

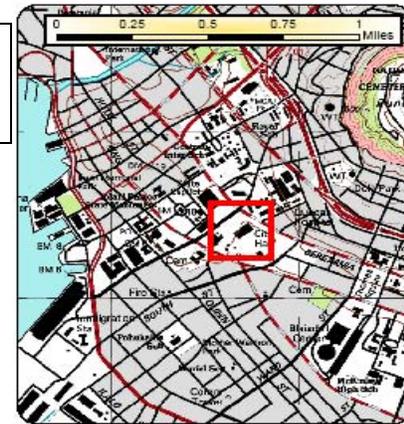
# Emergency Action Plan (EAP)

for

**Dam Name (Alternate Name if Any)**

State ID # **ST-0XXX**

**City, Island, County**



**Kalanimoku Building (HI-XXXX)**



Submitted By:

\_\_\_\_\_  
Name of Responsible Charge, Title, Dam Owner Name

\_\_\_\_\_  
Date

Copy \_\_\_\_\_ of \_\_\_\_\_

**(Use previous page for binder cover and this label for binder spine)**

**EAP for Dam Name (Alternate Name if Any)**

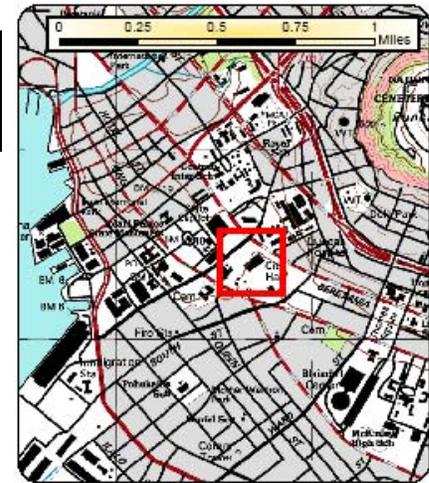
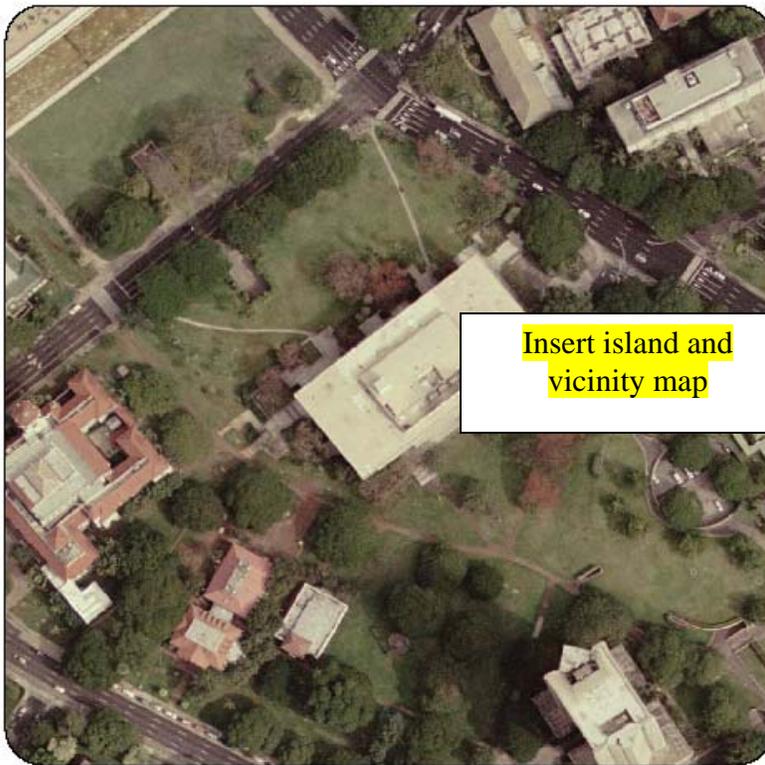
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Submitted By:

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Name of Responsible Charge, Title, Dam Owner Name

Copy \_\_\_\_\_ of \_\_\_\_\_

\_\_\_\_\_  
Revision Date

EAP for **Dam Name**, State ID # ST-0**XXX**

Revision **Month, Yr**

## **Table of Contents**

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## **Purpose**

This EAP outlines procedures to minimize risks to life and property when the integrity of the subject dam facility may be in jeopardy. This EAP considers unusual and emergency situations, both natural and manmade, and identifies appropriate responses. This EAP was specifically developed for the named facility only, and is not intended for use with any other facility.

Categories of unusual and emergency situations that may trigger activation of this EAP include (but are not limited to):

- Earthquake
- Sudden Reservoir Level Rise
- Flow through Spillway
- Embankment Overtopping
- Seepage
- Sinkholes
- Piping
- Damage of Spillway or Outlet Works
- Embankment Cracks
- Embankment Movement
- Abnormal Instrumentation Readings
- Security Threat
- Sabotage or Vandalism

**Roles and Responsibilities**

**(Owner to add to this list as appropriate for facility)**

The following roles and responsibilities have been assigned for implementation of this EAP:

<b>Person or Agency</b>	<b>Responsibility</b>
Dam Owner’s Representative	Inspect, monitor and operate dam. Detect unusual/emergency situation. Determine Notification Level for situation. Notify appropriate agencies by activating EAP. Monitor/Remediate situation. Provide status updates to other agencies. Develop EAP. Initiate and coordinate update and testing of EAP.
911 Dispatch	Notify emergency responders. Participate in update and testing of EAP.
Police Department	<b>Insert</b> Participate in update and testing of EAP.
Fire Department	<b>Insert</b> Participate in update and testing of EAP.
County Emergency Management	<b>Insert</b> Terminate Level 2/3 (Emergency) event. Participate in update and testing of EAP.
State Civil Defense	Assist local community as necessary. Participate in update and testing of EAP.
State Dam Safety Program	Assist agencies as necessary. Terminate Level 1 (Non-Emergency) event. Participate in update and testing of EAP.

REPLACE THIS SHEET WITH  
TAB “Level 1”

## Level 1 Notifications

### **NON-EMERGENCY** Unusual Event; Slowly developing

<b>Dam Owner's Representative</b>	
County of XXXXXXX Dept. of Public Works	
<u>Primary Contact</u> John Doe, Title	<u>Secondary Contact</u> Jane Doe, Title
808-XXX-XXXX (Office)	808-XXX-XXXX (Office)
808-XXX-XXXX (Home)	808-XXX-XXXX (Home)
808-XXX-XXXX (Cell)	808-XXX-XXXX (Cell)

(1)

<b>State Dam Safety Program</b>	
Department of Land and Natural Resources Engineering Division	
<u>Primary Contact</u> Edwin Matsuda, PE	<u>Secondary Contact</u> Jimmy Leung, PE
808-587-0268 (Office)	808-587-0238 (Office)
808-XXX-XXXX (Home)	808-XXX-XXXX (Home)
808-XXX-XXXX (Cell)	808-XXX-XXXX (Cell)

(Advise, No action required)

<b>County Emergency Management</b>	
County of XXXXXXX Department of Emergency Management	
<u>Primary Contact</u> John Defense, Director	<u>Secondary Contact</u> Jim Defense
808-XXX-XXXX (Office)	808-XXX-XXXX (Office)

<b>State Civil Defense</b>	
Ed Teixeira, Vice Director 733-4300	

#### **Suggested Pre-Scripted Statement - Dam Owner to State Dam Safety Program:**

This is \_\_\_\_\_. We have a Non-Emergency situation at **Dam Name (ST-0XXX)**. We have activated the EAP for **Dam Name (ST-0XXX)** and are currently under a Level 1, Non-Emergency Condition. We will advise you of any changes to this status. I can be reached at the following phone number \_\_\_\_\_.

## Level 1 Notification Log

### **NON-EMERGENCY**

#### **Unusual Event; Slowly developing**

(Photocopy Blank Forms as Needed for Your Agency)

<b>Name:</b>	<b>Facility:</b>
<b>Agency:</b>	<b>Date:</b>
<b>Title:</b>	<b>Time:</b>

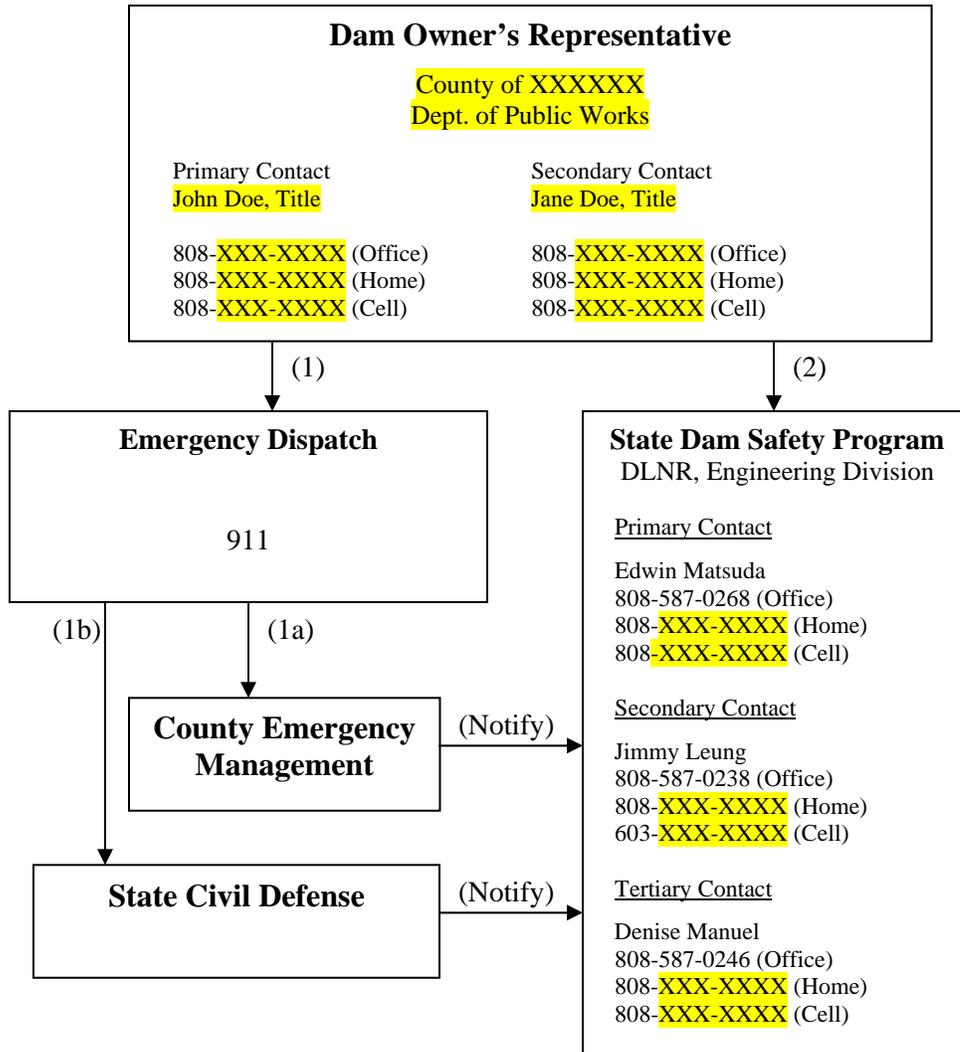
<b>Circle If:</b>	<b>Actual Event</b>	<b>EAP Test</b>
-------------------	---------------------	-----------------

<b>Agency Contacted</b>	<b>Time</b>	<b>Person Contacted</b>	<b>Comment</b>
1.			
2.			
3.			
4.			
5.			

REPLACE THIS SHEET WITH  
TAB “Level 2”

## Level 2 Notifications

### **EMERGENCY EVENT Potential Dam Failure Situation**



#### **Suggested Pre-Scripted Statement – Dam Owner to 911 Dispatch:**

We have a Level 2 Emergency Event, Potential Dam Failure at **Dam Name (ST-0XXX)**. The dam is being monitored. Evacuation MAY become necessary if the condition of the dam worsens. Contact County **Emergency Management** and State Civil Defense. My name is \_\_\_\_\_ and I can be reached at the following phone number \_\_\_\_\_, or alternate phone \_\_\_\_\_.

Repeat Statement.

## Level 2 Notification Log

### **EMERGENCY EVENT Potential Dam Failure Situation**

(Photocopy Blank Forms as Needed for Agency)

<b>Name:</b>	<b>Facility:</b>
<b>Agency:</b>	<b>Date:</b>
<b>Title:</b>	<b>Time:</b>

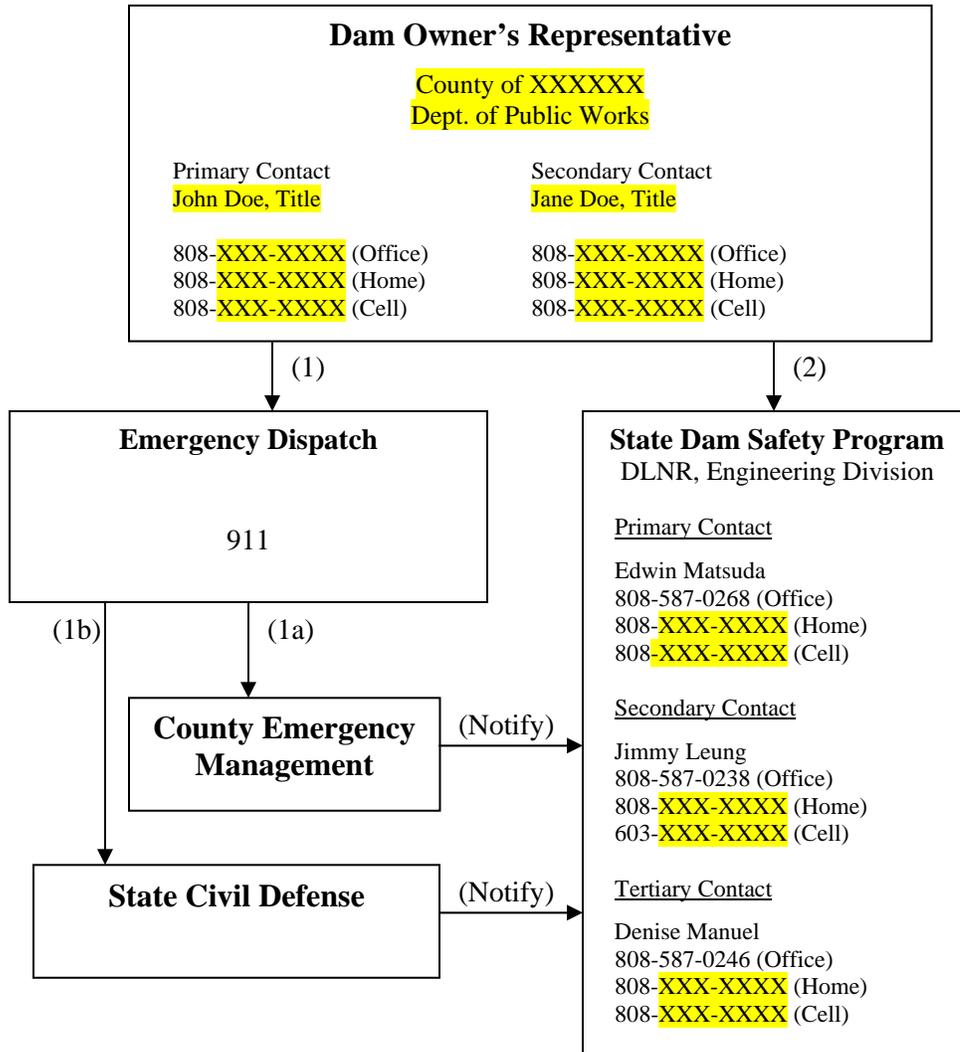
<b>Circle If:</b>	<b>Actual Event</b>	<b>EAP Test</b>
-------------------	---------------------	-----------------

<b>Agency Contacted</b>	<b>Time</b>	<b>Person Contacted</b>	<b>Comment</b>
1.			
2.			
3.			
4.			
5.			

REPLACE THIS SHEET WITH  
TAB “Level 3”

## Level 3 Notifications

### **URGENT EMERGENCY EVENT** **Dam Failure is Imminent or In-Progress**



#### **Suggested Pre-Scripted Statement – Dam Owner to 911 Dispatch:**

We have a Level 3 Emergency Event, Imminent or In-Progress Dam Failure at **Dam Name (ST-0XXX)**. Evacuation MUST begin immediately. Contact County **Emergency Management** and State Civil Defense. My name is \_\_\_\_\_ and I can be reached at the following phone number \_\_\_\_\_, or alternate phone \_\_\_\_\_.

Repeat Statement.

## Level 3 Notification Log

### URGENT EMERGENCY EVENT

**Dam Failure is Imminent or In-Progress**

(Photocopy Blank Forms as Needed for Agency)

<b>Name:</b>	<b>Facility:</b>
<b>Agency:</b>	<b>Date:</b>
<b>Title:</b>	<b>Time:</b>

<b>Circle If:</b>	<b>Actual Event</b>	<b>EAP Test</b>
-------------------	---------------------	-----------------

<b>Agency Contacted</b>	<b>Time</b>	<b>Person Contacted</b>	<b>Comment</b>
1.			
2.			
3.			
4.			
5.			

REPLACE THIS SHEET WITH  
TAB “Evacuation Map”

**Insert FINAL Evacuation Map  
developed by County Emergency  
Management/Civil Defense.**

Until Evacuation Map is finalized, Pacific Disaster Center  
inundation map & report (5 pp.) may be inserted here.

Owner shall remove inundation map & report after  
insertion of FINAL Evacuation Map.

## **Appendix A – Facility Information**

Facility Data Sheet

Vicinity (Area) Map

Street Map and Directions

Site Map/Drawing

REPLACE THIS SHEET WITH  
TAB “Facility Information”

Insert 1-page Facility  
Data Sheet (available on  
State Dam Safety  
Program Website)

# Insert Vicinity (Area)

## Map

Should include:

Any Upstream Dam(s)

Any Downstream Dam(s)

Labels in 12-pt Font

North Arrow

Scale

Topographic Information

REPLACE THIS SHEET WITH  
TAB “Directions to Site”

# Insert Street Map

Should include:

Directions to Site

Main Facility Access Route

Alternate Route if Main Access Flooded

Location of Access Gates

Labels in 12-pt Font

North Arrow

Scale

# Insert Site Map or Drawing

Should include:

Spillway

Spillway Gate (if applicable)

Primary Outlet Pipe

Primary Outlet Valve

Secondary Outlet/Drain Pipe

Secondary Outlet/Drain Valve

Access Paths

Labels in 12-pt Font

## Appendix B – Event Monitoring

EAP Inspection Checklist

Guidance for Determining the Event Level

Spillway and Outlet Works Capacity Graphs (if available)

Reservoir Drainage Chart (if available)

Local Resources Available

Contact Names and Numbers

**EAP INSPECTION CHECKLIST**

<b>Dam Name:</b>		<b>Inspected By:</b>	
		<b>Date:</b>	
<b>Weather Condition:</b>		<b>Event Triggering Inspection:</b>	
<b>Reservoir Water Level:</b>			
<b>Inspection Item:</b>		<b>Deficiencies/Comments:</b>	
NOTE ANY PRE-EXISTING CONDITIONS (AGE, LOCATION) AND CHANGES OBSERVED:			
<b>SPELLWAY:</b>			
	General Condition		
	Cracks?		
	Leaning?		
	Seepage?		
	Overtopping?		
	Erosion?		
	Other Comments?		
<b>GATES/STOPLOG BAYS:</b>			
	General Condition		
	Gate Mechanism Condition		
<b>EMBANKMENT CREST:</b>			
	Visual Settlement?		
	Misalignment?		
	Cracking?		
<b>EMBANKMENT UPSTREAM SLOPE:</b>			
	Erosion? Condition of Ground Cover?		
	Settlement, depressions, bulges?		
	Longitudinal/Vertical Cracks?		

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<b>EMBANKMENT DOWNSTREAM SLOPE:</b>	
	Erosion? Condition of Ground Cover?
	Settlement, depressions, bulges?
	Longitudinal/Vertical Cracks?
	Soft spots or boggy areas?
	Movement at or beyond toe?
	Boils at toe?
<b>SEEPAGE:</b>	
	Location
	Does seepage contain fine soil particles?
	Approximate flow rate (garden hose, full blast = approx 5 gal/min)
<b>RESERVOIR:</b>	
	Observed vortex?
	Sinkhole?
<b>ABUTMENT CONTACTS:</b>	
	General Condition
	Cracks?
	Leaning?
<b>OTHER OBSERVATIONS OR COMMENTS:</b>	

(Insert plan view and elevation view of dam facility here to easily identify facility features with the observations noted above)

REPLACE THIS SHEET WITH  
TAB “Emergency Detection”

## **Guidance for Determining the Event Level at Dam Name**

**Note: This is a site-specific guide developed for use at the named facility only!**

Level 1: Non-Emergency, Unusual Event, Slowly Developing

Level 2: Emergency, Potential Dam Failure Situation

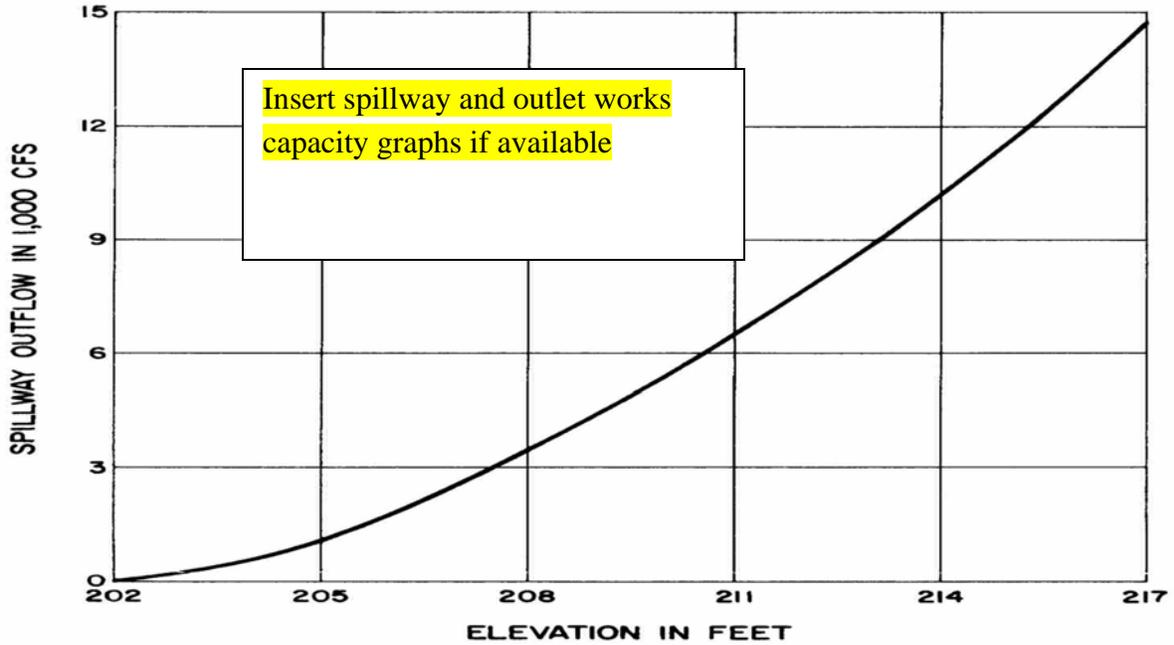
Level 3: Urgent Emergency; Imminent or In-progress Dam Failure

<b>Event</b>	<b>Situation</b>	<b>Event Level</b>		
Earthquake	Earthquake resulting in uncontrolled release of water from the dam			<b>3</b>
	Earthquake felt at or near dam, or reported to have occurred within 200 miles of the dam - look up magnitude ( <a href="http://hvo.wr.usgs.gov/earthquakes/">http://hvo.wr.usgs.gov/earthquakes/</a> ) and inspect according to Hawaii Dam Safety Guidelines : Seismic Analysis & Post-Earthquake Inspections, Circular C131	1	2	3
	Earthquake resulting in visible damage to the dam or appurtenances		2	
	New seepage near or around an outlet conduit that is under pressure (with downstream valve) within one month of an earthquake, > 5 gallons per minute, and transporting or possibly transporting fines.			2
	New seepage near or around an outlet conduit that is under pressure (with downstream valve) within one month of an earthquake, < 3 gallons per minute and not transporting soil material	1		
<b>Embankment Overtopping / High Water Level</b>				
Embankment Overtopping / High Water Level	Water from the reservoir is flowing over the top (crest) of the dam			<b>3</b>
	Upstream dam is being overtopped or in Event Level 3			<b>3</b>
	Reservoir level is 1-foot below the top (crest) of the dam (Event level depends on dam & watershed)	1	2	3
	Water level gage reading above alarm setpoint of # -feet	1	2	
<b>Embankment Cracking</b>				
Embankment Cracking	Cracks in the embankment with seepage (Refer To Seepage Events)	1	2	3
	New cracks in the embankment greater than ¼-inch wide without seepage	1		
<b>Embankment Movement</b>				
Embankment Movement	Sudden or rapidly proceeding slides of the embankment slopes			<b>3</b>
	Visual movement/slippage of the embankment slope	1		
<b>Outlet Conduit</b>				
Outlet Conduit	Cracks, joint separation, or leaking outlet conduit		2	
<b>Sabotage/ vandalism</b>				
Sabotage/ vandalism	Damage to dam or appurtenances that has resulted in uncontrolled water release			<b>3</b>
	Damage to dam or appurtenances that has resulted in seepage flow		2	
	Damage to dam or appurtenance with no impacts to the functioning of the dam	1		
	Modification to the dam or appurtenances that could adversely impact the functioning of the dam	1		

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Event	Situation	Event Level		
Security threat	Detonated bomb that has resulted in damage to the dam or appurtenances			3
	Verified bomb threat that, if carried out, could result in damage to the dam		2	
	Damage to dam or appurtenances with no impacts to the functioning of the dam		2	
Seepage / Low Water Level	New or existing seepage area with flow rate > 10 gallons per minute			3
	Rapidly increasing transport of soil material to the extent that failure appears imminent or in-progress			3
	New or existing seepage areas with increasing flow rate but < 10 gallons per minute		2	
	Seepage near or around an outlet conduit > 5 gallons per minute, or possibly transporting soil material		2	
	New or existing seepage areas not near outlet conduit, transporting or possibly transporting soil material		2	
	Reservoir water level is falling without apparent cause		2	
	Water level gage reading below alarm setpoint of # -feet	1	2	
	New seepage areas not near outlet conduit, < 10 gallons per minute and not transporting soil material	1		
	Seepage near or around an outlet conduit, < 2 gallons per minute and not transporting soil material	1		
Sinkholes or Whirlpools	Rapidly enlarging sinkhole on dam or abutments to extent that failure appears imminent or in-progress			3
	Whirlpool or other evidence exists indicating that the reservoir is draining rapidly through dam or foundation			3
	Observation of new sinkhole in reservoir area or on embankment		2	
Spillway Flow	Spillway flow is overflowing spillway walls			3
	Spillway is flowing with an advancing headcut (erosion) that is threatening the control section			3
	Spillway flow is flooding people downstream			3
	Reservoir water surface elevation at spillway crest with high rate of rise (spillway inadequate for design flows)		2	
	Spillway is flowing with active gully erosion		2	
	Spillway flow could result in flooding of people downstream if reservoir level continues to rise		2	
	Reservoir water surface elevation at spillway crest, or spillway is flowing with no active erosion	1		

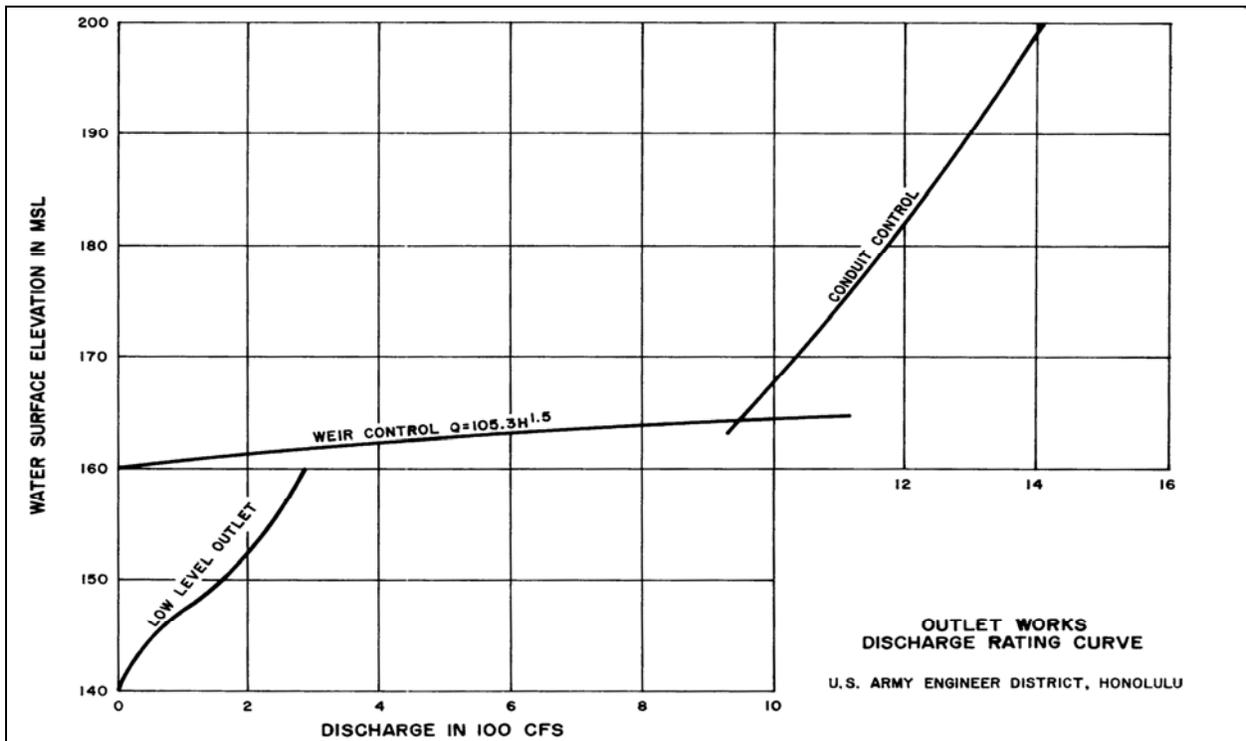
## Spillway and Outlet Works Capacity



**NOTE**

LENGTH = 65'  
DISCHARGE COEFFICIENT = 3.9

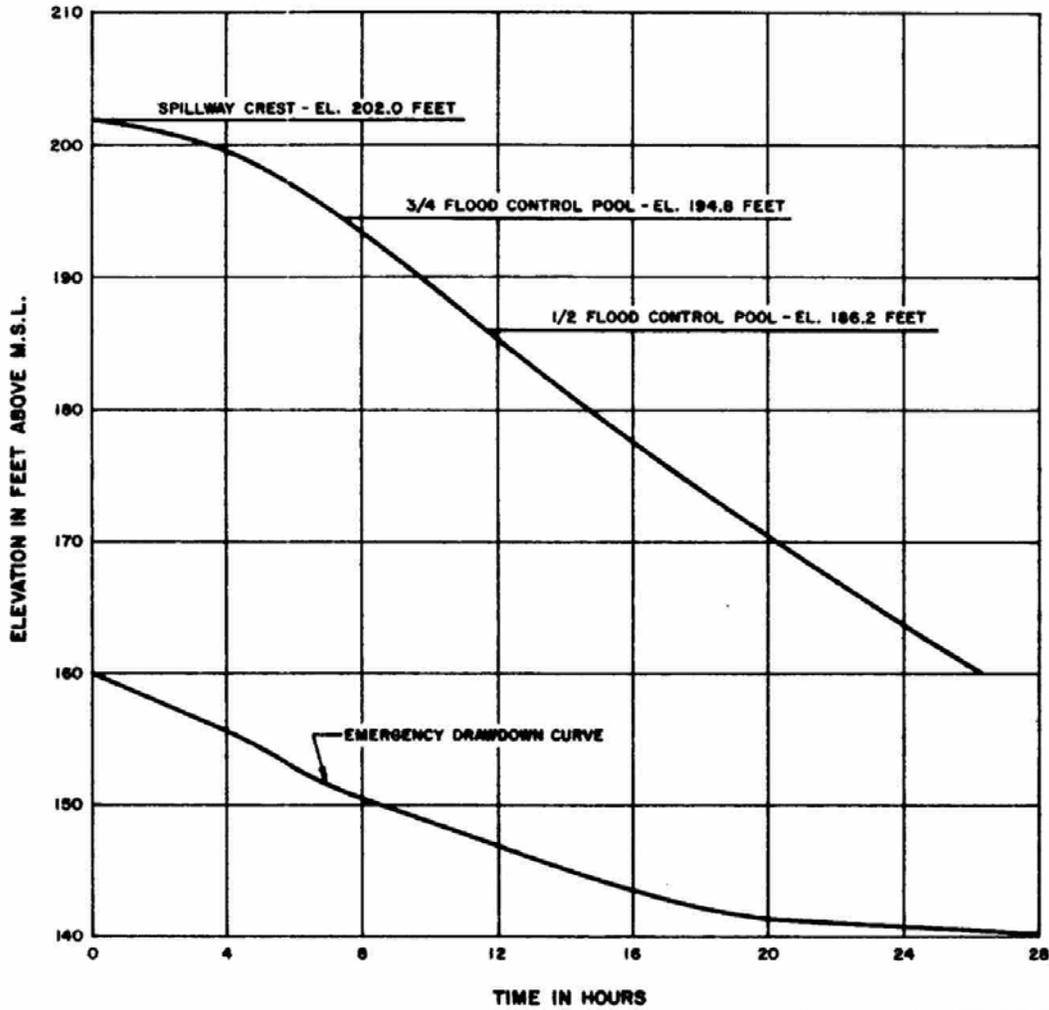
**SPILLWAY RATING CURVE**



**OUTLET WORKS  
DISCHARGE RATING CURVE**  
U.S. ARMY ENGINEER DISTRICT, HONOLULU

## Reservoir Drainage Chart

Insert reservoir drainage chart if available



FLOOD CONTROL AND ALLIED PURPOSES

EVACUATION AND EMERGENCY  
DRAWDOWN OF  
PERMANENT POOL

REPLACE THIS SHEET WITH  
TAB “Local Resources”

**Local Resources Available at Dam Name**

**Note: This is a site-specific list developed for use at the named facility only!**

**The following resources can be utilized in the event of an emergency:**

Quantity	Equipment/Resources	Contact Name/Telephone No.
1	Satellite phone – Limited cell phone coverage @ dam site	

**Other locally available resources include:**

Resources	Suppliers	Telephone No.
Heavy Equipment Service and Rental		
Sand and Gravel Supply		
Ready-mix concrete supply		
Sand bags		
Pumps		
Diving Contractor		
Lighting		
Generator		
Piping		
Geotextile (Type)		

REPLACE THIS SHEET WITH  
TAB “Contacts”

**Contact Names and Numbers for Dam Name**

Role & Responsibility	Primary Contact	Office Phone No.	Alternate Phone No.	Agency or Organization	Address
	Backup Contact				
<b>Dam Owner's Representatives:</b>					
Dam Owner					
Dam Owner's Operations Rep.					
Dam Owner's Technical Rep.					
<b>State Dam Safety Program:</b>					
State Dam Safety Program	Edwin Matsuda	587-0268		State of Hawaii Department of Land and Natural Resources	1151 Punchbowl St. Room 221 Honolulu, HI 96813
	Jimmy Leung	587-0238			
	Denise Manuel	587-0246			
<b>County Emergency Management:</b>					
<b>State Civil Defense:</b>					
<b>County Emergency Responders:</b>					

**Appendix C – Training, Testing and Updating**

Training of Dam Owner’s Representatives

Testing and Updating the EAP

Revision Summary Record

EAP Reviewed, No Updates Required Form

## **TRAINING OF DAM OWNER’S REPRESENTATIVES**

Include description of type of training received, including experience with this dam, other dams, or in a related field. If training differs according to each representative, please separately list each representative and their training received.

## **TESTING AND UPDATING THE EAP**

The Owner shall conduct a test of the emergency notification procedure (either Level 2 or Level 3) at least once every two (2) years. The Owner or designee will initiate the test by calling 9-1-1, and indicating **“This is a test of the Emergency Action Plan for XXXXXX Dam, in XXXXXXXXXXXX. This test is being conducted as a Level #X Emergency test.”**

Once the EAP test has been activated, each Agency will subsequently notify the contacts it is responsible for, as indicated on the appropriate “Level Notification” flowchart, indicating **“This is a test of the Emergency Action Plan for XXXXXX Dam, in XXXXXXXXXXXX. This test is being conducted as a Level #X Emergency test.”**

Each Agency participating in the test shall complete the “Level Notification Log” applicable to the level of emergency being tested. This Log template is found behind the appropriate “Level Notification” flowchart. Completed “Level Notification Log” forms shall be returned to the Owner at the following address: (Insert Name of Owner Representative, Mailing Address)

The Owner is responsible for monitoring the test and following up with the test results. Once “Level Notification Log” forms are collected by the Owner, the Owner should note any major discrepancy in the times that calls were received by each agency. Results of the test, along with an updated “Revision and Testing Summary Record”, shall be reported to DLNR Dam Safety Program. If the test indicates that changes are necessary to ensure proper and complete notification, the Owner is responsible for making the changes and distributing to all Official EAP Holders listed in the “Official EAP Holders” table found in Appendix D, along with an updated “Revision and Testing Summary Record”.

In lieu of the call test, the Owner may host and facilitate a tabletop exercise meeting with representatives from all Official EAP Holders. Meeting participants may want to visit the dam prior to the tabletop exercise. During the exercise, the Owner should present an example emergency scenario. Each Agency would then respond and log their response in the same manner as during an actual event.

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The Owner is responsible for updating the “Level Notifications” flowchart contact information, “Local Resources Available” table, “Contact Names and Numbers” table, and any other significant EAP changes including facility modifications at least once annually by calling each contact number listed. In addition, the Owner should ask if the person knows where the EAP is kept and if responsibilities described in the EAP are understood. This annual revision shall be in addition to the required call test or tabletop exercise conducted every two years.

The EAP document held by the Owner is the master document. When revisions occur, the Owner is to provide the revised pages and an updated “Revision and Testing Summary Record” to all agencies listed in the “Official EAP Holders” table. Each Official EAP Holder is responsible for distributing the revision sheets within its own Agency (as appropriate) and replacing the revision sheets within their Official copy.

Annually, after each EAP update or test conducted, if no updates are required the Owner shall complete the “EAP Reviewed, No Updates Required” form and submit to State Dam Safety Program.

**Revision and Testing Summary Record**

Record Number	Date	Revisions Made or Testing Conducted	By Whom

**EAP REVIEWED, NO UPDATES REQUIRED**

I have reviewed the Emergency Action Plan for the **XXXXXXXXXX** Dam in **City, Island**, dated **XX-XX-XXXX**, as well as the latest guidelines and requirements by State Dam Safety Program, and acknowledge there are no changes required at this time.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Representing \_\_\_\_\_

(Title, Agency Name)

Please return completed form to:

Edwin Matsuda, State Dam Safety Program  
State of Hawaii, Dept of Land & Natural Resources  
1151 Punchbowl Street, Room 221  
Honolulu HI 96813

**Appendix D – EAP Holders**

Official EAP Holders

EAP Concurrence Form

REPLACE THIS SHEET WITH  
TAB “EAP Holders”

**Official EAP Holders**

Copy #	Organization	Person receiving copy	Concurrence Form Received
1  Owner's Representative	Name Address	Name Title	
2  State Dam Safety Program	State of Hawaii, Dept of Land & Natural Resources 1151 Punchbowl Street, Room 221, Honolulu HI 96813	Edwin Matsuda, State Dam Safety Program	
3  County Emergency Mgmt	Name Address	Name Title	
4  County Police	Name Address	Name Title	
5  County Fire	Name Address	Name Title	
6  State Civil Defense	Name Address	Name Title	

**EAP CONCURRENCE FORM**

I have received the latest copy of the Emergency Action Plan (EAP) for the **XXXXXXXXXX** Dam in **City, Island**, dated **XX-XX-XXXX**, and concur with the tasks and responsibilities assigned herein for this agency in the event of an emergency and during testing of the EAP.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Representing \_\_\_\_\_

(Title, Agency Name)

Please return completed form to:

**(Insert Dam Owner Name and Address)**