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

July 27, 2012

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

AUTHORIZE THE APPROVAL AND ISSUANCE OF  
A DLNR DAM SAFETY CONSTRUCTION/ALTERATION PERMIT NO. 60  
DAM OUTLET REPLACEMENT FOR PAUWELA RESERVOIR (MA-0096)  
HAiku, MAUI, HAWAII

The Engineering 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 permit application, “PAUWELA RESERVOIR OUTLET VALVE REPLACEMENT”, pursuant to Hawaii Revised Statutes Chapter 179D.

APPLICANT:  
Mr. Mark Vaught  
Superintendent, Administration & Maintenance Operations  
East Maui Irrigation Company  
497 Baldwin Avenue  
Paia, Maui, Hawaii 96779

LANDOWNER:  
Mr. Nelson Chun  
Senior Vice President & Chief Legal Officer  
Alexander & Baldwin, Inc.  
822 Bishop Street  
Honolulu, HI 96813  
TMK: (2) 2-7-003:030, (2) 2-7-003:056, (2) 2-7-008:038, (2) 2-7-008:039

SUMMARY OF REQUEST:  
Application for a Dam Safety Construction/Alteration Permit for the replacement and relocation of the outlet valve to the upstream side of the embankment for Pauwela Reservoir, Haiku, Maui, Hawaii (See Exhibit 1)

LOCATION: Napili, Maui, Hawaii  
TMK: (2) 2-7-003:030 – A&B – Hawaii Inc  
TMK: (2) 2-7-003:056 – A&B – Hawaii Inc  
TMK: (2) 2-7-008:038 – A&B Properties, Inc  
TMK: (2) 2-7-008:039 – A&B - Hawaii Inc (See Exhibit 2)
BACKGROUND:
The dam at the Pauwela Reservoir was constructed in 1904 as a water storage and distribution system for the sugar plantations on Maui. There are no known construction drawings of the dam and it appears to be a typical earthen embankment of the early plantation era. The dam was noted to have excessive seepage in the 1980s and a toe drain was constructed to control and monitor the seepage.

The embankment at the Pauwela Reservoir is 47 feet high, has a length of 270 feet, and serves as a paved county road (Kauhiakoa Road). The surface area of the reservoir at the dam crest is approximately 6.8 acres. The dam impounds 98 ac-ft of water at the crest. There is an uncontrolled concrete box culvert spillway at the left abutment which passes flows under Kauhiakoa Road. The outlet consists of a trash rack protecting a drop box inlet in the bottom of the basin. Water is routed through the embankment via a 14 inch diameter pipe and flow is currently controlled with a downstream gate valve. The dam has a size classification of “intermediate” and hazard potential classification of “high”. (See Exhibit 3)

A September 2010 Phase I Dam Inspection Report Review by GEI Consultants, Inc. determined that the dam’s overall condition was “CONDITIONALLY FAIR”. The potential dam safety deficiencies and recommended actions noted were to evaluate the condition of the low level outlets, consider upstream control, establish a monitoring program, update the hydrologic analysis, and update the stability analysis. The work covered under this permit is to install an upstream control valve.

An application for the outlet modification of the Pauwela Reservoir was filed on November 7, 2011 by the operator, East Maui Irrigation (EMI), on behalf of Alexander and Baldwin, Inc., the dam owner.

PROJECT DESCRIPTION:
East Maui Irrigation is proposing to install an upstream control valve at the reservoir. This will prevent the outlet pipe from being pressurized at all times and is considered to be a dam safety improvement. The manually operated valve will be installed at the end of an inclined stem which will extend up the upstream slope of the embankment. A trash rack will be installed over the valve inlet to prevent debris from clogging the outlet pipe. These improvements should have little effect on the embankment at the facility as very little earth on the upstream face of the dam will be disturbed during the construction sequence. (See Exhibit 4)

CHAPTER 343 – ENVIRONMENTAL ASSESSMENT:
The project is entirely on privately owned lands and does not trigger the requirement for an environmental assessment. (See Exhibit 5)

REMARKS:
The applicant (EMI) and the owner (Alexander & Baldwin) have completed a basis of design, plans and specifications for the proposed outlet modification. East Maui Irrigation has requested for the approval of the submitted dam safety construction/alteration permit. The staff of the Engineering Division’s Dam Safety Unit has reviewed the documents and concluded that they are sufficient for their intended purposes. Staff recommends approval of this permit application along with the Dam Safety Permit General Conditions. (See Exhibit 6)
RECOMMENDATION:
That the Board:

1. Authorize the approval and issuance of the DLNR Dam Safety Construction/Alteration Permit Number 60 for the Dam Outlet Replacement at Pauwela Reservoir (MA-0096), Haiku, Maui, Hawaii; and

2. Direct the Chairperson to issue a dam safety permit for the dam outlet replacement at Pauwela Reservoir (DLNR Dam Safety Construction/Alteration Permit No. 60) 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 the permitted work and take appropriate action including but not limited to selecting and procuring testing or professional services to verify and inspect the construction work, approve revisions and changes to the project or permit conditions, and issue fines and/or revoke the permit, if necessary.

Respectfully submitted,

CARTY S. CHANG
Chief Engineer

APPROVED FOR SUBMITTAL:

WILLIAM J. AILA, JR.
Chairperson

Exhibit(s):
1. Owner Permit Application
2. Location Map / TMK Map
3. Site Images
4. Partial Construction Drawing set
5. Environmental Assessment Exemption Justification (Chapter 343 HRS)
6. Dam Safety Permit General Conditions
State of Hawaii
BOARD OF LAND AND NATURAL RESOURCES
Department of Land and Natural Resources
Engineering Division

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

Date of Application: __10/19/2011___

Applicant: ___________________________ Firm / Company: __East Maui Irrigation Co., Ltd.__

Contact Name: __Mark Vaught___ Mailing Address:__P.O. Box 791628, Paia, HI 96779___

Telephone: __808-579-9516___ Fax: __808-579-9517___ Email: __mvault@hcsugar.com___

The Applicant hereby applies to the Board of Land and Natural Resources for the approval of the attached plans and specification for the Addition of upstream controls for Pauwela Reservoir (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 ($25.00) (Waived for government agencies)
2. Three (3) copies of the Detailed Cost Estimate
3. Three (3) copies of the Final Design Report
4. Three (3) copies of the Plans
5. Three (3) copies of the Specifications
6. Proposed Construction Schedule
7. Supporting documents:

__________________________
__________________________
__________________________
__________________________
__________________________
__________________________

NAME OF STRUCTURE: _______Pauwela Reservoir_________________________

DAM OR RESERVOIR LOCATION: _______Haiku, Hawaii________

Island: __Maui________ Tax Map Key: ___(2)2-7-003:30,56; (2)2-7-008:38,39___

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

State Land Use District: _X__ Agriculture ___ Urban ___ Rural ___ Conservation

BRIEF DESCRIPTION OF WORK TO BE PERFORMED

__________________________
__________________________

Exhibit 1
**TECHNICAL INFORMATION:**

1. Drainage Area _____1.19_________ sq. miles or _______762_______ acres

2. Classification of Dam __High Hazard______________________________

3. Type of Structure __Earthen Dam______________________________

4. Elevation-Area-Capacity Data:

<table>
<thead>
<tr>
<th></th>
<th>Elevation</th>
<th>Surface Area</th>
<th>Total Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Streambed</td>
<td>414'+/-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Primary Spillway</td>
<td>435.5'+/-</td>
<td>6.8'+/-</td>
<td>100'+/-</td>
</tr>
<tr>
<td>Secondary Spillway</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Top of Dam</td>
<td>460'+/-</td>
<td>7.6'+/-</td>
<td>142'+/-</td>
</tr>
<tr>
<td>Design Water Level</td>
<td>Varies with rainfall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invert of Drain</td>
<td>423.5'(assumed)</td>
<td>upstream,</td>
<td>414'downstream</td>
</tr>
</tbody>
</table>

5. Spillway Details (Type, Dimensions, Material)

   Primary: __________Upstream - earthen, downstream - concrete lined riprap.________

   Secondary: __________________________________________

6. Purpose of Structure __Irrigation water storage.______________

   (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

   ____________________________

   Mailing Address ____________________________

   Registration No. ____________________________

   Telephone: ___________ Fax: ___________ Email: ___________

3. Registered Professional Engineer to be responsible for inspection during construction

   ____________________________

4. Contractor (If known)

   Mailing Address ____________________________

   Telephone: ___________ Fax: ___________ Email: ___________

5. List all other permits applications submitted to other governmental agencies:

   ____________________________ N/A__________________________

6. Anticipated effect of proposed structure on natural environment: __N/A__________

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Exhibit 1
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, Hawaii Administrative Rules. (Submit additional copies of this sheet should there be more owners)

**Signature on Original**

(Signature of Owner)

Applicant-address/Operator

(Address / Interest in Dam or Reservoir)

(Signature of Owner)

(Address / Interest in Dam or Reservoir)

ALEXANDER & BALDWIN, INC. / Owner

P.O. Box 3440

Honolulu, Hawaii 96801

(Address / Interest in Dam or Reservoir)

(Signature of Owner)

(Address / Interest in Dam or Reservoir)

(Signature of Owner)

(Address / Interest in Dam or Reservoir)

(Signature of Owner)

(Address / Interest in Dam or Reservoir)

(Signature of Owner)

(Address / Interest in Dam or Reservoir)

(Signature of Owner)

(Address / Interest in Dam or Reservoir)

I, Mark Vaught, 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 two (2) years of the approval date, unless specifically permitted in the approved permit terms and conditions.

**Signature on Original**

(Signature of Applicant & Title)

Manager

Date: 10/24/11

Exhibit 1
CHAPTER 343 ANALYSIS

Project Name: Upstream Control for Pauwela Reservoir (MA-0096)
Reviewers: John Dawley Date of Review: 10-November-2011

_____ 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 "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

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| ☐   | 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 ☐

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.

Exhibit 5
CHAPTER 343 ANALYSIS

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):

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

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;
CHAPTER 343 ANALYSIS

(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):

______________________________

______________________________

______________________________

Exhibit 5
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 ___

Exhibit 5
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.

Exhibit 6
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.