



# Addressing the Risks of High Hazard Potential Dams (HHPD)

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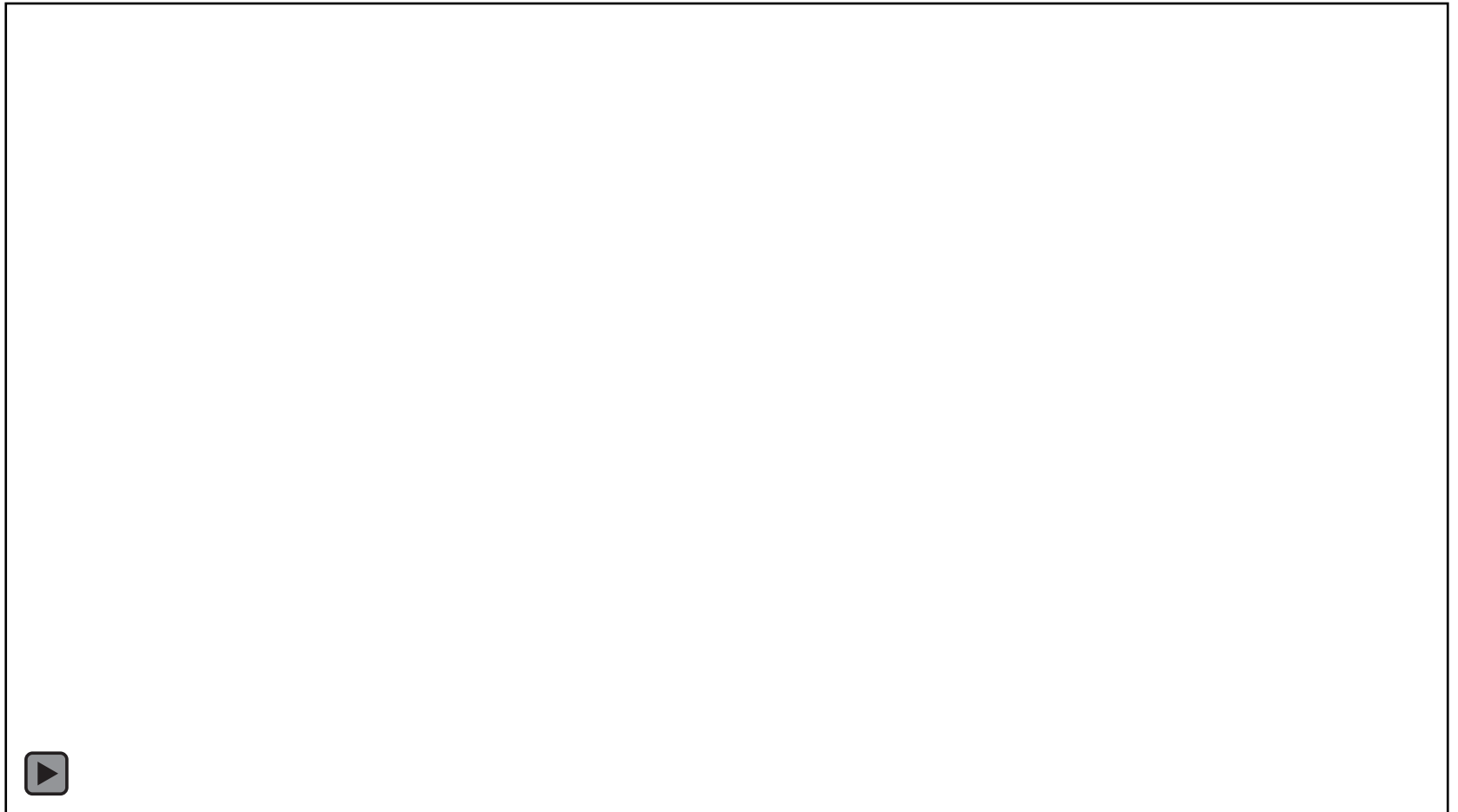


**FEMA**

July 15, 2020



# Addressing the Risks of HHPD Intro



Video Creator: Jack Heide, Acting Supervisory Community Planner, Mitigation Division, FEMA Region II



# NOTICE: WE WILL BE RECORDING THIS PRESENTATION

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- The purpose of the recording will be to use for future reference, share with individuals who were unable to attend the presentation, and potentially otherwise at FEMA's discretion.
- By attending this webinar you are consenting to these conditions.
- Please be advised you can choose to self-identify or not during the Q&A.



# Webinar Housekeeping

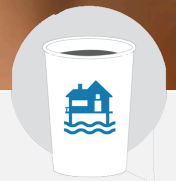
- Attendees **are currently muted** to reduce background noise.
  - Please do NOT put your phone on “hold”, it plays hold music for everyone else on this call. If you have to step away, please hang up and rejoin the call later.
- Use “Chat” panel **to all** to ask questions.
  - The chat will be open for 10 minutes following the presentation.
- **The PowerPoint slides will be emailed to participants afterwards.**
- **You may be eligible for Professional Credits:**
  - American Institute of Certified Planners (AICP) Certification Maintenance Credit.
  - Association of State Floodplain Managers (ASFPM) Certified Floodplain Manager (CFM) Continuing Education Credit. **Please contact [alyssa.geoghan@associates.fema.dhs.gov](mailto:alyssa.geoghan@associates.fema.dhs.gov) TODAY if you are looking for ASFPM credit.**
  - Participation certificates and agendas will be sent by request to all participants who attend the whole session and participate in the polls.





# Welcome and Overview

- Presentation
- Next Steps
  - Future Coffee Break webinars
  - Receiving professional credits
- Wrap-Up and Q&A



# Polling Question 1

**Does your jurisdiction have a dam?**

- A. My jurisdiction has one or more dams.**
- B. My jurisdiction does not have any dams.**
- C. I am unsure if my jurisdiction has any dams.**

**If so, how many (please write in the chat)?**



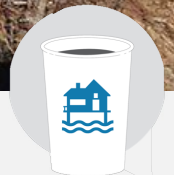


# Dams Can & Do Pose Big Problems in the USA



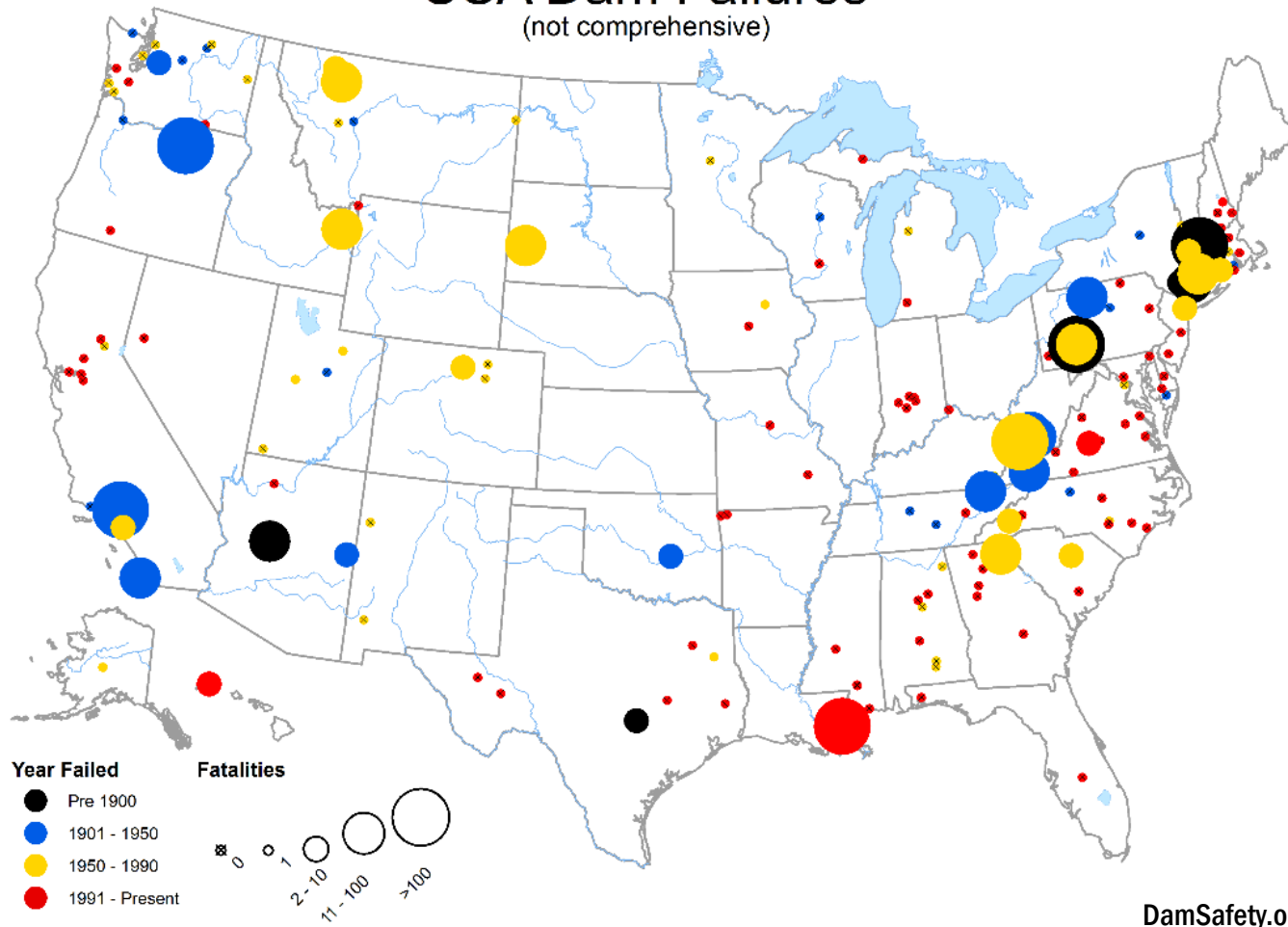
Oroville Dam, Oroville, CA, 2017

AP Photo



# Dams Can & Do Pose Big Problems in the USA

## USA Dam Failures (not comprehensive)



DamSafety.org





# Dams Have Been Built Since Ancient Times for a Variety of Purposes



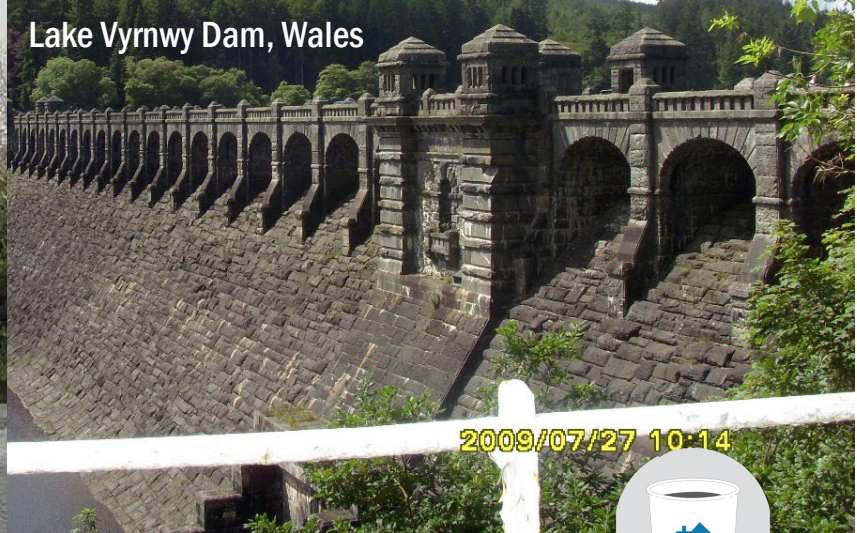
Cornalvo Dam, Spain



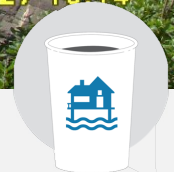
Great Dam of Marib, Yemen



Lake Homs Dam, Syria



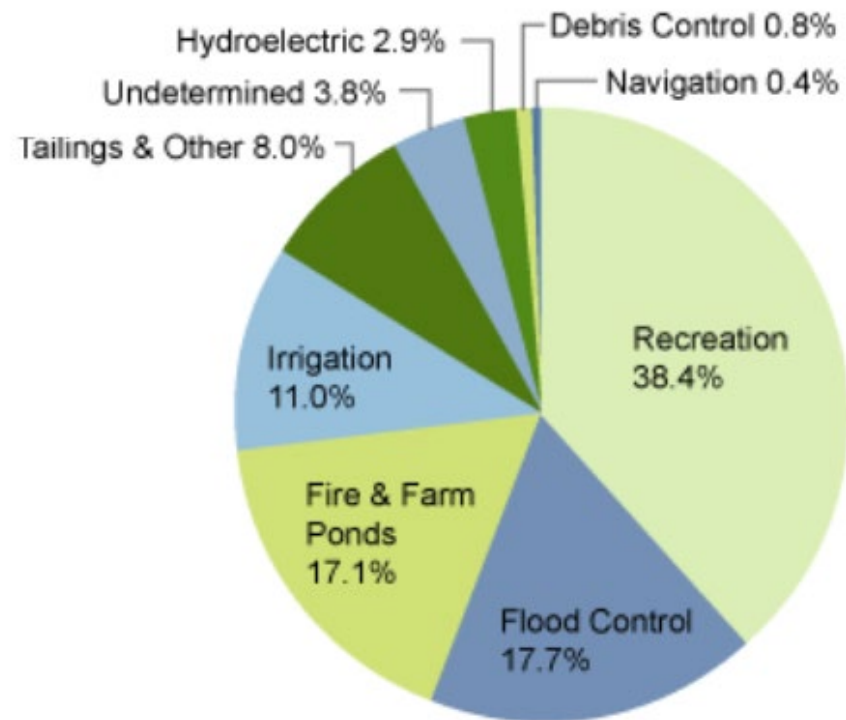
Lake Vyrnwy Dam, Wales



# This is Still True Today in the US

- Dams provide a range of economic, environmental, and social benefits, including:

- Recreation
- Flood control
- Water supply
- Hydroelectric power
- Waste management
- River navigation
- Wildlife habitat



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# Dams Have Purposes, Dams Pose Risks

Dams are man-made pieces of construction that are intended to hold back or impound water. This retention is a product of design, engineering, construction, and maintenance but the risk always exists that a dam will no longer be able to hold back the water.



# There are a Variety of Reasons Why a Dam May Fail

- **Dams can fail for one, or a combination of, the following reasons:**
  - **Overtopping caused by floods that exceed the capacity of the dam**
  - **Deliberate acts of sabotage**
  - **Structural failure of materials used in dam construction**
  - **Movement and/or failure of the foundation supporting the dam**
  - **Settlement and cracking of concrete or embankment dams**
  - **Piping and internal erosion of soil in embankment dams**
  - **Inadequate maintenance and upkeep**





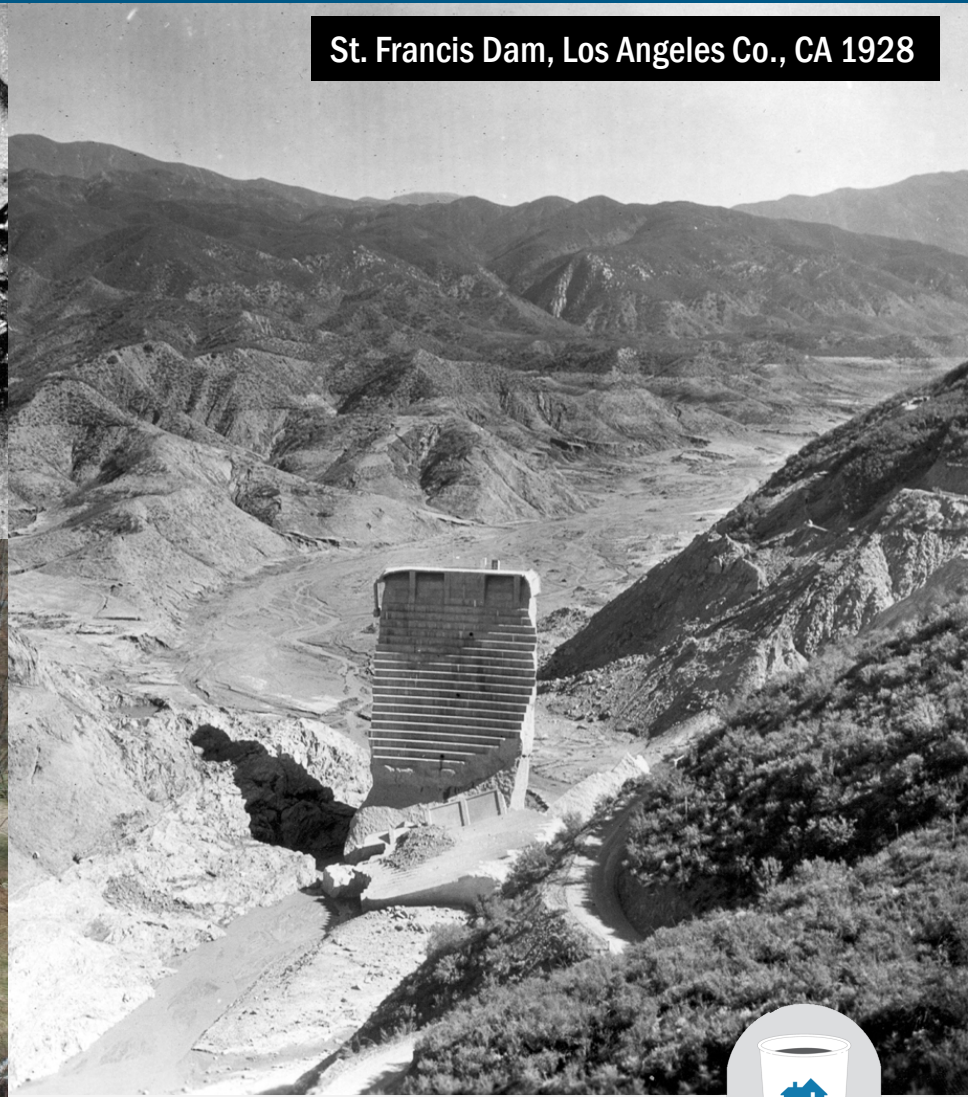
# We've Been Erecting Dams for a Long Time in the US, & Dams Have Also Been Failing for a Long Time



Johnstown, PA 1889



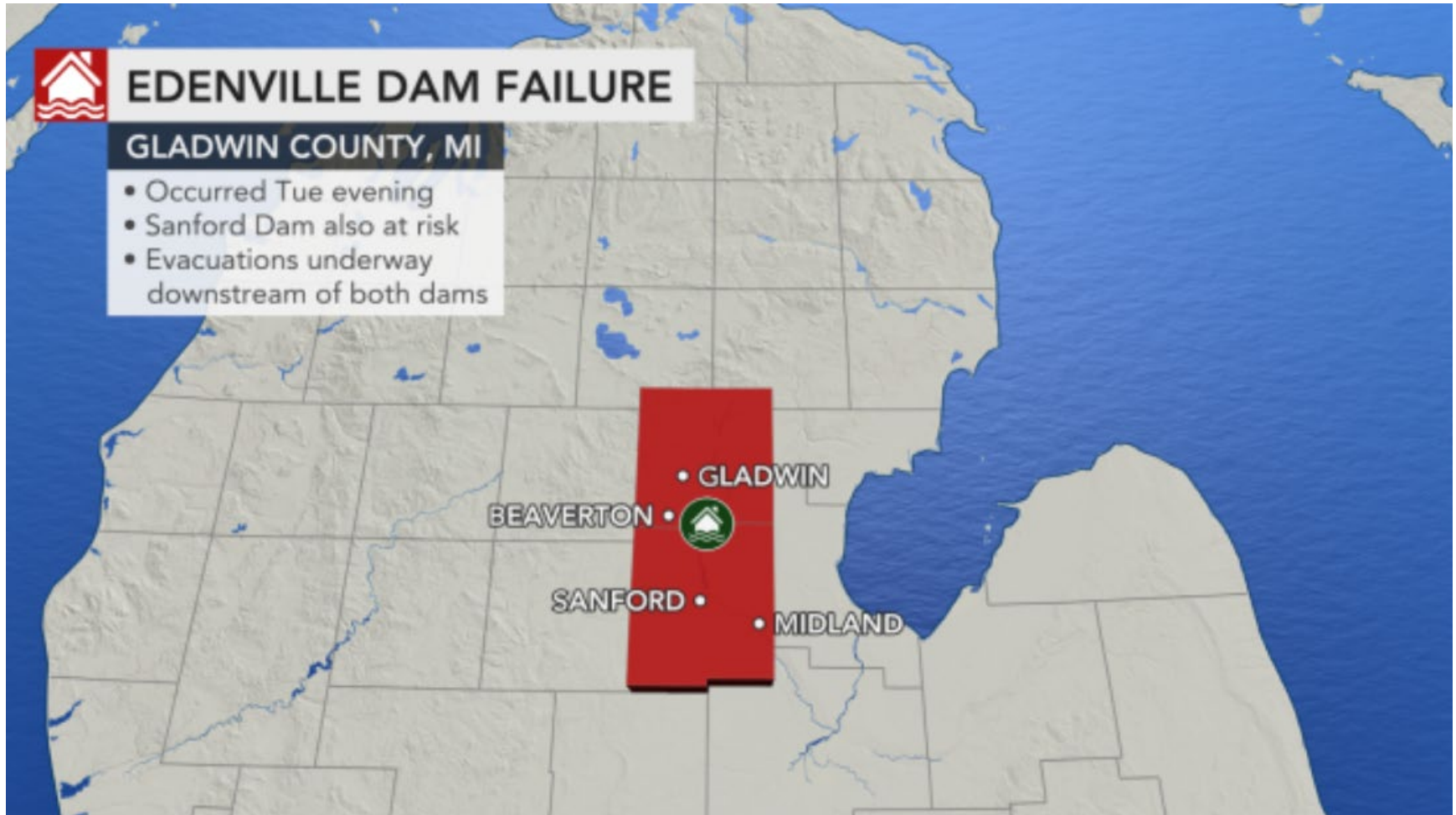
Austin, PA 1911



St. Francis Dam, Los Angeles Co., CA 1928



# This is Still True Today in the US

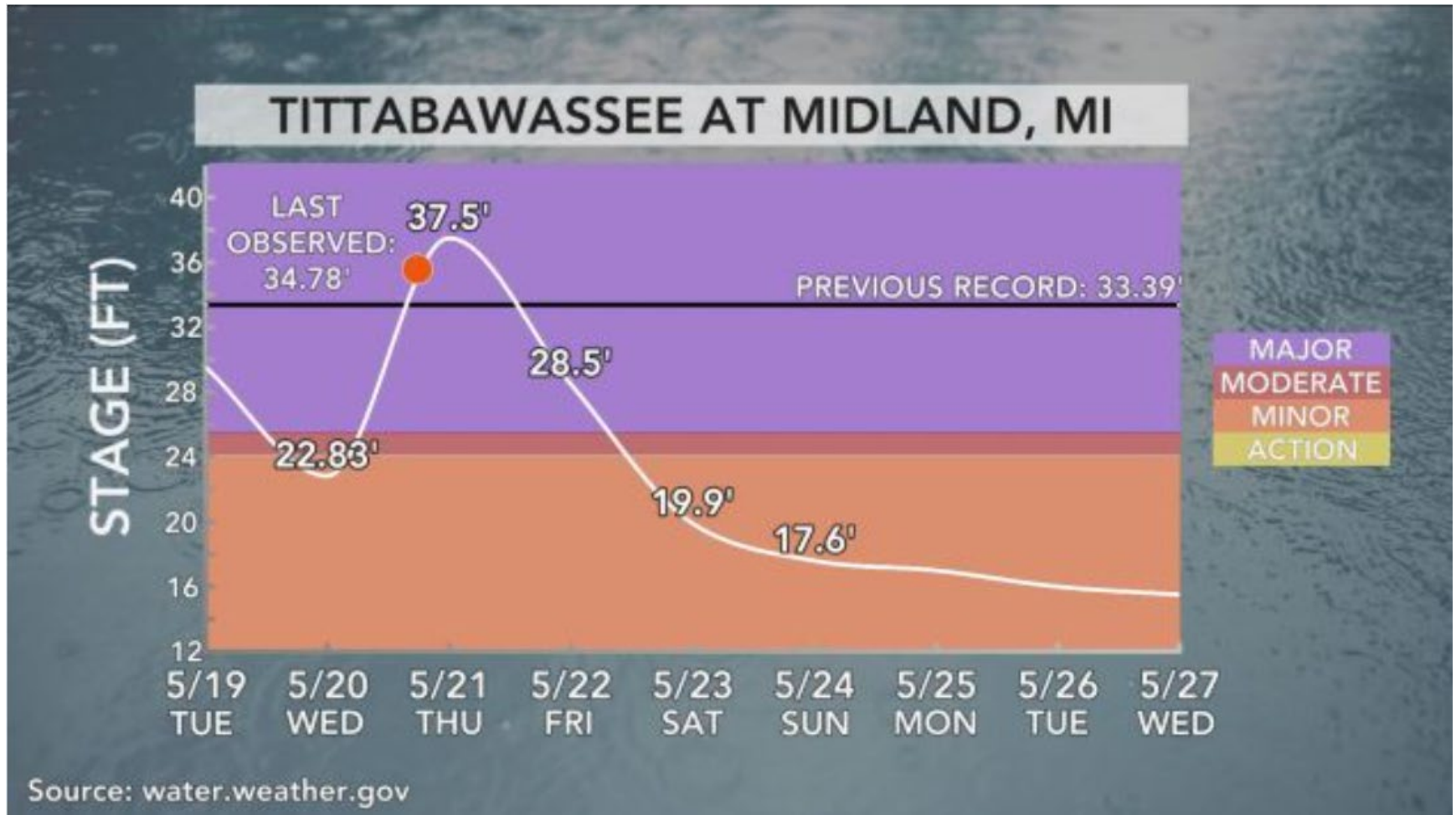


Accuweather





# This is Still True Today in the US



# This is Still True Today in the US



Michigan dam failures trigger historic and 'catastrophic' flooding

Gov. Gretchen Whitmer issued an emergency declaration, warning that some areas could be under 9 feet of water on Wednesday. Officials ordered 10,000 residents to evacuate.



# This is Still True Today in the US

The Federal Energy Regulatory Commission (FERC) revoked the Edenville Dam's license for power generation in 2018 after **numerous violations and longstanding concerns that the dam could not withstand a significant flood**. The commission notified the dam's previous owner as far back as 1999 that it **needed to increase capacity the dam's spillways**, according to Detroit News.

Concerns among residents and environmentalists are rising about the **potential of widespread toxic contamination after floodwaters mixed with containment ponds at the vast Dow chemical plant**.





# Got Dams?

**Table 4.2-5  
County Dam Hazard Data**

Name of Dam	River	Owner	Year Built	Hazard Potential
BELLEVUE LAKE DAM	STONEY CREEK	UNIITED WATER DELAWARE	1933	High
EDGEMOOR RESERVOIR DAM	TURKEY RUN-OS	UNIITED WATER DELAWARE	1908	High
PORTER RESERVOIR DAM	MATSON RUN-OS	CITY OF WILMINGTON	1909	High
EDGAR M. HOOPES DAM	RED CLAY CREEK-TR	CITY OF WILMINGTON	1931	High
SUNSET LAKE DAM	MUDDY RUN	NEWARK ANGLERS ASSOCIATION	1900	High
BECKS POND DAM	BELLTOWN RUN	DELDOT; DNREC DFW		High
SILVER LAKE DAM - MIDDLETOWN	DEEP CREEK	DELDOT	1945	High
WIGGINS MILL POND DAM	APPOQUINIMINK RIVER-TR	GEORGE SCHREPPLER	1965	High
CITY OF WILMINGTON SEWAGE LAGOON	DELAWARE RIVER-OS	CITY OF WILMINGTON		High
CITY OF WILMINGTON SLUDGE DISPOSAL AREA	DELAWARE RIVER-OS	CITY OF WILMINGTON		High



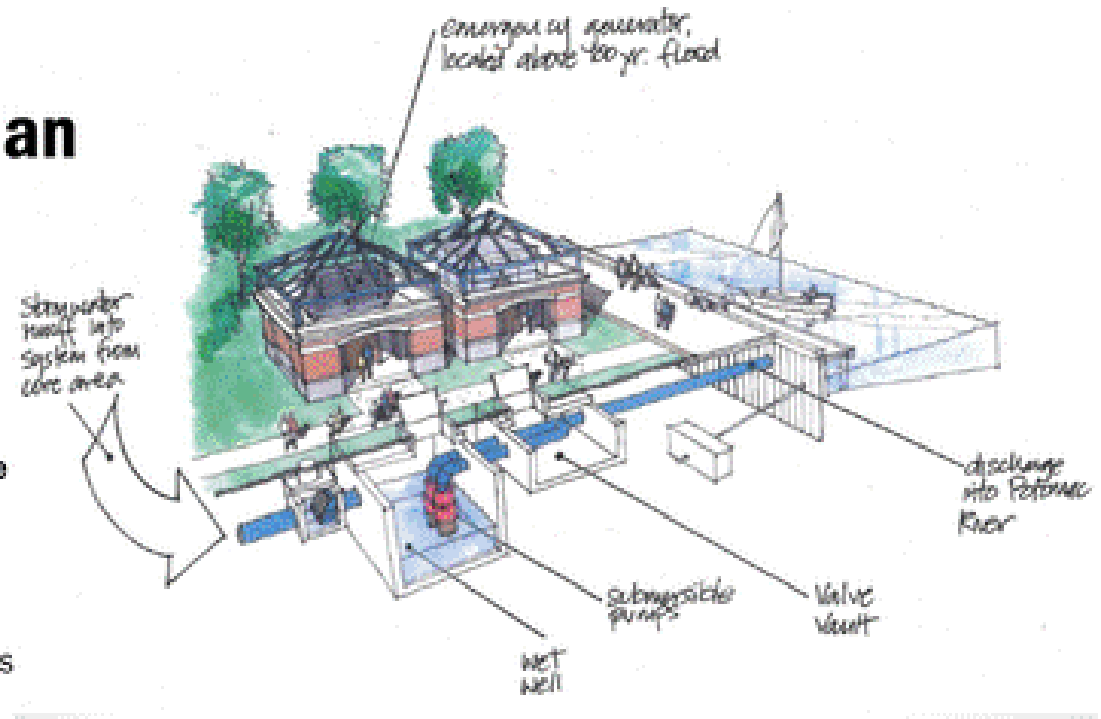
# Your Community's Hazard Mitigation Plan

## Completing your Hazard Mitigation Plan

Hazard mitigation is best accomplished when based on a comprehensive, long-term plan. Hazard mitigation plans allow communities to understand threats from natural hazards and develop strategies to reduce the impacts of disasters.

**Effective mitigation planning can break the cycle of disaster damage, reconstruction, and repeated damage. The four core steps in completing a hazard mitigation plan or plan update are to:**

1. Organize the planning process and resources
2. Assess risks and capabilities
3. Develop a mitigation strategy
4. Adopt and implement the plan





# Hazard Mitigation Plan Elements

Common elements of good mitigation plans include:

- **A community-driven, living document that allows for updates;**
- **A comprehensive risk assessment that provides the factual basis for activities in the strategy;**
- **A hazard vulnerability analysis that anticipates geographic risks and conditions;**
- **A hazard mitigation strategy that includes a description of mitigation goals;**
- **Incorporates periodic monitoring and evaluation mechanisms to allow for review of successes and failures or even just simple updates.**



# Dams = High, Significant, Low

Dams are typically ranked by hazard classification that is determined by the potential for infrastructure and property damages downstream if a dam failure were to occur. The three hazard classifications include high hazard (H), significant (S), and low (L) and are defined as follows:

- **High Hazard Dams.** Probable loss of life; major increases in existing flood levels at houses, buildings, major interstates and state roads with more than six lives in jeopardy.
- **Significant Hazard Dams.** Possible loss of life, significant increased flood risks to roads and buildings with no more than two houses or six lives in jeopardy.
- **Low Hazard Dams.** Loss of life is unlikely; minor increases to existing flood levels at road and buildings.

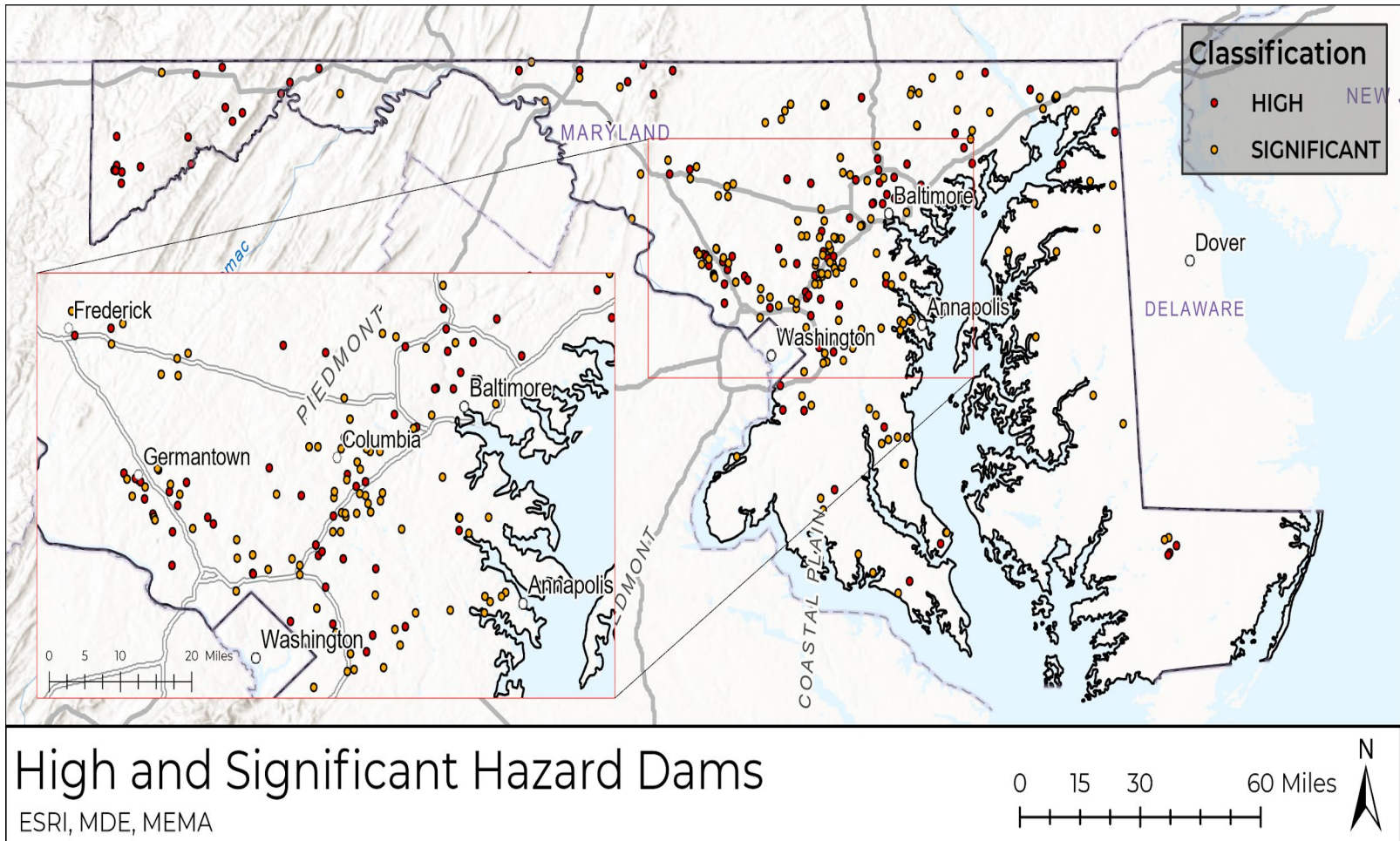


Indiana

The Herald Bulletin

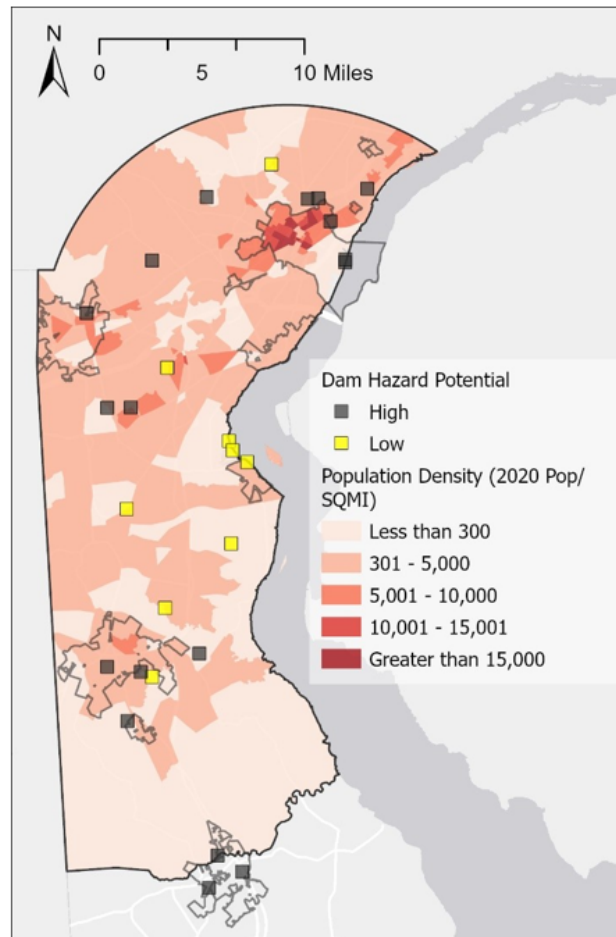


# High & Significant Dams Will Tend to be the Focus



# Mitigation Planning Process – Risk Assessment

Figure 4.3-26  
Location of Dams (With Hazard Ranking) in Relation to Population Density



New Castle County, Delaware

See USACE\_NID\_DE\_U.xls table for more information. Appendix of Supporting Information



# Mitigation Planning Process – Risk Assessment

## DAM INUNDATION AREA –DEEP CREEK DAM

### FRIENDSVILLE

STREET	RESIDENTIAL	COMMERCIAL
FIRST AVE	29	2
SECOND AVE	23	
THIRD AVE	1	
DAVE DIXON RD	6	
WATER ST	18	
CHURCH LANE	5	
ROSS AVE	9	
MAPLE ST	55	2
CHESTNUT ST	7	
OAK ST	12	
WALNUT ST	34	
PARK ST	9	
SAWMILL LANE	4	
CEMETARY RD	3	
MORRIS AVE	13	
OLD RIVER RD	7	
BEAR CREEK CT	8	
	243	4
<u>UNINCORPORATED</u>		
SANG RUN RD	10	
<b>GRAND TOTAL</b>	<b>253</b>	<b>4</b>

Source: Garrett County Department of Planning and Land Development  
Maryland Department of Assessments and Taxation





# Mitigation Planning Process – Hazard Ranking

Table 13: Hazard Mitigation Planning Committee Risk Analysis Ranking for Garrett County, 2018

Identified Hazard	Types of Events	Local Ranking
Drought	Drought	Medium-Low
Extreme Heat	Extreme Heat	Low
Riverine Flooding	Riverine Flooding; Flash	High
High Wind	High Wind	Medium High
Hurricane	Hurricane	Medium- Low
Thunderstorm	Thunderstorm; Lightning; Hail	Medium High
Tornado	Tornado	Medium
Winter Weather	Winter Weather; Winter Storm; Heavy Snow; Blizzard; and Extreme Cold	High
Soil Movement (Landslide)	Soil Movement; Landslide	Medium High
Wildfire	Wildfire	Medium
Fire/Explosion	Fire/Explosion	Medium
Dam Failure	Dam Failure	Medium
Epidemic (Opioid Crisis)	Epidemic; Opioid Crisis	Medium High
HazMat	HazMat	Medium
Cyber-Threat	Cyber-Threat	Medium High
Transportation - Fog	Transportation; Fog	Medium High

Source: 2018 Hazard Mitigation Planning Committee



# Mitigation Planning Process – Consideration of Dams



# Mitigation Plan Review Tool – Optional HHPDs

## OPTIONAL: HIGH HAZARD POTENTIAL DAM RISKS

HHPD1. Did Element A4 (planning process) describe the incorporation of existing plans, studies, reports, and technical information for high hazard potential dams?

HHPD2. Did Element B3 (risk assessment) address HHPDs?

HHPD3. Did Element C3 (mitigation goals) include mitigation goals to reduce long-term vulnerabilities from high hazard potential dams that pose an unacceptable risk to the public?

HHPD4. Did Element C4-C5 (mitigation actions) address HHPDs prioritize mitigation actions to reduce vulnerabilities from high hazard potential dams that pose an unacceptable risk to the public?

## REQUIRED REVISIONS





# Darlene Messina

Emergency Management Specialist

FEMA Region III



# Dams: What You Know and don't Know Matters



# Thousands Forced from Homes as River Dams Break

- Large scale hydrometeorological events have generated exceptionally high volumes of storm water runoff resulting in dam failures.
- Failures have generated significant impacts to communities and infrastructure, as well as causing environment damage.



# Dams: Challenges and Concerns

- Age and Dam Characteristics
- Ownership
- Calculating and Communicating Risk
- Emergency Action Plans (EAP)



# Dam Characteristics

## TYPES OF DAMS

### According to Use

- Energy generation
- Flood control
- Water storage
- Irrigation
- Recreation

### According to Design

- Embankment
- Concrete
- Gravity
- Buttress
- Arch

### According to Material

- Earth
- Rock
- Tailings from mining
- Timber
- Steel





# Emergency Action Plans for Dam Owners



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## Emergency Action Plans for Dam Owners

The Federal Emergency Management Agency (FEMA) is responsible for coordinating the Federal response to disasters. To improve the Nation's emergency preparedness and response capabilities, FEMA believes that formal guidelines are needed to help dam owners, in coordination with emergency management authorities, effectively develop and exercise Emergency Action Plans (EAPs) for dams. Much more detailed information can be found in FEMA 64, *Federal Guidelines for Emergency Action Planning for Dams*, online at [www.fema.gov/media-library/assets/documents/3357](http://www.fema.gov/media-library/assets/documents/3357).

Residents located in inundation zones downstream of dams risk injuries, loss of life, and damage to property

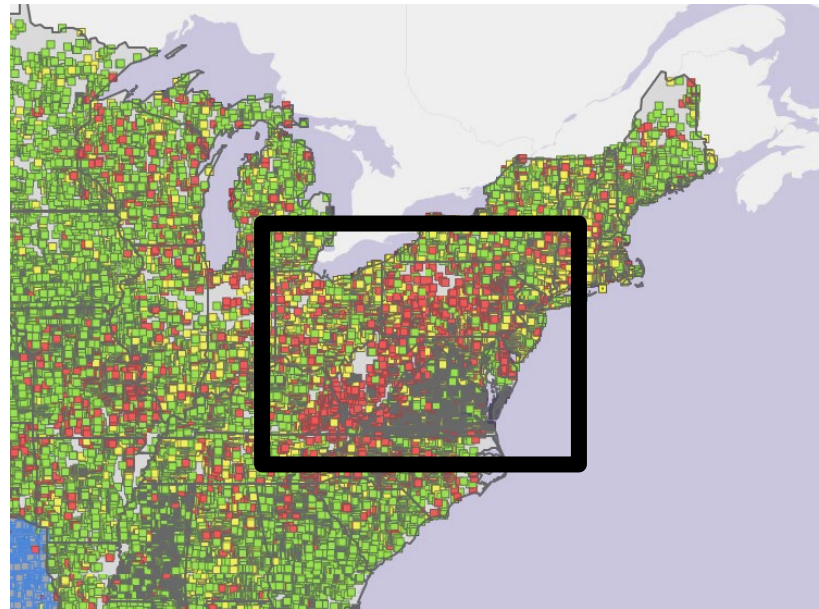
### Essentials for an EAP

- 1 Notification Flowcharts
- 2 Emergency Detection, Evaluation, and Classification
- 3 Responsibilities
- 4 Preparedness
- 5 Inundation Maps
- 6 Supporting Appendices



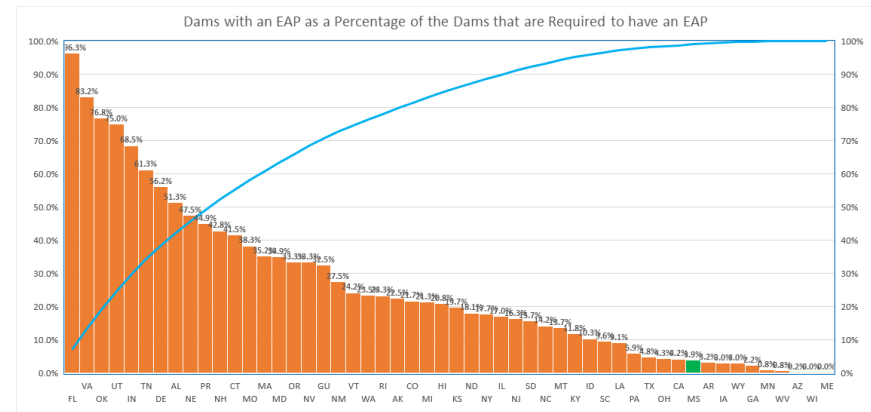
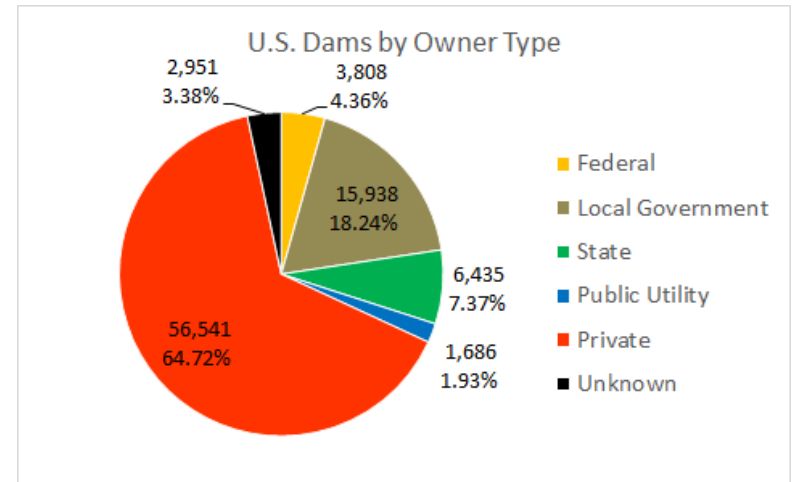
# Lets Talk about DAMS: Aging Infrastructure

- The average life expectancy of a dam is 50 years.
- In 2020, this means that 85 percent of dams in the US are over 50 and in need of repair.



# Whose Dam is it? Dam Ownership

- A large majority of dams (~65%) listed in the National Inventory of Dams (NID) are **privately owned**.
- Many private dam owners **do not fully understand** their personal liability in case of a failure.
- Many private dam owners **do not have the funds** to hire engineering companies to study their dams and prepare Emergency Action Plans (EAPs).
- The **safety of dams, however, is under the responsibility of the states.**





# Region III Dams

## Summary for PA

 1514 Total Dams	 72 Average Age of Dam	 94 % of High Hazard Potential Dams with an Emergency Action Plan	 90 % of Dams Regulated by State Agency	 9 % of Dams Regulated by Federal Agency	 3 % of dams with hydropower
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## Summary for MD

 400 Total Dams	 51 Average Age of Dam	 95 % of High Hazard Potential Dams with an Emergency Action Plan	 98 % of Dams Regulated by State Agency	 5 % of Dams Regulated by Federal Agency	 18 % of dams with hydropower
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## Summary for DE

 83 Total Dams	 79 Average Age of Dam	 65 % of High Hazard Potential Dams with an Emergency Action Plan	 57 % of Dams Regulated by State Agency	 0 % of Dams Regulated by Federal Agency	 0 % of dams with hydropower
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## Summary for VA

 2790 Total Dams	 56 Average Age of Dam	 91 % of High Hazard Potential Dams with an Emergency Action Plan	 72 % of Dams Regulated by State Agency	 4 % of Dams Regulated by Federal Agency	 30 % of dams with hydropower
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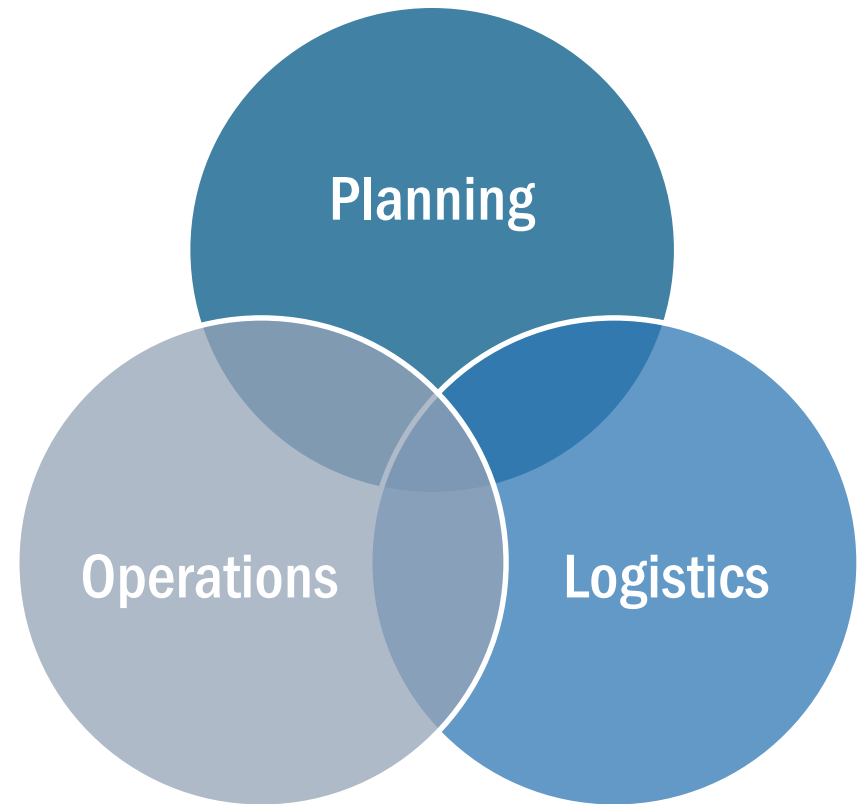
## Summary for WV

 586 Total Dams	 52 Average Age of Dam	 75 % of High Hazard Potential Dams with an Emergency Action Plan	 78 % of Dams Regulated by State Agency	 16 % of Dams Regulated by Federal Agency	 7 % of dams with hydropower
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# Know the Risk, Reduce Risk, Mitigate Risk, and Prepare for Risk

- Update regularly: categorization of risk dam
- Improve technical capability in modeling a dam breach
- Identify highest risk and characterize potential dam safety actions in advance of adverse conditions
- Emergency Operations Planning: Dam Incident Planning Guide  
Dam Safety – Nov 2019



# Risk Reduction and Preparedness

- **Facilitation of dam emergency response conversations with Dam Safety Stakeholders ( local, county, state, federal)**
- **Tabletop exercises**
- **Establish and validate processes for sharing critical information with key stakeholders and partners during an emergency**
- **Build upon technical capability – best practice sharing: DSS-WISE training offering – (postponed)**



# Risk: Data Elements to Determine Level of Risk





# Dam Failures

To **prepare** for emergencies or to **respond** efficiently to emergencies, dam-safety professionals look for answers to the following questions:

1. How fast and how far the flood will propagate?
2. What would be the flooding depth, velocity, and specific discharge (depth $\times$ velocity) ?
3. What hazard levels should one expect for humans, structures and infrastructures?
4. What would be consequences for humans?
5. What would be the level of damage to properties, infrastructures and the environment downstream?

**DSS-WISE Lite** and **DSS-WISE HCOM** tools are assisting dam-safety professionals to answer these questions **quickly** and **efficiently**.



# DSS-WISE: Modelling Dam Flood Risk

What Type of Analyses DSS-WISE™ HCOM Generates?

DSS-WISE HCOM generates four types of analysis:

1. Flood Hazard Mapping for humans
  - a. Flood hazard mapping for population caught outdoors
  - b. Flood hazard mapping for population caught indoors
2. Mapping of Potentially Lethal Flood Zones (PLFZ) for humans
  - a. PLFZ for children
  - b. PLFZ for adults
3. Analysis of the evolution of inundation areas by hazard classes
4. Analysis of Population at Risk (PAR) numbers by interfacing results from DSS-WISE Lite with population data
  - a. Nighttime PAR analysis using LandScan USA nighttime population
  - b. Daytime PAR analysis using LandScan USA daytime population
  - c. PAR analysis using 2010 census block data



# Preparedness

- What you know and what the public knows matters.
- Dam Safety Education

The screenshot shows the DCR website with the following elements:

- Header: "An Agency of the Commonwealth of Virginia" and "Virginia.gov Find an Agency".
- Logo: "DCR Virginia Department of Conservation and Recreation CONSERVE. PROTECT. ENJOY." with a search bar and social media icons.
- Navigation: "About DCR", "State Parks", "Natural Heritage", "Soil and Water Conservation", "Recreation Planning", "Dam Safety and Floodplains", "Land Conservation".
- Left Sidebar: "Dam Safety and Floodplains" menu with items like "Dam Safety Documents", "Dam Safety Contacts", "Dam Classification", "Dam Safety Regulations (PDF)", "Dam Safety Education", "Dams 101", "Dam Failures", "Dam Safety Awareness Day", "Hurricane Season", "Dam Safety Inventory System (DSIS)", "Probable Maximum Precipitation Study and PMP Evaluation Tool", "Probable Maximum Precipitation Study Background", "Temporal Distribution Analysis and Calculations Worksheet", "Vegetation, Erosion".
- Main Content: "Home » Dam Safety And Floodplains » Dam Safety Education - Dam Failures".  

### Dam Safety Education - Dam Failures

Dams can fail in numerous ways. Some common issues that could lead to failures are presented in the illustration and table below. Any failure or potential emergency event requires the activation of the dam's Emergency Action Plan.

Source: FEMA P-911, 2016b



# Wendy C. Howard Cooper

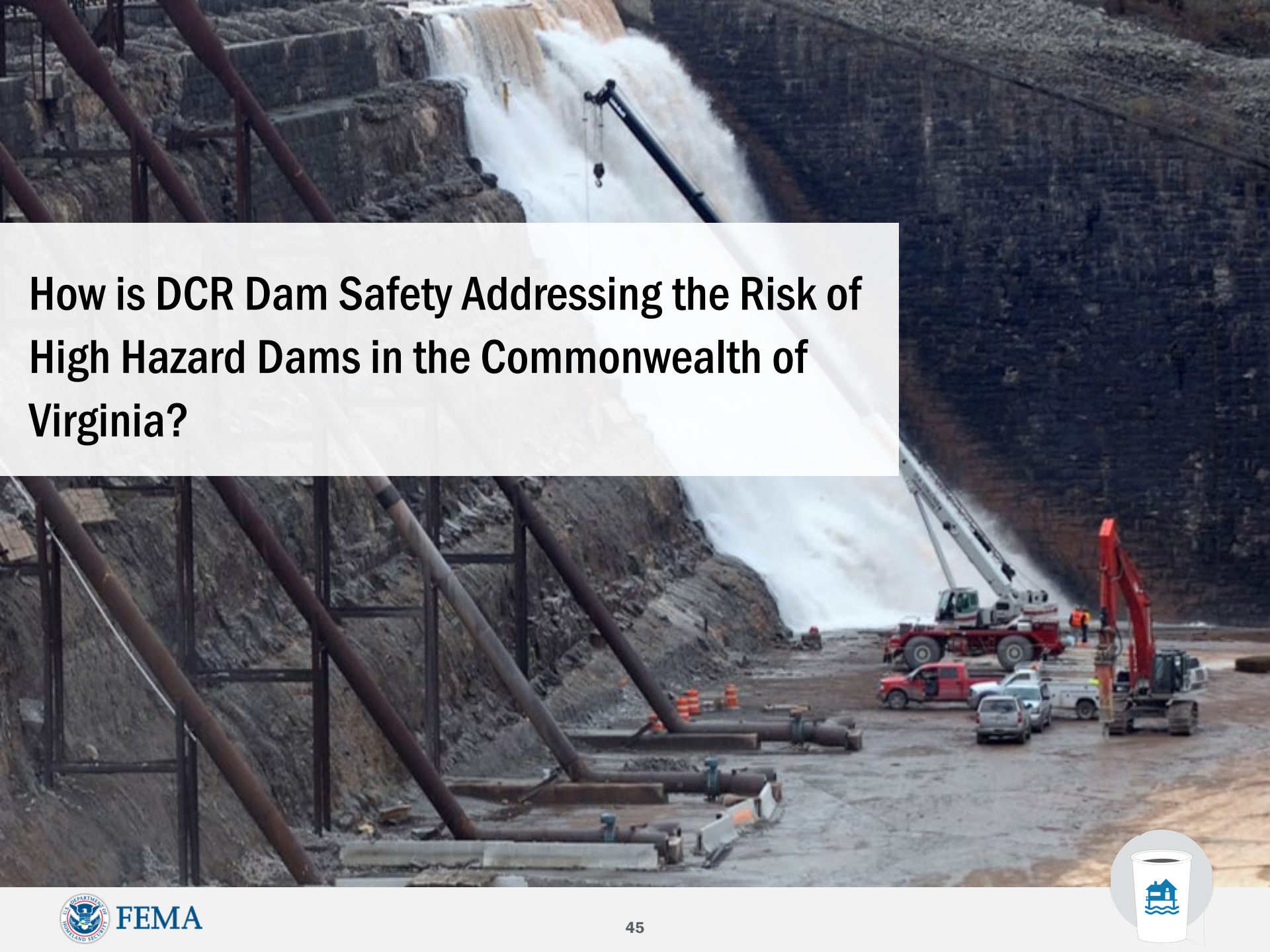
Director

Division of Dam Safety and Floodplain Management

Virginia Department of Conservation and Recreation







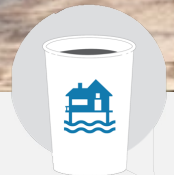
# How is DCR Dam Safety Addressing the Risk of High Hazard Dams in the Commonwealth of Virginia?





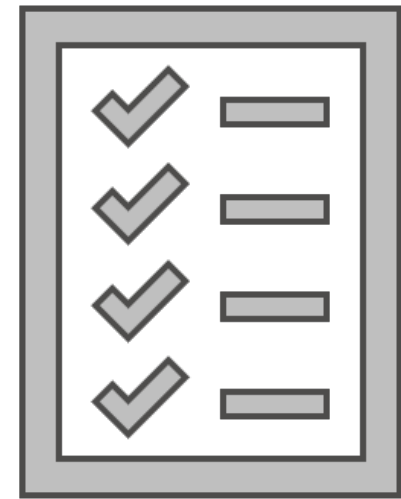
# New Developments and Initiatives

- **Regulatory Action**
- **Dam Safety, Flood Prevention and Protection Assistance Grants**
- **Unknown Dam Initiative**
- **Planning Assistance to States**
- **EAP Pilot**



# Regulatory Action - §55.1-703 of the Code of Virginia

- An Act to amend and reenact § [55.1-703](#) of the Code of Virginia, relating to Real Estate Board; required residential property disclosures; dams.
- The owner makes no representations with respect to whether the property is within a dam break inundation zone. Such disclosure statement shall advise purchasers to exercise whatever due diligence they deem necessary with respect to whether the property resides within a dam break inundation zone, including a review of any map adopted by the locality depicting dam break inundation zones.



# Regulatory Action - §55.1-703 of the Code of Virginia

- **The owner makes no representation with respect to the condition or regulatory status of any impounding structure or dam on the property or under the ownership of the common interest community that the owner of the property is required to join, and purchasers are advised to exercise whatever due diligence a particular purchaser deems necessary to determine the condition, regulatory status, cost of required maintenance and operation, or other relevant information pertaining to the impounding structure or dam, including contacting the Department of Conservation and Recreation or a licensed professional engineer.**





# Regulatory Action - Why This Matters

- **55% of High Hazard Dams in the Commonwealth of Virginia are not in full compliance with Impounding Structure Regulations**
- **30% of High Hazard Dams are privately owned**
- **Buying a home or property is a significant investment**
- **Often buyers are unaware of dam owner responsibilities or that their home is in a dam break inundation zone at the time of purchase.**
- **Buying a property with a noncompliant dam could cause unexpected catastrophic harm due to flooding and loss of life.**
- **The disclosure will at least give some notification to purchasers to do their due diligence related to impounding structures.**
- **Some buyers are walking away because of non-compliant dams**



# Dam Safety, Flood Prevention and Protection Assistance Fund

- DCR is targeting funding to high hazard dam projects to meet the performance metrics for the National Dam Safety Program
- Since June 30, 2019 DCR has improved these metrics as follows

High Hazard Dams with	3/31/2019	3/31/2020
Safety Inspections	0.6471%	0.8454%
Emergency Action Plans	0.5273%	0.5604%
Conditional Assessments	0.7253%	0.8765%



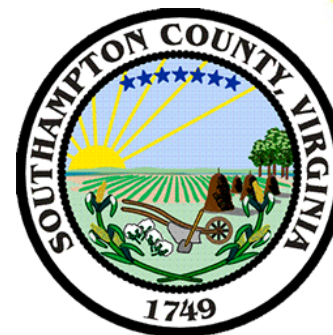
# New Initiatives – Unknown Dams Project

- **Funded by the FEMA National Dam Safety Grant**
- **One wage engineering tech under the supervision of a Dam Safety Regional Engineer**
  - **824 dams with no known regulatory status**
  - **Size of structure used to prioritize assessment**
- **Have evaluated 202 dams using GIS/LiDAR methods and as of March 31, 2020 have identified the following:**
  - **167 Dams of Regulatory Size**
  - **21 Not Regulated – Size Exempt**
  - **14 Department of Mines, Minerals and Energy**
- **Dam owners will be notified and provided steps to come into compliance with Dam Safety Impounding Structure Regulations**



# New Initiatives – Planning Assistance to States

- In Coordination with Norfolk District of the US Army Corps of Engineers
- Community-wide compliance effort in Southampton County and Franklin City
- Approved by both local units of government
- Fifteen dams within these localities – all operating outside of regulatory requirements
- Preliminary assessments for regulatory status
  - 13 deemed of regulatory size; 2 size exempt
- No cost to Dam Owners

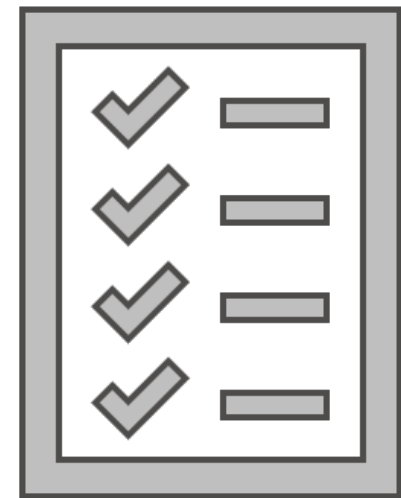




# New Initiatives – Planning Assistance to States

## Next Steps

- Engineering Inspections
- Dam Break Inundation Studies
- Emergency Action Plans
- Flood Studies as Necessary to meet new Risk Map requirements
- Next steps for full compliance for Dam Owners
  - Plans and specifications for repair
  - Conditional or Regular Operation and Maintenance Certificates or Agricultural Exemption Requests
- Next steps for Locality
  - Floodplain Management Plans and HMP updates to include all dam risks



# New Initiatives – Planning Assistance to States Benefits

- **Two communities moving toward full compliance with Dam Safety Impounding Structure Regulations**
- **In addition to CRS communities receiving credit for the State Dam Safety Program, there is an opportunity to receive credit for the Local Dam Safety Program as well should these communities join CRS.**
- **May open up the communities to eligibility for additional funding to assist with dam repairs.**
- **Whole community approach to resilience with integration of flood risks in hazard mitigation and floodplain management planning.**



# New Initiatives – Planning Assistance To States Stakeholder Engagement

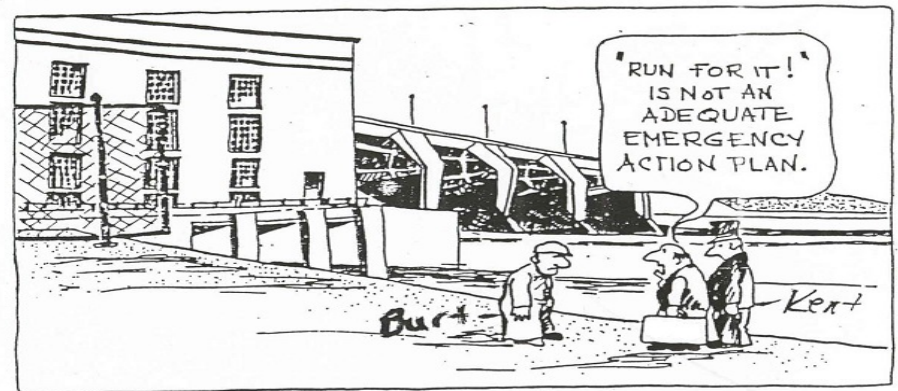
- More than 50 percent of all dams in the Commonwealth are privately owned
- Dam repairs are costly and is the primary contributing factor to non-compliance
- Local buy-in and cooperation to manage the inventory in their communities is imperative to make dams safer and increase resilience across the Commonwealth
- The PAS model could be replicated across the state with additional PAS, High Hazard Potential Dam Grant, BRIC, and other hazard mitigation funding. Second PAS pilot in development stages
- Federal, state and local partners are required



# New Initiatives – EAP Pilot

## Dam Safety Impounding Structure Regulations – EAP/EPP

- 4VAC50-20-175. Emergency Action Plan (EAP) for High and Significant Hazard Potential Impounding Structures.
- 4VAC50-20-177. Emergency Preparedness Plan for Low Hazard Impounding Structures.
- Approved by Dam Safety program every 6 years and requires
  - Annual Drill
  - Table Top Exercise – Conducted at least once every 6 years





# New Initiatives – EAP Pilot

- 4VAC50-20-175, A. In order to protect life during potential emergency conditions at an impounding structure, and to ensure effective, timely action is taken should an impounding structure emergency occur, an EAP shall be required for each High and Significant Hazard Potential impounding structure. The EAP shall be coordinated with the Department of Emergency Management in accordance with § 44-146.18 of the Code of Virginia. The EAP required by these regulations shall be incorporated into local and inter-jurisdictional emergency plans pursuant to § 44-146.19 of the Code of Virginia.



# New Initiatives – EAP Pilot

- Training provided to Northern Virginia Emergency Managers in May 2019
- Training provide to Virginia Emergency Support Team August 2019
- Community-wide EAP for PAS projects
- Discussion with Northern Neck PDC about the being a pilot site for EAP development, trainings, drills
- Promote community preparedness by requiring recipients to develop emergency planning and floodplain planning strategies on community wide level to assess risks and proactively mitigate those risks



# Polling Question 2

Have you or your local government partners... (please select all that apply):

- A. Contacted dam owners
- B. Participated in a dam-related project or planning effort
- C. Coordinated with your state's Dam Safety Agency
- D. Compiled or evaluated dam-related data to advance a project
- E. Reviewed or evaluated a plan that incorporates information on dam risk



# Joshua Norris

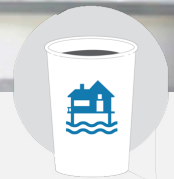
Hazard Mitigation Planner (MD FIT)

FEMA Region III



# Presentation Topics

- **HHPD Overview**
- **General Grant Requirements**
- **HHPD Mitigation Planning Requirements**
- **HHPD Mitigation Planning Tips**





# Overview

## Authorization:

- The Water Infrastructure Improvements for the Nation Act or the “WIIN Act”
- Created under FEMA’s National Dam Safety Program

## Purpose:

- For the “**rehabilitation of High Hazard Potential Dams**, provides technical, planning, design, and construction assistance in the form of grants for the rehabilitation of eligible high hazard dams”

## Key Dates and Timelines:

- Period of Performance: 36 months
- Application Deadline: 6/26/2020, by 5:00 pm in ND Grants
- Funding Selection: No later than 9/1/2020
- Award: No later than 9/30/2020



# General Grant Requirements (Non-Exhaustive)

**An eligible HHPD is a non-federal dam that...**

- **Is located in a state with a state dam safety program**
- **Is classified as “high hazard potential” by the state dam safety agency in the state in which the dam is located;**
- **Has an emergency action plan (EAP) approved by the state dam safety agency**
- **The state in which the dam is located determines:**
  - **That it fails to meet minimum dam safety standards of the state.**
  - **That it poses an unacceptable risk to the public.**
- **Exclusion: Eligible HHPD does not include**
  - **A licensed hydroelectric dam; or**
  - **A dam built under the authority of the Secretary of Agriculture**



# Eligible Activities

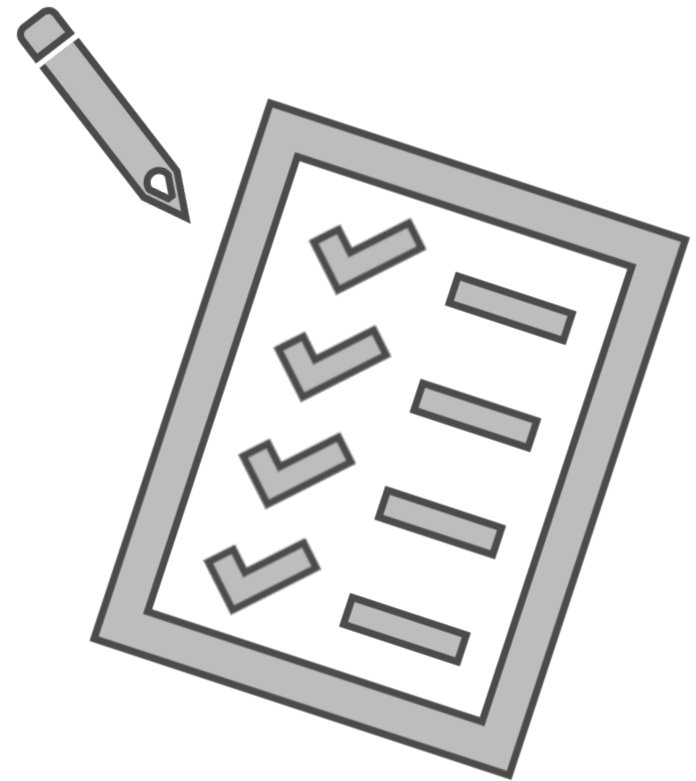
Category	Activity
Administrative	Administrative actions associated with grants management
Preparedness Planning	Development of evacuation plans, plans for flood fighting, or community response plans to include in the floodplain management plan Coordination of EAP and EOPs for different release conditions
Planning	Activities and studies that determine risks associated with eligible dams Environmental studies for NEPA compliance Development of floodplain management plans (including evacuation plans, plans for flood fighting, or community response plans, and coordination of EAP and EOPs for different release conditions as part of the floodplain management plan) Development of operation and maintenance plans
Preliminary Engineering	Dam risk and consequence assessments Feasibility studies Preliminary engineering studies Alternatives analysis Mapping, engineering survey, and inundation modeling
Engineering Design	Engineering design Development of specifications
Construction projects	Repair or rehabilitation of the dam Dam removal Construction monitoring Installation of early warning systems associated with the eligible dam project
Other Nonstructural Activities	Removing/relocating the downstream hazard
Outreach and Risk Communication	Public education and awareness of flood risks associated with the eligible dam project



# General Grant Requirements (Non-Exhaustive)

## Eligible Applicants:

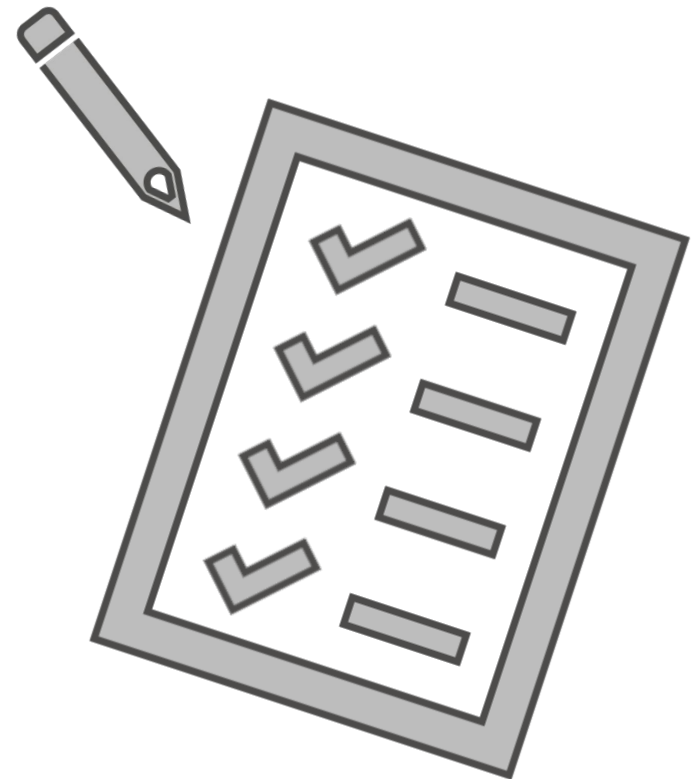
- Each state must designate 1 State Administrative Agency (SAA) to serve as the applicant.
- The SAA must submit a list of all eligible high hazard potential dams in their state with the applicant, and provide an assurance statement detailed further in the FY20 HHPD NOFO.
- A state must have in place by the obligation of funds a FEMA-approved state mitigation plan that includes all dam risks.



# General Grant Requirements (Non-Exhaustive)

## Eligible Subapplicants:

- Non-federal governmental organizations other than the designated applicant) and nonprofit organizations.
- Receives approval for all activities from the state dam safety program.
- Commit to provide operation and maintenance of the project for 50 years following dam rehabilitation.

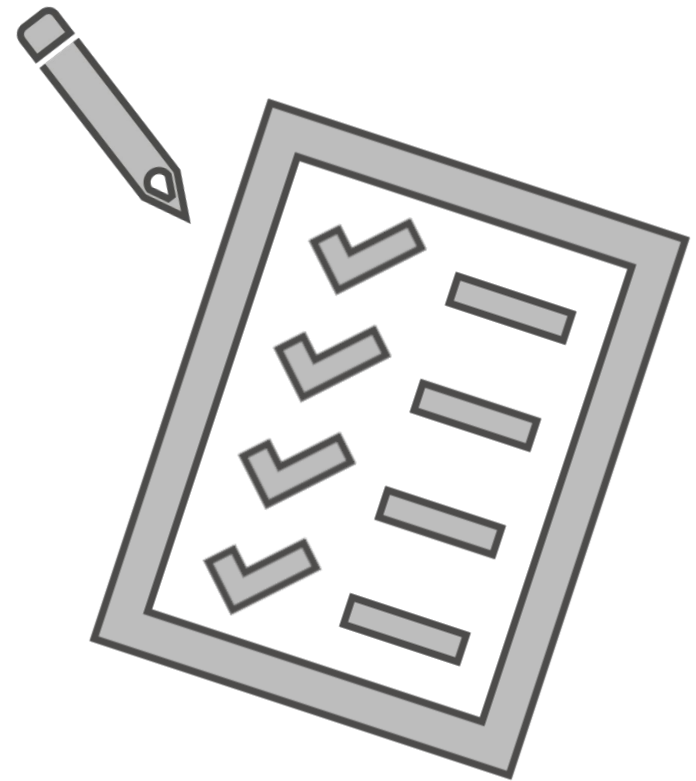




# General Grant Requirements (Non-Exhaustive)

## Eligible Subapplicants:

- Participate in and comply with the NFIP.
- Have in place a floodplain management plan to reduce the impacts of future flood events in the area impacted by the project (1 year grace period).
- **Have in place by the obligation of funds, a local FEMA-approved Hazard mitigation plan that includes all dam risks.**



# Unpacking “All Dam Risk”

## Incremental Risk

- Likelihood and consequences of a dam incident.
- Can be initiated by 1) internal loads; 2) external loads; or 3) mis-operation, component failure, or malfunction.

## Non-Breach Risk

- Risk in the reservoir pool area and affected downstream floodplain due to ‘normal’ operation of the dam.

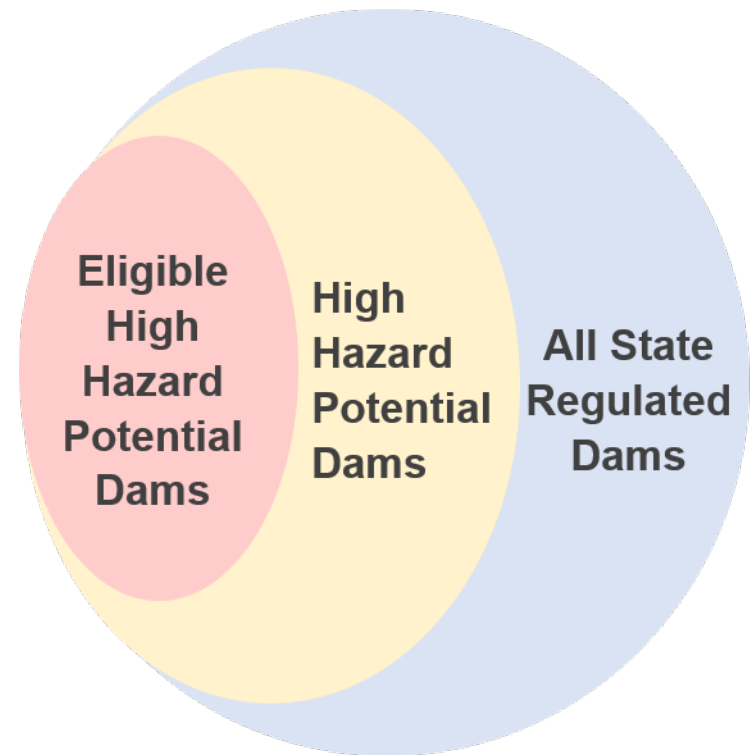
## Residual Risk

- The risk that remains after all mitigation actions and risk reduction actions related to a specific dam safety issue have been completed.



# HHPD Mitigation Planning Requirements

- The FY20 HHPD NOFO identifies **7 content requirements** for the Applicant's state hazard mitigation plan, and **4 content requirements** for the Subapplicant's local hazard mitigation plan.
- **At a minimum** the state and/or local mitigation plans must include all “eligible high hazard dams.”



# FY20 HHPD State Hazard Mitigation Plan Requirements

1. Does the plan describe how the state dam safety agency, other agencies and stakeholders participated in the **planning process** and contributed expertise, data, information, etc. relative to eligible high hazard potential dams?
2. Does the plan address all dam risk for eligible high hazard potential dams in the **risk assessment**?
3. Does the plan include **mitigation goals** to reduce long-term vulnerabilities from eligible high hazard potential dams?
4. Does the plan prioritize **mitigation actions** to reduce vulnerabilities from eligible high hazard potential dams?



# FY20 HHPD State Hazard Mitigation Plan Requirements

5. Does the plan identify **current and potential sources** of funding to implement mitigation actions and activities for eligible high hazard potential dams?
6. Does the plan generally describe and analyze **the effectiveness of local mitigation policies, programs, and capabilities** that address eligible high hazard potential dams?
7. Does the plan describe the **criteria for prioritizing funding** for eligible high hazard potential dams?





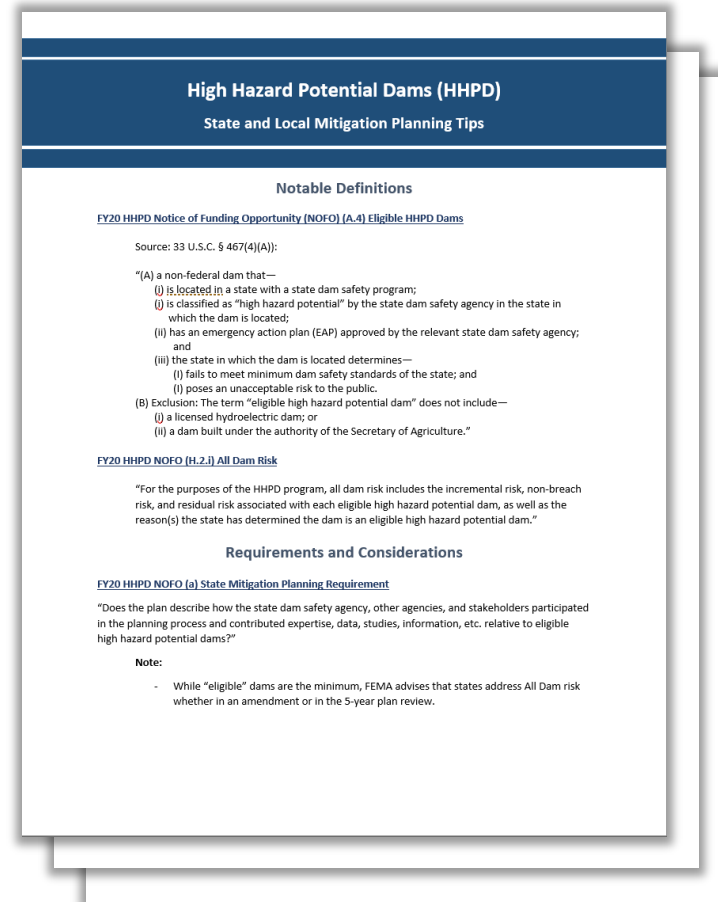
# FY20 HHPD Local Hazard Mitigation Plan Requirements

1. Does the plan **describe the incorporation** of existing plans, studies, reports, and technical information for eligible high hazard potential dams?
2. Does the plan address eligible high hazard potential dams in the **risk assessment**?
3. Does the plan include **mitigation goals** to reduce long-term vulnerabilities from eligible high hazard potential dams?
4. Does the plan **prioritize mitigation actions** to reduce vulnerabilities from eligible high hazard potential dams?



# HHPD Mitigation Planning Tips

FEMA Region III has shared HHPD State and Local Mitigation Planning Tips with state agencies to assist them in developing local and state hazard mitigation plans that satisfy the HHPD NOFO requirements.



# HHPD Mitigation Planning Tips (Example)

## FY20 HHPD NOFO (d) State Mitigation Planning Requirement

*Does the plan prioritize mitigation actions to reduce vulnerabilities from eligible high hazard potential dams that pose an unacceptable risk to the public?*

### **Recommended Planning Considerations**

- Describe the process to evaluate and prioritize actions related to HHPDs that are cost effective, how each action to reduce risks from HHPDs contribute to the goals and are linked to the state mitigation strategy.



# HHPD Mitigation Planning Tips (Example)

## FY20 HHPD NOFO (b) Local Mitigation Planning Requirement

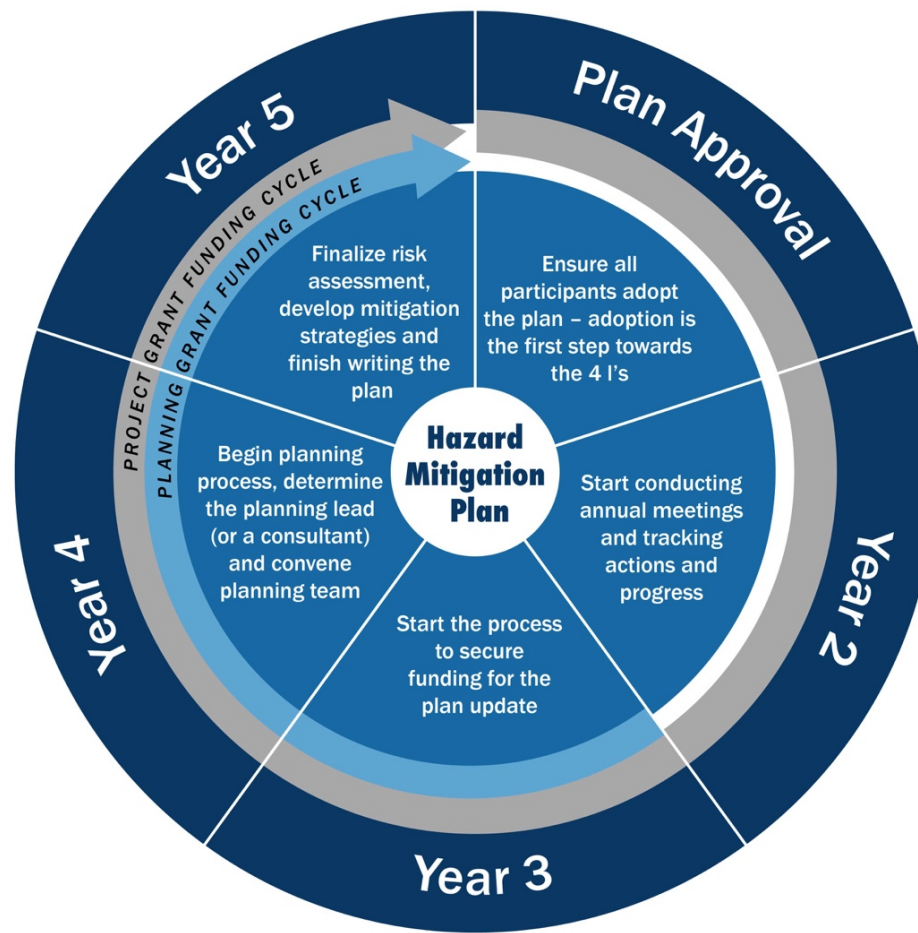
*Does the plan address eligible high hazard potential dams in the risk assessment?*

### **Recommended Planning Considerations:**

- Provide a *summary description* of the risk-based priority system required by the HHPD NOFO. An in-depth technical engineering analysis is not needed to meet planning requirements.
- Provide a list of HHPDs by name, identification number, location by jurisdiction, and other relevant information. Include a map.
- Describe the method the state uses to identify and assess the risk associated with dams.
- Summarize jurisdiction-specific vulnerabilities from eligible HHPDs



# Connecting to the Planning Cycle





# Region 3 2020 Coffee Break Webinar Schedule

**January**

Incorporating Historic and Cultural Resources in Your Hazard Mitigation Plan

**March**

~~Annual Hazard Mitigation Plan Reviews – Options and Outcomes~~

**May**

Annual Hazard Mitigation Plan Reviews – Options and Outcomes

**July**

Addressing the Risks of High Hazard Potential Dams (HHPD)

**September**

Tracking Risk Reduction through Your Capabilities Assessment

**November**

Bringing Lifelines into Hazard Mitigation Planning



# Upcoming FEMA Region III Coffee Break

**September 16, 2020**

## Tracking Risk Reduction through Your Capabilities Assessment

- To register, please follow the link\* to:  
<https://femaregion3coffeebreaks.eventbrite.com>
- To sign up for the Region III Resilience Report Newsletter and upcoming Coffee Break webinars, please follow the link\* to:  
<http://bit.ly/FEMA-Region-III>

*\*Please note, links will be sent out after this presentation.*



# You May be Eligible for Professional Credits

Participation certificates and agendas will be sent to all participants who attend the whole session and participate in the polls.



American  
Institute  
of Certified  
Planners (AICP)  
Certification  
Maintenance

Credit course number:  
9202123



Association  
of State Floodplain  
Managers (ASFPM)  
Certified Floodplain  
Manager (CFM)  
Continuing  
Education Credit

**!** Please contact  
[alyssa.geoghan@associates.fema.dhs.gov](mailto:alyssa.geoghan@associates.fema.dhs.gov)  
**TODAY** if you are looking for ASFPM credit.



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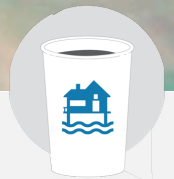
## Wendy C. Howard Cooper

Director, Dam Safety and Floodplain Management

VA Department of Conservation and Recreation

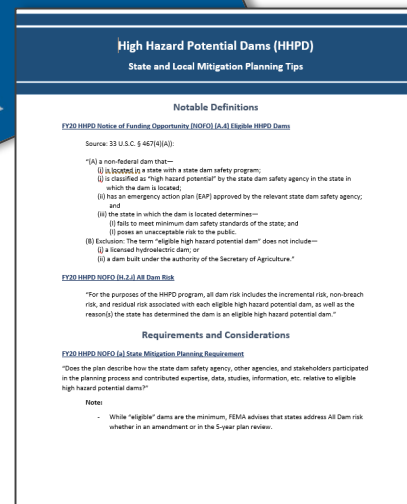
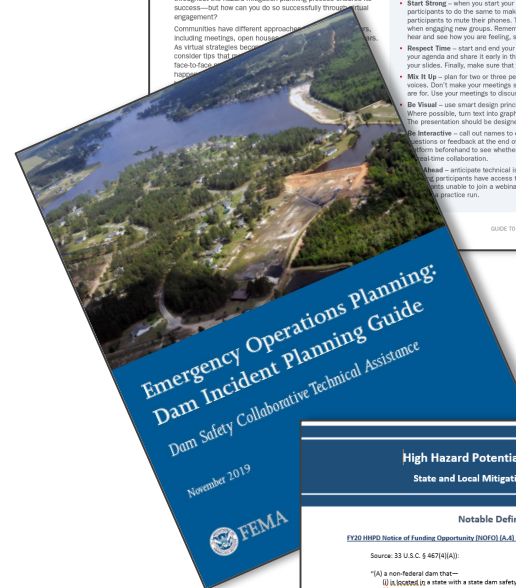
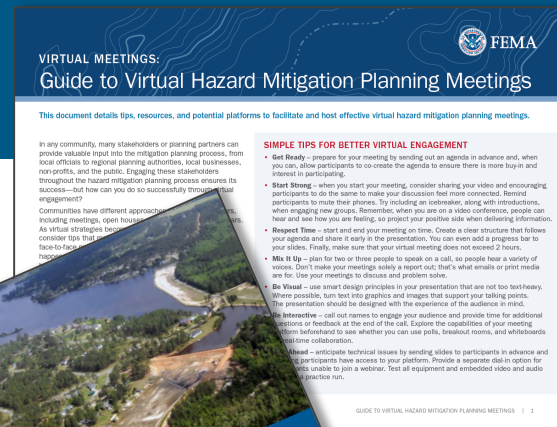
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# Resources

- [FEMA Guide to Virtual Hazard Mitigation Planning Meetings](#)
- [The FY20 HHPD Rehabilitation Grant Notice of Funding Opportunity \(NOFO\)](#)
- [Emergency Operations Planning: Dam Incident Planning Guide](#)
- [Rehabilitation of High Hazard Potential Dams Grant Program Guidance](#)
- [HHPD State and Local Mitigation Planning Tips\\*](#)
- [The FY20 State Plan Review Tool \(Updated with Optional HHPD Requirements\)\\*](#)
- [The FY20 Local Plan Review Tool \(Updated with Optional HHPD Requirements\)\\*](#)



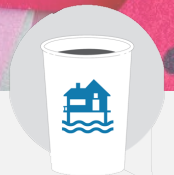
\*NOTE: The HHPD State and Local Plan Review Tools and the HHPD State and Local Mitigation Planning Tips will be emailed to today's attendees along with the PowerPoint slides.





# Questions?

**Please type your question(s) in the chat!**



# Thank you for Participating Today!



We hope to see you all at the next Coffee Break!





# FEMA

