

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

March 27, 2015

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

**APPLICATION FOR A DLNR DAM SAFETY CONSTRUCTION/ALTERATION PERMIT  
PERMIT NO. 66 – NU’UANU RESERVOIR NO. 4 (OA-0001)  
DAM REPAIR, HONOLULU, 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 Construction/Alteration Permit for the subject application, “Repair and Improvements to existing dam and appurtenances”, pursuant to Hawaii Revised Statutes Chapter 179D and current Administrative Rules.

**APPLICANT:**

Mr. Michael Matsuo  
Honolulu Board of Water Supply  
630 South Beretania Street  
Honolulu, Hawaii 96843

**LAND OWNER:**

State of Hawaii  
Department of Land and Natural Resources  
1151 Punchbowl Street, Room 221  
Honolulu, Hawaii 96813

**SUMMARY OF REQUEST:**

Application for a Dam Safety Construction/Alteration Permit for the repair and improvements to Nu’uanu Reservoir No. 4, Honolulu, Hawaii. (See Exhibit 1)

**LOCATION:** Honolulu, Oahu, Hawaii, TMK: (1) 2-2-54:001 (See Exhibit 2)

**BACKGROUND:**

Nuuanu Reservoir No. 4 is an earthen dam constructed in 1910 in Nu’uanu Valley. It is the largest of four reservoirs in the Nu’uanu watershed. The reservoir is at an elevation of about 1010 feet above sea level and currently is used for flood control. The reservoir receives inflow from a 1.372 square mile area at the top of Nu’uanu Valley.

**DESCRIPTION:**

The proposed work include dredging of reservoir sediment; repair and rehabilitate existing intake tower structure (includes window repair, refurbish operating controls, repair sluice gates and frames, replace debris cages, replace outside ladder and repaint water gage markings); repair and resurface access road;

restoration of cut-out road on the downstream embankment; extend outlet drain pipe; install stilling basin, riprap and concrete channel with weirs; and bridge rehabilitation. (See Exhibit 3)

CHAPTER 343-HRS – ENVIRONMENTAL ASSESSMENT:

The City and County of Honolulu, Board of Water Supply conducted an Environmental Assessment (EA) in June 2013. A determination of the finding is attached. (See Exhibit 4 )

REMARKS:

The applicant (Honolulu Board of Water Supply) and their Engineering consultant, R. M. Towill Corporation, 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 is sufficient for its intended purposes. Staff recommends approval of this permit application with the Dam Safety General Permit Conditions. (See Exhibit 5)

RECOMMENDATION:

That the Board:

1. Authorize the approval and issuance of the Dam Safety Construction/Alteration Permit for the repair and improvements to Nu'uauu Reservoir No 4; and
2. Direct the Chairperson to issue a dam safety permit for the alteration and removal of the Nu'uauu Reservoir No. 4 (DLNR Dam Safety Construction/Alteration Permit No. 66) 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 to modification to permit documents or conditions, issuance of fines and/or revocation of the permit, if necessary.

Respectfully submitted,



CHRIS T. TAKASHIGE  
Acting Chief Engineer

APPROVED FOR SUBMITTAL:



CARTY S. CHANG  
Interim Chairperson

- Exhibit(s):
1. Owner Permit Application
  2. Location map
  3. Construction Drawing pages
  4. Chapter 343-HRS Review
  5. General permit conditions

✓

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

3/27/15

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

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PERMIT NO. 66 – NU’UANU RESERVOIR NO. 4 (OA-0001)  
DAM REPAIR, HONOLULU, HAWAII**

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Mr. Michael Matsuo  
Honolulu Board of Water Supply  
630 South Beretania Street  
Honolulu, Hawaii 96843

**LAND OWNER:**

State of Hawaii  
Department of Land and Natural Resources  
1151 Punchbowl Street, Room 221  
Honolulu, Hawaii 96813

**SUMMARY OF REQUEST:**

Application for a Dam Safety Construction/Alteration Permit for the repair and improvements to Nu’uanu Reservoir No. 4, Honolulu, Hawaii. (See Exhibit 1)

**LOCATION:** Honolulu, Oahu, Hawaii, TMK: (1) 2-2-54:001 (See Exhibit 2)

**BACKGROUND:**

Nuuanu Reservoir No. 4 is an earthen dam constructed in 1910 in Nu’uanu Valley. It is the largest of four reservoirs in the Nu’uanu watershed. The reservoir is at an elevation of about 1010 feet above sea level and currently is used for flood control. The reservoir receives inflow from a 1.372 square mile area at the top of Nu’uanu Valley.

**DESCRIPTION:**

The proposed work include dredging of reservoir sediment; repair and rehabilitate existing intake tower structure (includes window repair, refurbish operating controls, repair sluice gates and frames, replace debris cages, replace outside ladder, and repaint water gage markings); repair and resurface access road; restoration of cut-out road on the downstream embankment; extend outlet drain pipe; install stilling basin, riprap and concrete channel with weirs; and bridge rehabilitation. (See Exhibit 3)

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The City and County of Honolulu, Board of Water Supply conducted an Environmental Assessment (EA) in June 2013. A determination of the finding is attached. (See Exhibit 4 )

REMARKS:

The applicant (Honolulu Board of Water Supply) and their Engineering consultant, R. M. Towill Corporation, 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 is sufficient for its intended purposes. Staff recommends approval of this permit application with the Dam Safety General Permit Conditions. (See Exhibit 5)

RECOMMENDATION:

That the Board:

1. Authorize the approval and issuance of the Dam Safety Construction/Alteration Permit for this project; and *SPECIFY - Nu'uuanu Res No. 4 ( - )*
2. Direct the Chairperson to issue a dam safety permit for the alteration and removal of the Nu'uuanu Reservoir No. 4 (DLNR Dam Safety Construction/Alteration Permit No. 66) 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 to issuance of fines and/or revocation of the permit, if necessary.

*modifications to permit documents per conditions,*

Respectfully submitted,

CHRIS T. TAKASHIGE  
Acting Chief Engineer

APPROVED FOR SUBMITTAL:

CARTY S. CHANG  
Interim Chairperson

- Exhibit(s):
1. Owner Permit Application
  2. Location map
  3. Construction Drawing pages
  4. Chapter 343-HRS Review
  5. General permit conditions

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: Nov. 13, 2013

Applicant:  
Contact Name: Michael Matsuo Firm / Company: Honolulu Board of Water Supply

Mailing Address 630 South Beretania Street, Honolulu, Hawaii 96843

Telephone: (808) 748-5951 Fax: (808) 550-5004 Email: MMATSUO@hbws.org

The Applicant hereby applies to the Board of Land and Natural Resources for the approval of the attached plans and specification for the repair and improvements to existing dam and appurtenances (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:

(please check)

- |  |  |
|--|--|
| 1. Filing fee equal to 2% of the Detailed Cost Estimate + Eng costs w/ calculation | <u>✓</u>                               |
| 2. Two (2) copies of the Detailed Cost Estimate                                    | <u>✓</u>                               |
| 3. Two (2) copies of the Final Design Report                                       | <u>n/a - no dam alteration involve</u> |
| 4. Two (2) copies of the Plans   | <u>✓</u>                               |
| 5. Two (2) copies of the Specifications  | <u>✓</u>                               |
| 6. Proposed Construction Schedule  | <u>✓</u>                               |
| 7. Supporting documents:   | <u>✓</u>                               |
| 8. One (1) electronic copy of all the above  | <u>✓</u>                               |
| <u>Fig 1 USGS</u>  | <u>✓</u>                               |
| <u>Fig 2 TMK</u>   | <u>✓</u>                               |
| <u>Fig 3 Drainage Boundary Map</u>   | <u>✓</u>                               |

NAME OF STRUCTURE: Nuuanu Dam No. 4 (National ID H00001)

DAM OR RESERVOIR LOCATION: Honolulu, adjacent to the Pali Highway, Honolulu side of Pali Tunnels

Island: Oahu Tax Map Key: (1) 2-2-54 : 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

Reservoir sediment dredging; Repair and rehabilitate existing intake tower structure (includes window repair, refurbish operating controls, repair sluice gates and frames, replace debris cages, replace outside ladder and repaint water gage markings); Repair and resurface access road; Restoration of cut-out road (downstream slope); Extend outlet drain pipe; Install stilling basin, riprap and concrete channel w/weirs; Bridge rehabilitation

Exhibit I

TECHNICAL INFORMATION:

DLNR-Dam Safety-Sheet 2

1. Drainage Area 1.38 sq. miles or 883.2 acres
2. Classification of Dam (Hazard/Size) High Hazard
3. Type of Structure Earthen Dam (Gravity fill embankment)
4. Elevation-Area-Capacity Data:
 

	Elevation	Surface Area (acres)	Total Storage Volume (acre-feet)
Natural Streambed	965	0	0
Primary Spillway	1,024.5	71	1,420
Secondary Spillway	n/a	n/a	n/a
Top of Dam	1,038	110	3,600
Design Water Level	993.5	10	120
Invert of Drain	974.75 / 993.5 / 1,011.25		
5. Spillway Details (Type, Dimensions, Material)  
 Primary: 180-ft long X 50-ft wide with concrete trapezoidal training walls with unlined discharged channel downstream
6. Purpose of Structure Flood control  
 (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) Michael Matsuo  
 Owner Company or Entity: City & County Honolulu Board of Water Supply  
 Mailing Address 630 South Beretania Street, Honolulu, Hawaii 96843  
 Telephone: (808) 748-5951 Fax: (808) 550-5004 Email: MMATSUO@hbws.org
2. Registered Hawaii Professional Engineer who prepared the plan Stacy K.Y. Armstrong  
 Mailing Address 2024 North King Street, Honolulu, Hawaii 96819  
 Registration No. 8983-C  
 Telephone: (808) 842-1133 Fax: (808) 842-1937 Email: StacyA@rmtowill.com
3. Registered Professional Engineer to be responsible for inspection during construction Stacy K.Y. Armstrong, P.E.
4. Contractor (If known) To be determined  
 Mailing Address \_\_\_\_\_  
 Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_
5. List all other permits applications submitted to other governmental agencies:  
DPP, City & County of Honolulu - Grading, Grubbing and Stockpiling Permit; Army Corps of Engineers (ACOE)-  
Jurisdictional Determination and Compliance with Clean Water Act Section 404; Dept. of Health,  
State of Hawaii - NPDES; HDOT HWY-CM - Occupancy and Use of State Highway Right-of-Way
6. Anticipated effect of proposed structure on natural environment: No Change

DLNR-Dam Safety-Sheet 3

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)



Ernest Y.W. Lau, BWS Manager and Chief Engineer  
(Printed Name & Signature of Owner)

C & C Honolulu, Board of Water Supply  
630 South Beretania Street, Honolulu, Hawaii 96843  
TMK:(1)2-2-54:001 Reservoir structure, dam and apputenances owner

(Address / TMK/Interest in Dam or Reservoir)  
State of Hawaii, Department of Land and Natural Resources  
1151 Punchbowl Street, Room 221, Honolulu, Hawaii 96813  
TMK:(1)2-2-54:001 Reservoir land owner

Carty Chang - DLNR representative  
(Printed Name & Signature of Owner)

(Address / TMK/Interest in Dam or Reservoir)

(Printed Name & Signature of Owner)

(Address / TMK/Interest in Dam or Reservoir)

(Printed Name & Signature of Owner)

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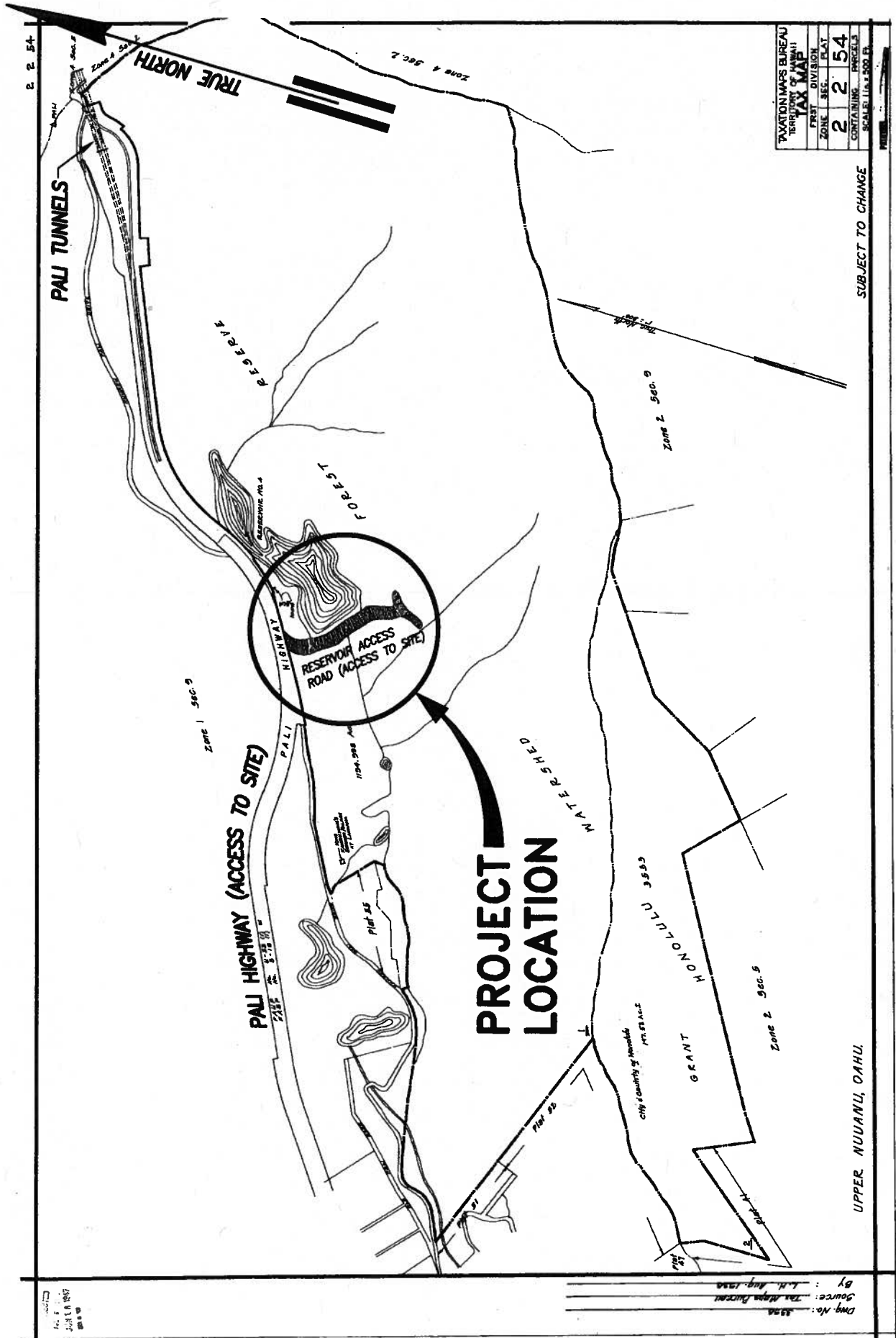
(Printed Name & Signature of Owner)

(Address / TMK/Interest in Dam or Reservoir)

I, Ernest Y.W. Lau, 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)

Date: 11/1/13



**NUUANU DAM NO. 4  
PROPERTY TAX MAP**





## SECTION 8

### Determination

The potential effects of the proposed project are evaluated based on the significance criteria in section 11-200-12 (Hawai'i Administrative Rules, revised in 1996). The following is a summary of the potential effects of the action.

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

The project does not involve an irrevocable commitment to loss or destruction of any natural or cultural resource. No previously undisturbed areas are included in the project area. No loss or destruction of any cultural resource or protected plant or animal species is anticipated to result from the project. The planned improvements consist of repairs to the existing Nu'uanu Reservoir No. 4 dam infrastructure and will not result in any significant changes over existing conditions.

**(2) Curtails the range of beneficial uses of the environment:**

The project will not curtail the range of beneficial uses of the environment. Planned repair work will restore Nu'uanu Reservoir No. 4 and its related infrastructure to full, designed capacity and operability. Construction activities will not restrict existing access or use of the surrounding forests, mountains, hunting areas and hiking trails.

**(3) Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS:**

The project will be undertaken in a manner that conforms with Chapter 344, HRS, State Environmental Policy. The proposed improvements will provide a public benefit by restoring full capacity and functionality to Nu'uanu Reservoir No. 4 for stormwater control, reduction of volume and velocity of stormwater flows in Nu'uanu Stream, impoundment of sediments that would otherwise be conveyed downstream to coastal waters, and promotion of rainwater infiltration to recharge groundwater in the Honolulu aquifer.

**(4) Substantially affects the economic or social welfare of the community or State:**

The project will not result in any changes to demographic characteristics or trends, or socio-economic conditions that would affect the economic or social welfare of the community or State. The planned improvements to the reservoir will restore the reservoir and related infrastructure to its designed capacity and function for flood control, and thereby provide a social benefit of reducing the hazard to life and property from flooding.

The proposed project is not expected to have any adverse economic impacts. Economic impacts from the proposed project will result from construction jobs, services, and procurements in the form of construction supplies and equipment. These benefits will be temporary and will cease when the project is complete.

**(5) Substantially affects public health:**

The proposed project will not have an adverse effect on public health. The planned improvements to the reservoir will restore the reservoir and related infrastructure to its design capacity and function for flood control, and thereby reduce the hazard to life and property from flooding.

Water quality will be protected during construction through the application of site-specific BMPs, including structural, vegetative, and management measures to prevent pollutant discharge in storm water runoff, in accordance with CWA regulations and State regulations set forth in HAR, Title 11 Chapter 54 - Water Quality Standards, and Chapter 55 - Water Pollution Controls.

Noise and air quality impacts resulting from construction activities will be mitigated by requiring the project contractor to comply with the provisions of HAR, Chapter 11-46, Community Noise Control, and Chapter 11-59 and 11-60, regarding Air Pollution Control.

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

The project will not result in any secondary impacts such as population changes, or changes to demographic characteristics or trends, or socio-economic conditions in the PUC, downtown Honolulu or Nuʻuanu Valley. The planned improvements to the reservoir will restore the reservoir and related infrastructure to its design capacity and function for flood control. The planned improvements are not a pre-condition for new development in the PUC, downtown Honolulu, or Nuʻuanu Valley. The reservoir does not function as a source of water or power that would stimulate demand for increased development or population growth in the region.

**(7) Involves a substantial degradation of environmental quality:**

The proposed project is not anticipated to involve a substantial degradation of environmental quality. Project activities consist of repair work to the existing reservoir and dam infrastructure within an area that has experienced extensive modification to the natural environment. The planned repairs will restore full, design capacity and functionality to the reservoir and will result in the following benefits to the environment:

- control the velocity and volume of stormwater flows in Nuʻuanu Stream and reduce the potential for erosion damage;
- impound sediments that would otherwise be conveyed downstream to coastal waters; and
- promote infiltration of rainwater to recharge the groundwater in the Honolulu aquifer.

Project activities will be conducted in compliance with state and county rules and regulations related to environmental quality and public health, as described elsewhere in this EA.

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

Cumulative impacts result from a series of projects that individually do not generate significant adverse effects, but collectively add up to a significant negative impact on the environment. The proposed project is being developed as a single project. No substantial effect to existing environmental conditions will result from this project. The proposed development does not involve a commitment to larger actions.

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

The proposed project at Nuʻuanu Reservoir No. 4 is not anticipated to have any adverse impacts on the population or habitat of any avifauna, terrestrial and aquatic wildlife. Nor will project activities diminish the availability of any plant species as a resource. None of the botanical, avian, or aquatic species observed during biological surveys of the project area is listed as threatened or endangered by the USFWS or by the State of Hawaiʻi. Furthermore, the proposed action will not result in modification of any federally designated Critical Habitat, as there is none present on or adjacent to the subject property. Construction activities may temporarily disrupt routine behavior patterns of common birds, but will not result in permanent impacts. When project activities are complete, bird activity is expected to return to current conditions.

**(10) Detrimentially affects air or water quality or ambient noise levels:**

The project is not anticipated to result in significant adverse effects on the area's long-term air or water quality or ambient noise levels. Runoff from construction areas will be regulated under NPDES permit conditions. BMPs will be employed to prevent soil loss and sediment discharges from work sites. Project activities will comply with DOH regulations as set forth in HAR Title 11 Chapter 54 - Water Quality Standards, and Chapter 55 - Water Pollution Controls.

Construction-related exhaust emissions and dust generation will be mitigated by requiring that the project contractor comply with HAR Chapter 11-59 and 60, regarding Air Pollution Control. Construction related impacts to air quality will be temporary and will cease when construction is completed. No long-term air quality impacts will result upon project completion.

Temporary noise impacts related to construction activities will occur, but will cease when the project is completed. Project activities will be conducted in compliance with noise level standards as set forth in HAR, Chapter 11-46, "Community Noise Control".

**(11) Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters**

The primary function of Nu'uuanu Reservoir No. 4 is to provide flood control for Nu'uuanu Valley and part of downtown Honolulu that lies within the Nu'uuanu Stream corridor. Discharges from the reservoir flow into Nu'uuanu Stream and through downtown Honolulu before entering the Pacific Ocean at Honolulu Harbor. The planned repair work will ensure that the dam infrastructure is fully operable as designed to control stormwater runoff and flood waters.

The FEMA FIRM No. 15003C0360F, dated January 19, 2011, shows that the project site is in Flood Zone D. This designation is used for areas where there are possible but undetermined flood hazards. No analysis of flood hazards has been conducted by FEMA. Land downstream of the project site is designated as Zone X, which are areas outside of the 500-year flood zone. No base flood elevations or depths are noted on the FEMA maps for this zone.

Nu'uuanu Reservoir No. 4 is classified as a High Hazard dam according to the degree of its potential to create adverse incremental consequences such as loss of life, property damage, or environmental impacts from a failure or mis-operation of the dam. The 3 hazard classifications are high, significant and low. The high hazard classification is due to the presence of a significant amount of residential and commercial development in Nu'uuanu Valley below the dam and does not relate to the dam's condition or stability.

As a precautionary measure, BWS currently keeps the water level in the reservoir at approximately ½ full, at the middle gate of 30-feet, which increases safety and the flood control aspects of the reservoir. The planned repairs will allow BWS to reduce the water levels to the lowest gate at 10-foot elevation, as designed, and thereby further reduce the risk of flood hazard.

**(12) Substantially affects scenic vistas and viewplanes identified in county or states plans or studies:**

The Nu'uuanu Reservoir No. 4 is not located within any scenic vistas and viewplanes identified in county or state plans or studies. In general, the trails in the surrounding mountains offer the only public views of the reservoir basin and dam infrastructure. The Pali Lookout, located approximately 1.5 miles away from the project site, is a major scenic attraction for residents and visitors. However, the reservoir and dam are not visible from the lookout, nor is the lookout visible from the reservoir. The west end of the Nu'uuanu Reservoir No. 4 dam embankment and access road are visible to the public from the adjacent Pali Highway, however the reservoir basin, intake tower, and other components of the dam infrastructure are not.

Potential impacts to scenic and visual resources will be minimal. Major work activities within the reservoir basin and on the downstream face of the dam embankment will not be visible to the public travelling on Pali Highway. Work activities on the dam access road at the west end of the dam embankment will be visible to passing motorists. Construction vehicles, equipment and material transport will be visible on the highway during mobilization and staging only. Heavy truck traffic required for hauling equipment and materials to and from the project site will be intermittent and of short duration. Construction activities will be visible to hikers that traverse the area. Project activities will have no effect on scenic views from the Pali Lookout. Work will be conducted during daytime hours and no nighttime lighting is proposed.

Project impacts on scenic visual resources will be minimal, temporary and will cease when the project is completed. Following construction, the project site will be generally restored to its pre-existing appearance. No additional mitigation measures are recommended.

**(13) Requires substantial energy consumption:**

There is no electrical power service to the existing reservoir facilities. Construction activities associated with the project will require relatively high, short-term energy use compared to existing conditions. Reservoir operations following construction will not require connection to HECO's electrical utilities in the Pali Highway ROW. No new demand or adverse impacts to utility services will result from this project.

In accordance with the provisions set forth in Chapter 343, HRS, and the significance criteria set forth in HAR, Section 11-200-12, it is anticipated that the proposed project will have no significant adverse impacts to social welfare, natural resources economic conditions, water quality, air quality, existing utilities, noise levels, archaeological sites, or wildlife habitat. Potential impacts should be minor and will be mitigated by measures described in this EA.

## **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. Compliance with Hawaii Revised Statutes 179D, and Hawaii Administrative Rules 13-190.1.