
# Wareham, Mill Pond Dam Replacement

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massDOT
Massachusetts Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

# Agenda

- Project Background
- Existing Deficiencies
- Environmental Constraints
- Proposed Improvements
- What's happening in resiliency?

# Project Background

- MassDOT initiated the project in 2010
- Rated as a High Hazard Dam by DCR
- A 2022 inspection found the dam in poor condition with significant structural, operational, and maintenance deficiencies
- Project is expected to go out to bid Spring of 2026

# Existing Deficiencies

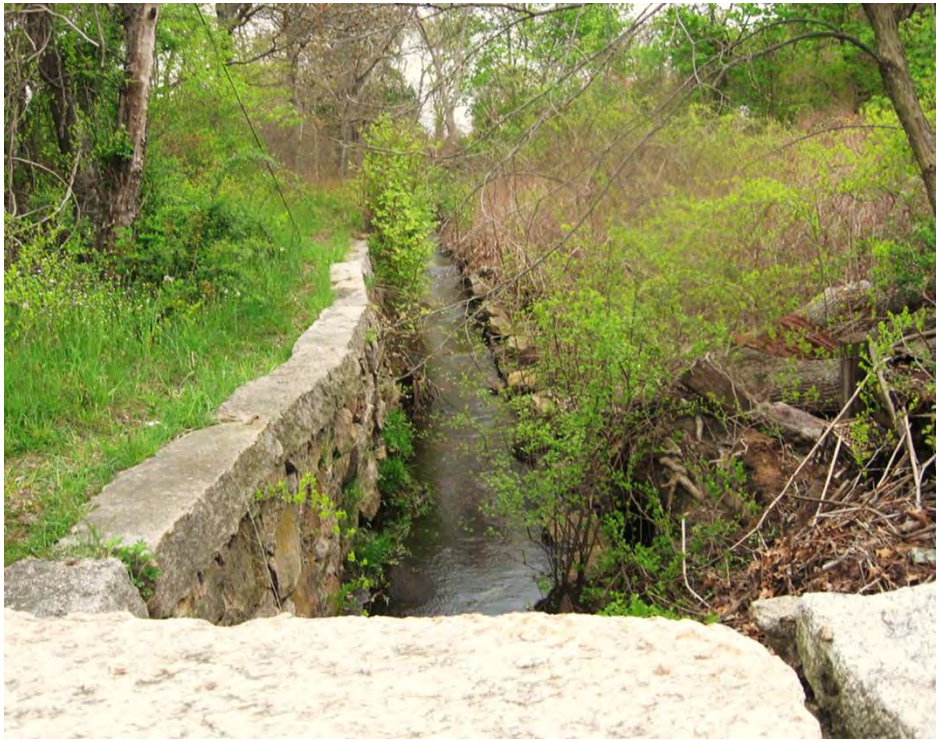
- The main and auxiliary spillways are undersized
- Fish ladder is inadequate and has a high mortality rate
- No bicycle accommodations are provided along Cranberry Highway
- Sidewalks are non-ADA compliant

## Auxiliary Spillway

## Harvesting Pad and Fish Ladder

# Environmental Constraints- Historic Agawam Herring Run/Dam

- Site has been maintained since the 17th century
- Existing dam was built in the 1800s and was reconstructed in the 1900s
- To this day, the Towns of Wareham and Plymouth maintain an annual agreement and auction the fishing rights when fish populations are high enough



# Environmental Constraints- Wetland Impacts

- Mill Pond Dam impounds the 145-acre Agawam Mill Pond

- With a 2-foot drawdown, the project would impact:
  - 40 acres of wetlands
  - Cranberry Bogs
  - Herring Migration
  - Fishing and Boating

- Through collaboration with DCR Office of Dam Safety, secant pile wall cofferdams will be installed

# Proposed Improvements

- The existing dam and spillway will be replaced with arch sharp crested weir spillway.
- A new step pool and fish ladder will provide improved aquatic connectivity for river herring and other diadromous fish species.
- Pedestrian and bicycle accommodations will be provided along Cranberry Highway

*Draft renderings are subject to change

Arched Weir Spillway

Pool and Weir Fish Ladder

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# Current Resiliency Integration


### Planning/ Scoping

MassDOT Highway Division's Project Scoresheet includes resiliency considerations.

MaPIT automatically screens proposed project locations against environmental, system condition, equity and safety layers.

ERC includes questions related to resiliency and stormwater control measures at scoping.

### Design/ Construction

Projects going through MEPA environmental review process use the RMAT Tool.

Added a "Climate Change Indicator" subsection as part of the updates to the MassDOT Bridge Design Manual.

Established a Rivers & Roads training program and expanding internal and external training.

Regularly use resilience reference manuals available through the USDOT Climate Center.

### Operations/ Maintenance

Developing a Programmatic Operations and Maintenance Plan for drainage system maintenance given more frequent and severe storm events.

Updated MassDOT standards to align with resiliency best practices relating to pavement mixture, preservation projects, and existing and new bridges.

Capturing institutional knowledge and increasing awareness of vulnerabilities.

# Further Enhancing Vulnerability Screening


## Actions:

- Develop enhanced workflows to screen incoming projects for natural hazards
- Develop and evaluate design considerations to address potential impacts
- Goal is to include the screening workflows at project initiation and scoping

# Extreme Heat Workflows

## What factors influence Extreme Heat risk for MassDOT projects?

### Infrastructure Damage

**Thermal Deformation Risk** = **Heat Island Effect** (Surface Temperatures > 120 °F) + **Heavy Vehicle Traffic** + **Poor Condition Roads**

### Road User Safety

**Heat Stress Risk** = **Heat Island Effect** (Ambient Air Temperatures > 90 °F) + **Pedestrian / Bicycle / Transit Infrastructure** + **Lack of Shade / Canopy**

# Extreme Precipitation Workflows

**What factors influence Extreme Precipitation risk for MassDOT projects with hydraulic structures?**

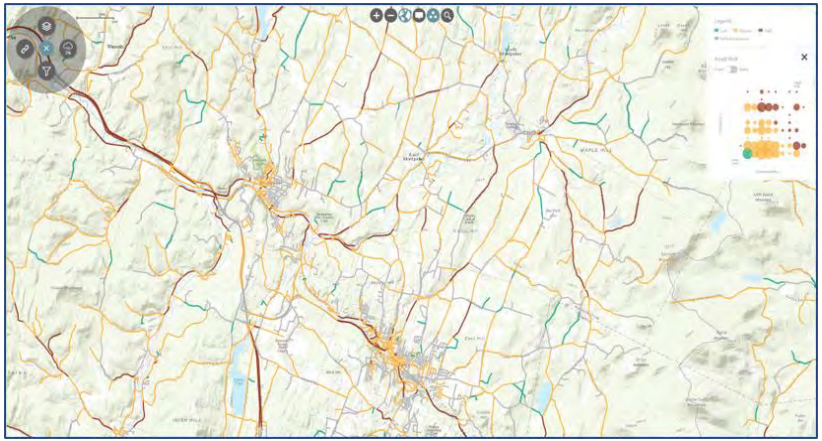
## Infrastructure Damage

**Structure Washout Risk** = **Likelihood of Flooding** + **Crossing Characteristics** + **Streambed and Slope Stability**

## Road User Safety

**Flash Flood Risk** = **Likelihood of Flooding** + **Watershed Flashiness** + **Drainage Area Characteristics**

# The Intersection Between Vulnerability and Criticality



Vtrans Transportation Resiliency Planning Tool
(VTrans Flood Resilience Map)

- Develop roadway criticality and vulnerability that will assess risk.
- Highly vulnerable locations that overlap with high criticality network:
  - Initiation of standalone project to mitigate risks.
  - Resiliency strategies incorporated into review projects has higher priority within workflow.
- **Take Away:** Data driven methodology to direct capital funding into network preservation of high critical/vulnerable areas.

# Thank you!

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