

Maryland Dam Safety Update

Issue 5, May 2020



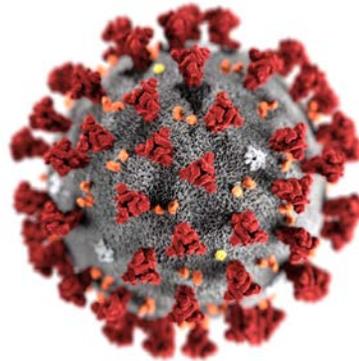
Dams provide many benefits for Maryland's citizens; however, dams can also be a great threat to the safety and well being of downstream property and people if they are not properly constructed or maintained. Maryland has been assuring the safety of dams since 1934.

Dam Safety During a Pandemic

A message from all of us:

Greetings! The uncertainty surrounding COVID-19 weighs heavily on our minds and takes a toll on the health and economic well-being of the citizens of the State of Maryland. We want to share in this newsletter that the Maryland Dam Safety program is adequately addressing the day-to-day needs of the dam community, is prepared to respond to emergencies should they arise, and continues to engage in forward looking planning to ensure that we are well positioned when we emerge on the other side of this virus and enter a new normal.

The health and safety of our employees, as well as those participating in inspections with



us has always been a top priority. Our staff is accustomed to relying on varying levels of personal protective equipment for dam inspections as well as following specialized procedures. Under our current protocols, our personal protective equipment has simply expanded and now when we are on-site we are wearing face masks, practicing social distancing procedures, and

using hand sanitizer. We anticipate that these practices will continue for months to come, and ask that all persons in attendance during dam inspections follow similar protocols. Inspections and site reconnaissance are crucial to our shared mission, but staff have also been empowered to leave an area if they encounter conditions or actions that place them at risk.

Our second top priority, ensuring public safety and welfare at and downstream of dams continues as well. While we have temporarily suspended some routine activities, known problems or vulnerabilities at dams continue to be watched closely, both in the field and virtually. We are preparing

Inside this issue

- 3 Dam Safety Reorganization
- 7 Dam Safety Consideration for MS4 Pond Retrofits
- 9 National Dam Safety Awareness Day



mde.maryland.gov/damsafety

internal emergency exercises to test our capabilities to respond to a larger or widespread disaster. We will be ready if called upon. As this essential work continues, it provides us the opportunity to develop additional operating procedures so that we can safely restart more routine inspections and operations.

Even though our team is working remotely, we stay connected daily through virtual meetings to coordinate the state's dam safety activities. During this crisis, we have been pushed to expand our use of technology and it is important that we maintain these advancements into the future. Fortunately, we have been well positioned to leverage new IT services and support based on our past investments. This includes laptops and hotspots to ensure staff has the equipment they need, and VPN services to provide real-time access to our large catalog of scanned historic documents and databases that keep us running. We have also worked to move our permitting processes to "paper-lite", and eventually paperless – as seen in the sidebar to the right.

We do not know what the new normal will look like but we do know that the same public safety protections for the dams in Maryland remain in place today as in the past, and in the future. We know that our employees will have the necessary equipment and are following new protocols for personal safety protection and we know that we continue to leverage advanced technology. We are in this together.



Permit Applications During the COVID-19 Pandemic

We are implementing a number of workflow changes during this time to ensure that the permitting process runs smoothly while maintaining social distancing and limiting access to MDE headquarters. Please review the following updates:

Dam Safety Permits

Applicants should continue to submit paper copies of their Joint Permit Application (JPA) as normal.

Once the JPA is screened by the Regulatory Services Center, applicants will continue to receive a letter indicating which programs will be reviewing the application.

Upon receipt of this letter, please provide an electronic copy of the JPA form and all supporting information to MDE.DamPermits@Maryland.gov. *Reference the Project Name and AI number found on the Regulatory Services letter in the email subject line.* The application materials will then be distributed to staff reviewers for further action.

Plan Review Division

(State and Federal Small Pond Reviews)

Effective immediately, the Sediment and Stormwater Plan Review Division (SSPRD) is transitioning to 100% electronic submittals. If you made a paper submittal to SSPRD after March 13, 2020 and have not yet communicated directly with the reviewer, then you should re-submit an electronic version to MDE.SSPRD@maryland.gov. Please see the instructions on electronic submissions on the SSPRD webpage.



Dam Safety Inspections and Compliance
 Hal van Aller, P.E.
 Division Chief

- Scott Bass, P.E. (Hydrology and Hydraulics)
- Visty Dalal (Engineering Geology)
- Kelly Flint, P.E. (Civil)
- Hira Shrestha, P.E. (Civil)
- Anna Sobilo-Ryzner (Environmental)

Dam Safety Permits
 John Roche, P.E.
 Division Chief

- Vimal Amin (Civil)
- Charlie Wallis, P.E. (Civil)
- Vacant
- Vacant

Dam Safety Reorganization

At the conclusion of 2019, the Dam Safety Division began a strategic reorganization process with the following outcomes in mind:

- Identify processes that can be improved, altered or discontinued to better serve the public and increase efficiency.
- Increase “regulatory certainty” by developing new guidance, policies, training and outreach for dam owners and engineers.
- Consider if updates to laws or regulation are appropriate and necessary.
- Rebalance staff workloads to more closely align with their skill sets and career objectives.
- Continue to improve the safety of dam in Maryland.
- Improve customer satisfaction.

To facilitate these objectives, the Dam Safety Division was split in two – The Dam Safety Inspections and Compliance Division led by Hal van Aller, P.E., and the Dam Safety Permits Division, led by John Roche, P.E. Charlie Wallis, P.E. and Vimal Amin have transferred to the new Division, which also has two vacancies for senior engineers.

For many day-to-day operations the boundary between the two Divisions will remain fluid – the change began about six months ago and many are still unaware.

While the COVID-19 pandemic has slowed some initiatives that the new structure allows, it has not stopped progress. The Permits Division is developing new guidance, updating internal processes, and is collaborating with MDOT SHA and MTA on particularly large projects with challenging permit issues. Likewise, the Inspections Division is taking on a new, unexpected task and doing their part to help slow the spread of the virus by exploring virtual dam inspections.

Expect to continue to see changes and improvements as we explore this opportunity!



FEMA

From FEMA:

FEMA Announces Operational Guidance for the 2020 Hurricane Season

WASHINGTON – To address the challenges of managing disaster response and recovery efforts during this year’s hurricane season, FEMA is releasing the “[COVID-19 Pandemic Operational Guidance for the 2020 Hurricane Season](#)” to help emergency managers and public health officials best prepare for disasters, while continuing to respond to and recover from coronavirus (COVID-19). The guidance can also be used by private sector and non-governmental organizations to gain an understanding of the government’s posture, planning and readiness efforts.

<https://www.fema.gov/media-library/assets/documents/188203>



COVID-19 Pandemic
Operational Guidance for
the 2020 Hurricane Season

May 2020



Michigan Dam Failures Highlight Importance of Dam Safety Awareness

Two dams failed in Michigan in mid-May – and life may never return to normal for some of those affected. The dams, Edenville and Sanford in Michigan’s Midland County released an incredible amount of water downstream, flooding cities, washing out roads and changing lives. The residents that built communities around the lakes created by the dams are likewise affected – combined the lakes have approximately the same surface area, but more shoreline than Deep Creek Lake in Garrett County.

Miraculously, there have been no reported deaths from these failures. The Maryland Dam Safety program extends its support to those impacted by the failures of these dams. At the same time, this horrible incident must serve as a reminder to dam owners in Maryland that all dams pose a risk – and responsible ownership includes necessary maintenance and repair activities, emergency action plan updates, and an awareness that no dam is invincible, even those that are nearly 100 years old.

It is premature to speculate on specific failure mechanisms as information is being gathered and the recovery process is underway. Those interested in learning more are encouraged to visit the Association of State Dam Safety Officials (ASDSO) Collaborate website, where informal reports from the scene are being shared.

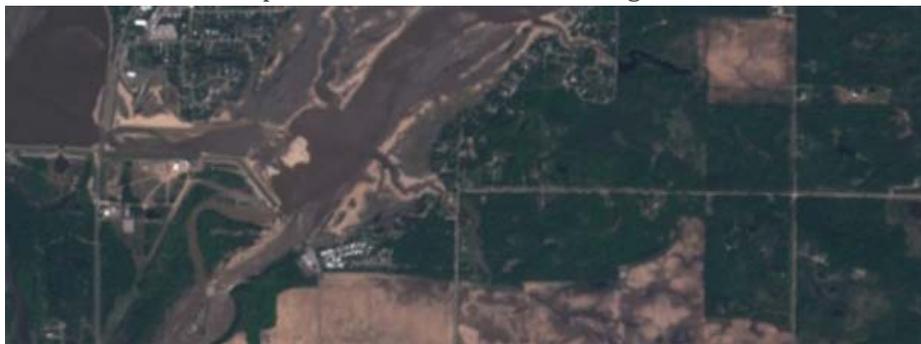


Image Attribution: Contains modified Copernicus Sentinel data 2020



STAY HOME

Even if you’re feeling healthy, social distancing will help us stop the spread of COVID-19.



STAY SAFE

Wash your hands frequently, cover coughs and sneezes, and stay home if you’re feeling ill.



STAY AWARE

Reputable sources include Governor Hogan, Maryland state agencies, and the CDC.



STAY CALM

No need to panic, hoard, or listen to rumors. We will all get through this together.

Dam Safety Training Opportunities

ASDSO Virtual Seminar: Basic Soil Mechanics Related to Earth Dams

June 4-6 damsafety.org

ASDSO Webinar: 1979 Machhu Dam Disaster: Social Origins and Social Consequences

June 9 damsafety.org

ASDSO Virtual Seminar: Seepage Through Earth Dams

June 23-25 damsafety.org

ASDSO Webinar: State of the Practice and Future of Dam Breach Modeling

July 14 damsafety.org

ASDSO Seminar: HEC-RAS

July 28-30 Phoenix, AZ

ASDSO Seminar: Inspection & Assessment of Dams

August 4-6 Nashville, TN

ASDSO Webinar: Low-Level Conduits, What Can Go Wrong, How to Inspect, How to Repair?

August 11 damsafety.org

ASCE Seminar: 2-Dimensional Modeling Using HEC-RAS

August 13-14 Charlotte, NC

Association of Engineering Geologists Annual Meeting

Sept. 15-20 Portland, OR

ASDSO Dam Safety 2020

Sept. 20-24 Palm Springs, CA

USSD 2020 Fall Workshop Series (7 workshops)

October 13-15 Denver, CO

Adapting to COVID-19: Virtual Dam Inspections

Regular inspections of dams must occur throughout their lifetime to evaluate the structural and operational aspects of the structure; to identify and resolve problems; and to verify that the component parts are functioning properly.

But how can this be accomplished during a period of social distancing and limited personal protective equipment (PPE)? Foregoing dam inspections is not the answer.

Maryland Dam Safety has been working to implement virtual inspection practices for inspection of construction and dams that are generally in good condition. The dam owner or their engineer will facilitate the virtual dam inspection using an online meeting platform (e.g., Google Meet, Microsoft Teams, Skype) tool. The owner/engineer will then walk the dam, operate necessary components, and take necessary measurements while the Dam Safety inspector takes notes. The inspection can be guided by the Dam Safety engineer, who can call out particular locations that need closer views or follow-up in-person inspections.

It is very important that virtual meeting platform allow the inspection to be recorded. The recording of the inspection can be archived with the Dam Safety Division and distributed to all involved parties for review and reference. At the current time, Google Meet is our preferred platform and State license allows for recording.

This virtual inspection process also allows for participants at their home/office to review aerial imagery, old reports and old photos – which may actually enrich the inspection experience.

Maryland Dam Safety staff are considered essential staff at this time – so in the event of an emergency or critical facility inspection, they can continue to make in-person inspections. All persons present during such inspections will be expected to adhere to CDC guidance for PPE and social distancing.



Socially Distant Inspector: Probing drain outfalls following another seepage incident at Greenbrier Dam

Confined Space Awareness

Dam Safety would like to use our newsletter as an opportunity to remind dam owners of their responsibility to diligently protect their employees from the potential hazards associated with confined spaces.

Many workplaces contain confined spaces because their configuration hinders the activities of employees and increase the risk of exposure to serious physical injury that would not normally arise in an open workplace. A “confined space” is a space that is large enough and so configured that an employee can bodily enter it; has limited or restricted means for entry and exit; and is not designated for continuous employee occupancy. At a dam, confined spaces include tunnels, principal spillways, manholes and underground vaults, among others.

Therefore, any owner of a dam in Maryland with a potential confined space should implement a written confined space permit policy and necessary training. The policy must be made available for inspection by employees and their representatives, prior to and during entry operations, in accordance with 5-602 and 5-101, et seq. of the Environment Article, Annotated Code of Maryland, COMAR 09.12.35 and Maryland Specific Supplements to OSHA Standards 29 CFR §§1926.1201 thru 1926.1213.



MDE SSDS Staff recently completed a two-day Confined Space training course.

OSHA’s Confined Space Standard (adopted by the Maryland Occupational Safety and Health (MOSH) on December 23, 2016) includes requirements for an alternative to a full permit entry, written programs, controlling hazards, equipment for safe entry, detection of hazardous conditions, informing contract employees, entry permits, cancelled entry permits, worker training, assigned duties, and emergencies.



Spring/Summer Maintenance

Now is a good time to perform regular maintenance and repairs at your dam. In particular, the Dam Safety Division recommends that:

- Grass is mowed and woody vegetation is removed before significant new growth appears
- Embankments are checked for unusual conditions such as seepage, slumps, unusually lush vegetation, erosion or animal burrows
- Concrete structures are checked for cracks, leaks or movement
- Trash racks are kept clear of debris that may have accumulated during high spring flows
- Valves are exercised and lubricated as needed to ensure proper working order
- Emergency Action Plans are updated

Rigorous maintenance programs are often necessary to ensure that conditions at a dam do not deteriorate over time. If you find a condition that needs attention, the Dam Safety Division is available to provide advice on next-steps. Contact us with any questions by calling (410) 537-3538

MOSH is a resource available to owners that need assistance in meeting the Confined Space Standard. Visit MOSH on the web at: dllr.state.md.us/labor/mosh/ or contact them by phone at 410-527-4499 (General Information) or 410-527-4472 (Consultation).

Please take the time necessary to ensure employee safety by identifying any confined spaces in your inventory and meeting the requirements of the Confined Space Standard for each of these spaces prior to entry.



Confined Space entry protocols are required at an inspection vault. Savage River Dam

Dam Safety Considerations for MS4 Pond Retrofits

Maryland's early stormwater management program (1982 - 2000) required the construction of quantity control ponds to reduce downstream flooding. Many of these ponds are ideal for retrofitting for improving local water quality and restoring the Chesapeake Bay. They are also an attractive option to local governments for meeting federal municipal separate storm sewer system (MS4) permits. Many of these ponds, however, have significant maintenance issues that need to be addressed during the retrofitting process (e.g., loss of storage capacity, rusting metal control structures, and trees on dams).

Before proceeding with a design for the alteration of an existing stormwater management pond, the current function of the facility must be assessed and documented. While it may be tempting to limit this



Keeping the Kids Busy While Teleworking...

With schools closed and many businesses switching to telework, it has been tough to juggle parenting and work duties. So why not combine them!

Below are a few fun ideas to integrate dams and STEM learning objectives into your daily routine. Kids enjoy getting to know what mom or dad does at work.

- Locate the nearest dam to your home using the National Inventory of Dams. (nid.usace.army.mil). Plan a visit to the dam if feasible.
- Download activity pages from the ASDSO Kids Corner (damsafety.org/kids)
- Start a log to estimate how much water each person in your household uses per day. How much per year? How big of a reservoir would your household or community need?
- Write to elected officials and explain the importance of safe dams in your community.
- For 4th to 6th graders – investigate the Dam curriculum at teachengineering.org/curricular/units/view/cub_dams

assessment to the water quality benefits of the pond, it is also important to determine the water quantity characteristics of the facility as it relates to downstream channel protection and flooding.

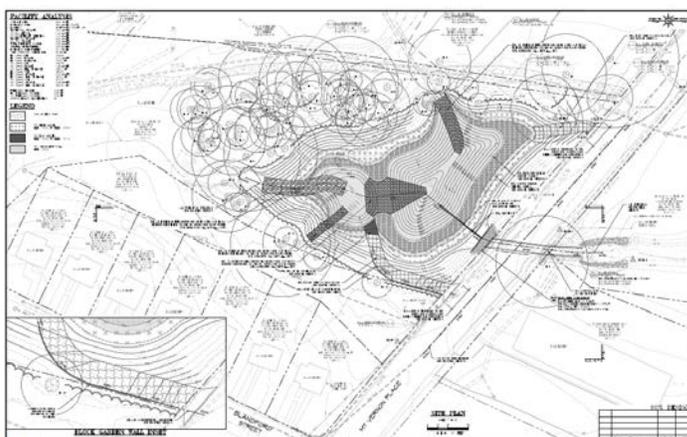
For example, a dry pond that is being altered to provide water quality volume via a permanent pool may reduce the amount of storage available to attenuate flood events. The Code of Maryland Regulations (COMAR) 26.17.04.11 (B)(6), prohibits projects that increase the risk of flooding to other property owners, unless the area subject to additional risk of flooding is purchased, placed in a designated flood easement, or addressed by other means acceptable to the Administration.

Additional implications that may arise from the modification of a stormwater management pond include the potential for a change in the hazard classification of that facility. Dams are classified based on the potential to impact downstream property and lives if the dam were to catastrophically fail. There are three hazard classifications for dams in the State of Maryland:

- Low Hazard -- loss of life is unlikely and damage is limited
- Significant Hazard -- small possibility of loss of life, damage causes property loss and/or interrupts use of public utilities or roads
- High Hazard -- loss of life is probable, serious damage to structures, important roads, public utilities or railroads

If the proposed design changes the hazard classification of a dam, or changes in the use of the downstream area necessitate elevating the hazard classification, the facility will need to safely pass a storm event much greater than the 100-year storm. All modifications to a dam or reservoir will require that an updated breach analysis and hazard classification be provided in the permit application. The analysis must be performed in accordance with the latest version of Maryland Department of the Environment's (Department) dam breach guidance, which can be found on the Dam Safety webpage. In addition, any deficiencies identified during the permitting process must also be addressed to obtain a permit.

Please contact the Department's Dam Safety Permits Division at MDE.DamPermits@Maryland.gov if you have any questions.



Spencer Dam Failure Investigation Report

In the early morning of March 14, 2019, Spencer Dam on the Niobrara River in northern Nebraska suddenly failed during a major flood and ice run on the river. The dam failure resulted in the death of one downstream resident and significant infrastructure damage.

The dam owner, in cooperation with the Nebraska Dam Safety Program, commissioned a failure investigation staffed by national dam safety experts to determine probable contributing causes (environmental, structural and human factors). Download the final report of the investigative team at: damsafety.org/SpencerDamReport



ASDSO Launches Searchable Dam Safety Incident Database

The database provides basic information on dam safety incidents to ASDSO members, dam safety stakeholders, the media and the public. You can search for incident information based on a number of search fields including dam name, state, downstream hazard potential, date and incident driver. You also have the option to download results or the entire database. Visit the database at: damsafety.org/Incidents

National Dam Safety Awareness Day: Reflecting on the Past – But Thinking of the Future

On May 31st, Maryland's Dam Safety Division recognizes National Dam Safety Awareness Day. This day of remembrance calls attention to the state of a normally forgotten piece of our nation's critical infrastructure – dams and reservoirs.

Whether one takes a moment to remember one of our nation's worst peacetime tragedies, the failure of the South Fork Dam near Johnstown, PA, a tragedy that claimed more than 2,200 lives, or the recent Spencer Dam failure in Nebraska, where one life was lost – we must also keep an eye on the future. In this era of intensifying natural hazards and a changing climate, the risk that dams pose to downstream communities is growing.

The MDE Water and Science Administration as a whole is currently evaluating climate change risks, vulnerabilities and adaptation strategies as they apply to our mission and day-to-day objectives. We recognize that there are many factors that contribute to the risk that dams pose, - but this also means that there are many ways to manage this risk.

Following the definition of risk posed by FEMA, our points of Attack to manage risk are to better understand the likelihood of intense loadings, to ensure adequate structural performance, and to lessen the magnitude of the consequences of failure. As a community of dam owners, engineers, regulators and emergency responders we can each contribute to slow "Risk Creep".

At the highest levels of the State, Maryland is demonstrating leadership on infrastructure resilience, climate adaptation and Preparedness through the National Governors Association, the American Flood Coalition and the Maryland Commission on Climate Change. The Sediment, Stormwater, and Dam Safety Program continues to strategize to improve dam inspections, encourage owner led maintenance and repair efforts, and develop policies and regulations that recognize . Collectively we can reduce risk by ensuring that our citizens understand the dams in their backyard. Through education and outreach, including development and exercising of Emergency Action Plans, a risk aware and well informed citizenry can help identify problems (See Something, Say Something) and efficiently evacuate when called on to do so.

Risk: "The product of the likelihood of a structure being loaded, likelihood of adverse structural performance, and the magnitude of the resulting consequences"
FEMA P-1025



Remember: Dam Safety is a shared responsibility. We succeed when we work together.