Ecological Restoration
Stream Crossings Projects

Regulatory History of Stream Crossing Standards

- Army Corps adopted Standards in 2005 Programmatic General Permit (PGP).
- 2008 - MassDEP amended WQC Regulations to require new subdivision projects to meet Stream Crossing Standards.

MassDEP Supports Stream Crossing Improvements

MassDEP has

- Participated in numerous workshops on SCS.
- Implemented the Stream Crossing Standards through its permitting actions.

Regulatory History of Stream Crossing Standards

- Wetlands Regulations for Bank and Land Under Waterways says projects shall not impair:
  - ✓ the water carrying capacity of the channel; or
  - ✓ the capacity of the Bank to provide breeding habitat, escape cover and food for fisheries; or
  - ✓ the capacity to provide important wildlife habitat functions
- Meeting the stream crossing standards meets the regulatory standards for Bank and LUW.

MassDEP participated in the River and Stream Continuity Project*

*River and Stream Continuity Project

MA Riverways Program, UMASS, The Nature Conservancy

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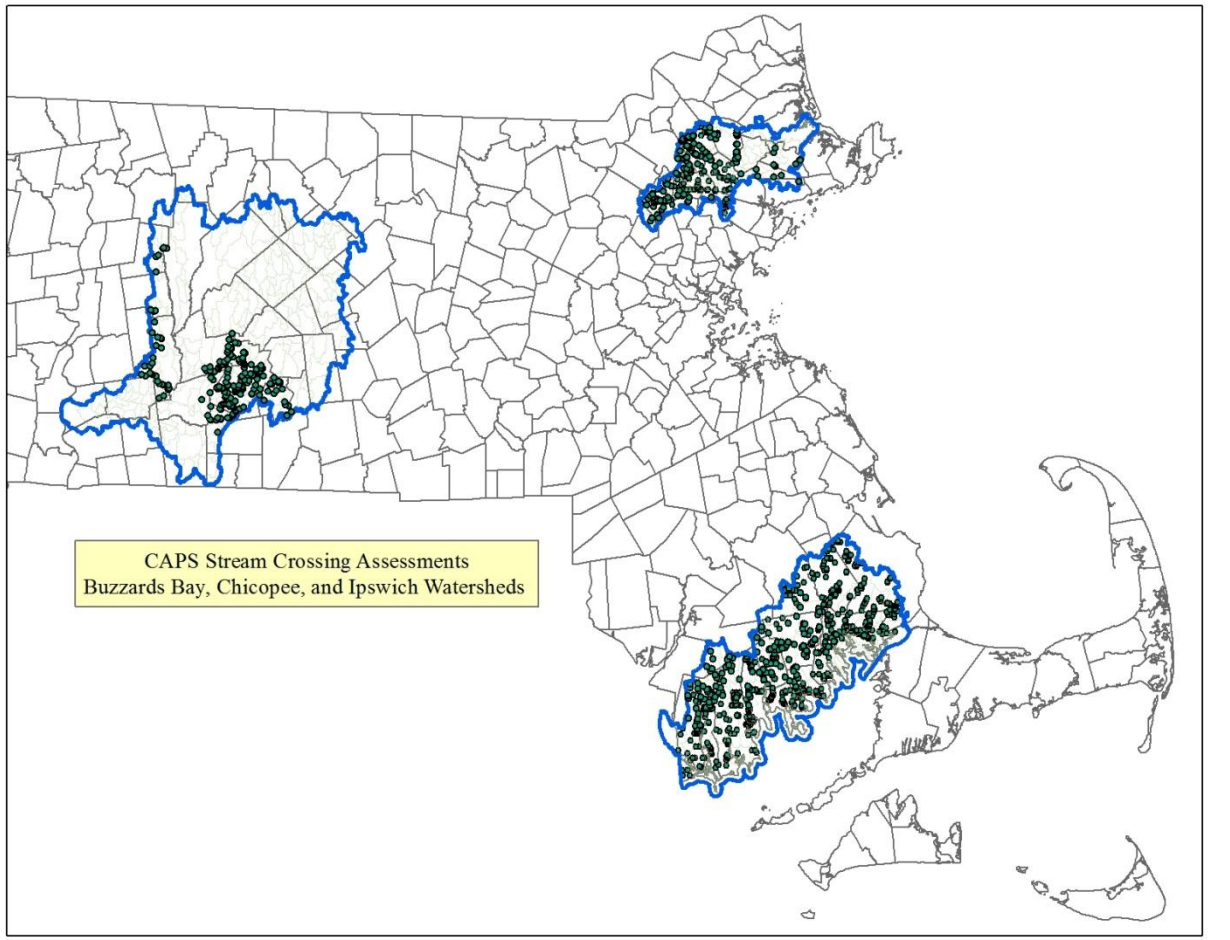
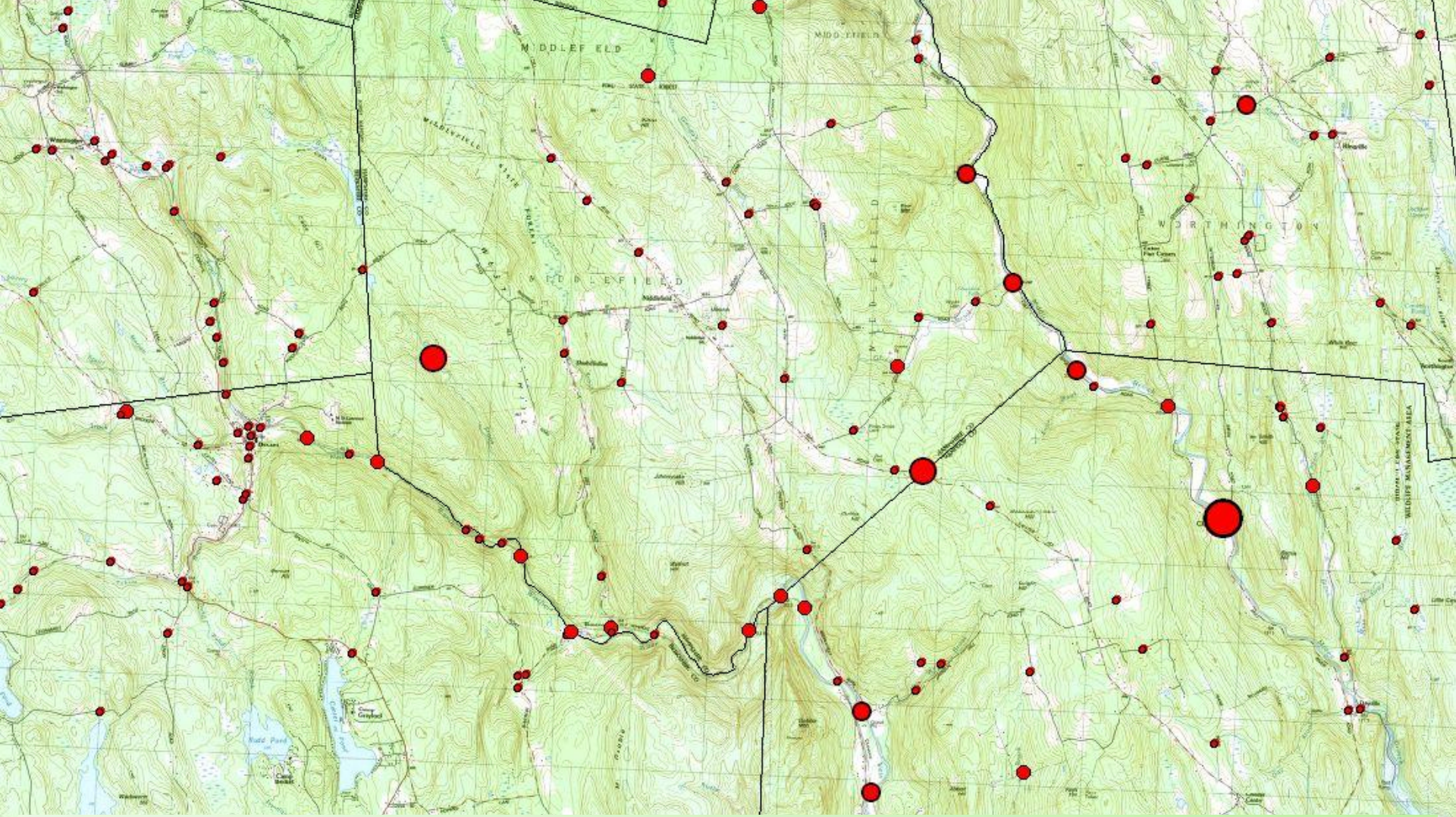
MassDEP Supports Stream Crossing Improvements



Assessed over 600 stream crossings in the (combined) Chicopee, Ipswich, and Buzzards Bay watersheds.

Stream Crossing Standards for Ecological Restoration Projects



Stream crossing ER projects are especially effective at priority crossings that maximize the “aquatic connectedness” achieved by culvert/bridge crossing replacement.

Conservation Assessment and Prioritization System (CAPS) Critical Linkages Project
UMASS-Amherst, TNC.

Tropical Storm Irene, Hurricane Sandy and Extreme Storm Events

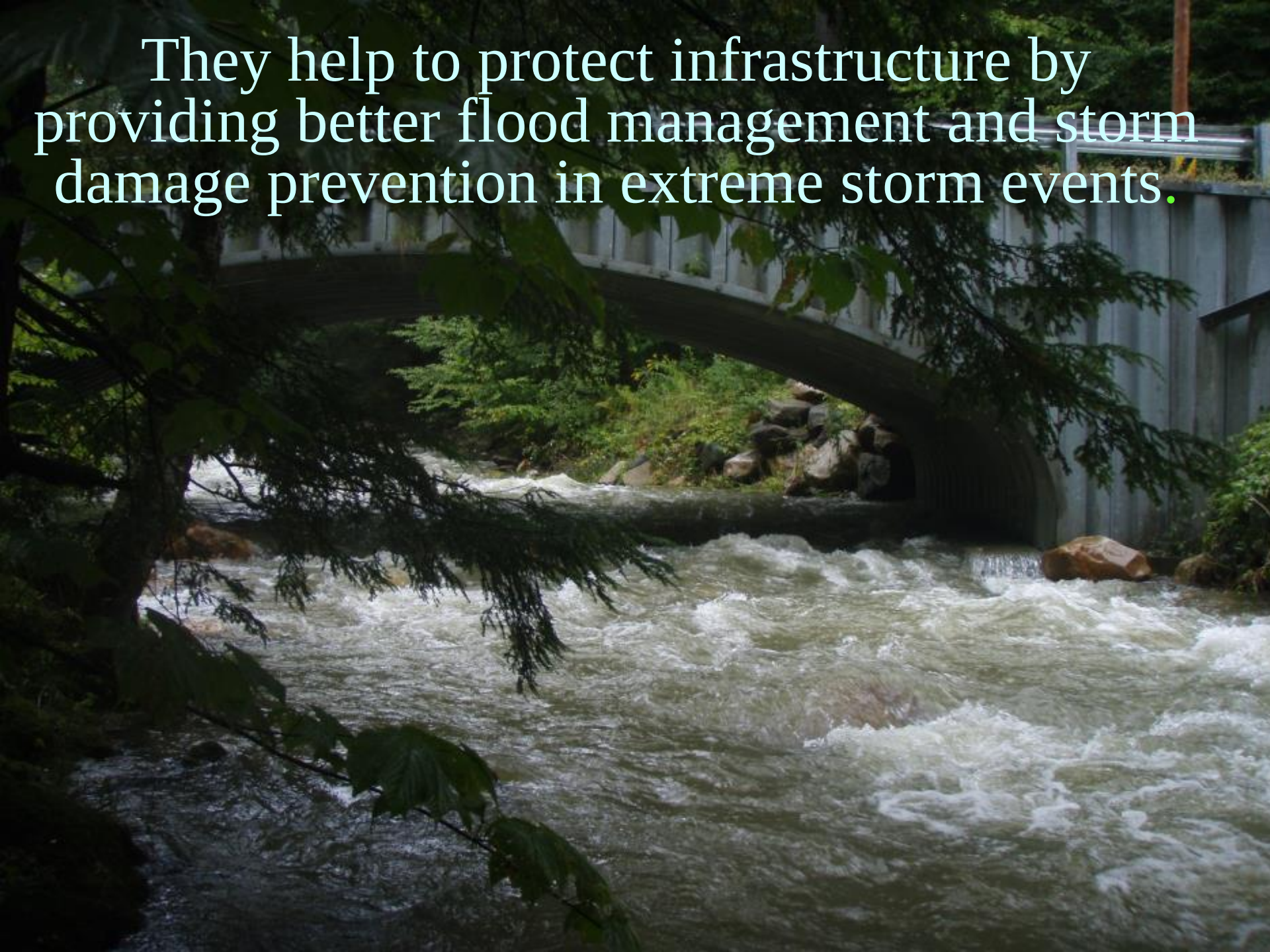
Tropical Storm Irene, Hurricane Sandy and other Extreme Storm Events

Tropical Storm Irene in Vermont

- 2012 FEMA decision refused to reimburse Townsend, VT for cost of improving crossings damaged in Irene'
- MassDEP is working with FEMA to assist Towns in getting reimbursement for upgrading damaged crossings.
- Making SCS the regulatory standard helps communities meet eligibility criteria for FEMA funding.

Stream Crossing Standards not only improve fish and wildlife passage

Courtesy of The Nature Conservancy


They help to protect infrastructure by providing better flood management and storm damage prevention in extreme storm events.

Proposed Regulatory Amendments

310 CMR 10.53 (8) Applicant Demonstrate:

1. No practicable alternatives to the crossing,
1. Impacts of the crossing are minimized,
1. Mitigation measures are provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40.

Proposed Regulatory Amendments

Construction of New Stream Crossings

- Non-tidal - The crossing complies with the Massachusetts Stream Crossing Standards.
- Tidal - The project is designed in a manner that does not restrict tidal flow over the full natural tidal range.

Proposed Regulatory Amendments

Replacement or Work on Existing Crossings

- Non-tidal - The crossing complies with the Massachusetts Stream Crossing Standards to the maximum extent practicable.
- Tidal – For crossings that restrict tidal flows, the tidal restriction will be eliminated to the maximum extent practicable.

Stream Crossing Standards "Maximum Extent Practicable"

- At a minimum, in evaluating the potential to comply with the standards to the maximum extent practicable the applicant shall consider site constraints in meeting the standard, undesirable effects of risk in meeting the standard and the environmental benefit of meeting the standard compared to the cost by evaluating the following:
- The potential for downstream flooding;
- Upstream and downstream habitat (in-stream habitat, wetlands);
- Potential for erosion and head-cutting;
- Stream stability;
- Habitat fragmentation caused by the crossing;
- The amount of stream mileage made accessible by the improvements;
- Storm flow conveyance;
- Engineering design constraints specific to the crossing;
- Hydrologic constraints specific to the crossing;
- Impacts to wetlands that would occur by improving the crossing;
- Potential to affect property and infrastructure; and
- Cost of replacement.

Citations and Links

- Vermont Agency of Natural Resources: Climate Change Team: *Tropical Storm Irene by the Numbers*
  http://www.anr.state.vt.us/anr/climatechange/irenebythenumbers.html
- T. Madsen and N. Willcox. 2012. *When It Rains, It Pours: Global Warming and the Increase in Extreme Precipitation from 1948 to 2011*
  http://www.environmentamerica.org/sites/environment/files/reports/When%20It%20Rains,%20It%20Pours%20vUS.pdf
- Flood Effects on Road-Stream Crossing Infrastructure: Economic and Ecological Benefirt of Stream Simulation Designs
  http://mc.manuscriptcentral.com/Fisheries and http://fisheries.org/better-road-stream-crossing-designs-can-help-prevent-road-wash-outs-and-help-fish
- Kevin McGarigal, Bradley W. Compton, Scott D. Jackson, Ethan Plunkett and Eduard Ene, 2012. *Critical Linkages Phase 1: Assessing Connectivity Restoration Potential for Culvert Replacement, Dam Removal and Construction of Wildlife Passage Structures in Massachusetts*
  http://www.umasscaps.org/docs_reports/index.html

MassDEP