APPLICATION FOR A DLNR DAM SAFETY PERMIT
PERMIT NO. 72 – OPAEULA RESERVOIR NO. 15 (OA-0020), TMK: 6-2-010:001
DAM REMOVAL, HALE’IWA, HAWAII

The Engineering Division (Division) hereby submits an application for your approval and authorization for the Chairperson and Department to stipulate conditions and issue a Dam Safety Permit for the subject application, “OPAEULA RESERVOIR NO. 15 – DAM REMOVAL”, pursuant to Hawaii Revised Statutes (HRS) Chapter 179D and current Administrative Rules.

APPLICANT:
Kamehameha Schools
567 South King Street, Suite 617
Honolulu, HI 96813

LAND OWNER:
Same as Applicant

SUMMARY OF REQUEST:
Application for a Dam Safety Permit for the REMOVAL of the Opaeula Reservoir No. 15, Hale’iwa, Hawaii. (See Exhibit 1)

LOCATION: Hale’iwa, Oahu, Hawaii, TMK: 6-2-010:001 (See Exhibit 2)

BACKGROUND:
Opaeula Reservoir No. 15 was constructed around 1910 for storage of irrigation water for Waialua Sugar Company sugarcane plantation. It is an off-stream reservoir consisting of a 21-foot high crescent-shaped earthen embankment with a 2,200-foot crest length. Appurtenances to the dam include an intake structure, outlet works, and a pipe spillway. The main inflow is from a ditch which originates from Opaeula 1 Reservoir. The owner has reconfigured the ditch and is now using PVC pipe to divert the water from Opaeula 1 Reservoir to a new non-regulated reservoir to supply water for downstream users. No loss of water supply from the removal of this storage facility is anticipated. Photos of the existing structure are shown in Exhibit 8.
DESCRIPTION:
The Opaeula Reservoir No. 15 will be breached by the removal of a portion of the embankment with a bottom width of 55 feet with side slope gradients of 3 horizontal to 1 vertical (3H:1V). The breach will result in an approximately 14-foot long channel. The longitudinal slope at the bottom of channel will be approximately 1.3 percent. The excavated soil will be placed as compacted on-site fill material. The graded areas will be stabilized with grassing. Kamehameha Schools will be responsible to maintain this site after the dam is removed. This is an off-stream reservoir which was only filled via a ditch system that has been altered and no longer services this reservoir. The removal of the embankment will result in the addition of approximately 1 acre to the existing 8,567,680-acre drainage area of the nearest downstream development and the increase risk to downstream flooding from this additional area is minimal. (See Exhibit 3)

CHAPTER 343-HRS – ENVIRONMENTAL ASSESSMENT:
The project is entirely on privately owned lands and does not trigger the requirement for completion of an environmental assessment. (See Exhibit 4 for evaluation)

STATE HISTORIC PRESERVATION DIVISION (SHPD) – HRS 6E - REQUIREMENTS:
SHPD required Kamehameha Schools to complete an Architectural Inventory Assessment for this removal project. SHPD stipulates that during construction, the owner shall provide “recording of the reservoir’s cross-section during demolition (to be submitted as an addendum to the AIA)”. The final AIA was accepted by SHPD on January 29, 2018 (LOG NO: 2017.00992; DOC NO: 1801TGM15) (See Exhibit 5)

AGENCY CONSULTATION:
The Division sent out notices to various agencies for their comments on the application. A compilation of the comments from the agencies are posted on Exhibit 6

REMARKS:
The applicant (Kamehameha Schools) and their Engineering consultant, Belt Collins Hawaii LLC, have completed a basis of design, plans and specifications and requests for the approval of a dam safety construction/alteration permit. The Division has reviewed the documents and concluded that it satisfies the permit requirements stipulated in HRS 179D and any special conditions deemed appropriate by the Division. Staff recommends approval of this permit application with the Dam Safety General Permit Conditions. (See Exhibit 7)

RECOMMENDATION:
That the Board:

1. Authorize the approval and issuance of the Dam Safety Permit for this project.
2. Authorize the Chairperson to issue a dam safety permit for the removal of the Opaeula Reservoir No. 15 (DLNR Dam Safety Permit No. 72) subject to such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.
3. Authorize the Department to oversee performance of the permitted work and take appropriate action including but not limited selecting and procuring testing or
professional services to verify the integrity of the construction work, approval of minor revisions and changes, issuance of fines and/or revocation of the permit, if necessary.

4. Delegate authority to the Chairperson to approve time extension for the dam safety permit when requested and deemed appropriate.

5. Authorize the Department to remove this dam from dam safety regulatory inventory and the requirements of Hawaii Revised Statutes Chapter 179D, upon satisfactory completion of the construction project.

Respectfully submitted,

CARTY S. CHANG
Chief Engineer

APPROVED FOR SUBMITTAL:

SUZANNE D. CASE
Chairperson

Exhibit(s):
1. Owner Permit Application
2. Location map
3. Construction Drawing pages
4. Chapter 343-HRS Review
5. General Permit Conditions
6. SHPD approval
7. Agency Consultation
8. Photos
State of Hawaii  
BOARD OF LAND AND NATURAL RESOURCES Department of Land and Natural Resources  
Engineering Division  

DAM SAFETY PERMIT APPLICATION FOR APPROVAL OF PLANS AND SPECIFICATIONS  
FOR CONSTRUCTION, ENLARGEMENT, REPAIR, ALTERATION, OR REMOVAL OF A DAM  

Date of Application: October 9, 2015  

Applicant: Jo Anne Hanada  
Contact Name: Firm / Company: Kamehameha Schools  

Mailing Address: 567 South King Street, Suite 617, Honolulu, HI 96813  

Telephone: (808) 534-3977  Fax: (808) 534-3848  Email: johanada@ksbe.edu  

The Applicant hereby applies to the Board of Land and Natural Resources for the approval of the attached plans and specification for the Opaeka‘a Reservoir No. 15, ID No. H100020, Dam Decommissioning (construction, etc.) in accordance with Chapter 179D HRS (as amended by Act 262, SLH 2006), and subject to the provisions, conditions, and limitations of the current Hawaii Administrative Rules and various DLNR dam safety guidelines.

Accompanying this application are:  

1. Filing fee equal to 2% of the Detailed Cost Estimate + Eng costs w/ calculation (please check) X  
2. Two (2) copies of the Detailed Cost Estimate  
3. Two (2) copies of the Final Design Report  
4. Two (2) copies of the Plans  
5. Two (2) copies of the Specifications  
6. Proposed Construction Schedule  
7. Supporting documents:  
8. One (1) electronic copy of all the above  

NAME OF STRUCTURE: Opaeka‘a Reservoir No. 15, ID No. H100020  

DAM OR RESERVOIR LOCATION: 5 miles southeast of the town of Hale‘iwa on Opaeka‘a road  

Island: O‘ahu  
Tax Map Key: 6-2-010:001  

Attach USGS topographic map (scale 1" = 2000\') and property tax map (showing location access to site, proposed work)  

State Land Use District: Agriculture  
Urban  Rural  Conservation  

BRIEF DESCRIPTION OF WORK TO BE PERFORMED  
Breach of the earthen dam structure by excavating and removing a section of the embankment and decommissioning of the associated reservoir. 

EXHIBIT J


TECHNICAL INFORMATION:

1. Drainage Area 0.007 sq. miles or 4.48 acres

2. Classification of Dam (Hazard/Size) Hazard Potential: High; Size Classification: Small

3. Type of Structure Earthen Dam

4. Elevation-Area-Capacity Data:

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<th>Surface Area (acres)</th>
<th>Total Storage Volume (acre-feet)</th>
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<td>Design Water Level</td>
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<td>Invert of Drain</td>
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5. Spillway Details (Type, Dimensions, Material)
   Primary: Concrete Pipe with Headwall and Wingwalls, 27-Inch Diameter
   Secondary: N/A

6. Purpose of Structure Impoundment of Irrigation Water
   (water supply, irrigation, recreation, real estate development, etc.)

7. Attach rainfall and stream flow records, and flood-flow records and estimates (as accurately as may be readily obtained)

ADDITIONAL INFORMATION

1. Primary Owner Contact (if different from applicant) (Same as Applicant)
   Owner Company or Entity: 
   Mailing Address 
   Telephone: Fax: Email:

2. Registered Hawaii Professional Engineer who prepared the plan Eric H. Tamashiro, P.E.
   Mailing Address 2153 North King Street, Suite 200, Honolulu, HI 96819
   Registration No. 9787-C, Hawai'i
   Telephone: 808-521-5361 Fax: 808-538-7819 Email: etamashiro@bchdesign.com

3. Registered Professional Engineer to be responsible for inspection during construction Eric H. Tamashiro, P.E.

4. Contractor (If known) TBD
   Mailing Address 
   Telephone: Fax: Email:

5. List all other permits applications submitted to other governmental agencies:
   Grading Permit (DPP, City & County); NPDES NOI-C (Dept. of Health, CWB)

6. Anticipated effect of proposed structure on natural environment: N/A
7. List all other parties that have ownership or other interest on the parcels where the dam and reservoir are located and identify their interest in the property. The Owners herein listed below concur with the work proposed within this application by the applicant and by his/her signing hereto, the owner of the land extends to the Board of Land and Natural Resources, and its designated representatives, a right-of-entry onto the project site to conduct any investigations or inspections required in compliance with the provisions of Chapter 13-190.1, Hawaii Administrative Rules. (Submit additional copies of this sheet should there be more owners)

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I, Jo Anne Hanada, the applicant, hereby certify that the information herein is true and factual to the best of my knowledge. Signing below indicates that the applicant understands that, if the permit requested is granted by the Board of Land and Natural Resources, the proposed work is to be initiated and completed within five (5) years of the approval date, unless specifically permitted in the approved permit terms and conditions.

(Signature of Applicant & Title) Owners Representative

Date: 11/05/15
1. General Information
   a. State Dam ID: OA-0020
   b. National ID: HI00020
   c. Dam Name: OPAEULA 15 RESERVOIR
   d. Other Name(s): 
   e. Longitude / Latitude: -158.0534 / 21.5754
   f. County / Island: Honolulu / Oahu
   g. Type of Dam: Earthen
   h. Purpose: Irrigation
   i. Completed / Last Modified: 1910 / -
   j. Nearest City / Town: HALEIWA (3 miles)
   k. Water Body Type: State Regulated Dam
   l. Dam Height: 21 ft
   m. Dam Length: 2,200 ft
   n. Drainage Area: 0.01 sq. miles / 4 acres
   o. Size Classification: Small

2. Owner Information
   a. Name of Owner: Kamehameha Schools
   b. TMK(s): (1) 6-2-010:001

3. Hazard Potential Classification
   a. Hazard Classification: High
   b. Emergency Action Plan: Yes

Exhibit 2
### 4. Reservoir

| a. Normal Storage | 64 ac-ft / 21 MG |
| b. Maximum Storage | 85 ac-ft / 28 MG |
| c. Surface Area |

### 5. Primary Spillway

| a. Minimum Spillway Width | 3 ft |
| b. Spillway Length | 90 ft |
| c. Spillway Type | Pipe |
| d. Protection | Concrete |
| e. Maximum Discharge |

### 7. Embankment

| a. Type of Dam | Earthen |
| b. Minimum Crest Width | 13 ft |
| c. Upstream Slope Grade | 40° / 1.2:1 |
| d. Upstream Slope Protection | Bare Soil |
| e. Downstream Slope Grade | 35° / 1.4:1 |
| f. Downstream Slope Protection | Vegetation |
| g. Dam Height | 21 ft |
| h. Dam Length | 2,200 ft |

### 6. Primary Outlet Works

| a. Works Type | Downstream Control |
| b. Maximum Discharge |
| c. Size | 20in |
| d. Control Description | Downstream |

### 8. Inflow Works

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CHAPTER 343 ANALYSIS

Project Name: Dam Decommissioning Opaekaʻa Reservoir No. 15 (OA-0020)
Reviewer: Jimmy Leung Date of Review: 16-December-2015

___ EA Done with Finding of no Significant Impact (FONSI)
___ EIS Done with Finding of no Significant Impact (FONSI)

If FONSI has been issued no further analysis is required. Date of FONSI: ______________________

TRIGGERS (HRS §343-5(a))
Is there an "action" that triggers the need for an EA?

Action

An "action" is a program or project:
   Initiated by an agency
   Initiated by an "applicant"
   Any person who, pursuant to statute, ordinance, or rule, officially requests
   "approval" for a proposed action (discretionary consent required from an agency
   prior to actual implementation of an action, distinguished from a ministerial
   consent)

   HRS 179D Statute
   __________ Ordinance
   __________ Rule

Triggers
Yes No
___ X Use of state or county lands or funds
___ X Use of conservation district lands
___ X Use within shoreline setback area
___ X Use of historic site designated on the National or Hawaii registers
___ X Use of land in the Waikiki Special District
___ X Amendment to county general plan which would result in designations other than
   agriculture, conservation, or preservation unless initiated by a county
___ X Reclassification of conservation lands by the Land Use Commission
___ X Construction or modification of helicopter facilities that may affect conservation
   district lands, a shoreline setback area, or a historic site
___ X Wastewater facilities, waste-to-energy facility, landfill, oil refinery, or power-
   generating facility

Triggers summary:
Is there a trigger?   Yes ___   No X
If Yes, Go to Exemptions to determine if the program or project is exempt
   If it is not exempt an Environmental Assessment is required
If No, Environmental Assessment is NOT required. Go to Summary.
EXEMPTIONS

Two sources of exemptions: exemption lists or exemptions contained in HAR §11-200-8(a)

1. Exemption Lists
   ____ Division exemption lists
   ____ Department-wide exemption list
   ____ Other exemption lists -

   Explain (which exemption list, which exemption, how it applies):

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
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2. HAR §11-200-8(a) exemptions
   ____ Operations, repairs, or maintenance of existing structures, facilities, equipment, or topographical features, involving negligible or no expansion or change of use beyond that previously existing
   ____ Replacement or reconstruction of existing structures and facilities where the new structure will be located generally on the same site and will have substantially the same purpose, capacity, density, height, and dimensions as the structure replaced
   ____ Construction and location of a single, new, small facilities or structures and the alteration and modification of the same and installation of new, small, equipment and facilities and the alteration and modification of same, including, but not limited to:
      (a) Single family residences less than 3,500 square feet not in conjunction with the building of two or more such units;
(b) Multi-unit structures designed for *not more than four dwelling units* if not in conjunction with the building of two or more such structures;

(c) Stores, offices, and restaurants designed for total occupant load of *twenty persons or less* per structure, if not in conjunction with the building of two or more such structures; and

(d) Water, sewage, electrical, gas, telephone, and other essential public utility services extensions *to serve such structures* or facilities; accessory or appurtenant structures including garages, carports, patios, swimming pools, and fences; and acquisition of utility easements

___ *Minor alterations* in the conditions of land, water, or vegetation

___ Basic data collection, research, experimental management, and resource evaluation activities that *do not result in a serious or major disturbance* to an environmental resource

___ Construction or placement of *minor structures accessory* to existing facilities

___ *Interior alterations* involving things such as partitions, plumbing, and electrical conveyances

___ Demolition of structures, *except* those structures located on any *historic site* as designated on the National or Hawaii registers

___ *Zoning variances except shoreline* set-back variances

___ Continuing administrative activities including, but not limited to purchase of supplies and personnel related actions; and

___ Acquisition of land and existing structures, including single or multi-unit dwelling units, for the provision of *affordable housing*, involving *no material change of use* beyond that previously existing, and for which the *legislature has appropriated* or otherwise authorized funding

Explain (how the exemption indicated above applies):
CHAPTER 343 ANALYSIS

Exemptions summary:
Does the Project qualify for an exemption?  Yes ____  No ____
If Yes, Exemption noted above, No Environmental Assessment Required
If No, Project requires Environmental Assessment

CUMULATIVE IMPACT

Exemptions are inapplicable when the cumulative impact of planned successive actions in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment.

Additional Notes

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

SUMMARY

Is Environmental Assessment required?
Yes
No  X
January 29, 2018

Ms. Jo Anne Hanada
Kamehameha Schools
567 South King Street
Honolulu, HI 96813

Dear Ms. Hanada:

SUBJECT: FINAL - Opæ‘ula 15 Reservoir Architectural Inventory Assessment
Opæ‘ula 15 Reservoir
Owner Name: Kamehameha Schools
Kawaiola Ahupua‘a, Wai‘alua District, Island of O‘ahu
TMK: (1)6-2-010:001

Thank you for the submittal from Kamehameha Schools (KS) for the Final Architectural Inventory Assessment (AIA). The State Historic Preservation Division (SHPD) received this submittal on January 25, 2018.

The Opæ‘ula 15 Reservoir is a 4.48-acre earth-bermed reservoir originally constructed in 1910 to irrigate Wai‘alua Agricultural Company's sugarcane fields in the Opæ‘ula Plateau. The reservoir remained in use from 1910 until the final sugarcane harvest by Wai‘alua Sugar Company in 1996. The development of the sugar industry in Hawai‘i allowed for agricultural and technological advances and socio-cultural changes.

On June 7, 2016, KS and SHPD agreed that an AIA be completed for the decommissioning of the reservoir which will involve excavation and removal of roughly 180 feet of the western embankment (LOG NO: 2016.01885; DOC. NO:1608GC19). Existing support infrastructure such as intake and outlet works, and spillways will not be affected.

On July 28, 2017, a draft AIA was accepted by SHPD (LOG NO: 2017.00992; DOC NO: 1707TGM15).

SHPD accepts the FINAL AIA.

Please contact Ms. Tanya Gumapac-McGuire, Architectural Historian, at (808) 692-8022 or at Tanya.Gumapac-McGuire@hawaii.gov regarding architectural resources or this letter.

Aloha,

Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Mr. Michael Desiletts, Garcia and Associates, mdesiletts@garciaandassociates.com
July 28, 2017

Ms. Jo Anne Hanada  
Kamehameha Schools  
567 South King Street  
Honolulu, HI 96813

Dear Ms. Hanada:

SUBJECT: Draft – Opa‘e‘ula 15 Reservoir Architectural Inventory Assessment  
          Opa‘e‘ula 15 Reservoir  
          Owner Name: Kamehameha Schools  
          Kawaiolaa Ahupua‘a, Waialua District, Island of O‘ahu  
          TMK: (1)6-2-010:001

Thank you for the opportunity to comment on this request from Kamehameha Schools (KS) for the Draft Architectural Inventory Assessment (AIA). The State Historic Preservation Division (SHPD) received this submittal on May 10, 2017.

The Opa‘e‘ula 15 Reservoir is a 4.48-acre earth-bermed reservoir originally constructed in 1910 to irrigate Waialua Agricultural Company’s sugarcane fields in the Opa‘e‘ula Plateau. The reservoir remained in use from 1910 until the final sugarcane harvest by Waialua Sugar Company in 1996. The development of the sugar industry in Hawai‘i allowed for agricultural and technological advances and socio-cultural changes.

On June 7, 2016, KS and SHPD agreed that an AIA be completed for the decommissioning of the reservoir which will involve excavation and removal of, minimally, a 180-foot portion of the westerly embankment (LOG NO: 2016.01885; DOC. NO:1608GC19). Existing support infrastructure such as intake and outlet works, and spillways will not be affected.

SHPD accepts the DRAFT AIA.

SHPD looks forward to reviewing the hardcopy and electronic FINAL AIA which will consist of the following: (1) development of a historic context study; (2) detailed description and dimensional measurements of the reservoir and associated engineering features such as gates, sluices and valves; (3) large-format HAER (level 2) photography of the reservoir and associated engineering features; (4) discussion of the reservoir’s role within the larger irrigation system; and (5) recordation of the reservoir’s cross-section during demolition (to be submitted as an addendum to the AIA).

Please contact Tanya Gumapac-McGuire, Architectural Historian, at (808) 692-8022 or at Tanya.Gumapac-Mcguire@hawaii.gov regarding architectural resources or this letter.
Aloha,

Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Mr. Michael Desilets, Garcia and Associates, mdesilets@garciaandassociates.com
October 6, 2016

Carty Chang, Chief Engineer
Engineering Division
Department of Land and Natural Resources
P.O. Box 373
Honolulu, HI 96809

Dear Mr. Chang:

SUBJECT: Chapter 6E-42 Historic Preservation Review –
Opae’ula Reservoir No. 15 (OA-0020)
Dam Safety Permit No. 72 – Dam Removal
Kawaiola Ahupua’a, Waialua District, Island of O’ahu
TMK: (1) 6-2-010:001

Thank you for the opportunity to review this submittal regarding the decommissioning of the Opae’ula No. 15 Reservoir. The landowner, Kamehameha Schools, proposes to decommission the existing reservoir by removing a portion of the earthen embankment and using the removed fill material to fill the reservoir basin. The proposed project will not affect the existing reservoir infrastructure including the intake and outlet works, and the pipe spillway. Ground disturbing activities will involve the excavation of approximately 470 cubic yards for the removal of at least an 180-ft. portion of the western embankment. SHPD received this submittal on August 3, 2016.

The Opae’ula 15 Reservoir was constructed in 1910 and is part of the agricultural infrastructure developed to support the sugarcane industry. The Opae’ula 15 Reservoir was specifically constructed for storing irrigation water to be used on the Waialua Sugar Company sugarcane plantation. The reservoir itself is a 21-ft. high earthen dam with a 2,200-ft. total crest length, capable of storing up to 64 acre-ft. of water supplied by the neighboring, upstream Opae’ula 2 Reservoir. The Opae’ula 2 Reservoir was breached in 2013 and consequently the Opae’ula 15 Reservoir has remained empty since that time. The Opae’ula 15 Reservoir appears to be surrounded by largely, flat and graded areas.

A review of our records indicates that SHPD previously requested an archaeological inventory survey (AIS) be conducted to adequately document the Opae’ula 15 Reservoir and any other historic properties within the project area, to assess their significance, and to ensure that appropriate mitigation is implemented (March 3, 2016; Log No. 2015.0437, Doc No. 1602KM27). On June 7, 2016, SHPD staff [Susan Lebo, Archaeology Branch Chief; Kā‘īwi Yoon, Architecture Branch Chief; and Kimi Matsushima, Oahu Archaeologist] met with Mike Desilets [Garcia and Associates, archaeological consultant hired by Kamehameha Schools for this project] to discuss the scope of work for the SHPD-requested AIS.

The agreed-upon AIS/Architectural documentation consists of the following: (1) development of a historic context study; (2) detailed description and dimensional measurements of the reservoir and associated engineering features such as gates, sluices, and valves; (3) large-format HAER (level 2) photography of the reservoir and associated engineering features; (4) discussion of the reservoir’s role within the larger irrigation system of which it is an integral part (however, documentation of connected system features is outside the scope); and (5) recordation of the reservoir’s cross-section during demolition (to be submitted in a letter report as an addendum to the AIS report). It was further agreed that the background section would begin with acquisition of the parcel by the current owner, Kamehameha Schools; inclusion of traditional Hawaiian mo‘olelo and archaeological background would not
be required, as the focus would be on documenting a specific historic property—Opae‘ula Reservoir No. 15—rather than on survey and documentation of a specific land parcel.

SHPD looks forward to receiving the requested AIS/Architectural documentation.

SHPD will notify you when the required documentation has been reviewed and accepted and the permit may be issued.

Please contact Kaiwi Yoon at (808) 692-8032 or at Kaiwi.N.Yoon@hawaii.gov for any questions regarding architectural resources, and me at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov for any questions regarding archaeological resources or this letter.

Aloha,

Susan A. Lebo, PhD
Archaeology Branch Chief

cc: Jimmy Leung, DLNR Engineering (jimmy.m.leung@hawaii.gov)
    Michael Desilets, GANDA (mdesilets@garciaandassociates.com)
    Jo Anne Hanada, Kamehameha Schools (johanada@ksbe.edu)
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STATF OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION
POST OFFICE BOX 373
HONOLULU, HAWAII 96809

JUL 27 2016

From:

Carty Chang, Chief Engineer

To: FROM:

SUBJECT: Opauea Reservoir No. 15 (OA-0020)
Dam Safety Permit No. 72
Dam Removal

LOCATION: Oahu, TMK: 6-2-10:001

APPLICANT: Arnulfo Castillo, Kamehameha Schools

Transmitted for your review and information are the attached documents on the subject Dam Safety Permit application.

1. Dam Safety Permit Application
2. Plan set (Selected sheets)
3. DLNR Dam Facility Data sheet

Please return to our office a signed copy of this transmittal with one of the choices below checked along with any comments by August 31, 2016. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Jimmy Leung of my staff at (808) 587-0238 or by email: jimmy.m.leung@hawaii.gov.

We have no comments
Comments are attached

NOT IN CONSERVATION
TO:

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FROM: Carty Chang, Chief Engineer

SUBJECT: Opaeka‘a Reservoir No. 15 (OA-0020)
Dam Safety Permit No. 72
Dam Removal

LOCATION: Oahu, TMK: 6-2-10:001

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(   ) We have no comments

(✓) Comments are attached

Signed: [Signature]
Print name: Bruce S. Anderson, DAR Administrator
Date: Sept 2, 2016
Date: 8/29/16
DAR # 5354

MEMORANDUM

TO: Bruce Anderson, Administrator

DATE: Glenn Higashi, Aquatic Biologist

FROM: 

SUBJECT: Opaeula Reservoir No. 15 (OA-0020)
Dam Safety Permit No. 72
Dam Removal

Comment | Date Request | Receipt | Referral | Due Date
---------|-------------|---------|----------|---------
7/27/16   | 8/02/16     | 8/03/16 | 8/31/16

Requested by: Carty Chang, Chief Engineer

Summary of Proposed Project

Brief Description:
The applicant Kamehameha Schools is requesting review on the Dam Safety Permit application for the decommissioning of the Opaeula Reservoir No. 15 (OA-0020) located at TMK: 6-2-010:001, containing 4.48 acres 5 miles southeast of the town of Haleiwa on Opaeula Road, Oahu. The reservoir is for agricultural irrigation and has an earthen dam. The proposed activity involves breaching of the earthen dam structure by excavating and removing a section of the embankment and decommissioning of the associated reservoir.

Comments:
The proposed project is not expected to have adverse impacts on the aquatic environment. However, breaching of the earthen dam structure by excavating and removing a section of the embankment should be scheduled during periods of minimal rainfall to prevent runoff from carrying sediments into nearby streams. Any non-native or invasive aquatic biota in the reservoir should be removed and disposed of to prevent them from entering nearby streams. Embankment walls should be leveled and the reservoir basin should be filled in so as not to entrap water during heavy rains.

Thank you for providing DAR the opportunity to review and comment on the Dam Safety Permit application. Should there be any changes to the project plans, DAR requests the opportunity to review and comment on those changes.
August 30, 2016

State of Hawaii
Department of Land and Natural Resources
Engineering Division
Attention: Mr. Carty Chang, Chief Engineer
P.O. Box 373
Honolulu, Hawaii 96809

Dear Mr. Chang:

SUBJECT: Opaeka‘a Reservoir No. 15 (OA-0020); Dam Safety Permit No. 72
Dam Removal

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Land Division's Oahu District for their review and comments.

At this time, enclosed are comments from the Land Division – Oahu District on the subject matter. Should you have any questions, please feel free to call Barry Cheung at 587-0430. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure
cc: Central Files
TO:  

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FROM:  
Carty Chang, Chief Engineer

SUBJECT:  
Opaeula Reservoir No. 15 (OA-0020)  
Dam Safety Permit No. 72  
Dam Removal

LOCATION: Oahu, TMK: 6-2-10:001

APPLICANT: Arnulfo Castillo, Kamehameha Schools

Transmitted for your review and information are the attached documents on the subject Dam Safety Permit application.

1. Dam Safety Permit Application  
2. Plan set (Selected sheets)  
3. DLNR Dam Facility Data sheet

Please return to our office a signed copy of this transmittal with one of the choices below checked along with any comments by August 31, 2016. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Jimmy Leung of my staff at (808) 587-0238 or by email: jimmy.m.leung@hawaii.gov.

(✓) We have no comments  
( ) Comments are attached

Signed:  
Print name:  
Date: 8/2/2016
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FROM:  Carty Chang, Chief Engineer

SUBJECT: Opaeula Reservoir No. 15 (OA-0020)  
Dam Safety Permit No. 76  
Dam Removal

LOCATION: Oahu, TMK: 6-2-10:001

APPLICANT: Arnulfo Castillo, Kamehameha Schools

Transmitted for your review and information are the attached documents on the subject Dam Safety Permit application.

1. Dam Safety Permit Application
2. Plan set (Selected sheets)
3. DLNR Dam Facility Data sheet

Please return to our office a signed copy of this transmittal with one of the choices below checked along with any comments by August 31, 2016. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Jimmy Leung of my staff at (808) 587-0238 or by email: jimmy.m.leung@hawaii.gov.

( x) We have no comments  
( ) Comments are attached

Signed:  
Print name: Vern T. Miyagi  
Date: August 22, 2016
January 29, 2018

Ms. Jo Anne Hanada
Kamehameha Schools
567 South King Street
Honolulu, HI 96813

Dear Ms. Hanada:

SUBJECT: FINAL - Opae‘ula 15 Reservoir Architectural Inventory Assessment
Opae‘ula 15 Reservoir
Owner Name: Kamehameha Schools
Kawaiola Ahupua’a, Waiʻalua District, Island of O‘ahu
TMK: (1)6-2-010:001

Thank you for the submittal from Kamehameha Schools (KS) for the Final Architectural Inventory Assessment (AIA). The State Historic Preservation Division (SHPD) received this submittal on January 25, 2018.

The Opae‘ula 15 Reservoir is a 4.48-acre earth-banked reservoir originally constructed in 1910 to irrigate Waiʻalua Agricultural Company’s sugarcane fields in the Opae‘ula Plateau. The reservoir remained in use from 1910 until the final sugarcane harvest by Waiʻalua Sugar Company in 1996. The development of the sugar industry in Hawai‘i allowed for agricultural and technological advances and socio-cultural changes.

On June 7, 2016, KS and SHPD agreed that an AIA be completed for the decommissioning of the reservoir which will involve excavation and removal of roughly 180 feet of the western embankment (LOG NO: 2016.01885; DOC NO: 1608GC19). Existing support infrastructure such as intake and outlet works, and spillways will not be affected.

On July 28, 2017, a draft AIA was accepted by SHPD (LOG NO: 2017.00992; DOC NO: 1707TGM15).

SHPD accepts the FINAL AIA.

Please contact Ms. Tanya Gumpac-McGuire, Architectural Historian, at (808) 692-8022 or at Tanya.Gumpac-McGuire@hawaii.gov regarding architectural resources or this letter.

Aloha,
Alan Downer
Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Mr. Michael Desilets, Garcia and Associates, mdesilets@garciaandassociates.com
DAM SAFETY PERMIT GENERAL CONDITIONS

APPROVAL OF PLANS AND SPECIFICATIONS FOR DAM AND RESERVOIR CONSTRUCTION, ENLARGEMENT, REPAIR, ALTERATION OR REMOVAL

The following General Conditions shall be adhered to for all Dam Safety permits unless otherwise authorized in writing.

1. Actual construction, enlargement, repair, alteration or removal shall be completed within 5 years of issuance of the permit application approval unless an extension authorized in writing by the Board is issued.

2. Prior to the start of work the owner or applicant shall provide a construction engineer to ensure compliance with the approved plans and specifications and who shall have ultimate responsibility for the supervision of all inspection tasks. The construction engineer may assign some inspection tasks to a duly authorized agent under the construction engineer's supervision. The engineer shall be licensed in the State of Hawaii.

3. The construction engineer shall maintain a record of construction that at a minimum, shall include, daily activity, and progress reports, all test results pertaining to construction; photographs sufficient to provide a record of foundation conditions and various stages of the construction through completion, all geologic information obtained; and construction problems and remedies.

4. A construction quality assurance plan shall be prepared and submitted to the Department for approval prior to the start of construction, which details the minimum requirements of the construction engineer's observation of construction.

5. A construction schedule, which includes the notice to proceed date and estimated project duration and a construction emergency action plan shall be submitted prior to the preconstruction meeting.

6. A preconstruction meeting shall be held subsequent to submitting the quality assurance plan, construction schedule and construction emergency action plan, but not later than 14 days prior to the start of construction. All parties actively involved in the construction should be requested to attend, such as the dam owner, the design engineer, the construction engineer, the contractor and the Department.

7. The Department shall be notified 5 calendar days prior to the commencement of construction.

8. Any changes from the approved plans and specifications shall be approved by the design engineer and a change order, including details and supporting calculations, must be provided to the Department. Major changes must be submitted in writing with supporting documentation and approved in writing by the Department. No work shall be initiated until the approval by the Department or Board is received. Minor changes may be transmitted verbally and approved by the Department verbally provided that documentation of the change is provided to the Department within 10 days of the approval.
9. For new dam construction and for dams and reservoirs that have lowered the water level or have been drained to facilitate construction, the construction engineer shall file and obtain approval of a filling plan with the Department. The applicant/owner shall not proceed with the filling of the reservoir until it receives permission from the Department. The construction engineer shall provide documentation of monitoring during the filling operation.

10. Prior to the filling of the reservoir, the construction engineer shall submit one copy each of the approved Operations Manual and the approved Emergency Action Plan for the facility upon completion of the project as applicable.

11. The construction engineer shall give the Department at least ten days advanced notice of initial materials placement of the dam's foundation, in the cutoff trench, outlet backfill, outlet foundation, and any appurtenance requested by the Department in the approval of the plan for construction observation, to allow for observation by the Department.

12. Notice of substantial completion shall be issued by the construction engineer to the Department stating that the permitted improvements are functionally complete such that filling of the reservoir can be initiated with an approved filling plan.

13. The construction engineer shall give the Department fifteen (15) calendar days advance written notice prior to the project’s final construction inspection. The construction engineer shall coordinate with the Department to conduct this inspection in the presence of the Department’s dam safety personnel.

14. The construction engineer shall provide notice at least ten (10) days prior to initiating filling the reservoir, unless agreed at the final inspection.

15. If conditions are revealed which will not permit the construction, enlargement, repair, alteration, or removal of a safe dam or reservoir, the application for approval for construction, enlargement, repair, alteration, or removal shall be revoked.

16. A topographic survey of completed work including all monuments, inverts, crest alignment, spillways, and significant appurtenant features, when required by the Department shall be completed.

17. The applicant/owner shall utilize appropriate erosion control best management practice measures during construction to minimize turbidity (such as scheduling of work during period of low stream flow) and prevent debris and construction materials, including concrete, petroleum products, and other pollutants from enter the waters of the State. Construction related water and debris should be properly disposed of in a legal and environmentally safe manner and in accordance with the Department of Health and other Federal regulations.

18. The applicant/owner shall submit a copy of the dam safety application and the plans and specifications of the proposed improvements to the County Engineer of the County for which the dam resides for compliance with County codes.

19. Within fifteen (15) calendar days of completing the project, the applicant/owner or its representative shall provide the Department with a confirmation letter of compliance, signed and stamped by the construction engineer, indicating that the construction
was completed in accordance to approved plans and specifications including any field changes. The construction engineer shall submit the remaining construction completion documents which may include, but not be limited to, as-constructed drawing, final construction report, topographic survey, record of the location of permanent monuments, log of recorded water levels and other readings from the refilling operation, long-term instrumentation monitoring plan, and affidavit showing the actual cost of construction including engineering costs, within 60 calendar days of the submittal of the final construction inspection.

20. Construction completion documents and the construction engineer's certification shall be provided to the Department within 60 days of the final construction inspection. The Department will review the submitted items and furnish acceptance or denial within 60 days of receipt of satisfactorily completed construction completion documents and close out the dam safety permit.

21. This permit does not relieve the applicant/owner of their obligations to comply with all applicable Federal, State, and County regulations.

22. In the unlikely event that subsurface historic resources, including human skeletal remains, structural remains, cultural deposits, artifacts, sand deposits, or sink holes are identified during the demolition and/or construction work, cease work in the immediate vicinity of the find, protect the find from additional disturbance, and contact the State Historic Preservation Division at (808) 692-8015.

UPSTREAM SLOPE

1. View of upstream slope looking right near Station 13+00. Several trees growing on slope above normal pool (see inset photo).

2. View of upstream slope looking right near Station 8+50.

Exhibit 8
3. View of erosion at top of upstream slope at Station 8+30.

4. View of upstream slope looking right from Station 8+50. Note erosion at top of slope at Station 8+30 (see Photo 5). Range pole placed near top of slope.
5. View of 4-foot high scarp at top of upstream slope looking left from Station 5+00.

6. View of upstream slope looking right from Station 4+00. Slope is very steep (~1V:1H).
7. **View** of upstream slope from top of dam at Station 6+00 looking left.

8. **View** of scour hole at pump station outfall at right abutment near Station 1+00.
9. View of dam crest looking left from Station 7+50. Dam crest is 16 feet wide.

10. View of dam crest looking right from left abutment near Station 13+00.
11. View of dam crest looking left from left abutment. Note dip in dam crest between Stations 10+00 and 12+00.

12. View of dam crest looking right from Station 6+50.
13. View of downstream slope looking left from right abutment near Station 1+00.

14. View of downstream slope looking left from top of dam near Station 3+50. Note dense woody vegetation on downstream slope.
15. View of downstream slope looking right from toe of dam near Station 6+80. Note dense woody vegetation on downstream slope.

16. View of downstream slope looking right from access road at toe of dam near Station 8+50. Note dense woody vegetation on downstream slope.
17. View of downstream slope looking left from access road at toe of dam near Station 8+50. Note dense woody vegetation on downstream slope.

18. View of downstream slope looking right from left abutment near Station 12+50.
19. View of spillway inlet structure. Note deteriorated concrete wing walls. For close up see Photo 20.

21. View inside of spillway conduit looking upstream from downstream end. Note crack in conduit at top.

22. View downstream of toe of dam looking upstream at spillway and outlet structure outlets.
OUTLET WORKS

23. Upstream end of outlet structure looking at intake structure. Top of intake structure is exposed above reservoir level. Bottom of intake structure is approximately 7.7 feet below water level. Staff gage mounting pole located adjacent to inlet structure.

24. View of outlet works inlet structure. Depth of water to bottom of inlet structure is approximately 7.7 feet.
New Non-regulated Reservoir that replaces the storage of Opauela 15 Reservoir
(10/29/2015)