

Au Train River Flooding

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MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Today's Discussion

- My job duties
- Floodplain Terms & Significance
- FEMA Mapping in Au Train Township
- Flooding on Au Train River
- Flood Mitigation and Grants

My Job Duties

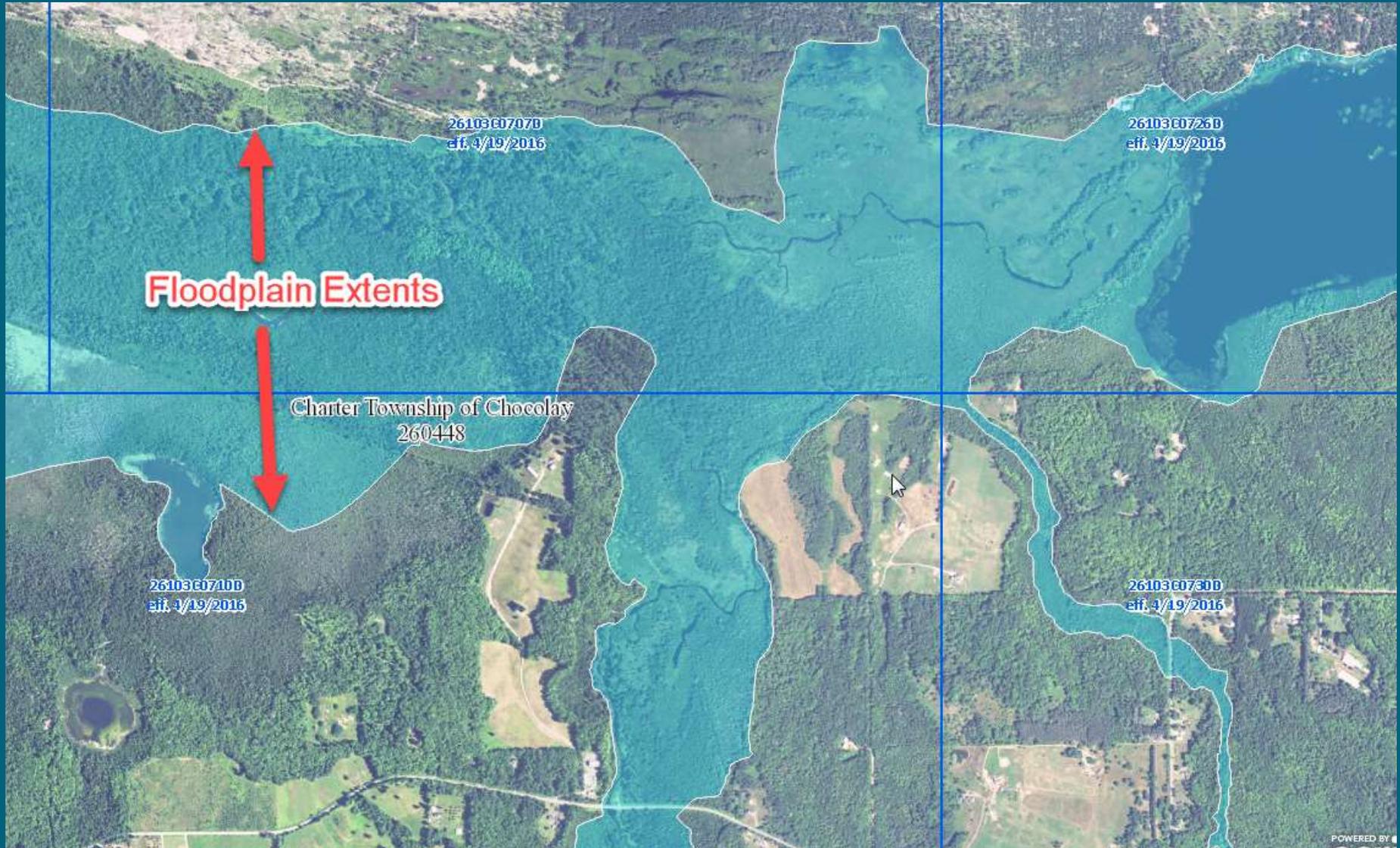
- Administer Michigan's Floodplain Statute (Part 31 of MI NREPA) for EGLE WRD
 - ✓ Review permit applications for projects in rivers, streams, floodplains
 - ✓ Bridges, culverts, fills, dams, etc.
 - ✓ Address violations (harmful fills/structures in FP)
- Local contact for FEMA National Flood Insurance Program (NFIP)
 - ✓ Outreach and assistance to NFIP communities & public
 - ✓ Help communities join NFIP
 - ✓ Provide Floodplain Elevations to public
 - ✓ Work with Building Inspectors

Recap: What is a Floodplain?

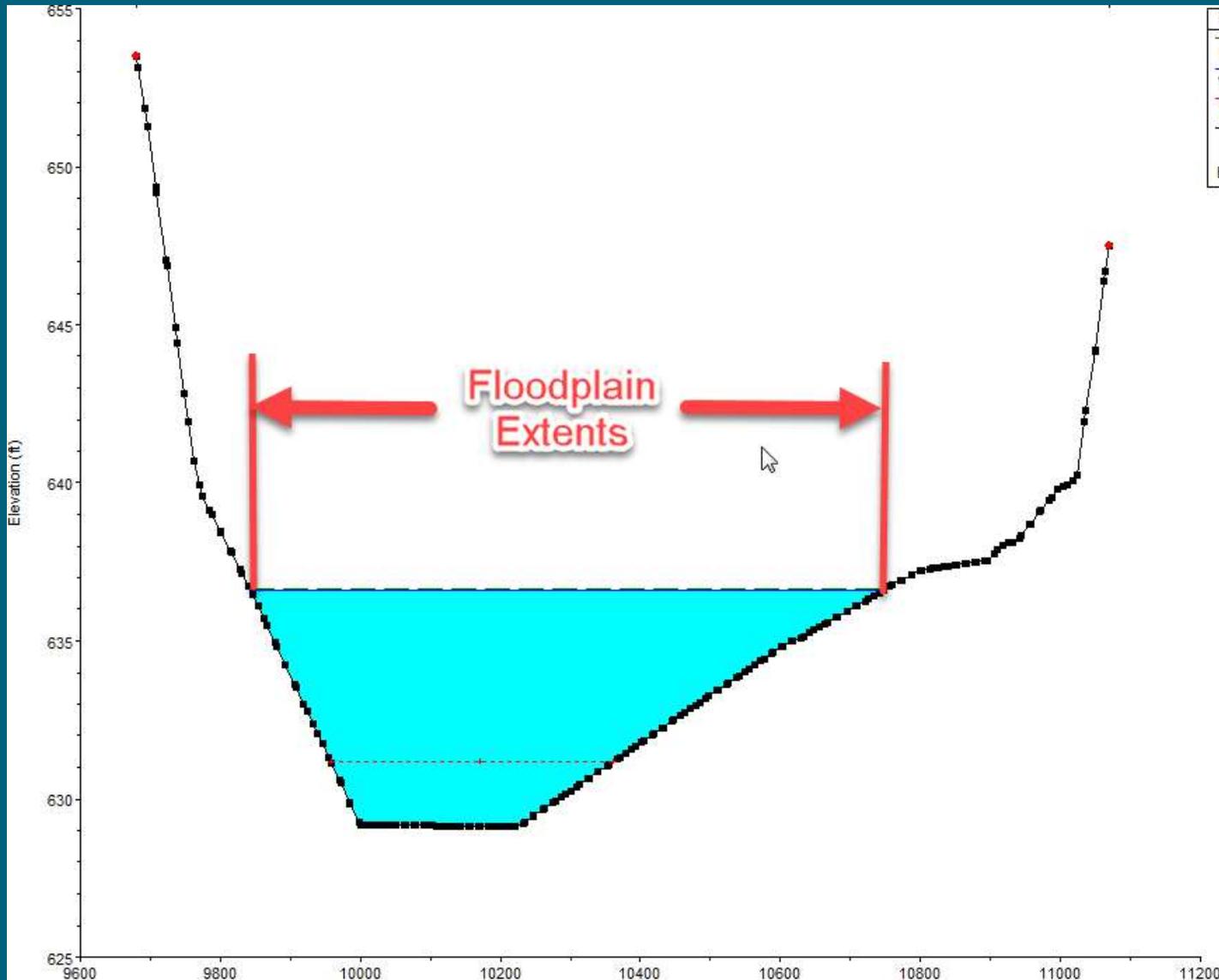
- A Floodplain is the area of land adjoining a river, stream or lake that will be inundated by a *100-year flood*.
- What is a 100-year flood?
 - It is a flood with a magnitude which has a 1 % chance of occurring or being exceeded each year.
 - Example: The 1% chance (1 in 100 chance) rainfall event at Au Train is 4.6” in 24 hours*.

*Based on statistics determined by NOAA / NWS.

Floodplain = Horizontal Extent (Plan View)



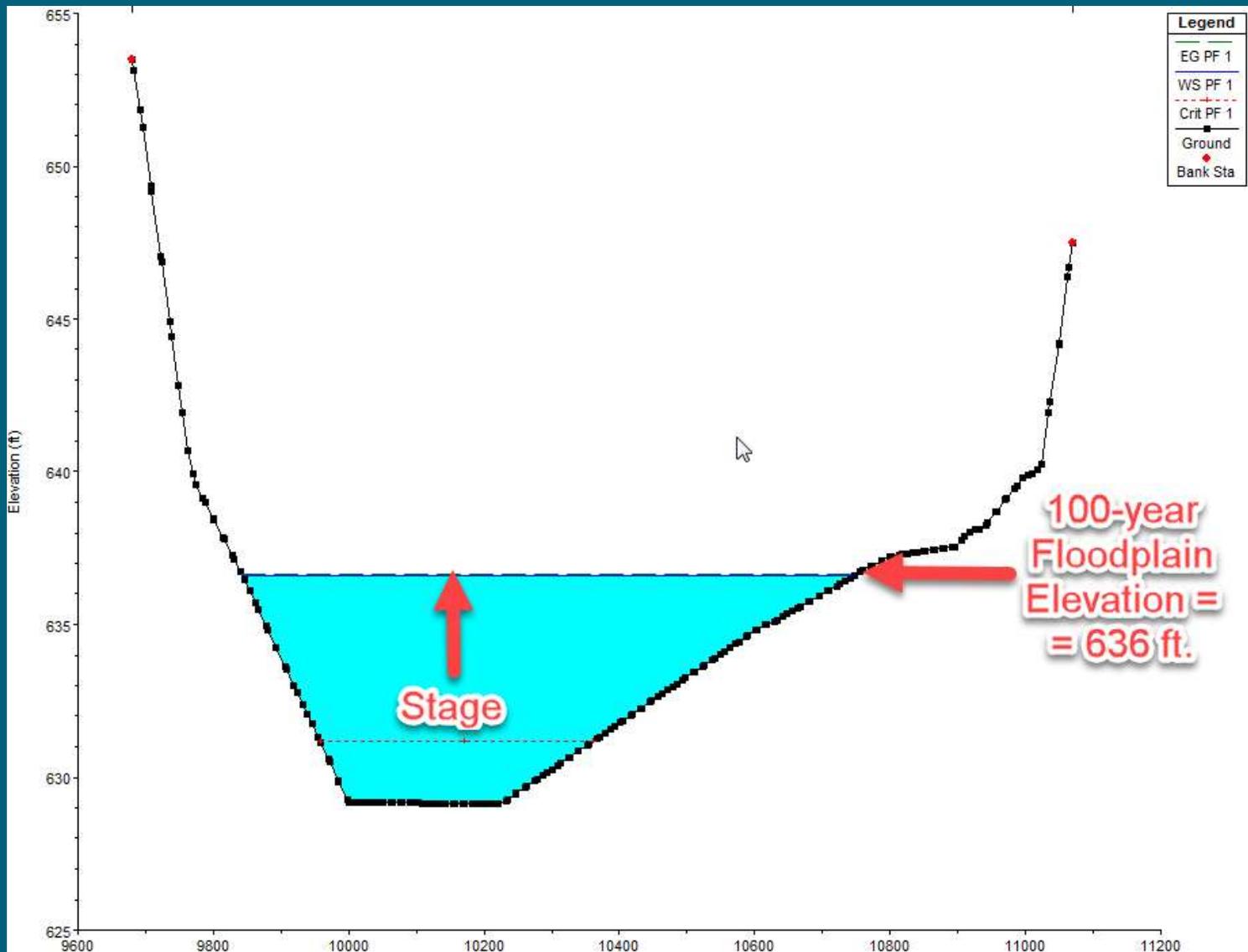
Floodplain = Horizontal Extent (Cross-Section View)



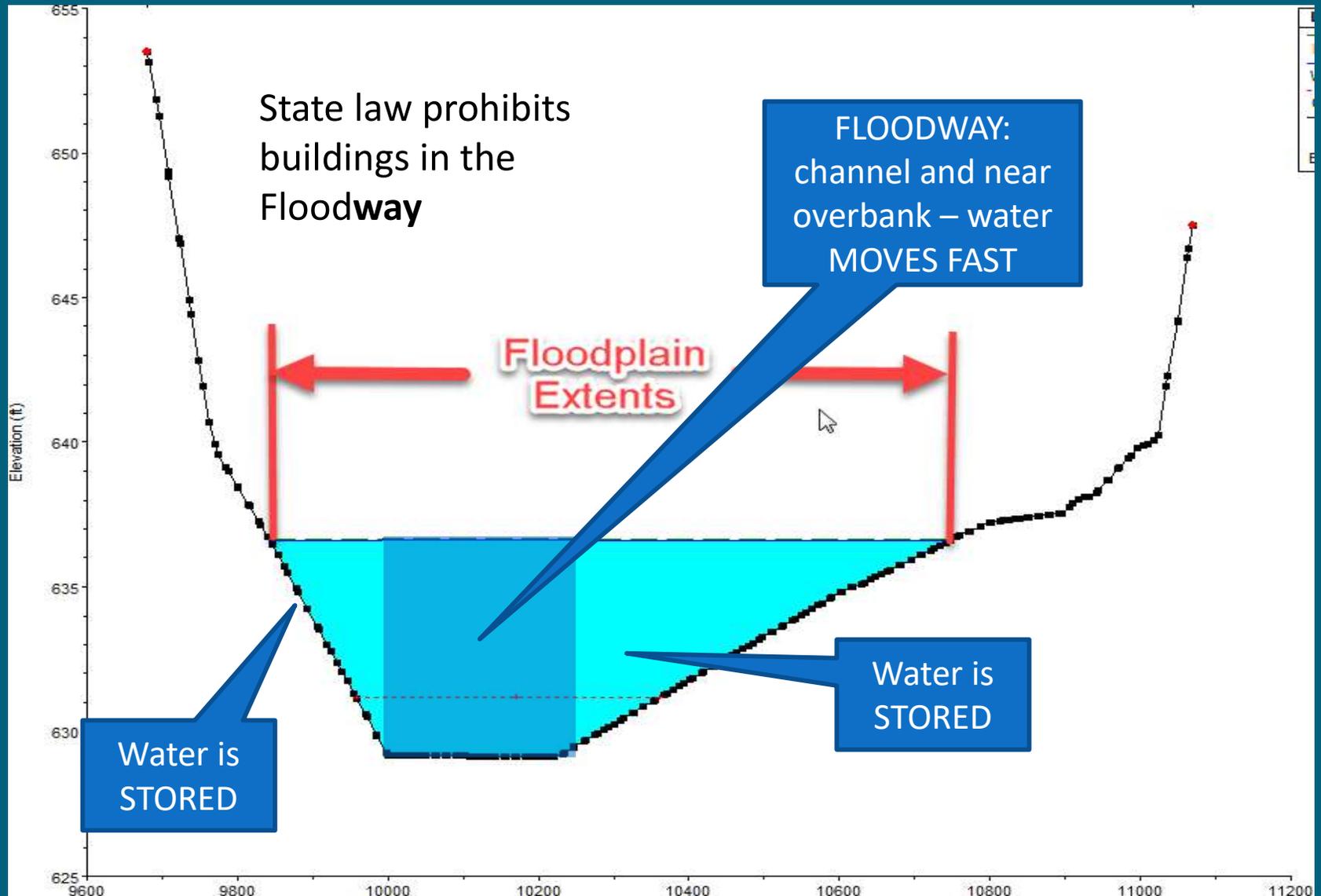
What is Flood Stage and the “100-year Flood Elevation?”

- The Flood Stage refers to how high (what elevation) the water rises to, due to a given rainfall-runoff event.
- The “100-year Flood Elevation” is the Flood Stage elevation that occurs when the 1% Flood (a.k.a. 100-year flood) occurs

Flood Stage or Elevation = Vertical Extent



Floodway vs. Floodplain



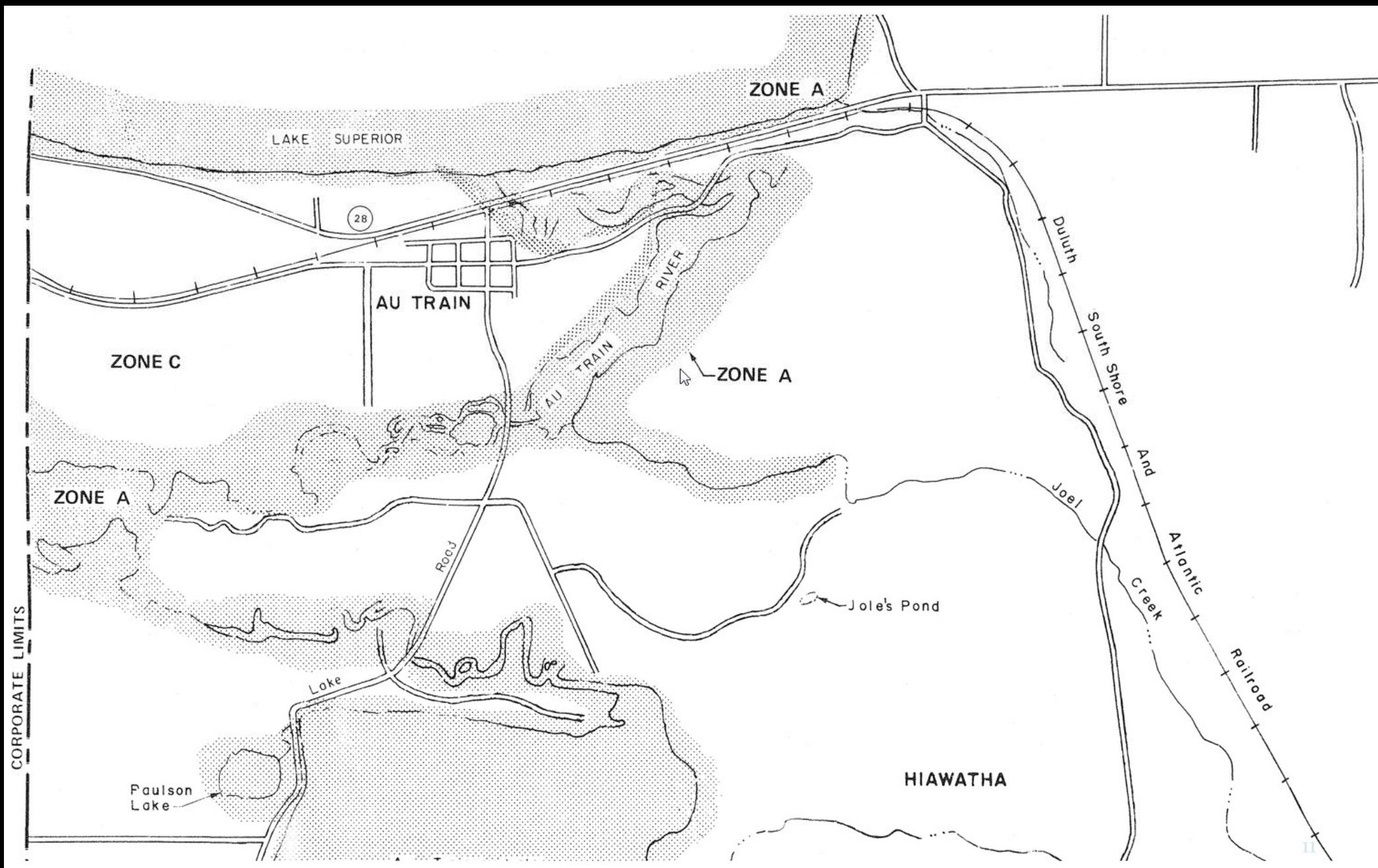
DRAFT New Flood Map (FIRM) for Au Train

**DRAFT – NOT FOR
CURRENT USE**

Light blue is overall
FLOODPLAIN

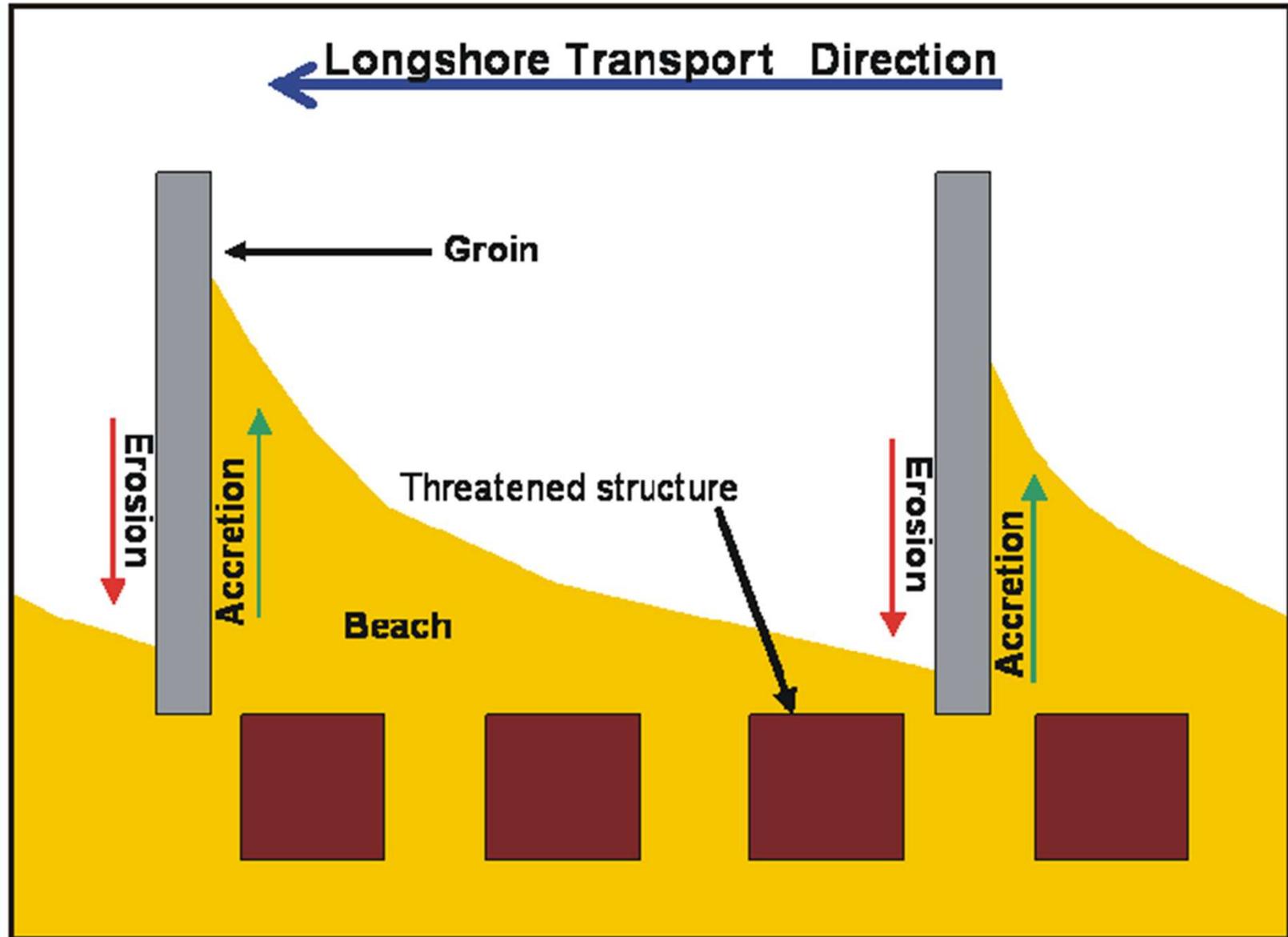
Purple is
FLOODWAY

Current Flood Map (FIRM) for Au Train



Current Flooding Issue

- Riverine Flooding is occurring due to ice blockages at bridge and coastal process of long-shore drift.
(Coastal flooding is inundation by the lake, directly)
- “Long-shore drift” is the steady movement of shoreline materials (sand, rock) back and forth along the shoreline
- At the river mouth, the drift direction varies to east or to west depending on storms, water level, etc.
- Long-shore drift cannot be stopped. Hard structures such as breakwalls “starve” the down-drift areas of sediment causing erosion
- Flooding solutions upstream of bridge are most viable



Suggestion – Floodplain Overflow Culverts Beneath M-28:

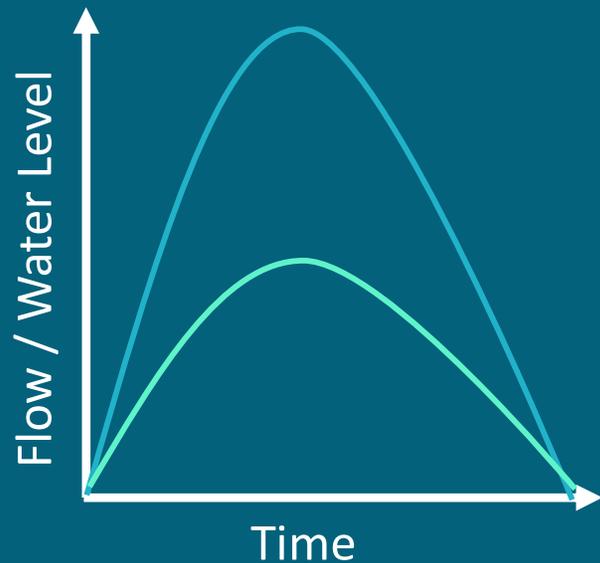
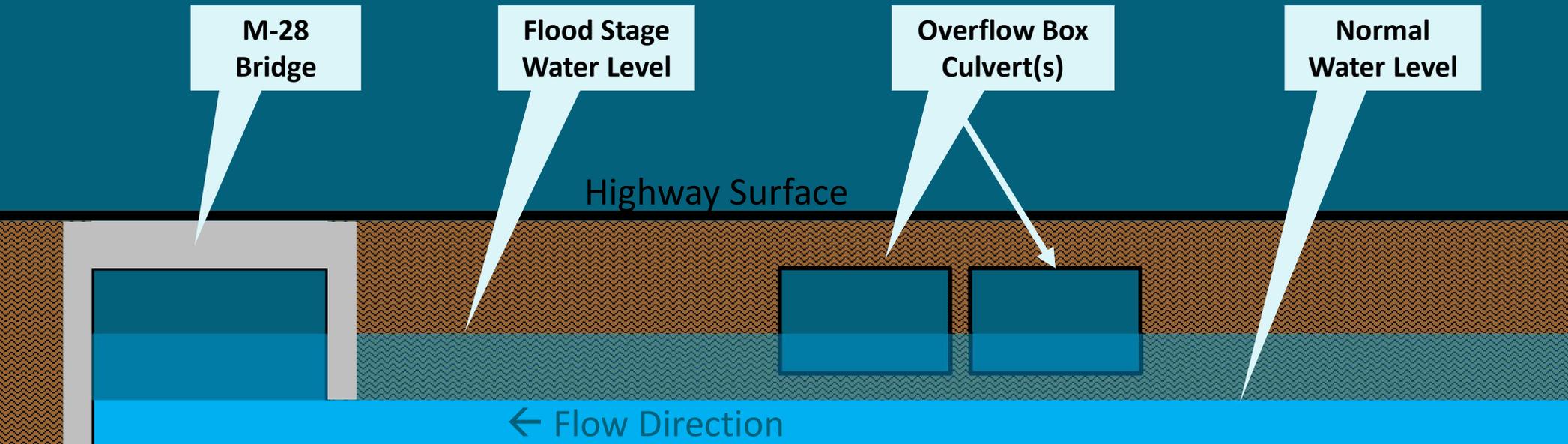


Install one or more floodplain equalizer culverts in one or both locations.

Culverts would be set such that bottoms (inverts) would be above the normal river water level and would pass flood waters to other side.

Beach & M-28 Bridge

Suggestion – Floodplain Overflow Culverts Beneath M-28:



- Lower flood stages and possibly duration of flood
- Is a practice used by MDOT / requires their cooperation
- Does not affect normal river water levels
- Does not involve trying to control Coastal Processes
- Potentially reduce frequency / urgency of dredging
- Reduce associated risk for bridge impacts from dredging
- Straightforward design
- Can be funded by FEMA Hazard Mitigation/BRIC Grants

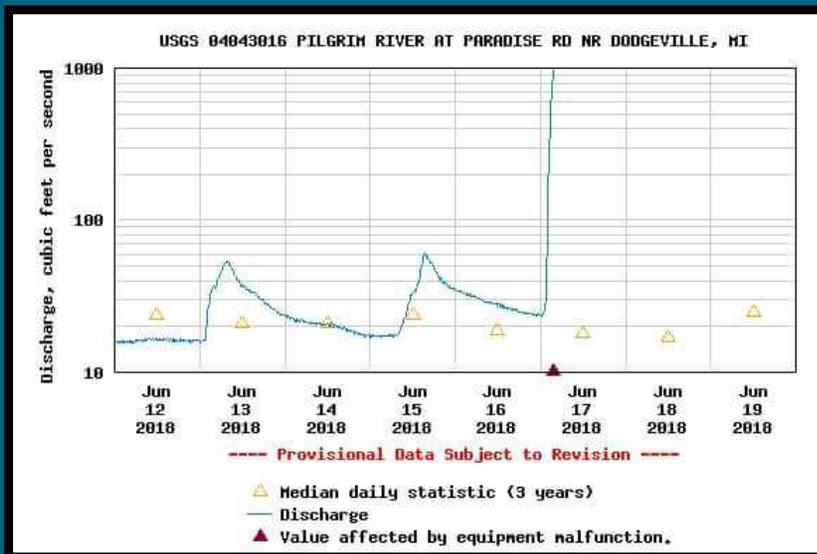
FEMA Grants

- Hazard Mitigation Grant Program (HMGP)
- Local Flood Mitigation Assistance (LFMA) Grant
 - ✓ Reduce flood losses for single structures or facilities, groups of structures or whole neighborhoods.
- Building Resilient Infrastructure & Communities (BRIC) Grant
 - ✓ Direct Technical Assistance (DTA) under BRIC* - FEMA provides engineers and scientists to serve as a community's "consultant" to evaluate flood hazards, and help select and design mitigation
- Pre-Disaster Mitigation (PDM) Grant
- FEMA Grants State Contact: Matt Schnepf
 - Hazard Mitigation Unit Manager - Emergency Management & Homeland Security Division of MI State Police; SchnepfM1@michigan.gov*

*Au Train Township applied last weekend

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Web Resources

- **FEMA Map Service Center:**
<https://msc.fema.gov/portal/>
- **FEMA Digital National Flood Hazard Layer:**
<https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd>
- **FEMA's Floodsmart.gov (About Flood Insurance):**
<https://www.floodsmart.gov/>
- **FEMA Preliminary Map Viewer:**
<https://fema.maps.arcgis.com/apps/webappviewer/index.html?id=e7a7dc3ebd7f4ad39bb8e485bb64ce44>