

## Edenville Dam Emergency Order

### Frequently Asked Questions

#### INTRODUCTION

Up to eight inches of rain fell on parts of mid-Michigan over three days in mid-May. The historic rainfall placed additional stress on the Edenville and Sanford dams. On the evening of May 19, a portion of the Edenville Dams earthen embankment failed, causing an uncontrolled release of impounded water to rush downstream toward Edenville, Sanford Lake and Sanford Dam. More than 11,000 people were evacuated and 2,500 structures damaged by the floods, but no major injuries or fatalities were reported.

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#### What is the current situation?

The breach in the Edenville Dam occurred on the east side of M-30, the roadway that crosses Wixom Lake between the Tittabawassee River and Tobacco River sides of the Edenville Dam. Since the area of the breach is lower than the Tobacco River spillway west of M-30, water from the Tobacco River has flowed past the collapsed roadway bridge and through the breach. This means that much of the Tobacco River is draining through the natural Tittabawassee River channel. Water flowing laterally past the dam is causing scouring along the dam and at the M-30 bridge site, compromising the stability of the dam and making it difficult to make temporary fixes to the M-30 bridge.



Aerial view of current situation with the Edenville Dam.

## How does an emergency order help?

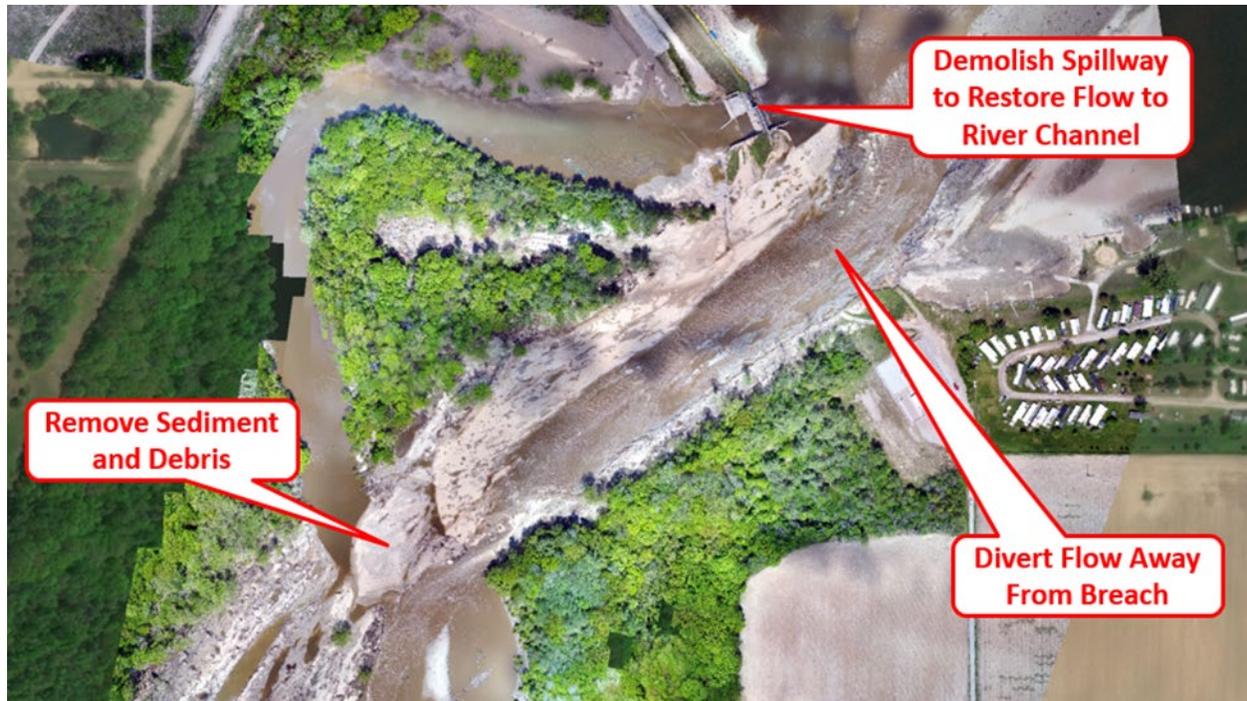
The Michigan Department of Environment, Great Lakes, and Energy has the ability under Section 31521(1) of Part 315, Dam Safety, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) to issue emergency orders that compel dam owners to take necessary actions related to dam safety. Section 31521(1) empowers EGLE to “order an owner to immediately repair, draw down, breach, or cease operation of a dam where a dam is in imminent danger of failure and is causing or threatening to cause harm to public health, safety, welfare, property, or the natural resources or the public trust in those natural resources.” The dam’s owner, Boyce Hydro Power LLC, has not been sufficiently responsive to EGLE requests for an engineering analysis of the Edenville Dam’s current situation. The emergency order can be used to compel Boyce to act or allow EGLE to take action on its own at the privately-owned dam.

## What work is to be accomplished under the emergency order?

The agreed-upon work plan instructs Boyce to make modifications to reduce the Tobacco spillway crest so that the Tobacco impoundment can be lowered to reduce dam safety concerns and restore flow to the downstream river. This will alleviate river flow strains on the collapsed M-30 bridges, minimize upstream impacts and address concerns about the dam stability. The Tittabawassee River spillway will be demolished and modified to restore flow to the abandoned river channel. Also, sediment and debris in the rivers at the spillways and up to 3,000 feet downstream must be removed.



Expected work to be performed on the Tobacco River side of the Edenville Dam.



Expected work to be performed on the Tittabawassee Side of the Edenville Dam.

### How was this work plan chosen?

AECOM, an engineering firm hired by the Michigan Department of Transportation (MDOT) in partnership with EGLE, to develop and evaluate alternatives to temporarily rectify the current situation, scored four alternative work plans. Their Alternative B was selected as the best plan to protect the public from possible future flooding, transportation infrastructure and repairs and downstream natural resources. Additionally, it was determined that this alternative could be feasibly completed before Spring 2021, when higher flows are expected on the rivers from spring rains and snowmelt.

### How were the alternatives scored?

The alternative plans were scored on how they enhanced safety, minimized loss of resources, maintained or improved resources, design and construction schedule, post operation maintenance and monitoring, construction risk, risk reduction and public and stakeholder perception.

### Will the work affect river water levels?

The work plan will restore the Tobacco River to its natural route, both above and below the Edenville Dam. Water levels behind the dam will drop by an unknown amount, and that will be known when the engineering and design plans are completed. Lowering the spillway will allow for more water to flow through the dam and into its natural downstream channel. The Tittabawassee River water levels won't likely change as its impoundment was nearly fully drawn down through the breach.

### Will the work affect water wells in the area?

Long term effects of changes in water levels or shifting water tables caused by the collapse of the dams will not be known for some time, but some shallow water wells near the shores of the former lakes have gone dry. It's unclear what impact the work related to the safety measures at the Edenville dam will have on the water table and property

owners' wells. There are a number of reasons that residents may be having issues with their wells: The flooding may have damaged pumps, screens may be clogged, or the depths of the well may not be sufficient. If residents are having issues with their wells, they should contact the emergency managers for either Midland or Gladwin Counties or the local health department. Local officials may be able to offer help with funding or resources to repair or drill deeper wells.

### Why is EGLE taking this action?

EGLE is concerned over the safety of the remaining portions of the Edenville Dam, the continued impact on natural resources and the prospect of a future flood that could send a wave of water that is 10-15 feet downstream. That amount of water would have a severe impact on residents, infrastructure, homes, businesses and natural resources between Edenville Dam and the Sanford impoundment. Lesser flooding extents would be expected downstream of the Sanford Dam. Modifying the Tobacco River spillway, restoring the Tobacco and Tittabawassee Rivers to their natural channels and clearing debris and sediment will be the best short-term protective measures for area residents and businesses.

After the dam in Gladwin County failed on May 19, 2020, EGLE attempted four times – through compliance communications and legal action – to compel Boyce Hydro Power LLC, which owns the dam, to hire a licensed engineer to inspect the dam. The engineer was to report any deficiencies and recommend corrective actions to address dam safety, public transportation and natural resource impacts. While a report by TRC Engineers that was provided by Boyce to the State did identify significant issues with the dam, it did not provide all of the information that was required under a Temporary Restraining Order sent to Boyce on June 15, 2020. Subsequently, EGLE, MDOT and engineering firm AECOM performed a full inspection and came to agreement on a work plan that will address these remaining concerns.

### What is the justification for the emergency order?

The emergency order is necessary to protect the public from possible future flooding impact, transportation infrastructure and natural resources. Without the partial breach of the Tobacco spillway, the remainder of the dam could be endangered, potentially causing another uncontrolled release of the water that is impounded behind the dam. The Edenville Dam is still considered a High Hazard dam, which means there are significant and severe consequences downstream should the dam fail. Another uncontrolled release of water could threaten lives and property. EGLE has tried without success since May 22, 2020, to compel Boyce to adequately address the ongoing hazards posed by the dam, and EGLE now must take this major step in the public's interest.

### Why is EGLE taking this action now?

On a project of this scope, work must be expedited and completed before Spring 2021. There are concerns that if the dam's condition is not improved, spring rains and thawing snow could cause additional damage to the dam and potentially cause another significant downstream flooding event, as well as put the M-30 bridges at further risk of damage.

### What is the timeline for actions under the emergency order?

Boyce is to complete the design and permitting of its work in Fall 2020. A finalized plan will include stabilization measures; however, the final, safe water surface elevation is still to be determined. Once the plan is finalized, construction is to begin, no later than Oct. 19, 2020. Completion of the project is expected in early Spring 2021. Because EGLE has concerns about Boyce's willingness or ability to complete this work in a timely manner, EGLE and MDOT have put AECOM under contract to continue with the design and permitting.

## Who will pay for the temporary work on the dam?

Boyce is to hire an engineering firm to develop a work plan and begin construction by Oct. 19, 2020. As owner of the dam, Boyce is obligated to pay for the work. Should Boyce fail to submit an acceptable plan or commence construction by the set deadline, EGLE will immediately step in and undertake the work. It will then seek to recover costs from Boyce.

## What does this mean for the dam's future?

The work under the emergency order is necessary to meet time-sensitive needs to address site concerns about the safety of the dam and ongoing impacts to public safety, transportation and natural resources. The work under the emergency order does not impact any final decision on the dam's future or the timeframe to decide how to move forward. Those determinations are to be made by the dam's owner and not by any state agency or department.

## Why is MDOT involved in this process?

The failure of the Edenville Dam caused flooding that washed out two M-30 bridges over Wixom Lake and the Tittabawassee River. Without restoring the natural flow of the Tobacco River, it creates challenges to reconstruct these crossings due to continuously evolving river channel dynamics. Long-term, MDOT is looking to develop a more permanent transportation solution.

## How does this work fit into the investigation of the cause of the dam failure?

The emergency work plan is separate from an ongoing independent forensic investigation of the causes behind the collapse of the Edenville and Sanford dams and any recommendations by the team for future action. That in-depth investigation by five subject matter experts is expected to be completed next year. Read a [one-page document that explains the reviews and investigations launched after the dam failure](#).

## What if Edenville Dam is not rebuilt, will it be removed?

Any decision on the future of the dam is up to the dam's owner. EGLE does not typically dictate the fate of dams it regulates. Rather, EGLE is generally supportive of maintaining or removing existing dams, provided that either option is carried out in a safe manner and in accordance with applicable laws. EGLE is fully committed to working with the dam's owner and local stakeholders as they work toward a determination of whether or not the Edenville Dam will be restored.

## More resources

- [Dam Safety Program website](#)
- [Edenville Dam Failure website](#)
- [Michigan Dam Safety Task Force website](#)
- [Preliminary Report on the Edenville Dam Failure, Response Efforts, and Program Reviews](#)
- [Edenville Dam failure internal and external reviews](#)

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*Meaningful involvement of residents ensures an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health.*