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FERC DAM SAFETY PROGRAM

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FERC Presenter

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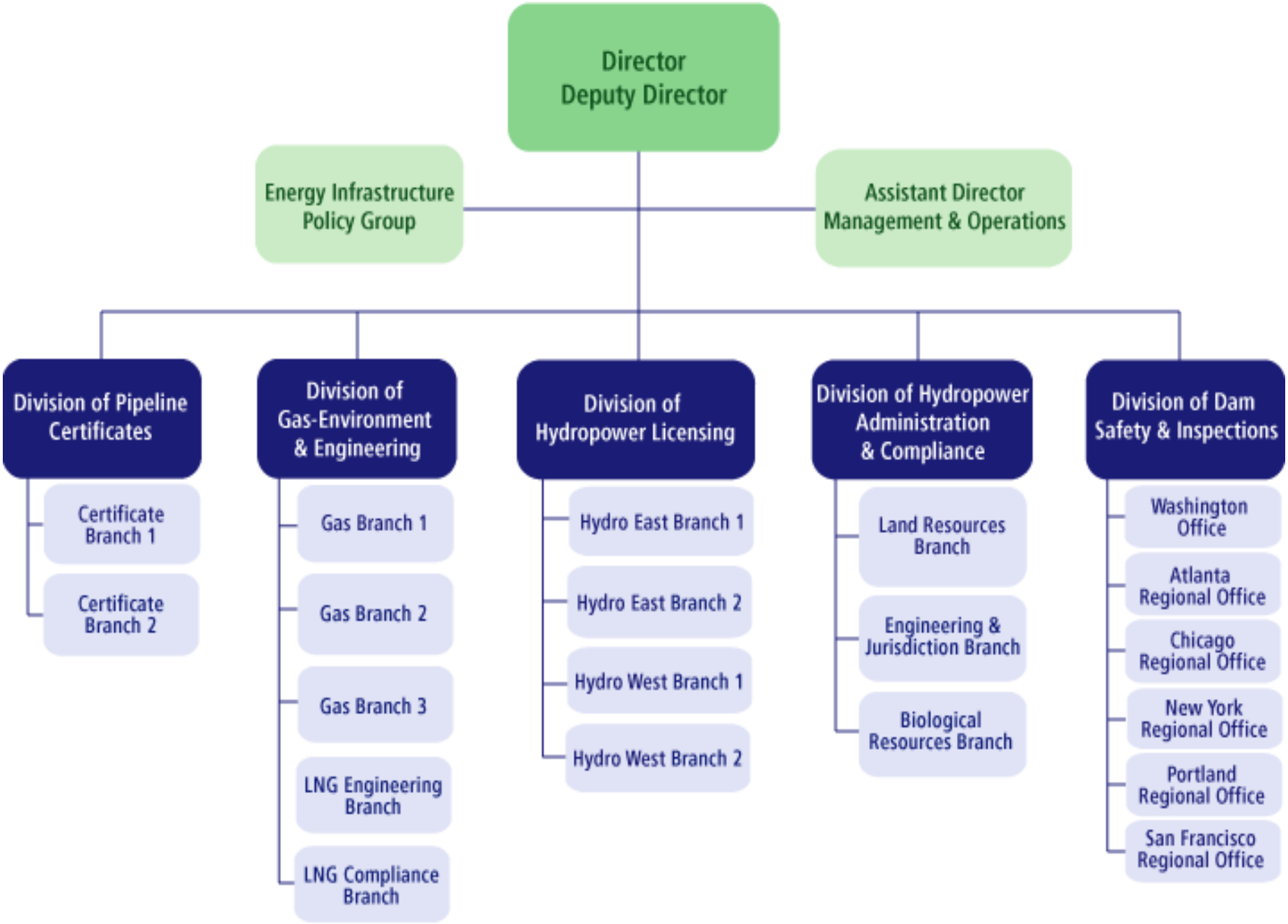
- Dam Safety
- State Dam Safety Coordination
- FERC Initiatives

Office of Energy Projects (OEP)



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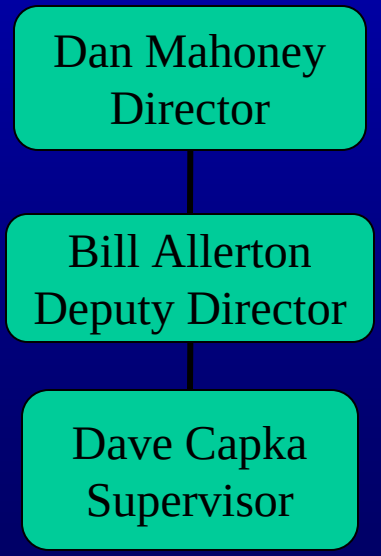
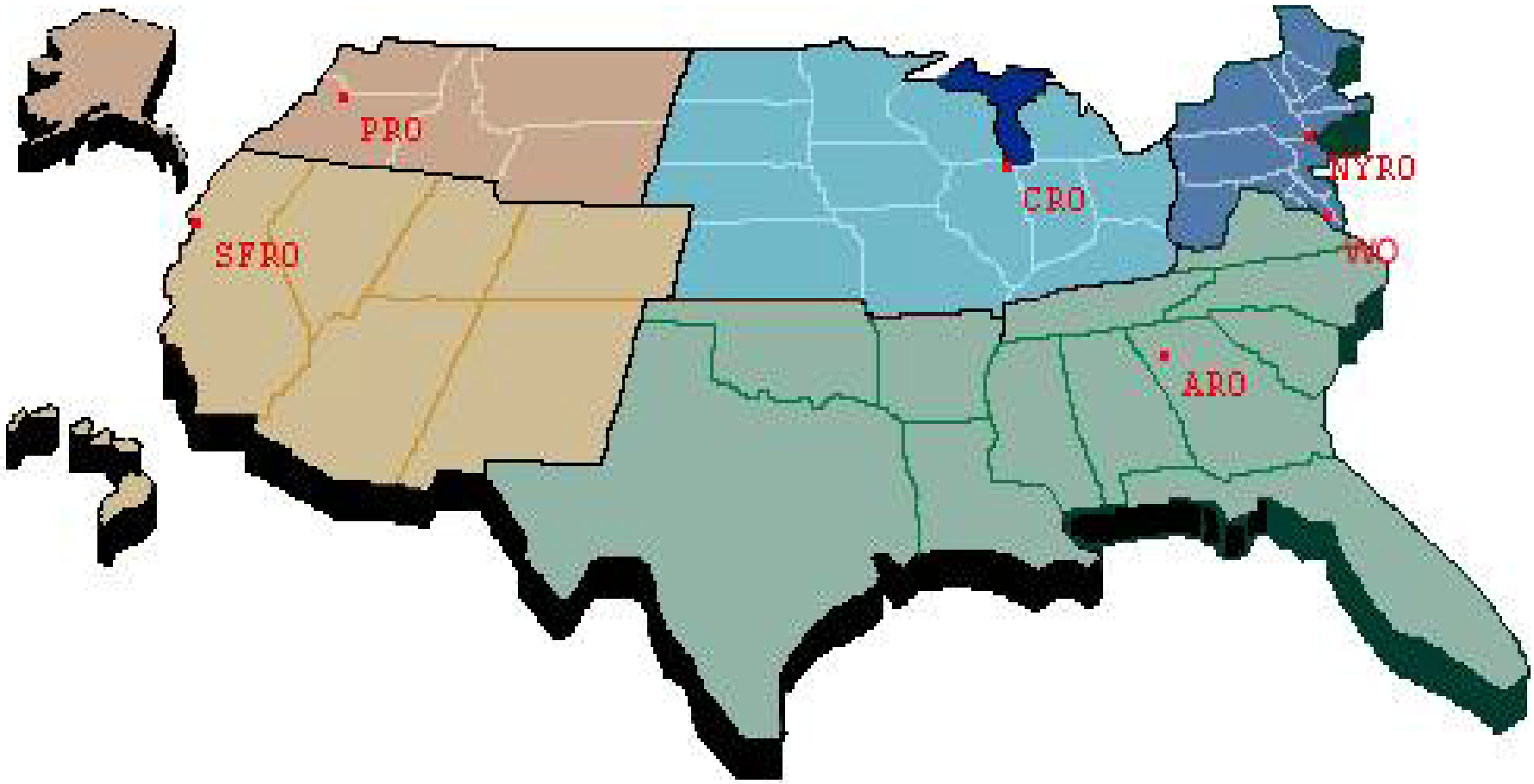
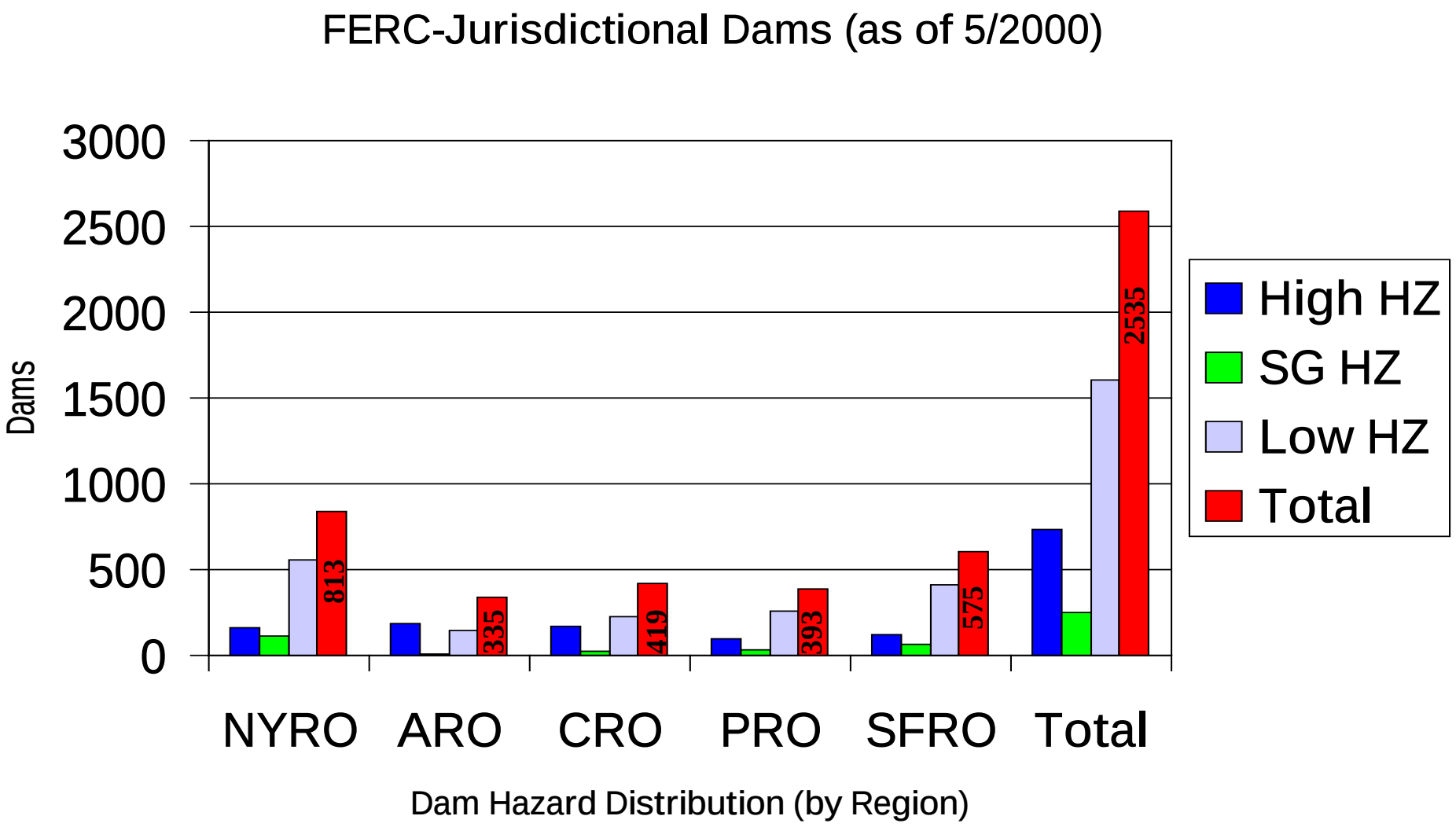
Washington Office
Division of Dam Safety and Inspections





FERC REGIONS

Dams Under FERC Jurisdiction



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Division of Dam Safety and Inspections
Atlanta Regional Office

Charles Wagner
Regional Engineer

Wayne King
Deputy Regional Engineer

Randal Pool
Supervisor
Dam Safety

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FERC Dam Safety Program

"Dam safety is a critical part of the Commission's hydropower program and receives top priority."

- Engineering Guidelines
- Dam Safety Engineering and Inspections and Surveillance
- Part 12 of the Commissions Regulations
- Security Program
- Public Safety

Update of Engineering Guidelines.

- Chapter 4 Embankment Dams(2010)
- Chapter 13 Evaluation of Seismic Hazards(2010)
- Chapter 12 Water Conveyance (Draft 2010)
- Chapter 14 Dam Safety Performance Monitoring

- Review of Engineering Analyses, Designs, Plans, and Specifications.
- Inspection during Construction.
- Post-Construction Dam Safety Inspections

  Annually for High and Significant Hazard Project

  Every Three Years for Low Hazard Projects
- Potential Failure Modes Analysis

Significant & Low Hazard PFMAs

- Significant Hazard Dams that do not Require Part 12D Inspections
- Low Hazard Potential Dams greater than 9 Feet High or that Impound more than 25 Acre-feet

Significant Hazard Dam PFMA

- Part of the FERC Dam Safety Inspection

- Dam Owners take the Lead and Follow the Guidance Provided in Chapter 14 of the FERC Engineering Guidelines

- Dam Owners Can Use their in-house Dam Safety Knowledge, Experience, And Expertise, or Retain a Consultant.

- The Facilitator should be a Civil Engineer with a Broad Background and Experience in Dam Safety.

- The FERC Engineer will Participate In The PFMA as Described In Chapter 14.

Low Hazard Potential Dam PFMAs

- Voluntary
- Part of the FERC Dam Safety Inspection
- Dam Owners Encouraged to take the Lead
- FERC Inspector may Serve as Facilitator if Requested by the Owner
- PFMA Report will be included in the Dam Safety Inspection Report

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FERC Dam Safety Engineering

Dam Safety Surveillance & Monitoring Plans

Chapter 14

- Design SMP to Address Potential Failure Modes
- Include Instrumentation Details Often Not Provided
- Emphasize Evaluation of Instrumentation

- Identifies the Necessary Instrumentation & Monitoring According to the PFMA and Part 12D

- Final Guidance is Posted on FERC Website

  www.ferc.gov/industries/hydropower/safety/guidelines.asp

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FERC Dam Safety Engineering

Risk Informed Decision Making

FERC Recognizes the Value that Risk Informed Decision Making Brings to Dam Safety

FERC is Exploring How Risk Assessment Techniques can be Best used in a Regulatory Environment

Working with USBR and USACE

Part 12 of the Commission's Regulations

- Subpart B – Reporting Safety Related Information
- Subpart C - Emergency Action Plans
- Subpart D – Independent Consultant Dam Safety Inspection
- Subpart E – Construction Quality Control Plans
- Subpart E – Instrumentation and Monitoring
- Subpart E – Warning and Safety devices
- Subpart E – Testing of Spillway gates

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SECURITY

New Requirements for the Security Program

- Vulnerability Assessment
  - Updated Annually and Reprinted Every Five Years (Group 1 Dams only)
  - Reprint Due 12/31/2010
  - Must Consider Various Threats from Insider to Terrorist

- Security Assessment
  - Updated Annually (Group 1 & 2 Dams)
  - Reprint Due 12/31/2010

- Security Plan
  - Must Be Site-Specific
  - Updated Annually (Group 1 & 2 Dams)
  - Reprint Due 12/31/2010
  - Must Define Internal Emergency Response (Group 1 & 2 Dams), & Recovery (Group 1)
  - Tested Every Five Years (Group 1 Dams)

Dam Assessment Matrix for Security and Vulnerability Risk (DAMSVR)

Revision of DAMSVR (Version 2)

DAMSVR Analysis Schedule

- New DAMSVR v2 Analysis for all Security Group 1 and 2 Dams for 2009

- **Every Five Years** Thereafter, or

- The First Year a New FERC Engineer is Assigned to the Project, **or**

- Following Changes To The Project Such As:

  - Physical Security Changes
  - Procedural Operations (Security, Personnel, Etc.)
  - Cyber/SCADA Modifications
  - Addition of New Project Features, Significant Project Modifications,
  - Changes to Downstream Conditions
  - Local/Regional/National Threat Level Changes that Could Affect the Project
  - Dam Safety Inspection Indicates New Info is Warranted (e.g., New Owner, New PFMA, etc.)

Dam Owners Can Request Copies of the Updated DAMSVR on the FERC Website (www.FERC.gov)

http://www.ferc.gov/industries/hydropower/safety/guidelines/security/damsvr-req.asp

Development of New Security Groups

- The 2002 Security Grouping is Still Current, and has Never Officially Changed
- The 2009 V2 DAMSVR Analyses Will Create the New Groups
- Licensees/Exemptees to be Notified in January 2010 of New Groups

Security Training

- ASDSO Annual Conference (Hollywood, FL) 9/30/09

- To Be Attached to the Annual EAP Training Course as Day 3 (Spring 2010)

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Public Safety

Emergency Action Plans

FERC EAP Initiatives

- Ensuring the Effectiveness of EAPs
- Identifying Time Sensitive Notification

Ensuring the Effectiveness of EAPs – Time Sensitive EAPs

- Time of Sunny Day Dam Breach Flood Wave Arrival Compared to Time for Local EMA to Notify and Evacuate
- Focus on Development Immediately Below the Dam
- Does the EAP Provide for the Timely Notification or Evacuation if Necessary

Reduce Response Times

- Dam Owner need to work with Local EMA to establish necessary Alert Measures

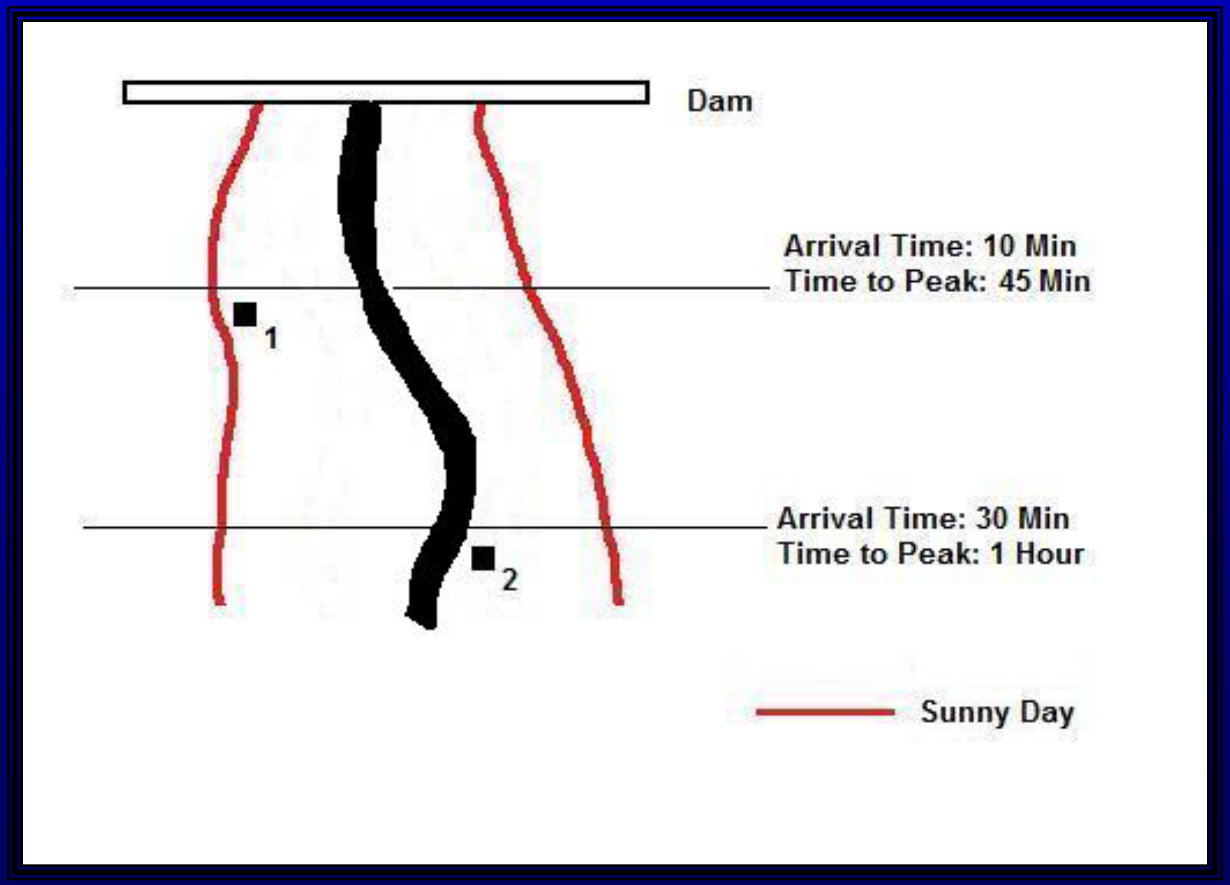
Time Required for Activating EAP

- Detection
- Verification (Onsite or Travel to Dam?)
- Contacting Local EMAs

Time for EMAs to Contact Homeowners

- Travel to Neighborhood?
- Telephone Alert?
- Time for evacuation?

Flood Wave Arrival Time?



- Procedure to Assess Time Sensitive EAPs

Public Safety EAP

Step	Time Parameter	Time (min)
A	Flood Wave Arrival Time	30
B	Detection Time	**10**
C	Verification Time	**20**
D	Notification Time	**5**
E	Licensee Response Time (B + C + D) = (10+20+5)	**35**
F	EMA Response Time	20
G	Excess Response Time (A – (E + F)) = 30-35-20	**-25**

Reduce Detection and Notification Time

- Adjust Trigger Points on Headwater/Tailwater Alarms to Activate Sooner.
- Install Internet-Accessible Cameras Pointed at Headwater and Tailwater Staff Gages.
- Install Sirens
- Use a Local Contact Who Can Verify Condition

Public Safety EAP

- Letters in September/October.
- Evaluate Times for Detection, Verification, and Notification.
  - Best Way is with a Test/Drill
- Discuss Response Times with EMAs
- Plan & Schedule to Reduce Detection, Verification, Notification, and Response Times.

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State Dam Safety Coordination

How is FERC Working With State Dam Safety Agencies?

State Coordination

- Embankment Seminar (Georgia and New York 2008)
- Seepage, Piping and PFMA Seminar (Florida 2009)
- State attendance at annual Inspections

NHA Questions

- Reevaluation of Post Tensioned Anchors
- Sayano-Shusenskaya Incident
- Definition of Navigability
- FERC Workshops

Questions?