

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

February 24, 2023

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

STAFF REPORT

Regarding: Dam Safety Enforcement Action on Puu O Hewa Dam (KA-0107) for Failure to Comply with Notice of Deficiency Issued November 2, 2022, and to make a finding of violations sufficient to support a specified fine on the owner, Eric A. Knudsen Trust.
Koloa, Kauai, Tax Map Keys (4) 2-7-002: 01

Dam Owner: Eric A. Knudsen Trust
John Horwitz

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

Background on Dam

The Puu O Hewa Reservoir was constructed around 1915 for plantation irrigation. The reservoir receives water from the Mauka ditch and runoff from the surrounding watershed. The dam was classified as an “unsafe - non-emergency” dam by the US Army Corps of Engineers in a 1981 Phase I Investigation. The property is owned by Eric A. Knudsen Trust (hereafter referred to as Knudsen Trust or owner) and has been leased by various lessees in the past several years. Most recently, it was leased by Green Energy Team LLC from 2019-2022 (hereafter referred to as Green Energy). Green Energy was purchased by Mahipapa LLC (hereafter referred to as Mahipapa) in 2022, but the status of Green Energy’s existing lease or Mahipapa’s take over lease with Knudsen Trust is unclear.

Hazard Potential: High Hazard Potential Dam
Population at Risk: 612 people, including a 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 lower spillway on October 28, 2016
Dam Embankment: Earthen
Dam Height: 23 feet
Dam Length: 540 feet
Maximum Storage: 115 acre-feet (approximately 37 million gallons)

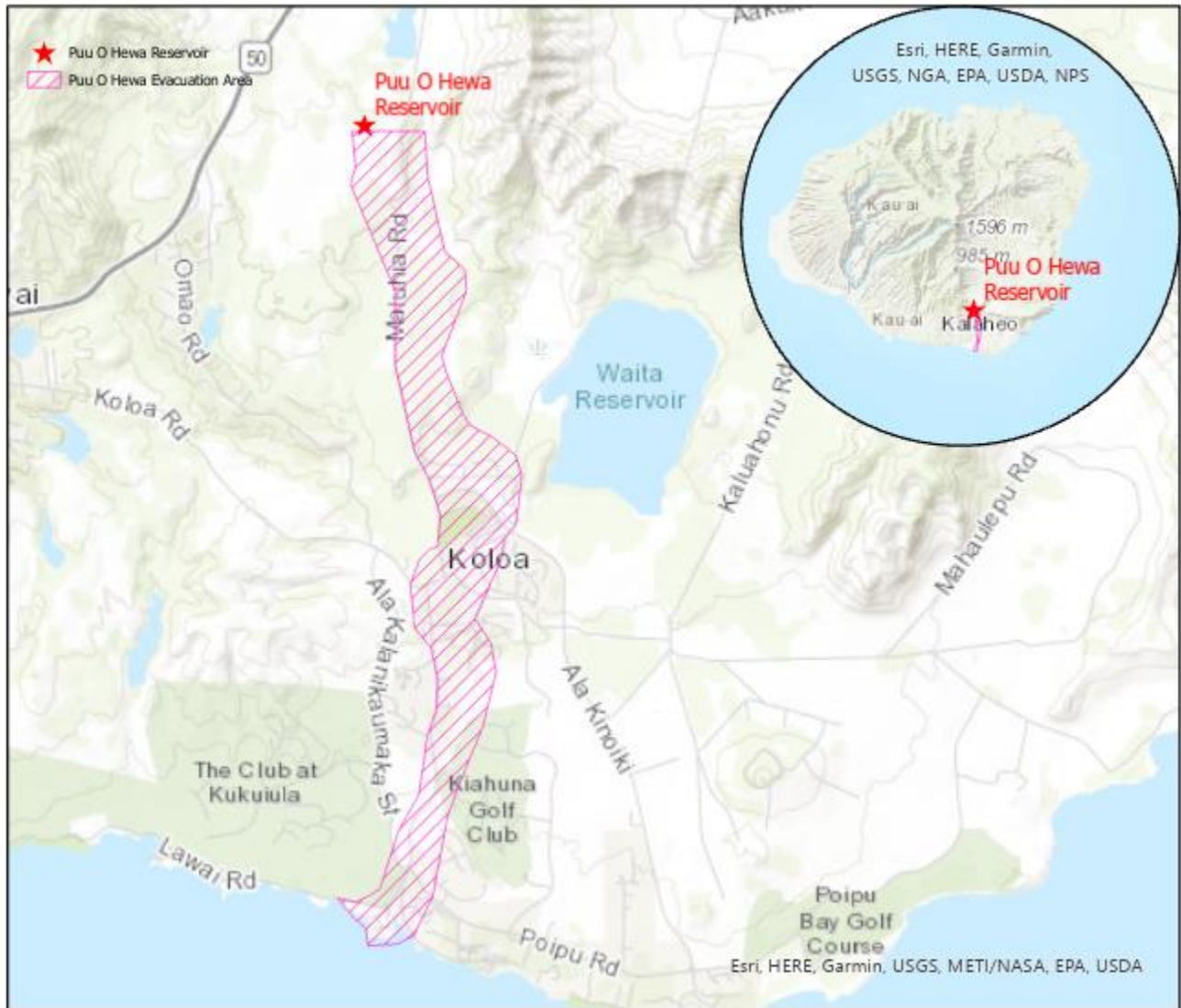


Figure 1. Location map showing evacuation area

Primary Safety Issues

While there are other long standing safety issues for this dam (see Attachment A), the notice of deficiency (NOD) issued by the Department of Land and Natural Resources (Department) on November 2, 2022, was specifically meant to address a more urgent safety issue due to the outlet structure being compromised. Over time, the outlet had gotten blocked with silt, rocks, and other debris, preventing the release of water from the reservoir. This is a highly dangerous situation, because it means that there is no way to control the water level in the reservoir which could result in the potential overtopping and failure of the dam in a large storm event. When the NOD was issued, the operator and lessee at the time was Green Energy, and in an attempt to clear the outlet, they excavated a large area over the outlet intake. (See Figure 2). While they succeeded in removing a large boulder that was blocking the outlet, allowing some water to pass through, the current condition of the outlet remains of high concern because the outlet capacity is limited due to the extensive silt blockage (See Figure 3). Additionally, the sinkhole / dugout area right above and behind the original outlet intake (and the condition of the outlet pipe) are risk factors for leakage/preferential flow outside the outlet pipe, increasing the risk of failure of the dam.



Figure 2 (above) shows the excavation around outlet intake and the lack of protection from internal erosion



Figure 3 (left) shows the level of siltation in the outlet channel, significantly decreasing the flow through the outlet

Enforcement Actions and Owner Responses

On July 21, 2022, the Department's dam safety program received a call from Green Energy, the operator and lessee at that time, stating that the reservoir was not draining, and that the outlet had become clogged. The extent of the problem was unclear, but the verbal agreement was that drawings of the intended repair would be sent to the Department's dam safety program for review. The extent of the damage was first ascertained during an inspection on 9/7/2022, which was also attended by the owner. During the inspection, it was discussed with the owner that the problem needed to be addressed and that a dam safety permit would be required due to the extent and scope of the work. The Department sent emails to the owner on 9/8/2022 and on 9/27/2022 to reiterate the importance of addressing this quickly, and to emphasize the importance of retaining a qualified engineering consultant to provide a design that would address this safety issue. Correspondence described is provided in Attachment B.

Since engineered stamped drawings were not received by the Department, a NOD was issued on November 2, 2022. This NOD was issued to encourage the owner to address the outlet concerns expeditiously and correctly. The NOD required that the owner submit an emergency operations plan and keep the reservoir empty, which they complied with. The NOD also required the owner submit engineered stamped drawings by 1/27/2023 to address the issue. The owner did not retain a consultant to do the design work, nor have they provided engineered stamped drawings to the Department. The owner has requested an extension via email (Attachment C) to submit engineered stamped drawings for the fix.

Discussion

The inability to drain a reservoir poses a large risk, as the reservoir is susceptible to overtopping during any large weather events, and in circumstances where other defects may jeopardize the embankment. The owner's prior lessee (Green Energy) was aware of the problem with the outlet and the requirement to submit engineered stamped drawings for the fix since July 21, 2022. The owner was also aware of the problem and the urgency from around September 7, 2022. Yet four months after issuance of the NOD, the owner had still not retained a consultant to address the problem. Considering that the NOD requirements were very focused on just the emergency work, this appears to be an unjustified delay. Of even greater concern to the Department's dam safety program, based on the email of 1/25/2023, is that it is unclear who the responsible party is to ensure the safe operation of this dam and to address this emergency situation.

It is still necessary and urgent for the outlet deficiencies to be fixed. We recommend fining the owner for missing the deadline to retain an engineering consultant and submit engineered stamped drawings by the 1/27/23 deadline. In addition to this fine, we are recommending granting the owner an extension and a new deadline with an automatic fine if they fail to meet this new deadline. The dam owner is ultimately responsible for the safe maintenance and operations of their dam regardless of agreements with lease holders or operators.

Recommendations

1. The Board authorize the Chairperson to issue a \$5,000 fine to the Knudsen Trust for failing to submit the required engineered stamped drawings for the outlet fix by the 1/27/23 deadline as specified in the NOD.

2. The Board authorize the Chairperson to grant an extension to Knudsen Trust to submit the required engineered stamped drawings for the outlet fix by 4/7/23.
3. In the event Knudsen Trust fails to meet the new deadline in Item no. 2, the Board authorize the Chairperson to make a finding of violation and to issue an automatic penalty of \$10,000.
4. The owner will pay all fines issued by the Chairperson within 60 calendar days of the fine being issued. In the event the Knudsen Trust fails to pay fines within the time allotted, the Knudsen Trust 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:



DAWN N.S. CHANG, Chairperson
Board of Land and Natural Resources

ATTACHMENT A – NOD Letters issued for Puu O Hewa

November 2, 2022 Letter
October 28, 2016 Letter
April 16, 2012 Letter

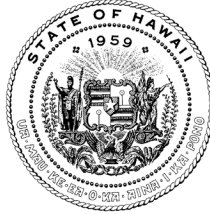
ATTACHMENT B – Correspondence Concerning Outlet Structure

July 21, 2022 Email in follow-up to first report of Outlet problems
August 24, 2022 Email concerning Sept 7 inspection and clarification of operator
September 8, 2022 Follow-up email after Sept 7 inspection
September 27, 2022 Response to incomplete plan submittal from Green Energy
January 6, 2023 Reminder letter from Department

ATTACHMENT C – January 25, 2023 Email from owner requesting deadline extension

ATTACHMENT A

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Nov 2, 2022

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. John Horwitz
Eric A. Knudsen Trust
P.O. Box 160
Koloa, Hawaii 96756

Mr. Canen Hookano
Eric A. Knudsen Trust
P.O. Box 160
Koloa, Hawaii 96756

Dear Mr. Horwitz and Mr. Hookano:

DAM SAFETY - NOTICE OF DEFICIENCY PUU O HEWA RESERVOIR (KA-0107), KAUAI

This notice is a follow-up and reiteration of emails sent on July 22, September 8, and September 27, 2022 regarding the silted in outlet and sinkhole/dug out area at the subject regulated dam, which could further compromise the safety of the dam. This Notice of Deficiency (NOD) does not replace previous NODs issued for this structure.

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). The subject facility is classified as a High Hazard Potential dam, which means that failure will result in probable loss of human life.

As discussed in the emails listed above, based on the inspection on 9/7/2022, the condition of the outlet is of high concern because the outlet capacity is limited due to the silt blockage. Additionally, the sinkhole / dugout area right above and behind the original outlet intake (and the condition of the outlet pipe) are risk factors for leakage/preferential flow outside the outlet pipe, increasing risk of failure of the dam.

Pursuant to HAR 13-190.1-41, dam owners have the primary responsibility for determining when an emergency involving a dam or reservoir exists and activate their Emergency Action Plan (EAP). According to the August 2022 EAP on file for this reservoir, an EAP level 1 or 2 should be activated.

Where an emergency exists, necessary actions to safeguard life, health and property should be taken. However, this does not relieve you from complying with all other provisions of the rules, inclusive of HAR Sections 13-190.1-20 & 13-190.1-22, & 13-190.1-30-31, which require construction drawings, plans and specifications to be signed and sealed by a design engineer and

the construction work to be observed and certified by a construction engineer. Additionally, all other permitting requirements from other Federal State or County agencies are required to be obtained, unless otherwise waived by those agencies.

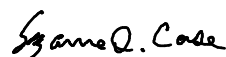
Even though we agree that the emergency nature of the work may require you to finish the dam safety permitting process after construction is completed, you are still responsible to make sure that the construction documentation and supervision of the work meets the minimum requirements as set forth in the law.

These are the minimum actions and respective deadlines that shall be taken to address and mitigate this issue:

1. **Immediately upon receipt of this notice**, and until a permanent solution has been implemented, maintain the reservoir empty.
2. **By 11/15/2022:** Submit to the Department and implement an emergency operations and monitoring plan outlining measures that will be taken to ensure safety until remediation is complete. This can include, but is not limited to, daily visual checks of the reservoir, installing an electronic monitoring gage, and/or making sure that pumps are available to empty the reservoir in the event that it is filling faster than it can drain. The plan should provide both for regular monitoring and reporting of the reservoir condition, as well as a way to address problems should they arise.
3. **By 1/27/2023:** Send the Department a set of plans approved by a licensed Engineer to address the emergency remediation of the outlet and sinkhole. This can be a full permit package with notation describing which portions of work will be done as emergency work (i.e. before the permit is acquired), or a limited package addressing only the emergency portion of the work. A proposed schedule of work should be included with the plans.
4. Alternatively, to requirement 3, **by 1/27/2023**, if the Knudsen Trust chooses to breach the structure rather than repair the outlet, please have an Engineering firm provide preliminary plans and a schedule for the design completion.

Failure to comply with these 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 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: Mahipapa, LLC (VIA EMAIL: kanani.kawamura@mahipapa.com)

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
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

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

Dear Mr. Baldwin:

**PUU O HEWA RESERVOIR (KA-0107), 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 at the invert to the primary (lower) spillway.
 - 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
Puu O Hewa Reservoir (KA-0107), 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.:
Dam Name:

Owner:
Contact Person:

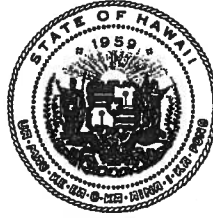
Date:

Type of Deficiency	Item No.	Item	Previously Completed	Anticipated Date (as applicable)				Start Construction	Comments
				Start Investigation	Complete Investigation	Start Design	Complete Design		
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							
		S1 Seepage Evaluation							
Seepage	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							
	D1	Emergency Action Plan (Req'd for High & Significant dams)							
Documentation	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)							
	Z1	Instrumentation							
Other	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							
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31							
Totals							

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 3473

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

Dear Mr. Wong:

**NOTICE OF DAM SAFETY DEFICIENCY
PUU O HEWA RESERVOIR (KA-0107)
KOLOA, KAUAI, HAWAII**

On March 28, 2012 Department of Land and Natural Resources (DLNR) Dam Safety Program staff accompanied by Mr. Bill Cowern 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 Puu O Hewa Reservoir (KA-0107):

1. Held a pool of water 2-inches flowing over the spillway;
2. The upstream slope, abutments, toe, and downstream slope areas were unable to be reached and inspected due to excessive vegetation; and
3. The Primary Spillway that was excavated out in 2007 only has 4-ft of side wall protection at the control section with the remaining 6-ft length having 12-ft high earthen walls that are very unstable and pose a hazard.

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

1. Provide for a means to measure the water level and maintain daily record;
2. Provide access to the abutments, toe and downstream embankment to allow for inspection and monitoring. Maintain a clear area 25-ft beyond the toe to the dam; and
3. Evaluate spillway capacity and submit a plan to address the unstable earthen vertical side walls.

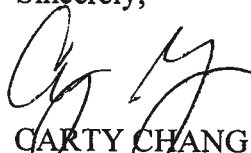
The spillway improvements and repairs will require a permit from our office. Your proposed actions should include a completed application form and back-up calculations for the inflow design flood, spillway capacity and improvement details.

The Dam Safety Program will be contacting you to conduct a follow up inspection of the Puu O Hewa dam and reservoir in June 2012. We request clearing for us to be able to conduct an adequate inspection.

Please find attached 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

ATTACHMENT B

Belleau, Gina

From: Belleau, Gina
Sent: Thursday, July 21, 2022 12:17 PM
To: Gilles Lebbe
Cc: Matsuda, Edwin Y
Subject: Switch to upstream valve for Puu O Hewa (KA-0107)

This is just a quick summary of our phone conversation this morning.

You have intended for some time to switch the control for the outlet at Puu O Hewa from downstream to upstream.

You recently noted that the reservoir was no longer draining through the outlet. You pumped out the reservoir, and found that the outlet had become clogged with silt and that there was a sinkhole near the upstream end of the outlet. Your plan is to fix the outlet and replace the downstream control with an upstream control valve. Since this is an emergency situation, you do not have time to go through the full permitting process before doing the work. However, you do plan to send us pictures and sketches of the intended work as soon as you can.

I agreed that this work needs to take place as soon as possible, and that it would not be safe to wait for a formal permit approval. Once we get drawings/pictures of the situation we will provide any feedback we can on short notice. An after the fact permit may be required after the work is done.

Thanks for the phone call this morning and for taking action when it is needed to ensure safety.

Gina Belleau

Department of Land & Natural Resources/Engineering Division
Dam Safety Unit Engineer


Website: dlnreng.hawaii.gov/fcds

Belleau, Gina

From: Belleau, Gina
Sent: Thursday, August 25, 2022 11:48 AM
To: Gilles Lebbe; caner [REDACTED] EAK Trust
Cc: Benjamin A. Kudo; Matsuda, Edwin Y; [REDACTED]
Subject: RE: [EXTERNAL] Re: Change of Tenant for Mauka (KA-0119), Puu O Hewa (KA-0107) and Pia Mill (KA-0115) and Inspection of Mauka on 9/7/2022

OK. I will work with Mahipapa to make sure I have access to inspect at 1 pm on 9/7/2022. Let me know if any representatives of Knudsen Trust plan to attend the inspection.

We are requesting that you provide access to your facility and a representative to assist the inspection team on the day of the inspection as well as answer any follow up questions that may arise later. We anticipate the inspection to last between 1-3 hours.

For this inspection to be effective, your representative should be able to provide maintenance records for viewing; access to all features of your facility; and assure that spillways, slopes, toe and crest areas are cleared of debris and high vegetation that might prohibit a thorough investigation.

Thank you,

Gina Belleau

Department of Land & Natural Resources/Engineering Division
Dam Safety Unit Engineer

[REDACTED]
Website: dlnreng.hawaii.gov/fcds

From: EAK Trust [REDACTED]
Sent: Thursday, August 25, 2022 12:27 AM
To: Belleau, Gina [REDACTED]
Cc: caner [REDACTED]; Benjamin A. Kudo [REDACTED]; Gilles Lebbe [REDACTED]
Matsuda, Edwin Y [REDACTED] mahipapa [REDACTED]
Subject: [EXTERNAL] Re: Change of Tenant for Mauka (KA-0119), Puu O Hewa (KA-0107) and Pia Mill (KA-0115) and Inspection of Mauka on 9/7/2022

Gina,

No change in operations as Green Energy was purchased by Mahipapa and all operations still handled by the tenant which is still managed by Gilles.

John

Sent from my iPhone. Please ignore any typos.

On Aug 25, 2022, at 2:54 AM, Belleau, Gina [REDACTED] wrote:

I'm writing to confirm the change in your tenant from Green Energy LLC to Mahipapa LLC per the EAP submitted 8/1/2022 for the above listed reservoirs. I also wanted to clarify that the EAP did not list an operator. As such, all official correspondence for operations type questions would go to the owner (Knudsen Trust) until we are informed otherwise.

Dam safety will be doing a routine Visual Dam Safety Inspection of Mauka Reservoir on 9/7/2022, followed by an inspection of the ongoing outlet work at Puu O Hewa. We need to know who we should contact to arrange meeting times and locations and to provide us access to the structures (open the gate, etc.). We would also like to view any maintenance records for the structures.

Please confirm the personnel changes listed in the EAP, and let me know if you would like me to have any additional new contact information. Let me know if you have any questions.

Gina Belleau

Department of Land & Natural Resources/Engineering Division

Dam Safety Unit Engineer

[REDACTED]

Website: dlnreng.hawaii.gov/fcds

Belleau, Gina

From: Belleau, Gina
Sent: Thursday, September 8, 2022 1:02 PM
To: John Horwitz; caner [REDACTED]
Cc: [REDACTED] mahipapa [REDACTED] Jeremiah Menefee; Gilles Lebbe; Matsuda, Edwin Y
Subject: Puu O Hewa (KA-0107) Outlet Repairs
Attachments: 20220907-Condition Photo-135737.jpg; 20220907-ConditionPhoto-135144.jpg; 20220907-ConditionPhoto-135452.jpg

This is in follow-up to our conversation in the field yesterday concerning the Puu O Hewa outlet repairs.

The current situation of the outlet is of high concern because the outlet capacity is limited due to the silt blockage. Additionally, the sink-hole/dug out area right above and behind the original outlet intake (and the condition of the outlet pipe) are risk factors for leakage/preferential flow outside the outlet pipe, increasing risk of failure of the dam if it were to fill (such as during a rain event).

Due to the conditions, it is important that your fix is designed by an engineer with experience in dam safety. Once you have the engineer's design drawings, you can apply for the dam safety permit. The permit application form and general conditions can be found on our website here:

<https://dlnreng.hawaii.gov/dam/forms/permit-application/>

To reiterate, you will need a permit for a fix of this magnitude.

One other important aspect to increase awareness of those who need to know while the dam is in this compromised state is to active your EAP Level 1. This is a non-emergency level that lets those who need to know (in this case HI-EMA and KEMA) that the dam is in a compromised state right now. Your EAP plan does have an inoperable outlet as a level 1 EAP alert, so it is in alignment with your plan.

I'm attaching pictures from yesterday's visit as documentation of the situation this email is addressing.

Please let me know if you have any questions.

Gina Belleau

Department of Land & Natural Resources/Engineering Division
Dam Safety Unit Engineer

[REDACTED]
Website: dlnreng.hawaii.gov/fcds

Belleau, Gina

From: Belleau, Gina
Sent: Tuesday, September 27, 2022 2:48 PM
To: Gilles Lebbe
Cc: Matsuda, Edwin Y; EAK Trust; caner [REDACTED] mahipapa [REDACTED]
Subject: RE: Switch to upstream valve for Puu O Hewa (KA-0107)

Thank you for sending the plans for Puu O Hewa Outlet works. Our primary concern with the plans is that they do not address the sealing of the annulus between the slip lined pipe and the existing outlet or the mitigative measures at the outlet that may be necessary due to potential piping through the dam embankment that could occur due to that annulus not being fully sealed. An additional (secondary) concern is the remediation of the sinkhole area and the anchoring of the outlet on the upstream end.

Pursuant to HAR 13-190.1-41, dam owners have the primary responsibility for determining when an emergency involving a dam or reservoir exists. If this is the case, you can take actions necessary to safeguard life, health and property. However, this does not relieve you from complying with all other provisions of the rules, inclusive of HAR Sections 13-190.1-20 & 13-190.1-22, & 13-190.1-30-31 which require construction drawings, plans and specifications to be signed and sealed by a design engineer, licensed in the State of Hawaii and the construction work to be observed and certified by a construction engineer.

Although you are choosing to do this work under Emergency Work provision of the rules an after the fact dam safety permit, approved by the Board of Land and Natural Resources is still required. All requirements of our rules are still applicable to obtain the after the fact permit or applicable penalties may be imposed.

Though the extent of the damage was not fully understood until the inspection on 9/7/2022, the Department is still willing to let work begin on this project prior to the full permit being approved, as discussed on 7/22/2022. However, we will still require you to go through the permit process after the fact. As we discussed on the phone that day, making sure you have a licensed engineer who has done the calculations and is willing to be liable for the design is necessary, even if the work is begun prior to the permit being officially approved. It is in your best interest to make sure that the work is pre-approved with your engineer because if you do the work prior to consulting a licensed engineer, you may be required to redo work or do additional mitigation to meet requirements which would likely be more costly, and it is an expense that could easily be prevented by working with your design engineer ahead of time.

In conclusion, please work with a licensed Civil Engineer to address the sealing of the annulus around the slip-lined outlet and other mitigative measures the Engineer may find necessary. Please immediately submit a letter to Suzanne Case, Chairperson of the Department of Land and Natural Resources attn; Engineering Division Dam Safety Program to identify your proposal. Even though we agree that the emergency nature of the work may require you to finish the permitting process after construction, you will need to make sure that as far as possible your construction documentation and supervision meets the minimum requirements as set forth in the law.

Gina Belleau

Department of Land & Natural Resources/Engineering Division
Dam Safety Unit Engineer
[REDACTED]

From: Gilles Lebbe [REDACTED]
Sent: Friday, September 23, 2022 8:51 PM
To: Belleau, Gina [REDACTED]
Cc: Matsuda, Edwin Y [REDACTED]; EAK Trust [REDACTED]
Subject: [EXTERNAL] Re: Switch to upstream valve for Puu O Hewa (KA-0107)

Hi Gina.

I'm hereby presenting a proposed repair plan for the Puu O Hewa outlet works and sinkhole. Sorry this took so long.

The plan is as follows:

Slip line the existing 12" discharge pipeline with a 10" HDPE pipeline. This method uses the existing pipe as a sleeve by which the new pipe can be slid through. The new HDPE pipe will be 200' long with a 45-degree elbow and flange on the inside of the reservoir to be mounted inside of the new concrete headwall structure, this will provide a smooth surface for the concrete to match up to for the mounting of the valve. This will also take care of the silt build up issue since the valve will be located above the current bottom of the reservoir. The downstream valve will be removed. The new reservoir discharge control valve will be mounted on top of the new concrete headwall. The new valve will have a stem that runs up the inside of the reservoir to the crest where there will be an operating handle that will be used to open and close the valve. The valve stem will be supported with vertical supports as it goes up the dam to ensure that the valve stem remains straight. See attached drawing.

I was copied in an email from you dated September 9 in which you requested that an engineer be involved. This is contrary to what we agreed to and what you confirmed in the email below. If an engineer will have to be hired, a permit obtained, the work bid out and executed, this process will likely take well over a year or two. The chances of having a major rain event in two years is almost 100%. I'm concerned that, in case of a rain event the sinkhole will erode quickly and wash out the dam. This erosion could be slow down by closing the outlet valve when the inflow exceeds the discharge capacity of the outlet pipe but the downstream valve is broken and very difficult to operate (it requires to work with hammer, wrenches etc in the outlet ditch which is unlikely to be done when conditions are bad and water is gushing out of the pipe).

Please let me know your thoughts and recommendations. Have a nice weekend.

Aloha,

Gilles

From: "Belleau, Gina" [REDACTED]
Date: Friday, July 22, 2022 at 12:17 AM
To: Gilles Lebbe [REDACTED]
Cc: "Matsuda, Edwin Y" [REDACTED]
Subject: Switch to upstream valve for Puu O Hewa (KA-0107)

This is just a quick summary of our phone conversation this morning.

You have intended for some time to switch the control for the outlet at Puu O Hewa from downstream to upstream.

You recently noted that the reservoir was no longer draining through the outlet. You pumped out the reservoir, and found that the outlet had become clogged with silt and that there was a sinkhole near the upstream end of the outlet. Your plan is to fix the outlet and replace the downstream control with an upstream control valve. Since this is an emergency situation,

you do not have time to go through the full permitting process before doing the work. However, you do plan to send us pictures and sketches of the intended work as soon as you can.

I agreed that this work needs to take place as soon as possible, and that it would not be safe to wait for a formal permit approval. Once we get drawings/pictures of the situation we will provide any feedback we can on short notice. An after the fact permit may be required after the work is done.

Thanks for the phone call this morning and for taking action when it is needed to ensure safety.

Gina Belleau

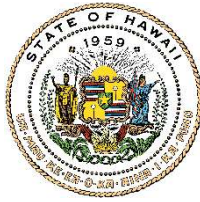
Department of Land & Natural Resources/Engineering Division
Dam Safety Unit Engineer



Website: dlnreng.hawaii.gov/fcds

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



**STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII'
DEPARTMENT OF LAND AND NATURAL RESOURCES**

ENGINEERING DIVISION
P.O. BOX 373
HONOLULU, HAWAII 96809

Jan 6, 2023

DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

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

VIA CERTIFIED MAIL

Mr. John Horwitz
Eric A. Knudsen Trust
P.O. Box 160
Koloa, Hawaii 96756

Mr. Canen Hookano
Eric A. Knudsen Trust
P.O. Box 160
Koloa, Hawaii 96756

Dear Mr. Horwitz and Mr. Hookano:

**DAM SAFETY - NOTICE OF DEFICIENCY FOLLOW-UP
PUU O HEWA RESERVOIR (KA-0107), KAUAI**

In follow-up to the Notice of Deficiency dated November 2, 2022, we received from you on November 15, 2022, an emergency operation management plan. While we have no objections to your Reservoir Emergency Operation Management Plan, we are unsure how to interpret a recommendation from your operator to install remotely readable level gages at the reservoir. When do you intend to follow that recommendation?

We also wish to remind you of the upcoming 1/27/2023 deadline to send a set of plans approved by a licensed Engineer to address the emergency remediation of the outlet and sinkhole. Please include in that submittal clarification of the intended action regarding the recommendation of Seymour Resources Hawaii, Inc., to install remotely readable level gages at the reservoir.

Failure to comply with these actions by the indicated deadlines may result in a Civil Resource Violation and/or actions by the Board of Land and Natural Resources pursuant to HRS §179D-6 and 8 and HAR §13-190.1-5. Please contact Gina Belleau of my Engineering Division staff at Gina.C.Belleau@hawaii.gov should you have any questions regarding this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Cary S. Chang".

CARTY S. CHANG
Chief Engineer

c: Mahipapa, LLC (VIA EMAIL: kanani.kawamura@mahipapa.com)

ATTACHMENT C

Belleau, Gina

From: John Horwitz [REDACTED]
Sent: Wednesday, January 25, 2023 4:14 PM
To: Belleau, Gina
Subject: [EXTERNAL] Re: Puu O Hewa Reservoir (KA-0107) Notice of Deficiency--Deadline reminder

Dear Gina,

I am seeking your consideration and approval of an extension of time to either submit a set of plans to address the emergency remediation of the Puu Hewa outlet and sinkhole or to breach the structure as outlined in your email of November 15, 2022.

Our lessee, Green Energy Team, has apparently been sold to Mahipapa. The lease is not assignable and the Eric A. Knudsen Trust has not reached an agreement with Mahipapa to be the lessee going forward notwithstanding the fact that Mahipapa has assumed the daily operations of the tree farm without our approval.

Mahipapa has obtained a bid to remediate the outlet and sinkhole from Yogi Kwong Engineers, LLC (YKE) and is willing to pay the cost of the remediation. However, according to Mahipapa (I have not had any communications with YKE), YKE requires the contract to be executed by the Trust which I need to review and get approval from the Board of Trustees.

I had left this issue to the lessee to address as per the lease but the circumstances have made those responsibilities more complex. It is our expectation to reach an agreement with Mahipapa and have the house in order thereafter. We just need a little time (30-45 days, please).

Thank you,

John Horwitz

On Tuesday, November 15, 2022 at 11:17:05 AM HST, Belleau, Gina [REDACTED] wrote:

Just a reminder that your operation plan is due today.

Gina Belleau

Department of Land & Natural Resources/Engineering Division

Dam Safety Unit Engineer

[REDACTED]

Website: dlnreng.hawaii.gov/fcds

From: Belleau, Gina

Sent: Wednesday, November 2, 2022 2:31 PM

To: John Horwitz [REDACTED]; caner [REDACTED]

Cc: [REDACTED] mahipapa [REDACTED]

Subject: Puu O Hewa Reservoir (KA-0107) Notice of Deficiency

Please find attached NOD for Puu O Hewa Reservoir. Hard copy to follow.

Gina Belleau

Department of Land & Natural Resources/Engineering Division

Dam Safety Unit Engineer

[REDACTED]

Website: dlnreng.hawaii.gov/fcds