

Maryland Dam Safety Update

Issue 6, December 2020



Dams provide many benefits for Maryland's citizens; however, dams can also be a great threat to the safety and well being of downstream property and people if they are not properly constructed or maintained. Maryland has been assuring the safety of dams since 1934.

Federal Funding Aids Maryland's Dam Safety Program

The Maryland Department of the Environment's (MDE) Dam Safety Program (DSP) spent considerable time and energy in 2020 to pursue grants that will help aid the implementation of the DSP and assist dam owners. Some notable grant awards are listed below.

The Environmental Protection Agency's Chesapeake Bay Regulatory and Accountability Program awarded the MDE DSP \$54,000 to create a state-specific probable maximum precipitation (PMP) study, which will replace the NOAA Hydrometeorological report (HMR 51/51) with data through 2020. Impacts from climate change, including increased precipitation and storm events, are causing heightened nutrient and sediment loads to the Chesapeake Bay. Output from this project will be used to improve the design of larger dam embankments, control structures, and spillway components making them more resilient to extreme precipitation storm events, and helping to sustain nutrient reductions from these impoundments into the future.

The Federal Emergency Management Administration's (FEMA) Pre-Disaster Mitigation Program awarded Maryland's DSP \$110,850 to develop a dam failure inundation mapping set for all dams in the state. Output from this project will enhance the dam failure sections of local hazard mitigation plans by providing risk and vulnerability assess-

ment information generated by DSS-WISE Lite, a FEMA-developed program specifically designed to identify risk, assess vulnerability, and determine the effects of dam failure. The inundation maps will be public domain products and will be available to the public through MDE's Flood Risk Application, also known as the "Maryland DFIRM Outreach tool" (www.mdfloodmaps.com).

FEMA's High Hazard Potential Dams Program (HHPD) awarded Maryland \$274,167 to assist eligible dam owners in their planning, design, and construction efforts. The eligible rehabilitation activities will reduce dam risk and increase community preparedness. As part of this application, MDE worked with the Maryland Emergency Management Administration (MEMA) to update Maryland's Dam Safety Hazard Mitigation Plan and rank Maryland's High Hazard Potential Dams for funding under this program. Funding of individual dam projects is pending at this time.

MDE in coordination with Maryland Department of Transportation (MDOT) is currently applying for \$885,000 through FEMA's Building Resiliency Infrastructure and Communities (BRIC) Program. Maryland's BRIC proposal focuses on developing new tools and resources based on current climate science for better understanding the hazards that state and local government agencies will need to address. Potential outputs from this project if accepted include the completion of Maryland-specific PMP study (partially funded by CBRAP), an update of Atlas 14, further development of the Resiliency Partnership Resource Website and Climate Change Vulnerability Viewer, and the creation of a real-time weather application.

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mde.maryland.gov/damsafety

Save the Date: Annual Dam Owners Workshop



Please save the date for our Annual Dam Owners Workshop. Due to the limitations of COVID-19, the workshop is tentatively planned as a virtual event for **January 26 and 27, 2021**.

Though the agenda is still under development, we are considering hosting one approximately three hour training session on the 26th that will be focused on dam ownership issues, and a second three hour session on the 27th that will be focused on dam engineering issues. All are welcome to attend both sessions.

The event will be held on a virtual meeting platform, with a maximum attendance of 250 persons. We hope to make recordings of the sessions available. A registration email will be coming soon, be on the lookout!

2021 State Hazard Mitigation Plan

The State of Maryland's Hazard Mitigation Plan is currently being updated by the Maryland Emergency Management Agency (MEMA) for approval in 2021. Hazard mitigation planning reduces loss of life and property by minimizing the impact of disasters. MEMA will conduct a Hazard Identification and Risk Assessment (HIRA) to identify natural hazards and associated risks and vulnerabilities. A set of mitigation actions will be developed into a comprehensive strategy in order to develop long-term solutions to increase the resilience of the state.

The 2021 Hazard Mitigation Plan will include for the first time an individual section on Maryland dams and hazards. MEMA will also be requesting additional dam information when approving County Hazard Mitigation Plans.

Learn more and participate in the planning process by visiting MEMAs [virtual open house](#).

FAQ Posted on Dam Safety Webpage

A new Frequently Asked Questions (FAQ) section has been posted to the Maryland Dam Safety webpage [HERE](#). The FAQ covers dam permitting, dam ownership and dam emergencies. If you have suggestions for other FAQ topics, please contact the Dam Safety Program.

Department of Labor Offers Free Ethics Course

The MD Dept. of Labor has launched a new opportunity to obtain one hour of professional development, free of charge. This training is designed to meet Maryland's required ethics training for Professional Engineers (PEs). The current training consists of an examination that will demonstrate the licensee's knowledge and understanding of Maryland law and ethics. The training can be accessed [HERE](#).



Blairs Valley Dam
Image: MDE



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GET COVID-19 EXPOSURE ALERTS

Help protect your community while maintaining your privacy

bit.ly/MDCOVIDAlert

Dam Safety Training Opportunities

USSD Webinar: Intro. to Engineer of Record for Tailings Dams

Dec 15, 2020 ussdams.org

ASDSO Webinar: Responding to Dam Emergencies

Dec 15, 2020 damsafety.org

ASCE Webinar: Approaches to Mitigation of Karst Sinkholes

Jan 11, 2021 asce.org

HEC-HMS GIS and PMP Modeling

Jan 11, 2021 owd.tcnj.edu/~horst/conned.htm

ASDSO Webinar: Fundamentals of Concrete Construction Inspection of Dams

Jan 12, 2021 damsafety.org

ASDSO Virtual Seminar: Improving Emergency Operations for Dam and Levee Failures and Incidents

Jan 26, 2021 damsafety.org

ASDSO Webinar: Drilling Plans and Hazard Evaluations for Dams and Levees

Feb 9, 2021 damsafety.org

ASDSO Webinar: Debris Management for Safe Dam Operations

March 9, 2021 damsafety.org

MFRI Training: OSHA Confined Space Awareness and Entry

March 22-23, 2021 mfri.org

USSD 2021 Conference

April 12-16, 2021 Charleston, SC

Proposed Regulatory Change: Ponds in Use III Waters and Designation of Small Pond Approval Authority

A proposed regulation change was posted to the Maryland Register on November 20, 2020 to address two issues related to the approval of small ponds. The first proposed change promulgates regulations based on changes to Environment Article §§5-503 from the 2018 Senate Bill 100. This change authorizes the Department to designate small pond approval authorities other than local Soil Conservation Districts (SCDs). The second change removes the requirement that small ponds in Use III watersheds must be permitted through the Dam Safety Program. As a reminder to all applicants, until the regulation change goes into effect, small ponds located in Use III waters must be submitted to the Dam Safety Permits Division for review and permitting.

For more information on the proposed regulation change, contact Hal Van Aller or John Roche. Instructions for providing comments on the proposed regulatory change can be found in the Maryland Register listing. Comments will be accepted through December 21, 2020.

The Maryland Register can be accessed via the following link: <http://www.dsd.state.md.us/MDR/4724.pdf> A more detailed description of the change is provided below. Text that is *italicized* is added, while text within [brackets] is removed.

.05 Dams and Reservoirs.

A. (text unchanged)

B. Structure Classification and Design Criteria.

(1)—(4) (text unchanged)

(5) Dams in Category IV. The designs, plans, and specifications for all dams

classed in Category IV, and not approved by either the soil conservation district [and classed in Category IV] or the Administration's designee, shall be reviewed by the Administration for technical compliance with the requirements in USDA, Natural Resource Conservation Service, Maryland Conservation Practice, Standard Pond Code 378 (January, 2000), which is incorporated by reference in COMAR 26.17.02.01-1B(2), *and the Administration's policies and procedures*.

C.—F. (text unchanged)

G. Certain Small Ponds. [Except for those ponds which are to be located in natural trout waters or those which are temporary and which are intended solely to trap sediment during construction operations, certain] *Certain* small ponds may be exempt from the permit requirements cited here if the plans and specifications are approved by *either* the appropriate soil conservation district *or the Administration's designee*. The following shall apply to the approval of all ponds pursuant to Environment Article, §5-503(b), Annotated Code of Maryland:

(1) *The designs, plans, and specifications shall be reviewed for technical compliance with the requirements in USDA, Natural Resource Conservation Service, Maryland Conservation Practice, Standard Pond Code 378 (January, 2000), which is incorporated by reference in COMAR 26.17.02.01-1B(2), and the Administration's policies and procedures.*

(2) The soil conservation district, *or the Administration's designee*, shall notify the Administration of all ponds approved pursuant to this section. The notification shall include a copy of the pond approval and a pond summary sheet. The notification shall be submitted to the Administration within 30 days of the end of each quarter (September 30, December 31, March 31, and June 30) in which the approval was granted.

(3) The soil conservation district, *or the Administration's designee*, for all ponds approved pursuant to Environment Article, §5-503(b), Annotated Code of Maryland, shall submit a certification to the Administration within 90 days after the completion of construction. This certification shall state that the subject pond was constructed in conformance with the approved plans and specifications. A certification by a professional engineer, land surveyor, or landscape architect practicing in accordance with the laws of Maryland shall be acceptable to the Administration instead of a certification by the soil conservation district *or the Administration's designee*.

Dam Safety Staff News

Hal Van Aller, P.E. completed his term as the President of the Association of State Dam Safety Officials (ASDSO) in September 2020. Hal led the organization as they adapted to the challenges of the COVID-19 pandemic, and has recently been heavily involved in the update of the ASDSO Model State Dam Safety Program. Hal has been a very active member of the organization for decades, participating in numerous technical committees, the Board of Directors and Executive Committee, and has contributed to dozens of guidance documents, manuals, technical journal articles and conferences. Hal has been the Maryland State Representative to ASDSO for over ten years.

Visty Dalal has been awarded the '2020 Outstanding Volunteer' award by AEG (Association of Environmental & Engineering Geologists). At the 2020 Online Annual Conference, Visty was recognized by AEG's President, for "his vision and work as the 'Acquisitions Editor' of AEG News and for striving to make the AEG News publication more beneficial to our members". Mr. Dalal is an active member of AEG since 2005, and serves on several AEG committees: Communications Committee, Dams Technical Review Committee; Diversity, Equity, and Inclusions Committee; and Strategic Implementation Committee.

John Roche, P.E. has been named the new Maryland State Representative to ASDSO effective September 2020. In addition, John was elected to represent the Northeast region on the ASDSO Board of Directors for a two year term. John is a member of the ASDSO Technical Journal Editorial Committee, the Technical Training Committee, and is the Chair of the Emergency Preparedness and Consequence Reduction Committee.

MDE recently held its annual employee award ceremony. **Jennifer Smith, P.E.** was recognized for five years of service. **Kelly Flint, P.E.**, and **Hira Shrestha, P.E.**, were recognized for ten years of service.



Image: Visty Dalal



Image: ASDSO (with permission)

Award Winning Maryland Dam Projects

Fullerton Reservoir: The Fullerton Reservoir project (Owner: Baltimore City, Engineer: Gannett Fleming) was recently named the 2020 Award of Merit winner by the County Engineers Association of Maryland. This project included construction of three (3) 21-million gallon concrete water tanks.



Brighton Dam: The Brighton Dam rehabilitation project (Owner: WSSC, Engineer: AECOM) was recently named a 2020 Award of Merit by Engineering News-Record (ENR) MidAtlantic. This project included rehabilitation of aged concrete and tainter gates, as well as intake tower sluice gates.



Congratulations to the owners and project teams for both of these award-winning projects!

All images: MDE File Photos

What's In Your Pond?

The Sediment, Stormwater, and Dam Safety (SSDS) program recently held a series of three online seminars for local regulators and soil conservation districts to discuss current issues related to stormwater management and small ponds. Copies of the presentations will be made available on the Dam Safety webpage in the near future for those who could not attend, and for the broader engineering community.



While developing the material for the seminars the SSDS program sent a survey to local jurisdictions to learn more about their stormwater management and small pond approval practices and their needs. We heard a common theme of stressed resources, a need for more training, and a concern over the loss of institutional knowledge.

We intend to use the feedback gained from the surveys and discussions during the sessions to improve training and provide additional clarity to existing regulations. We also plan to engage the community in Small Pond Work Groups as we develop additional guidance and work through regulatory updates. If you wish to participate in the Small Pond Work Groups, please complete the [Expression of Interest form](#) on the Dam Safety webpage.

Initial work will include completing the “under development” memos described to the right.



As we move forward, we welcome your feedback regarding problems or successes with MD378 and current regulations. If you have materials or feedback to share, contact John.Roche@Maryland.gov

Dam Safety Guidance Documents: Clarifying MD378 and Regulations

A number of requirements related to the classification, design, construction, and operation of dams and small ponds are commonly misunderstood by both the design and regulatory community. This is evidenced by a high degree of variability observed by the Dam Safety Program in design submittals and during periodic inspections. Often the misunderstandings are a result of conflicting, confusing, or ambiguous language.

While some of the commonly misunderstood requirements may require a regulatory update to resolve, the Dam Safety Program has released a number of Dam Safety Policy Memos to provide a clear interpretation of the regulations. All designers and regulators should become familiar with these documents, which can be located at the [Dam Safety Policies](#) page on our website. A summary of the issues that have been addressed is provided below.

Memo 1: Maintenance and Repair, Trees and Woody Vegetation

Replaces and expands on 1993 “Plantings on Roadway Dams” memo. Clarifies tree removal requirements and provides construction detail.

Memo 2: Roadway/Railroad Embankment with Culvert Crossing

Resolves confusion in existing MD378 language for road embankments.

Memo 3: Impoundments Adjacent to Steep Slopes

Discusses potential dangers of siting a dam/pond at crest of steep slope.

Memo 4: Hazard Classification – Small Impoundments

Provides simplified hazard classification for certain low height, low storage volume dams.

Memo 5: Best Practices for Construction of Dams and Small Ponds

Under development - Coming Soon

Memo 6: Dam Decommissioning

Provides general concepts to consider when planning a dam removal.

Memo 7: Impoundment Filling Plans

Provides clarification on considerations for first filling and content of filling plan.

Memo 8: Structural Considerations for Risers and Trash Racks

Under development - Coming Soon

Memo 9: Water Storage and Collection Tanks

Addresses broad definition of “dam” in regulations

Memo 10: Utilities in Dam Embankments

Addresses treatment of utilities within and near dam embankments

Memo 11: Activities Not Requiring Dam Safety Permit

Provides clarification of activities considered normal maintenance (no permit required), and those where a permit is required.

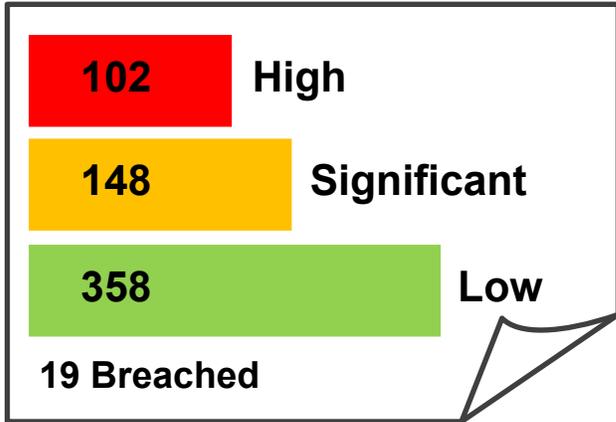
Memo 12: Excavated Ponds

Under development - Coming Soon

Maryland Dam Safety: A Year* in Numbers

Data from January 1 through November 30

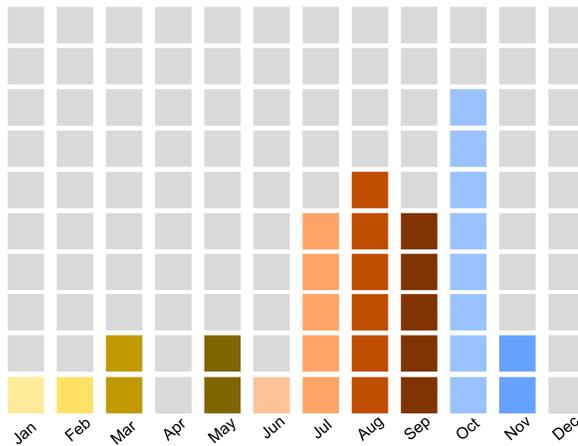
9 Staff 



627 DAMS
15,000+ small ponds

170 DAMS INSPECTED

75% HIGH HAZARD DAMS INSPECTED



 **87**
Permit Applications Received

 **19**
Permits Issued

 **83**
Permit Exemptions Issued

Dams with EAPs in Compliance



Dams with EAP Exercise in Past 5 Years



11 EAPs were exercised in 2020. Exercises conducted in Washington and Howard Counties



13 EAPs were activated in 2020. Four low hazard dams/small ponds failed or nearly failed

Outreach Activities

- 3 "What's In Your Pond" Seminars
- 3 Presentations by staff at national conferences
- 2 Presentations by staff to local governments/orgs.
- 2 Dam Safety Newsletters created
- 1 Policy Memo Completed

ASDSO Scholarship



The application for the 2021/2022 ASDSO Undergraduate Student Scholarship is [now available](#). Scholarships have ranged from \$5,000 to \$10,000 in recent years. Successful recipients must be U.S. citizens and enrolled full-time at the senior level (during the 2021/2022 school year) in an accredited civil engineering program or a related field as determined by ASDSO. Students must also demonstrate an interest in pursuing a career in hydraulics, hydrology or geotechnical disciplines, or another discipline related to the design, construction, and operation of dams. Applications are due March 31, 2021.

USSD Scholarship



The application for the 2021 USSD Student Scholarship is [now available](#). The scholarship award is given annually to students whose academic program and research studies have the potential to develop practical solutions to design and construction challenges related to dams and levees. Applicants must be U.S. citizens or permanent residents enrolled in U.S. academic institutions. Applications are due March 1, 2021.

USACE Levee Safety Program Draft Policy

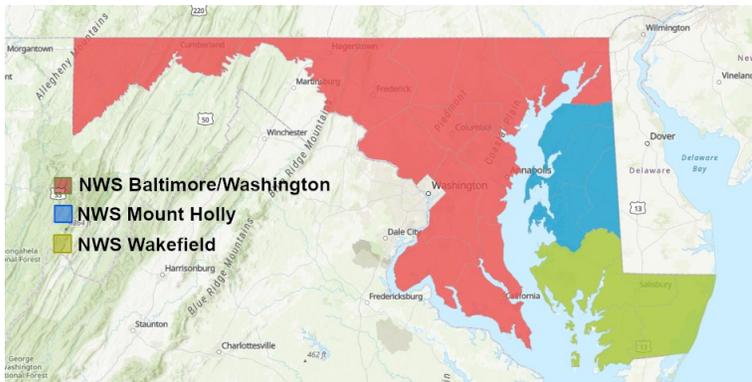


The USACE has been working to address the comments made on the draft Levee Safety Program, Engineer Circular and a revised draft is now available. You can find the updated document [here](#). Should you have feedback on or questions about this revised draft, please email EC218@usace.army.mil.

Emergency Action Plans: Important Updates and Reminders

The National Weather Service (NWS), Baltimore/Washington office recently announced two changes that will require Emergency Action Plan (EAP) updates for most Maryland dams.

The first change affects Garrett and Cecil counties, which will now be covered by the NWS Baltimore/Washington office. These locations were formerly covered by the NWS Pittsburgh and Mt. Holly offices, respectively. A map showing NWS office coverage is provided below. Dam owners in Garrett and Cecil counties must update their EAP to reflect this change.



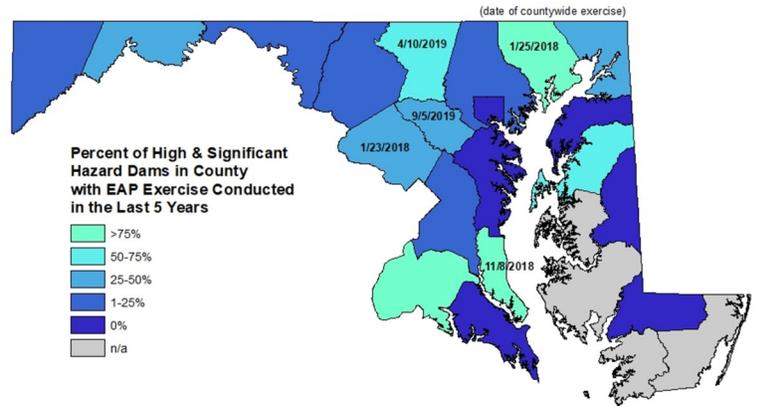
The second change announced by NWS is a new telephone number for the Baltimore/Washington Office. EAPs within the NWS Baltimore/Washington region should be revised to reflect the new correct information:

National Weather Service Baltimore/Washington
43858 Weather Service Road
Sterling, Virginia 20166

Primary EAP Contact:
Decision Support Meteorologist
nws-sterling-wxsupport@noaa.gov
1-800-253-7091 (24/7)
1- 571-888-3501 (Business Hours Only)

Jason Elliot remains an alternate point of contact and can be emailed at: Jason.elliott@noaa.gov

With 2021 rapidly approaching, now is a good time to begin reviewing and updating your EAPs. Currently only 76% of high and significant hazard dams are in compliance with the law requiring annual updates, and only 36% of dams have participated in a table top exercise (TTX) within the past five years. Failure to comply with the requirements of the EAP law can result in legal action against dam owners and increased risk to persons and property in the event of a hazard event. We strongly encourage all owners to work towards full compliance with the annual update and TTX requirements.



In the first 11 months of 2020, EAPs were activated 13 times. Many of these activations were based on elevated water levels due to storms, but EAPs were also activated for unanticipated conditions, such as the sudden appearance of seepage and sloughing on the downstream face of a dam. Heavy rains from Tropical Storm Isaias, and non-tropical events in the early fall resulted in the overtopping and failure of at least two small ponds, and the overtopping and near failure of one additional small pond and one low-hazard dam.

As critical as EAPs are, a communities awareness of their responsibilities as dam owners under Maryland law must also be emphasized. As you update your EAP, we also strongly suggest that you discuss the dam with your homeowners association (HOA) or community groups. The costs associated with normal maintenance and repairs are the responsibility of all persons who own the dam or the reservoir. Should the state need to step in and take control of a dam to resolve an unsafe condition, all members of an HOA or community that benefits from the dam will be liable to repay the costs incurred by the state. Failure to repay these costs can result on liens being filed on individual properties.



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