



Year-in-Review

National Dam Safety Program Fiscal Year 2021

February 2022



FEMA

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Year-in-Review

The National Dam Safety Program (NDSP) is a partnership of public and private sector stakeholders that promotes the establishment and maintenance of effective federal and state dam safety programs to reduce the risks to human life, property, and the environment from dam-related hazards.

The program began to publish this series to showcase essential NDSP accomplishments. This document is devoted to accomplishments that occurred during Fiscal Year (FY) 2021. It provides the dam safety community, as well as the public, a heightened understanding of the Program’s objectives: to reduce the risk associated with dams and promote the benefits of dam safety.

To promote dam safety, FEMA coordinates with federal, state, and private sector partners through:

- The National Dam Safety Review Board (NDSRB), comprised of federal, state, and private sector partners, advises FEMA’s administrator in setting dam safety priorities. The board also consults the administrator on the effects of dam safety policy.
- The Interagency Committee on Dam Safety (ICODS), comprised of federal agencies having an involvement with dams, was founded in 1980 to encourage the establishment and maintenance of effective federal programs, guidelines, and policies to enhance dam safety and security.

Table 1. Accomplishments for Fiscal Year 2021

<i>Program Highlights</i>	
Total Training/Collaborative Technical Assistance Sessions	15
Training Participants	More than 802
New updated guidance or tools	10

1. Trainings

1.1. Emergency Management Institute (EMI): Virtual National Dam Safety Program Technical Seminar – Feb. 16-19, 2021

The National Dam Safety Review Board Work Group on Dam Safety Training welcomed all dam and levee safety professionals and those responsible for responding to dam and levee safety incidents to the annual National Dam Safety Program Technical Seminar (NDSPTS). The annual technical seminar took place virtually, Feb. 16-19, 2021. The topic for this year’s seminar was *Risk-Informed Decision Making (RIDM) and Benefit-Cost Analysis (BCA) for Dam and Levee Projects* which included

presentations focused on challenges, benefits, tools, and success stories of RIDM and BCA. In total, 322 individuals were in attendance.



Figure 1. 2021 Virtual National Dam Safety Program Technical Seminar

1.2. Collaborative Technical Assistance

The FEMA Collaborative Technical Assistance (CTA) series helps communities at risk of dam-related flooding to better understand their risk landscape and the potential consequences of dam-related emergencies. This technical assistance includes planning for emergencies related to operational discharges or dam-related infrastructure failure. In FY 2021, the FEMA program worked with one cohort – San Diego County, California. There was a total of eight sessions in addition to four office hours with a total of 420 participants.

1.3. Dam Failure Life Loss Consequence Virtual Workshop – May 17-19, 2021

This workshop provided dam owners, emergency managers, and other relevant stakeholders with the information needed to define and estimate consequences for dam failure scenarios. The course also highlighted the importance of defining dam failure scenarios and assessing life loss consequences through the presentation of tools and case studies. Due to COVID-19, this workshop was held virtually and had 60 participants.

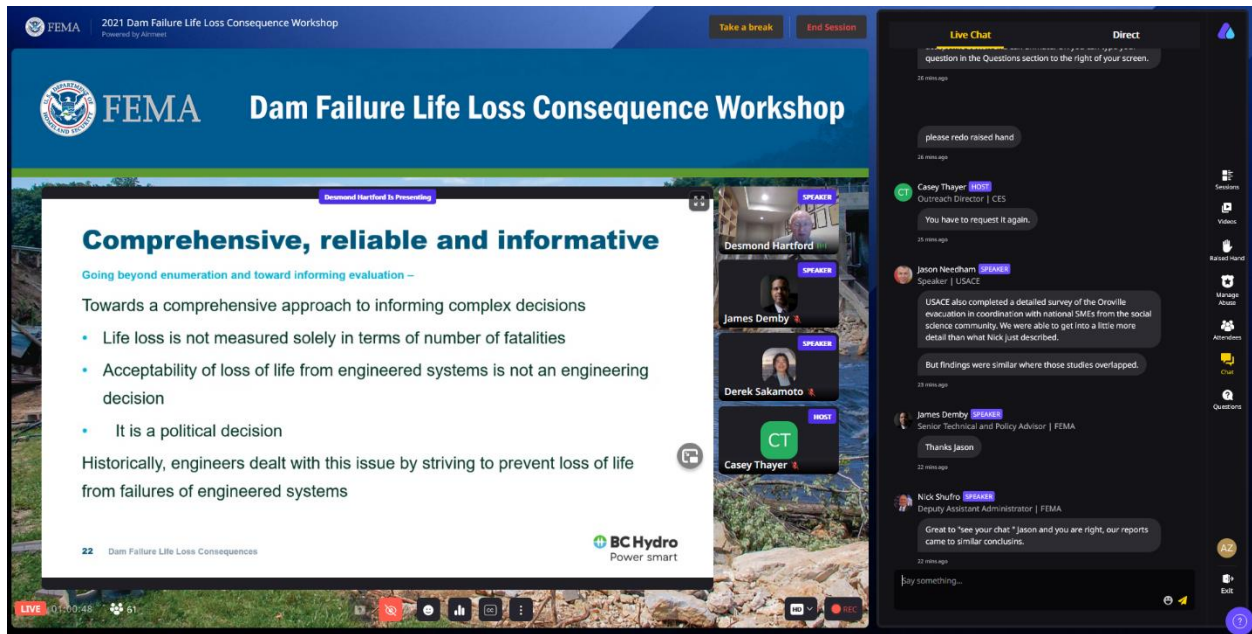


Figure 2. 2021 Dam Failure Life Loss Consequence Virtual Workshop

1.4. Learning Content Management System (LCMS) Seepage and Internal Erosion Courses

The FEMA NDSP worked with EMI to develop three LCMS courses based on FEMA P-1032, *Evaluation of Monitoring of Seepage and Internal Erosion*. The courses provide dam owners, emergency response personnel and other stakeholders with the knowledge and tools to identify seepage and internal erosion within dams.

- Course IS-0874, *Introduction to Seepage and Internal Erosion and the Emergency Response to Seepage Related Dam Risks*, is the first part of the three-part series. The course provides a basic level introduction to the concepts and implications of seepage and internal erosion and builds a foundation for private dam owners, local, state, tribal and territorial officials to understand seepage-related dam risks.
- Course IS-0875, *Identifying, Monitoring, and Addressing Seepage and Internal Erosion at Dams*, provides a basic introduction to identifying, monitoring, and addressing seepage and internal erosions at dams.
- Course IS-0876, *Evaluation and Analysis of Internal Erosion and Seepage Conditions at Dams*, builds competency in the investigation and analysis of seepage and internal erosion at dams. It also builds a foundation for local emergency officials and engineers on seepage conditions as they pertain to risk-based systems.

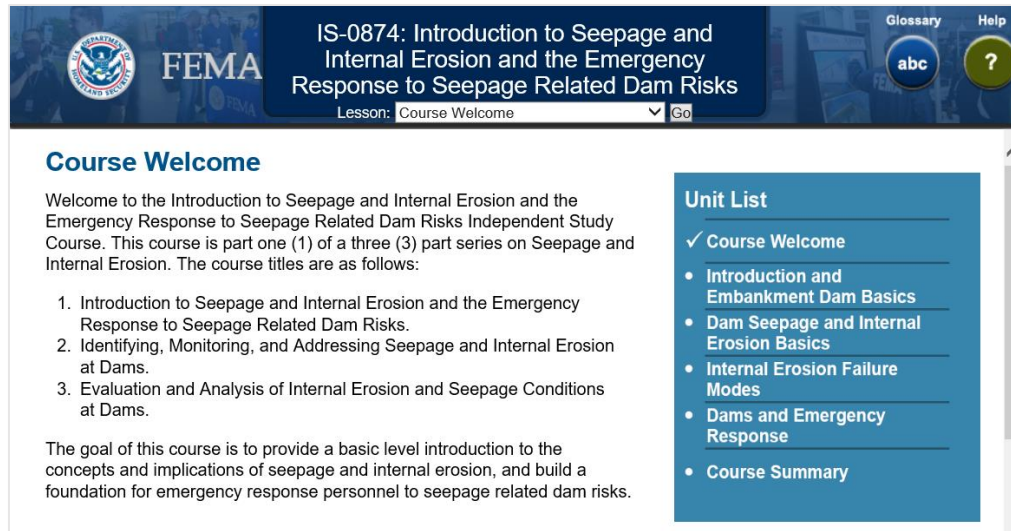


Figure 3. LCMS Course Welcome Screen

2. Publications/Reports/Resources

2.1. FEMA National Dam Safety Program Overview Fact Sheet

This fact sheet was developed to give an overview of the Program and breaks down the different components – partnerships, grants, training, research and public safety and awareness. The fact sheet can be viewed [here](#).

2.2. National Dam Safety Awareness Day Outreach Materials

In FY 2021, FEMA NDSP created the following resources to help the dam safety community promote and participate in National Dam Safety Awareness Day.

1. [Event planning checklist](#) – A list of things to consider when planning your local dam safety event.
2. [Key messages](#) – A list of short talking points to help start conversations about dam safety.
3. [Template news release](#) – A pre-approved news release with standard boilerplate language for use by local champions in promoting National Dam Safety Awareness Day. Also included is guidance for engaging members of the media.
4. [Web and social media content](#) – Suggested content for promoting local events on your website or social media accounts. Also included is guidance for sharing stories and/or photos by using the #DamSafetyDay hashtag on Facebook, Twitter, Instagram, and LinkedIn.
5. [Activities for kids](#) – FEMA has prepared a list of suggested activities for engaging children, which helps kids to be more risk-aware. It is also an effective way to engage their parents and other family members.

Dam Safety Awareness Day is on May 31 and was established to commemorate the failure of the South Fork Dam in Johnstown, Pennsylvania. The Johnstown disaster was the worst dam failure in the history of the United States, with over 2,200 lives lost. National Dam Safety Awareness Day seeks to encourage and promote individual and community responsibility and best practices for dam safety, as well as what steps can be taken to prevent catastrophic dam failures.

2.3. Federal Guidelines Updates

The FEMA NDSP, in coordination with ICODS and NDSRB, formed four task/work groups to begin updating the following Federal Guideline documents:

- FEMA P-64 – *Emergency Action Planning for Dam Owners*
- FEMA P-65 – *Earthquake Analyses and Design of Dams*
- FEMA 93 – *Federal Guidelines for Dam Safety*
- FEMA P-148 – *Glossary of Terms*

2.4. Decision Support System for Water Infrastructure Security (DSS-WISE) 3.0

The National Center for Computational Hydroscience and Engineering (NCCHE) at the University of Mississippi recently released the new beta version 3.0 of the DSS-WISE Web system. This was done in coordination with the U.S. Department of Homeland Security Science and Technology Directorate, the Federal Emergency Management Agency National Dam Safety Program, and the California Department of Water Resources Division of Safety of Dams.

This update builds upon the previous version 2.0 with a host of powerful new features and a redesigned user interface to assist dam safety professionals, dam safety regulators, community officials, and emergency managers with dam break and flood hazard inundation mapping. These new capabilities and enhancements include the following:

1. A completely redesigned web user interface.
2. An improved, contextualized help system.
3. The generation of intermediate results upon user request.
4. A new dam NID search tool.
5. A new point query tool for results.
6. An improved breach parameter calculator.
7. Improvements to the results package.
8. The ability to load new simulation parameters from a previous submission.
9. The ability to include the presence of user-drawn levees.
10. The ability to model dams in series.

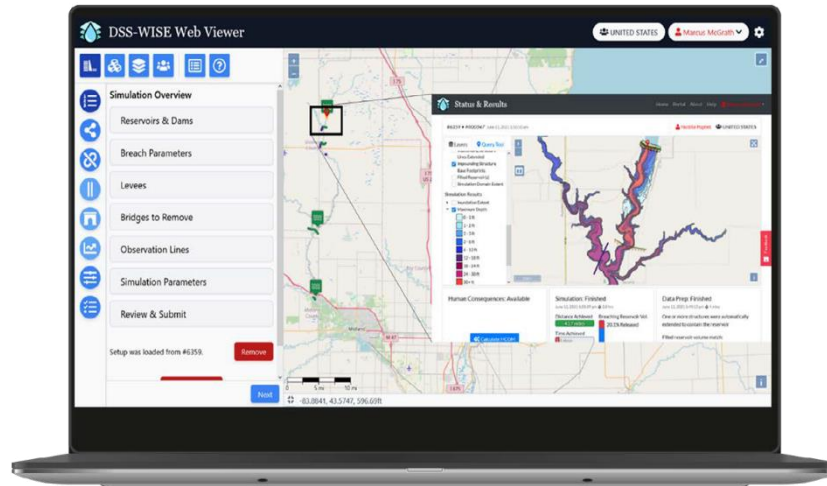


Figure 4. Updates featured in DSS-WISE 3.0

3. Grants

3.1. FY 2021 State Assistance Grants

A total of \$5.9 million was awarded in FY 2021. The purpose of the State Assistance Grant is to provide financial assistance to states for strengthening their dam safety programs.

3.2. Rehabilitation of High Hazard Potential Dams (HHPD) Grant

The President signed the “[Water Infrastructure Improvements for the Nation Act](#)”, also known as the “WIIN Act,” on Dec. 16, 2016, which added a new grant program under FEMA’s National Dam Safety Program (33 U.S.C. 467f). Section 5006 of the Act, [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 potential dams. In FY 2021, FEMA received \$12 million to implement the Rehabilitation of High Hazard Potential Dams Grant Program. This grant provides assistance with planning and other construction activities. There was a total of 15 awardees.

Table 2. Fiscal Year 2021 High Hazard Potential Dam Grant Highlights

<i>Program Highlights</i>	
Total Award Recipients	15
Funds Allocated	\$12 million
Hotline Questions Answered	More than 60

4. Conferences/Presentations

4.1. Dam Safety 2021: Association of State Dam Safety Officials Annual Conference – Nashville, Tennessee

The NDSP attended and exhibited at the Association of State Dam Safety Officials (ASDSO) Annual Conference in Nashville, Tenn. from Sept. 12-15, 2021. On Thursday, Sept. 16, 2021, Preston Wilson of the FEMA NDSP spoke with 19 seniors at Tennessee State University, a Historically Black College and University. These students are a part of Tennessee State University's Civil and Architectural Engineering program. Preston discussed how dam safety fits into FEMA's mission and how dam safety is an exciting industry that requires civil engineers to utilize skills and resources from multiple civil engineering subdisciplines. In addition, he discussed the important role that Civil Engineers have in Emergency Management, including critical infrastructure and helping communities understand the impacts of these essential lifelines.



Figure 5. FEMA's Preston Wilson presents to Tennessee State University Students

The NDSP also invited four graduate and doctorate level Civil and Architectural Engineering students to attend the ASDSO conference. The conference sessions included a variety of workshops, presentations, and meetings related to current topics within dam safety, including climate change, new technology and resilience.



Figure 6. Civil and Architectural Engineering students attending the ASDSO Conference

4.2. United States Society on Dams Annual Conference – Virtual

The FEMA NDSP also participated in the United States Society on Dams Annual Conference from May 10-21, 2021. Due to the ongoing COVID-19 pandemic, the conference was held over a two-week period. James Demby and Preston Wilson of the FEMA NDSP also participated in the presentation “From Reacting to Preparing: The History of Emergency Action Plans for Dams” during the conference.