

2020 MIDLAND COUNTY DAM FAILURES & THE EFFECT ON THE MIDLAND FIRE DEPARTMENT



Or "Swimming Upstream"

History: DAMS AND MORE DAMS

- There are numerous dams in the Tittabawasse watershed north and west of The City of Midland.
- The two largest and closest are Sanford, nearest to the north and Wixom, located north of Sanford. Both have large lakes and are operated by Boyce Hydro in 2020.
- These dams were built incorporating hydro-electric power plants in the mid to late 1920s. They are of earthen work construction with concrete spillways.
- Additional smaller dams further north include Secord north of Wixom. Most, if not all are of similar earthen work construction and are aging.



Preparation

- **Fall 2019:** Midland County EM Jen Boyer conducts a tabletop dam failure exercise using updated inundation maps.
- The dam failure maps indicate an inundation similar to a 500 year flood event.
- Midland Fire Department determines such an event would trigger evacuation of approximately a third of the city's land mass and potentially 10,000 people.
- An evacuation area South of US 10 & West of Eastman Rd. is established. Evacuations are to be accomplished using MFD, MPD and door to door as needed. Assisted living, nursing homes and other high risk facilities will receive notifications as soon as possible.

Saturday, May 16th “The Gathering Storm”

- On the evening of Saturday May 16th, the National Weather Service issued a flood watch for Midland County from Sunday the 17th through Monday the 18th. Heavy rainfall to the north and west was expected to impact the Tittabawassee River and the dams north of the City of Midland.
- The river was initially expected to crest at 25.8 feet on Sunday the 17th.
- The city has a flood response action plan in place with some street closures and minor evacuations beginning at 20'. Flood stage is established at 24'.
- Action points are in place up to a 33.9' level.
- 35' is considered to be a 100 year event.
- 38' is considered to be a 500 year event. Moderate flooding is routine in the city.

**Sunday,
May 17th
RAINDROPS
KEEP
FALLING.....**

- The National Weather Service states the Tittabawassee will now crest at 25.2' on Wednesday, May 20th.
- Heavy rains continue to fall over the watershed.

**Monday,
May 18th
More
Raindrops
Keep
Falling.....**

- “Normal” street closures begin for light flooding.
- 10:54 a.m. - The Weather Service revises predicted levels to crest at 28.5’ on the morning of Wednesday, the 20th & issues a “**Flood Warning**”.
- Residents in low lying areas are warned of potential flooding per the city plan.
- 1:31 p.m. - The Weather Service puts the flood warning in effect “Until Further Notice” with no change in crest predictions.
- Heavy rains continue to fall over the watershed. The dams are spilling at capacity. Lake levels are rising dramatically.
- 5:00 p.m. - An EOC meeting is called to discuss the escalating situation. Information coming from Gladwin County to the north and from Boyce Hydro employees is alarming. It is clear to members of the EOC that the dams are in danger of over topping. Boyce management denies any immediate danger.
- 6:54 p.m. – The river is now expected to crest at 32.5’ on Wednesday.

Monday, May 18th Continued...

- 11:00 p.m. – A Zoom EOC meeting takes place. The situation continues to deteriorate. Information from Boyce employees is less than assuring. The dams continue to spill at maximum, with water nearing the top of the dams.
- The Emergency Manager asks for input from the County Chiefs. I, along with several other Chiefs state we cannot wait. Evacuations downstream from Wixom and Sanford Dams must take place as soon as possible. We know the Sanford dam cannot hold if the Wixom dam to the north fails.
- Midland Twp. Chief Swanson & Homer Twp. Chief Hanson whose districts are normally only moderately effected by flooding, offer to deploy to the northern departments to assist in evacuations. The other Chiefs offer as well.
- The EM asks what the message to the public should be? I state the message should say there is an **“IMMINENT DAM FAILURE”**. Anything less will not be taken seriously by the public. Coleman Chief Cozat seconds this language and all agree.

**Tuesday,
May 19th
Just when it
couldn't get
any worse....**

- 12:22 a.m. - AN **"IMMINENT DAM FAILURE"** warning is issued to residents from Wixom Lake to Sanford lake and residents downstream from the Sanford Dam to the City of Midland boundary. Should the dams fail, there will be sufficient lead time to evacuate city residents in areas not already evacuated.
- Shelters are set up at several public schools to handle evacuees.
- In the early morning hours, Boyce Hydro management (In Las Vegas) disputes "imminent dam failure" with the EM and 911 Director, arguing the dams are "structurally sound", although they cannot regulate the water over the spillways. This is announced to the public by Midland County EM and Boyce Hydro with recommendations that residents around the lakes still evacuate.

**Tuesday,
May 19th
Continued....**

- Although the rains have subsided, the watershed continues to rise with the run off.

WIXOM
LAKE





**Tuesday,
May 19th
Finger in the
Dike??**

- I am requested by Dispatch, along with several other Chiefs and the Sheriff to meet at 5:00 p.m. with Boyce workers, Fisher Contracting, an engineering firm and EGLE representatives at the Wixom Dam in Edenville.
- We arrive to hear a proposal or option to intentionally breach the dam earthen works near the Tobacco spillway. The hope was that although this would create a failure and would still result in flooding, it would be much slower.

**Tuesday
May 19th
Finger in the
Dyke,
continued...**

- We cleared from the Wixom dam at approximately 5:40 and reconvened at the Edenville Fire Department several blocks away from the dam which was obscured by trees.
- I followed the others through the door as we were discussing how that decision was a little above our pay grade (Chief Cozat's words) I then received a frantic call from our 911 Director telling me the dam had failed and to "get out of there now". Her staff was just sending the alert out. The phone connection was lost at this time.

Tuesday, May 19th Escalation

- I returned directly to the EOC from Wixom Dam. EM Boyer asks what we needed. I requested activation of the National Guard for personnel and high wheeled vehicles, MI Task Force 1 for swift water rescue and all MABAS water rescue units available from Bay and Saginaw Counties.
- 5:48 – The National Weather Service issues a life threatening flash flood warning from Edenville to Sanford dam seven miles downstream. (no kidding?)
- 5:51 p.m. – It is announced the Edenville dam has failed and Edenville and Sanford areas need to evacuate.
- 6:11 p.m. Announcement - US-10 which crosses Sanford Lake will be closed.
- 6:40 p.m. – The formal announcement is given to City of Midland residents west of Eastman & south of US-10 to evacuate. Evacuation of those who will go is completed in approximately 4 hours.

**Tuesday,
May 19th
Sanford Dam Failure
Begins**

- 7:07 p.m. – It is announced that a structural collapse of the Sanford dam is imminent.
- 9:50 p.m. – Governor Whitmer declares a State of Emergency for Midland County.



Additional Assets Requested

- Over the next day, additional resources are called to support and relieve operational personnel.

**Wednesday
May 20th**



Wednesday, May 20th & Beyond....

- The Oakland County Incident Management Team arrives and begins operating out of MFD Station 1.
- They are instrumental in assisting with logistics over the next several days and are invaluable in assisting and relieving very tired MFD Command Officers.

Failings & Points of Light

- **Midland County EOC -**
- Organized as a group of representatives from local government and department heads sitting at a rectangular table. PIOs are available from both city and county and are effective.
- No seats established for Command, Operations, Planning, Logistics or Finance Sections. This in spite of frequent flood events in recent years.





Schools

Business Community

Libraries

Questions??

ccoughli@midland-mi.org

