical studies unavoidably delays getting permits and starting construction, all other timeframes for work have been moved appropriately for the new technical studies deadline, but to prevent having to come back before the board, we are asking that these penalties be pre-assessed in the event that the owner misses the deadlines. Finally, though the September 15, 2021 NOD had a set time for the construction start date, to avoid controversy over the length of the permitting process, we are recommending that the deadline be changed to depend on the date the permit is approved by the board.

Recommendations:

1. Pursuant to HRS §179D and HAR §13-190.1, the Board find that the owners of Mauka Reservoir (KA-0119) are in violation of HRS §179D-30(5), and HAR §13-190.1-40(a) and (c) for failing to do studies to determine if the structure is in compliance with HAR §13-190.1-4.
 - a. The ERIC A. KNUDSEN TRUST will be fined \$15,000 for failing to submit the proposed technical studies by 5/1/2022, pursuant to HRS §179D-8(b).
 - b. The ERIC A. KNUDSEN TRUST will pay all fines within 60 days of the Board's action.
 - c. In the event that the ERIC A. KNUDSEN TRUST fails to comply with the Board order to pay fines within the time allotted, the owner shall be fined an additional \$5,000 per day until the ordered fine amount is paid.

DLNR Staff Report – Mauka Dam (KA-0119)

2. The Department recommends the Board authorize the Chairperson to issue the following automatic penalties in the event The ERIC A. KNUDSEN TRUST misses any of the future deadlines as follows:

	Deliverable to Department	Due Date	Penalty for Missed Milestone
a.	Submit Technical Studies (revised deadline) that determine if the structure is in compliance with HAR §13-190.1-4	3/1/2023	\$20,000
b.	A complete Dam Safety Permit Application for remediation.	10/1/2023	\$20,000
c.	Submit a fully executed construction contract to do the permitted work within six (6) months from the date the Board approves the permit.	Six months after board approval of permit	\$20,000

3. The ERIC A. KNUDSEN TRUST will pay all fines issued by the Chairperson within 60 calendar days of the fine being issued. In the event that the ERIC A. KNUDSEN TRUST fails to pay fines within the time allotted, the owner shall be fined an additional \$5,000 per day until the ordered fine amount is paid.

Respectfully submitted,



CARTY S. CHANG
Chief Engineer

APPROVED FOR SUBMITTAL:



SUZANNE D. CASE, Chairperson
Board of Land and Natural Resources

ATTACHMENT A – Enforcement Letters

April 16, 2012 NOD

October 28, 2016 NOD

September 15, 2021 NOD

ATTACHMENT B – NOD response letters

10/31/2021 Letter from Green Energy to Department

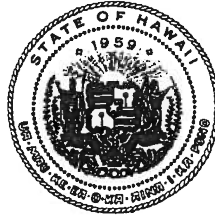
12/6/2021 Response to Letter from Green Energy Dated 10/31/2021

3/8/2022 Letter from Green Energy to Department

4/28/2022 Response to Letter from Green Energy Dated 3/8/2022

ATTACHMENT A

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES

ENGINEERING DIVISION
POST OFFICE BOX 373
HONOLULU, HAWAII 96809

APR 16 2012

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY H. KAULUKUKUI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

CERTIFIED MAIL RETURN RECEIPT REQUESTED

7011 0110 0000 6242 3497

Mr. Stacey Wong, Trustee
Eric A. Knudsen Trust
P.O. Box 759
Kalaheo, HI 96741

Dear Mr. Wong:

NOTICE OF DAM SAFETY DEFICIENCY MAUKA RESERVOIR (KA-0119) KOLOA, KAUAI, HAWAII

On March 28, 2012 Department of Land and Natural Resources (DLNR) Dam Safety Program staff accompanied by Mr. Bill Covern representing Hawaiian Mahogany conducted inspections of the regulated dams and reservoirs owned by the Eric A. Knudsen Trust in the Koloa area as part of the regular dam safety inspection program.

During the inspection it was observed that Mauka Reservoir (KA-0119):

1. Held a pool of water which was flowing 2-inches over the spillway and no staff gage was found to identify the water level;
2. The abutments, toe, and downstream slope areas were unable to be reached and inspected due to excessive vegetation;
3. There was a pond of water at the exit of the outlet pipe and along the toe. The area was overgrown and unable to be visually inspected. The outlet ditch may be blocked and not allowing the water to drain away from the toe; and
4. There was flowing water heard near the toe above the ponded water area. We were unable to further investigate due to the excessive vegetation.

Based on the above observations and findings, the following is issued for your immediate action:

1. Provide for a means to measure the reservoir water level and maintain daily record;
2. Provide access to the abutments, toe and downstream embankment to allow for inspection and monitoring. Maintain the embankment and an area 25-ft. beyond the toe to the dam; with erosion control ground cover

3. Clear, investigate and take remedial actions to eliminate the ponded water at the toe; and
4. Clear and investigate the flowing/seeping water source and provide a proposal for addressing the flowing water.

Please notify our office upon successful completion of each of the above action items, and send us a copy of the daily monitoring logs at the close of each month.

The Dam Safety Program will be contacting you to conduct a follow up inspection of the Mauka dam and reservoir in June 2012. We request that the excessive vegetation be cleared to enable us to conduct an adequate inspection.

Please find attached a copy of the inspection report from the March 28, 2012 visit. Please note that there are outstanding deficiencies identified in the November 2009 Phase I Visual Inspection Report by Kleinfelder and August 10, 2010 DLNR Inspection Report. Failure to address the concerns could lead to restrictions of water levels and/or a requirement to drain the reservoirs.

Should there be any questions, please feel free to contact Ms. Denise Manuel of my staff at Ph. (808) 587-0246.

Sincerely,

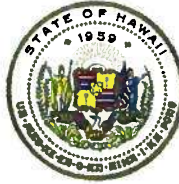


CARTY CHANG
Chief Engineer

DM:ja

c. Bill Cowern, Hawaiian Mahogany

DAVID Y. IGE
GOVERNOR OF HAWAII



**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES**

ENGINEERING DIVISION
POST OFFICE BOX 373
HONOLULU, HAWAII 96809

OCT 28 2016

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

Mr. Peter Baldwin
Co-Trustee
Eric A. Knudsen Trust
P.O. Box 160
Koloa, HI 96756

Dear Mr. Baldwin:

**MAUKA RESERVOIR (KA-0119), KAUAI
NOTICE OF DAM SAFETY DEFICIENCY**

This letter is to notify you that the subject regulated dam/reservoir was determined to be in poor condition and a threat to public safety due to one or more physical / operational conditions and deficiencies that were noted in previous inspection reports. The condition determination for this facility was established from the Department of Land and Natural Resources (Department) statewide investigations from 2007-2009, subsequent dam safety inspections, and current extensive erosion on the downstream slope.

Your immediate action is required of the following:


1. Keep the reservoir at a restricted water level:
 - a. Install/upgrade the staff gage with numbers and extend to the top of the dam elevation.
 - b. Maintain the operating water level 5-ft below the invert of the spillway elevation.
 - c. Continue to take actions to maintain the water level.
 - d. Provide photographic documentation of the water level and the staff gage within fifteen (15) days of this notice. Also provide key water level elevations on a cross section drawing for this facility.
 - e. Failure to maintain the water level below this restricted level would be subject to civil resource violation penalties in the amount of \$ 1,000 for the first violation.
2. Submit a Remediation Schedule:
 - a. Submit a schedule to the Department detailing when deficient conditions will be corrected, within twenty (20) days of this notice. (A sample format is attached).

Mr. Baldwin
Mauka Reservoir (KA-0119), Kauai
Notice of Dam Safety Deficiency
Page 2 of 2

3. Install a real time water level monitoring gage system:
 - a. Install a real time water level monitoring gage system at the facility to monitor the water level in the reservoir.
 - b. Coordinate with the Department on the installation of this device. The Department is installing a limited number of gages this year.
4. Update the Emergency Action Plan:
 - a. If your EAP has not been updated in the last 12 months, update and distribute updated copies within thirty (30) days of this notice. An Online tool is available to update the EAP. Please contact the Department if you need assistance.
5. Submit monthly monitoring reports:
 - a. Take daily/weekly readings of applicable water level, seepage rates, etc and relevant photos and submit the monitoring reports to the Department assigned engineer's email: denise.m.manuel@hawaii.gov, at the beginning of each month for the previous month.
 - b. A sample log sheet is attached. The log sheet shall be tailored to the site specific needs for the facility. Please contact the Department for a soft copy to customize.
 - c. The initial report is due the first month following receipt of this notice.

Continued operation and maintenance of the facility is still required and all previously noted deficiencies still need to be addressed. Failure or delinquency to comply with the above stated actions may result in additional penalties and/or Board of Land and Natural Resources actions. Please contact Ms. Denise Manuel of my staff at (808) 587-0246 should you have any questions regarding this matter.

Sincerely,



CARTY S. CHANG
Chief Engineer

Attachments

Dam Remediation Plan

Dam Inv. No.: _____ Owner: _____ Date: _____

Dam Name: _____ Contact Person: _____

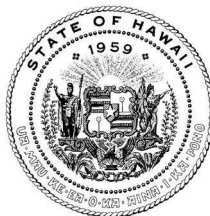
Type of Deficiency	Item No.	Item	Previously Completed	Start Investigation	Complete Investigation	Start Design	Complete Design	Start Construction	Comments
Hydraulic Deficiency									
H&H	H1	H&H Analysis, IDF, Spillway Adequacy (required for all dams)							
	H2	Spillway Construction Modification							
	H3	Spillway Maintenance							
	H4	Ability to maintain reservoir empty							
Stability / Geotechnical Deficiency									
Stability	G1	Stability Analysis (Req'd for High & Significant dams)							
	G2	Seismic Evaluation							
	G3	Embankment Modifications							
Seepage	S1	Seepage Evaluation							
	S2	Seepage Remediation							
Operational / Other Deficiency									
Access	A1	Develop access to Dam Features							
	E1	Excessive Vegetation							
Embankment	E2	Embankment Irregularities/Erosion							
	O1	Outlet works remediation (functional outlet req'd for all dams)							
Outlet Works	O2	Outlet works investigation (ie. Assessment, video)							
	O3	Upstream outlet control							
Documentation	D1	Emergency Action Plan (Req'd for High & Significant dams)							
	D2	O&M Manual (Req'd for all dams)							
	D3	O&M Log / Records (Req'd for all dams)							
	D4	Improvement Records (Copies submitted to State)							
Other	Z1	Instrumentation							
	Z2	Real time Reservoir Water Level Gage							

Reservoir Daily Log

Month/Year: _____

Date	Rainfall	Reservoir Water Level Height (gage)	Intake flow rate:	Outlet flow rate:	Maintenance	Seepage flow rate:	Remarks Top of Dam gage reading = ____ Spillway gage reading = ____
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
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13							
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25							
26							
27							
28							
29							
30							
31							
Totals							

DAVID Y. IGE
GOVERNOR OF HAWAII



**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES**

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Sep 15, 2021

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

VIA CERTIFIED MAIL

Mr. John Horwitz
Eric A. Knudsen Trust
PO Box 160
Koloa, HI 96756

Mr. John Contrades
Green Energy Team, LLC
3-2600 Kaumualii Hwy, Suite 1300 #300
Lihue, HI 96766

Mr. Canen Hookano
Eric A. Knudsen Trust
PO Box 160
Koloa, HI 96756

Mr. Gilles Lebbe
Green Energy Team, LLC
3-2600 Kaumualii Hwy, Suite 1300 #300
Lihue, HI 96766

Dear Mr. Horwitz, Mr. Hookano, Mr. Contrades, and Mr. Lebbe:

**MAUKA RESERVOIR (KA-0119), KAUAI
DAM SAFETY - NOTICE OF DEFICIENCY**

The subject regulated dam/reservoir has been classified to be in a poor overall condition and a threat to public safety due to one or more physical / operational conditions and deficiencies identified by the Department of Land and Natural Resources (Department). This Notice of Dam Safety Deficiency supersedes the conditions stipulated in previously issued notice of deficiencies.

The subject facility is classified as a High Hazard Potential dam, as failure could jeopardize the lives of the downstream public.

Pursuant to Hawaii Revised Statutes (HRS) 179D-6, you are required to take the following remediation, maintenance and monitoring actions, by the deadlines indicated:

1. Remediation Schedule:

By 11/1/2021:

- a. **Send Site Survey to the Department:** Per previous email correspondence, a site survey and outlet tunnel inspection have already been completed. Please send results/report to the Department at DLNR.EN.FCDS@hawaii.gov.

By 11/1/2021:

- b. **Engage a consultant to perform technical studies:** Provide the Department with the consultant name, and a schedule of studies. Studies should be done to document and verify compliance with HAR §13-190.1-4, or with the intent of bringing the structure into compliance. The studies may include, but are not limited to, an updated Hydrologic and Hydraulic (H&H) study and that a Slope Stability Analyses as recommended in the 2009 and the 2021 Phase I investigation for this facility.

By 5/1/2022:

- c. **Submit Technical Studies:** Submit Hydrologic/Hydraulic studies, stability analysis and/or other applicable reports required to support that the dam is in compliance with HAR §13-190.1-4 or (as determined by the study results) to support proposed improvements.

By 12/1/2022:

- d. **Apply for Dam Safety Permits for remediation:** If remediation is required to be in compliance with HAR §13-190.1-4, submit a complete dam safety permit application package (HAR §13-190.1-20) to bring your facility into compliance with HAR §13-190.1-4. If a multi-phase approach to bringing your facility into compliance is chosen, then the permit package for the first phase must be submitted by this date along with a schedule for subsequent phases.

By 12/1/2023:

- e. **Start Construction:** Start Construction of the approved Dam Safety Permit Improvements if necessary to come into compliance with HAR §13-190.1-4.

2. Owner Maintenance and Monitoring:

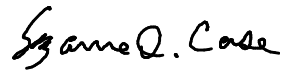
From 11/1/2021 until further notice:

- a. **Submit logs of seepage measurements and observation:** Once per month (on the first business day of the month), submit weekly logs of seepage measurement noting flow rate and clarity of water to DLNR.EN.FCDS@hawaii.gov.
- b. **Maintain the reservoir level at an elevation of 5.5 feet:** This is the same restriction required by previous NODs (5 feet below the invert of the spillway). While fluctuations during large storm events are unavoidable, level should always be dropped as quickly as possible following events. If upcoming events are predicted, the water level should be lowered in anticipation. If the water level is above the 5'6" threshold for more than 72 hours, you will be subject to a Civil Resource Violation System (CRVS) penalty of up to \$1000. The Department will consider written requests for deviation from this requirement.

Mr. Horwitz, Mr. Hookano, Mr. Contrades, and Mr. Lebbe
Mauka Reservoir (KA-0119)
Notice of Deficiency
Page 3 of 3
Sep 15, 2021

Failure to comply with the Remediation and Maintenance and Monitoring actions by the indicated deadlines may result in penalties and other actions by the Board of Land and Natural Resources pursuant to HRS § 179D-6 and 8 and HAR § 13-190.1-5. Please contact Edwin Matsuda of my Engineering Division staff at Edwin.Y.Matsuda@hawaii.gov should you have any questions regarding this matter.

Sincerely,

A handwritten signature in black ink that reads "Suzanne D. Case". The signature is written in a cursive, flowing style.

SUZANNE D. CASE
Chairperson



ATTACHMENT B

5031, Ku'ia Road • Kōloa, HI, 96756
3-2600 Kaumualii Hwy, STE 1300 #300 • Līhu'e, HI, 96766
(808) 647-2049
(808) 435-3014
contact@greenenergykauai.com
www.greenenergykauai.com

an Equal Opportunity Provider and Employer

October 31, 2021

State of Hawaii – DLNR
Suzanne D. Case, Chairperson
PO Box 621
Honolulu, HI 96809

RECEIVED
2021 NOV -4 AM 8:08
DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

VIA CERTIFIED MAIL

RE : MAUKA RESERVOIR (KA-0119), KAUAI DAM SAFETY – NOTICE OF DEFICIENCY

Dear Mrs. Case,

This letter does not constitute a response to your department's notice of deficiency mentioned above. This letter merely notifies you of certain items raised in said notice. A response letter to the notice of deficiency will be sent to you by the E.A. Knudsen Trust in due time.

Green Energy Team, LLC has certain limited responsibilities to operate the Mauka Reservoir pursuant to its lease agreement with the E.A. Knudsen Trust. This letter does only relate to matters for which Green Energy may be responsible and solely reflects the position of Green Energy Team and not of the E.A. Knudsen Trust.


Our company operates Mauka Reservoir. Mr. Contrades and myself want to make you aware of the following:

- 1) A site survey was conducted by Green Energy Team in 2019 using our own surveying and mapping tools. The results were uploaded to the EAP and align with the historical survey data.
- 2) A visual outlet tunnel inspection is conducted annually and the outlet tunnel is in good condition. This is part of the annual inspection per the O&M plan that is on file with your department.
- 3) I personally mentioned to your department that Green Energy Team has retained the services from Gannett Fleming to conduct, amongst other things, a hydrological review of Mauka Reservoir.
- 4) We will maintain Mauka reservoir level at maximum 5.5' as per your department's mandate. We hereby notify you that this represents considerable safety risks. Due to low water levels, grass, bushes and trees will grow on the reservoir bed that was formerly flooded. Because of the soft silt bottom this vegetation will be uprooted during the next flood event and can cause the outlet tunnel and spillway to clog which

could then lead to overtopping of the dam and a dam breach. We decline every and all liability for damages and accidents caused by this mandate.

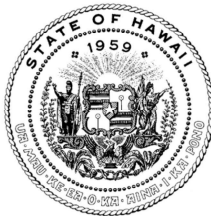
- 5) Based on the data available to us, there will be no seepage at a reservoir pool level of 5.5'. In addition, there is no weir or drain installed and we thus can't measure the flow rate. As long as there's no seepage, there's also no reason to install a weir or drain.

Sincerely



Gilles Lebbe
General Manager

DAVID Y. IGE
GOVERNOR OF HAWAII



**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES**

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Dec 6, 2021

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

VIA CERTIFIED MAIL

Mr. Gilles Lebbe
Green Energy Team, LLC
3-2600 Kaumuali'i Hwy, Suite 1300 #300
Lihue, HI 96766

Dear Mr. Lebbe:

**MAUKA RESERVOIR (KA-0119), KAUAI
Response to Letter from Green Energy Dated 10/31/2021**

Thank you for your letter concerning certain requirements stated in the Notice of Deficiency (NOD) letter issued by the Department of Land and Natural Resources (the Department) on September 15, 2021. Per HAR §13-190, owners are responsible for the adequate and timely maintenance, operations, and inspection of their reservoirs, and are also responsible for any engineering and geologic investigations which may be required to ensure public safety.

In response to the requirements stated in the NOD for 11/1/2021:

- 1) We acknowledge the elevations in the EAP and our data system were updated, and we will accept your attestation that these elevations were obtained by survey conducted by Green Energy, and that the Key Elevations recorded cover all the specific Priority 1 Site Survey requirements (from the Phase 1 report) except the embankment crest profile. Since we expect that an embankment topography will be done as part of future studies required by the NOD, we will delay requirements for obtaining the additional topographic information until technical studies are submitted.
- 2) Thank you for notifying us that the outlet was inspected by Green Energy and is in good condition. Please submit any pictures or video of the outlet inspections for our files. If none were taken, please submit such photo / video documentation from next year's outlet works inspection.
- 3) Thank you for engaging a consultant (Gannett Fleming) to perform technical studies and letting us know that they will be performing a hydrological review to confirm the dams spillway adequacy. We look forward to seeing the results of those studies by 5/1/2022.
- 4) We acknowledge that Green Energy has been restricting the reservoir water level below the level stipulated by the NOD and has been providing monthly seepage monitoring reports to our office of any seepage observed. The monitoring reports have indicated that seepage has not been observed at the restricted reservoir water levels. Please continue to send a monthly report to the department.

The restriction of the water level does not relieve the owner of the responsibility to maintain safety at the facility, including maintaining the vegetation within the reservoir that may impact the safe operation of the facility. The Department will consider alternative mitigative actions recommended by your engineer for consideration. Until such mitigative actions are proposed and accepted, the owner is responsible to maintain vegetation at their facility to avoid potential safety hazards. This includes managing vegetation in the reservoir which could potentially block the low-level outlet or spillway.

- 5) The restricted water level is a minimum operating restriction based on safety concerns and other issues historically observed at the facility. We understand that Green Energy has only recently assumed the operational role at the facility, therefore we provide the following background for your information:

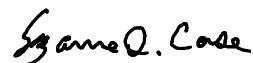
- In December 2009, the Knudsen trust was sent a copy of the 2009 Phase I report by Kleinfelder West, Inc., which had a priority 1 recommendation to update the 1981 hydrologic and hydraulic study to determine if the existing spillway was capable of passing the inflow design flood, and to monitor seepage, as seepage is a major concern. This was reiterated again in the 2021 Phase I report by AECOM (as seen during the 2018 inspection).
- An April 16, 2012 NOD was sent because of inability to inspect or monitor suspected seepage. These were based on a March 2012 inspection by DLNR that noted the reservoir water was flowing into the spillway and audible flows could be heard in the heavy downstream vegetation above the low-level outlet water flows. The NOD noted that failure to address the concerns could lead to restrictions of water levels and/or a requirement to drain the reservoir. A follow up inspection in June 2012 noted that the reservoir water level was lowered, some vegetation had been removed and the ponded water area downstream had been reduced.
- Inspections in May 2015 & February 2016 noted that reservoir water levels were higher and back near spillway levels. No seepage monitoring logs were established. Vegetation along the toe also needed to be cleared back further.
- October 28, 2016: Because mitigative actions to control and monitor the seepage were not being accomplished and the reservoir was being operated near spillway levels as noted in the May 2015 and February 2016 inspection, another NOD was sent restricting the water level to the present restriction (5 feet below the spillway). The restricted water level was put in place due to seepage concerns and also because the spillway was believed to be undersized to handle the probable maximum flood.
- The Department acknowledges and appreciates that the Green Energy Team has been clearing and maintaining the vegetation and has taken a more proactive role in monitoring and operating all their regulated reservoirs. Still, the underlining deficiencies such as remediating the downstream slope / toe to mitigate against seepage failures and providing for possible modifications to address spillway sizing deficiencies remain. Therefore, the Department sent the September 15, 2021 NOD to formalize a remediation schedule for the facility. The NOD was not sent due to any newly noted deficiencies. Interim reservoir water level restrictions can be modified if

Mr. Lebbe
Mauka Reservoir (KA-0119)
Response to Letter from Green Energy Dated 10/31/2021
Page 3 of 3
Dec 6, 2021

the owner / owner's engineer can provide sufficient justification for those actions and effective mitigative measures to ensure safety at the structure is maintained to the satisfaction of the Department. Adherence to the Department's restrictions and other mitigative measures authorized by the Department do not imply in any way that the Department deems the reservoir safe and no longer at risk from the underlying deficiencies. Compliance with the Department's mitigative restrictive levels or any other mitigative actions do not relieve the dam owner of their responsibility to maintain and ensure safe operation at their facility, including responsibility to address any inadvertent consequences resulting from the Department's restrictions.

Please contact Ms. Gina Belleau of my Engineering Division staff at Gina.C.Belleau@hawaii.gov should you have any questions regarding this matter.

Sincerely,



SUZANNE D. CASE
Chairperson

Cc:

Mr. John Horwitz
Eric A. Knudsen Trust
PO Box 160
Koloa, HI 96756

Mr. Canen Hookano
Eric A. Knudsen Trust
PO Box 160
Koloa, HI 96756

Mr. John Contrades
Green Energy Team, LLC
3-2600 Kaumualii Hwy,
Suite 1300 #300
Lihue, HI 96766



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LAND DIVISION

2022 MAR 11 AM 10:39

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

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(808) 647-2049
(808) 435-3014
contact@greenenergykauai.com
www.greenenergykauai.com

March 8, 2022

Suzanne D. Case, Chairperson
Board of Land and Natural Resources
State of Hawaii
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

RECEIVED
2022 MAR 10 PM 1:04
DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

Re: Mauka Reservoir (KA-0119), Kauai, Notice of Dam and Reservoir Deficiency
dated September 15, 2021.

Dear Chair Case:

This letter is in response to your letter to us dated December 6, 2021 regarding the above Notice of Deficiency ("NOD").

1. Thank you for acknowledging the site survey measurements as uploaded in the EAP. The topographic information on the embankment crest was already profiled in the study conducted by Walter Lum and Associates for the Department of the Army, Corps of Engineers on August 1981 (See pages 3 - 6, 11-12, and Plate 1-B). To the best of our knowledge and based upon our inspection, the embankment crest profile has not changed significantly since the aforementioned U.S. Army Corps of Engineers study was completed except for one location where surface erosion occurred. We feel there is no need for further measurements to be taken at this time.

2. Based upon our recent inspection, the outlet is in good working condition. We will provide photos to you of the outlet during our inspection in 2022, which is planned for the next coming weeks. For your information, we are not able to provide any internal video of the outlet since to our knowledge, automated robotic-cam equipment is not presently available on the island for the diameter size of the outlet piping.

3. Following the NOD, and in order to better protect our rights, we have decided to alter the scope of work for Gannett Fleming. The initial order was to calculate the predicted maximum precipitation and water flow to the reservoir to determine spillway adequacy and upstream water in-flow mitigation measures. However, given the NOD and the potential legal consequences associated with it, we are forced to alter this scope of work to study if the dam is actually regulated or not. The size of the dam, the current impoundment capacity and the unrealistic flood map provided by the DLNR all lead us to believe the dam is most probably not regulated or at least wrongly categorized as a high hazard dam. It is our understanding that this study will not be completed by your deadline of May 1, 2022. We will make the study available to you when there is sufficient data to make an accurate prediction and conclude the study.

4. We will continue to provide monthly seepage monitoring reports to your department. In regard to managing the vegetation within the reservoir, we draw your attention to the inverse relationship between water level and the amount of vegetation growing within the reservoir. That is, by keeping the water level low we promote more vegetation growth, which can increase the probability of blockage. There is no way to maintain vegetation in the treacherous mud on the edges of the reservoir. Due to a hundred years of silt build up, the mud is estimated to be around 6-9 feet deep. It is unsafe to send people or machines in there. Hence, when we assumed the operating responsibility of the reservoir, we implemented a balanced approach to increasing water levels temporarily in order to flood the reservoir edges so to control vegetation and thus the risk of blockage. We have now abandoned that practice and vegetation is growing in the muddy edges and this vegetation can't be cleared. As said, we will not be held responsible for the consequences of the DLNR's decision to permanently restrict water levels.

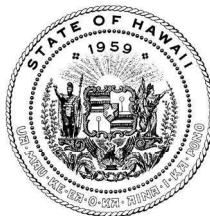
We will continue to work in good faith to keep the dam safe. However, in complying with and following the specific recommendations of your department as reservoir and dam safety regulators, we the Green Energy Team and the Knudsen Trust, do not assume your regulatory responsibility nor waive any rights we may have should any of the department's recommendations cause property damage, injury or death.

Should you have any questions or concerns please feel free to contact the undersigned.



Gilles Lebbe
General Manager

DAVID Y. IGE
GOVERNOR OF HAWAII



**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES**

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Apr 28, 2022

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

VIA CERTIFIED MAIL

Mr. Gilles Lebbe
Green Energy Team LLC
3-2600 Kaumualii Hwy, Suite 1300 #300
Lihue, Hawaii 96766

Dear Mr. Lebbe:

**MAUKA RESERVOIR (KA-0119), KAUAI
Response to Letter from Green Energy Team LLC Dated 3/8/2022**

Thank you for your letter dated March 8, 2022 concerning certain requirements stated in the Notice of Deficiency (NOD) letter issued by the Department of Land and Natural Resources (the Department) on September 15, 2021.

We respond to each of the points raised in the above-referenced letter as follows:

1: The August 1981 topographic information is insufficient. A detailed topographic survey was not accomplished in the 1981 Phase I report, which profile data is now over 40 years old. The Department requests a topographic survey as described as a priority 1 recommendation in the 2021 AECOM Phase I Investigation of Mauka Reservoir. The topographic map will identify and document the current condition and geometry of the embankment and can a) determine if there is settling of the embankment or are low spots along the crest, b) determine areas of sliding or erosion concerns, and c) assist in verifying the crest width. These surveys will assist your engineering team in their stability analysis of the embankment. As stated in our letter dated December 6, 2021, we accepted that several of the key elevations were surveyed by Green Energy and indicated that a more detailed topographic survey must be done in conjunction with other technical studies, which remain due on May 1, 2022 according to the NOD.

2: Please forward your 2022 photos of the outlet. The Department appreciates your efforts to both inspect and document the outlet conditions and looks forward to receiving a copy of those photos.

3: Mauka Reservoir has been classified as a regulated dam for over twenty years. Mauka Reservoir (KA-0119) is a regulated dam because it meets the definition of a "dam" as

defined in Hawaii Administrative Rules (HAR) §13-190.1-2, and does not otherwise qualify as an exempt structure under HAR §13-190.1-3. The definition, which is stated in the alternative, includes specific dams such as Mauka Reservoir that have been included in the September 1998 “[Dams within the jurisdiction of the State of Hawaii](#)” circular¹. A copy of the 1998 “Dams within the Jurisdiction of the State of Hawaii” can be viewed in the documents tab of the online Dam Inventory System, which is utilized to update your EAPs. If you have data showing Mauka Reservoir no longer fits this definition, despite being listed in the 1998 circular, please submit a permit application to remove from the inventory with sufficient information to support your conclusion.

It has now been over seven months since the issuance of the NOD. The NOD allowed flexibility to choose which technical studies would most efficiently bring your structure into compliance with HAR §13-190.1-4, but had the **May 1, 2022** deadline. If you are unable to meet this May 1st deadline to provide those technical studies, you will be in violation of the NOD requirements and may be subject to fines, including attorney’s fees and costs, as can be imposed by the Board. Under HRS §179D-8, administrative penalties alone may be up to \$25,000 per day for a violation.

4: Please consider proposed alternative mitigative actions regarding vegetation management and the current water level restriction. Pursuant to HRS §179D-30 and HAR §13-190.1-40, owners are responsible for the adequate and timely maintenance, operations, and inspection of their dams and reservoirs, and are also responsible for any engineering and geologic investigations, which may be required to ensure public safety. Furthermore, compliance with the water restriction levels or any other mitigative actions imposed by the Department do not relieve the dam owner of their responsibility to maintain and ensure safe operations at their facility, including responsibility for any inadvertent consequences of such restrictions or mitigative actions. We disagree with your current stated view on liability for Mauka Reservoir and urge you to consult with your legal counsel for a proper assessment of your company’s legal rights and duties for the use of your dam and reservoir to impound water under both HRS chapter 179D and HAR chapter 13-190.1 and any other applicable law.

The Department will consider alternative mitigative actions as may be recommended by your engineer or engineering consultant, and we encourage you to include justification for alternatives to the current level restrictions as part of the alternative mitigative actions. Alternative mitigative actions must also include detailed operational action plans addressing the event of overtopping of this structure during severe storm events and minimizing seepage on the downstream toe.

¹ <https://dams.hawaii.gov/Files/00000000-0000-0000-0000-000000000000/01-Hawaii%20Dam%20Safety%20-%20Regulatory/1998%20Sept-Circular%20122%20-%20Jurisdictional%20Dams%20in%20the%20State%20of%20Hawaii.pdf>

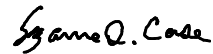
Mr. Lebbe, Mr. Horwitz, Mr. Hookano and Mr. Contrades
Mauka Reservoir (KA-0119)
Response to Letter from Green Energy Team LLC Dated 3/8/2022
Page 3 of 3
Apr 28, 2022

The Department acknowledges the considerable efforts of Green Energy Team LLC in maintaining and operating all their regulated reservoirs and dams. The concerns continue to be the underlying deficiencies of this particular structure. The purpose of the September 15, 2021

NOD was to formalize a remediation schedule for the facility to address these underlying deficiencies.

Please contact Edwin Matsuda of my Engineering Division staff at Edwin.Y.Matsuda@hawaii.gov should you have any questions regarding this matter.

Sincerely,



SUZANNE D. CASE
Chairperson

Cc: **Mr. John Horwitz**
Mr. Canen Hookano
Eric A. Knudsen Trust
P.O. Box 160
Koloa, Hawaii 96756

Mr. John Contrades
Green Energy Team LLC
3-2600 Kaumualii Hwy, Suite 1300 #300
Lihue, Hawaii 96766