National Hydropower Association 2013 Annual Conference

New Dam Safety Initiatives and Priorities: An Update

Capital Hilton
Washington, DC
April 22 – 24, 2013

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Ongoing Initiatives

- Owners Dam Safety Program
- Risk Informed Decision Making
- EAP Enhancement

Owner's Dam Safety Program (ODSP)

- Owners of High and Significant Hazard Potential Dams were required to submit a formal ODSP to D2SI. (letter dated May 3, 2012)
- Initial submittals received
- Currently sending out letters reviewing ODSP's

Basic Principles of a Good ODSP

- Acknowledgment of Dam Safety Responsibilities
- Communication
- Clear Designation of Responsibility
- Allocation of Resources to Dam Safety
- Learning Organization

Benefits of an ODSP
Regulator Perspective

- An ODSP includes all aspects that affect Dam Safety
  - Organizational plus Technical aspects
- Provide opportunities to discuss Dam Safety needs and improvements within the owners organization, consultants, contractors and with the regulator
- Having a well thought out ODSP clearly reduces the risk of something bad happening at FERC projects

Owner's Dam Safety Program (ODSP)

Positive Comments - Industry

- Helped to Raise the Profile and Visibility of Licensee's Dam Safety Program
- Increased the understanding of Senior Executives on Dam Safety and the Risk they hold as dam owners
- Highlighted the Need to Have Knowledgeable Dam Safety Engineers in the Organization
- Caused Licensees to Seriously Plan For Succession Planning

Owner's Dam Safety Program (ODSP)

Negative Comments -Regulator

- Chief Dam Safety Engineer Responsibilities and Qualifications Not Well Defined
- Poor Dam Safety Training Plan
- Meeting FERC requirements should not be the primary judgment that a Licensee has a good ODSP
- Silent on requirement of CDSE to report to senior management the status of overall inventory of dams and associate dam safety issues on a periodic basis
- No backup plan if CDSE is not available to carry out duties

Owner's Dam Safety Program (ODSP)

Positive / Negative Comments

- Some of the Licensees that Submitted Well Written ODSP's Do Not Have The Best Executed Dam Safety Programs
- Some of the Licensees That Submitted Poorly Written ODSP's Have Some of the Best Dam Safety Programs

Owner's Dam Safety Program (ODSP)

Summary

- In general, submittals have been high-quality, demonstrating importance that many owners have placed on the effort
- We will provide a generic, best-practices list as enclosure to our review letter to you

Risk Informed Decision Making (RIDM)

Annual Performance Targets

FY 2010: Develop Action Plan - Complete

FY 2011: Portfolio Risk Assessment of FERC Dam Inventory - Complete

FY 2012: Determine RIDM is Consistent With Regulatory Process – Complete

FY 2013: Finalize Policy and Technical Guidelines

FY 2014: Fully Incorporate RIDM Into the Dam Safety Program

Engineering Guidelines Chapters Under Development

- Concrete Dams
- Embankment Dams
- Internal Erosion and Piping
- Spillway Gates & Other Outlet Works
- Operational Issues etc.
- Hydrologic Hazard Assessment
- Probabilistic Seismic Hazard Assessment
- Consequences (Life Safety, Economic, Dam Breach)
- Risk Analysis
- Risk Assessment

Training Opportunities

RIDM Level 2	ODSP
May 14 – 15, 2013 Phillip Burton Federal Building San Francisco, CA	May 16, 2013

Registration:
http://www.ferc.gov/EventCalendar/EventDetails.aspx?ID=6837&CalType=%20&CalendarID=116&Date=05/14/2013&View=Listview

RIDM Level 2	ODSP
June 25 – 26, 2013 FERC Headquarters Washington, DC	June 27, 2013

Registration:
http://www.ferc.gov/EventCalendar/EventDetails.aspx?ID=6838&CalType=%20&CalendarID=116&Date=06/25/2013&View=Listview

Federal Guidelines for Dam Safety Risk Management

- Risk Analysis
- Risk Assessment
- Risk Management

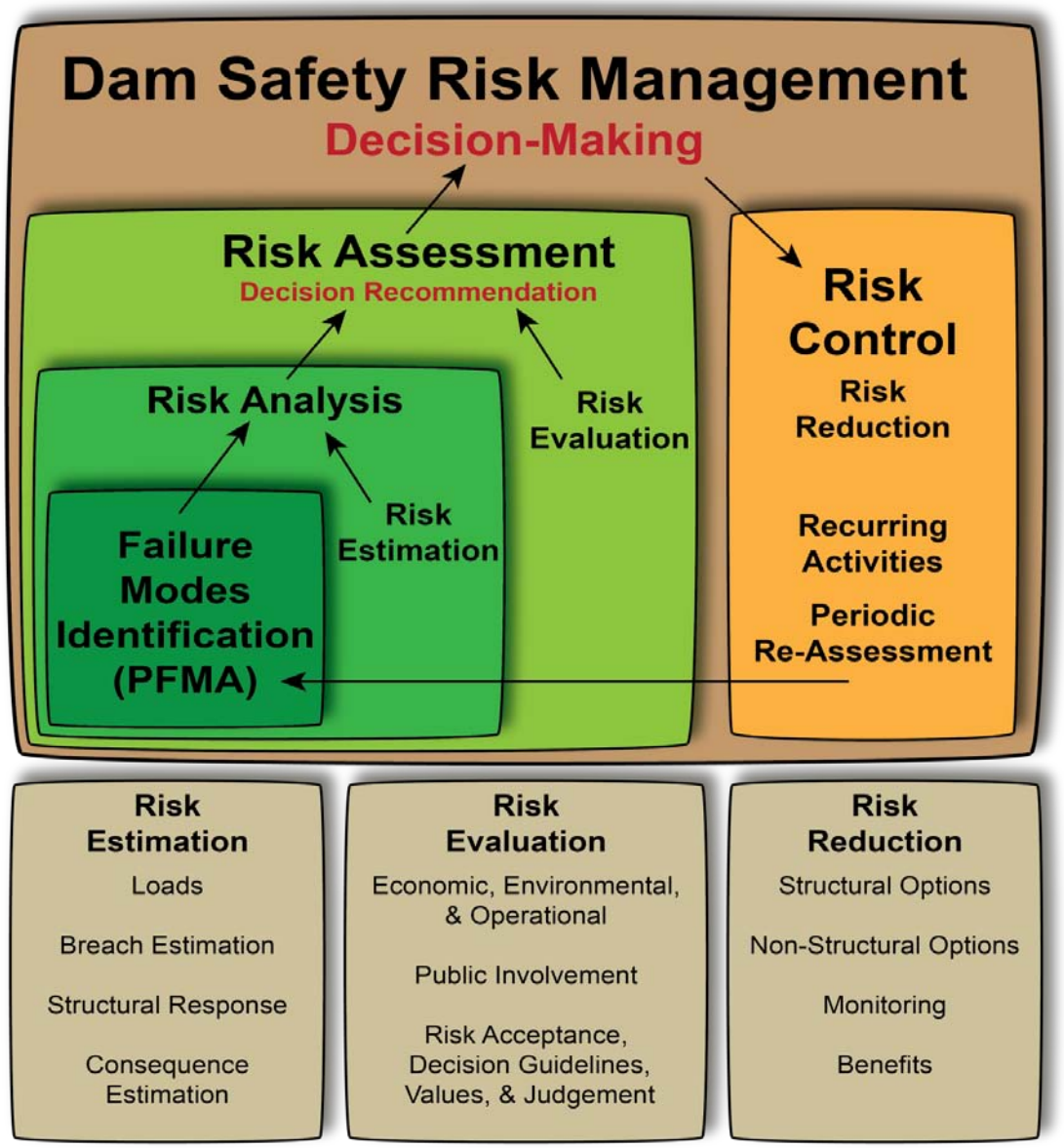

Figure 1 - Relationship between Risk Analysis, Risk Assessment and Risk Management

EAP Enhancement Initiative

Requirement of all high and significant hazard potential dam owners to include in the EAP a more detailed description of your operating plan during high flow events

EAP Enhancement Initiative

Why did FERC begin this initiative?

- During recent storm events FERC received inquiries from several Licensees asking what pre-emptive steps they could undertake to ensure their dams safely passed the expected flood flows. We wanted to ensure that all Licensees are prepared ahead of storm events to avoid unnecessary complications during the events.

- Make sure Licensees have a well thought out operating plan to safely pass flood flows

- Improve communication to reduce post flood event complaints

EAP Enhancement Initiative

Key Aspects Described in EAP

1. Essential operations before, during, and after flood flows reach your project.

2. A general overview tying project discharges to EAP notification procedures.

3. For projects that are remotely operated, describe what triggers sending staff to a project and at what point personnel are to be physically present at a site.

4. If the reservoir is to be drawdown describe coordination you will undertake with the resource agencies.

EAP Enhancement Initiative

Comment from NHA HPC

- Since many licensees already have extensive operating plans, referencing SOPs or O&M manuals in the EAP could achieve most of D2SI's objective, and also avoid internal confusion
  - Response
    - Reference to SOP and O&M manuals ok as long as short overview provided.

EAP Enhancement Initiative

Comment from NHA HPC

- Rather than including the procedures in the EAP, would communicating actual discharges or reporting percent of maximum spill capacity achieve D2SI's objective, which would avoid predicting downstream impacts but create a trigger to notify.
  - Response
    - General targets of when discharges may exceed bank flows and notifications are to be given to emergency responders are to be established in advance and summarized in EAP.

EAP Enhancement Initiative

Comment from NHA HPC

- When D2SI developed the Owners Dam Safety Program last summer you provided an example of an ODSP. Can you provide a similar example of what you are seeking in an EAP amendment?
  - Response
    - See attached

Example High Flow Operation / Notification Table

The following is an example table that correlates outfows from a dam, operation procedures, expected impacts, and the organizations that will be notified.

Flow (cfs)	Operation Procedures	Expected Impacts	Organizations to be Notified
< 2,000	Operate powerhouse turbines from remote command center as needed to maintain water surface elevation of 810 ft.	None	None
2,000 - 10,000	As water levels reach elevation 810.2 ft, open gates as needed from remote command center to return to normal water surface elevation of 810 ft. If flows are predicted to exceed 10,000 cfs, send roving operator to dam.	None	None
10,000 - 12,500	Manually open gates to maintain normal water surface elevation of 810 ft. Remote command center will monitor water levels and notify roving operators for further gate modifications.	Minor riverbank flooding	National Weather Service, Downstream Dam Owner
12,500 - 15,000	Manually open gates to maintain normal water surface elevation of 810 ft. Remote command center will monitor water levels and notify roving operators for further gate modifications.	Flooding of low-lying roads near river	National Weather Service, Downstream Dam Owner, Local Police
15,000- 17,500	Manually open gates to maintain normal water surface elevation of 810 ft. Operators will man dam 24/7.	Significant flooding of roads near river	National Weather Service, Downstream Dam Owner, Local Police
17,500 - 20,000	Manually open gates to maintain normal water surface elevation of 810 ft. Operators will man dam 24/7.	State Highway 92 bridge flooded, significant flooding of local roads and houses near river	National Weather Service, Downstream Dam Owner, Local Police, State Emergency Management Authority
>20,000	Operators will man dam 24/7. Leave all gates open. If water levels approach elevation 812 ft and are continuing to rise, operators will go to high ground and initiate Potential Failure Condition of EAP. If water levels approach elevation 814 ft (crest of embankment), operators will initiate Imminent Failure Condition of EAP.	State Highway 92 bridge flooded, significant flooding of local roads and houses near river upstream and downstream of the dam, possible dam failure	EAP Notification Flowchart

EAP Enhancement Initiative

Comment from NHA HPC

- Is D2SI asking licensees to take on additional responsibility for notifying the public in the event of an emergency?
  - Response
    - No. We are asking Licensees to review their operating procedures to ensure the project can safely pass flood flows and to make sure notifications go out to the emergency responders, National Weather Service and Corps of Engineers/Other Agencies as early as possible. Thus we are asking for Licensees to review their procedures ahead of time to ensure they have a well thought out plan prior to the flood event.

QUESTIONS?