

# The North Atlantic Aquatic Connectivity Collaborative (NAACC)

## Climate-Ready and Critter-Friendly Culverts



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# Restoring Aquatic Connectivity

Road-stream crossing upgrade or replacement:

- reconnects streams to their headwaters,
- increases movement of aquatic wildlife tracking climatic changes,
- provides access to coldwater refugia for native fish populations,
- improves resiliency of transportation infrastructure to heavy flows and mitigates flooding from extreme storm events,
- can save money in the long term



Mike Jones

# What is the NAACC?

- Infrastructure to support assessments and prioritization
  - Assessment protocols (AOP), field data forms
  - Online crossings database
  - Data quality procedures
  - Training programs
  - Scoring systems
  - Prioritization tools



# What is the NAACC?

- Network of individuals & organizations to assess crossings, set priorities, implement projects
- 427 observers collected field data
- 86 coordinators organized observers within regions or states



# NAACC Founding Partners





# Culvert Assessment Form

**CROSSING DATA**

For multiple culvert crossings on one structure, select the first culvert on the left, starting at the lowest elevation.

Crossing Code: \_\_\_\_\_ Leaf  (Optional) \_\_\_\_\_ Date Observed (MM/DD/YYYY): \_\_\_\_/\_\_\_\_/\_\_\_\_ Leaf Cleaner: \_\_\_\_\_

Number of Culverts: Culvert \_\_\_\_\_ of \_\_\_\_\_ Stream: \_\_\_\_\_ Road: \_\_\_\_\_

Location (to 1/2 mile (km)): \_\_\_\_\_ Town: \_\_\_\_\_ County: \_\_\_\_\_ State: \_\_\_\_\_

GPS Coordinates: <sup>N</sup> Latitude: \_\_\_\_\_ <sup>W</sup> Longitude: \_\_\_\_\_ Weather: \_\_\_\_\_

Crossing Type:  Bridge  Culvert  Multiple Culvert  Leaf  No-Crossing  Removal Crossing  Road Stream  Accessible  Partially Accessible  No Openness Channel

Culvert Material:  Metal  Concrete  Plastic  Wood  Brick/Stone  Bungaloo  Combination

**INLET**

Approach:  Heaved  Wingwall  Heaved & Wingwall  Without To Slope  Projecting  Flush  Raised  Other  None

Inlet Slope:  1  2  3  4  5  6  7 Inlet Dimensions & Width: \_\_\_\_\_ x Height: \_\_\_\_\_ I. Substrate/Water Width: \_\_\_\_\_ II. Water Depth: \_\_\_\_\_

Inlet Grade:  At Stream Grade  Rise Step  Partial  Opposed/Unopposed/Submerged  Unknown

**OUTLET**

Approach:  Heaved  Wingwall  Heaved & Wingwall  Without To Slope  Projecting  Flush  Raised  Other  None

Outlet Slope:  1  2  3  4  5  6  7 Outlet Dimensions & Width: \_\_\_\_\_ x Height: \_\_\_\_\_ I. Substrate/Water Width: \_\_\_\_\_ II. Water Depth: \_\_\_\_\_

Outlet Grade:  At Stream Grade  Rise Fall  Cascade  Rise Fall Over Cascade  Opposed/Unopposed/Submerged  Unknown

	INLET					OUTLET				
	Adequate	Poor	Critical	Unknown	N/A	Adequate	Poor	Critical	Unknown	N/A
Longitudinal Alignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Level of Bankage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Normal End Section	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invert Deterioration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bogging or Cracking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cross-Section Deformation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Structural Integrity of Barrel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Joints and Seams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Settling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Headwall/Wingwalls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Armoring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spill/Scour Protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Embankment Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Performance Problems Requiring Action**

<input type="checkbox"/> Culvert/Box Overflow +1/2 of the	<input type="checkbox"/> Local Outlet Over	<input type="checkbox"/> Embankment Slope Instability
<input type="checkbox"/> Tailwater Backlogs +1/2 the opening	<input type="checkbox"/> Routine and/or frequent Overtopping	<input type="checkbox"/> No Access/Inlet/Outlet Blocked/Submerged
<input type="checkbox"/> Bogging or Cracking Related Inlet Failure	<input type="checkbox"/> Embankment Piping	<input type="checkbox"/> Aggressive Material/Corrosion/Chemical
<input type="checkbox"/> Poor Channel Alignment	<input type="checkbox"/> Channel Deposition/Headcut	<input type="checkbox"/> Exposed Footing (Open Bottom Culvert Only)

*to provide additional feedback on performance problems on the optional record sheet*

Notes: \_\_\_\_\_

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Photo # _____ Description: _____	Photo # _____ Description: _____
Photo # _____ Description: _____	Photo # _____ Description: _____
Photo # _____ Description: _____	Photo # _____ Description: _____
Photo # _____ Description: _____	Photo # _____ Description: _____

# Culvert Condition Module

- Identify crossings at risk of failure because of structural condition
- Developed with advisory group
- Finalizing manual
- Incorporating into NAACC database and electronic data form

# Partnership

Essential to build common cause among those working on transportation and ecological networks

- UMass, MADOT-funded project in Deerfield Watershed
  - create comparable scoring systems
  - risk of failure – NECSC hydrologic modeling
  - disruption of local emergency medical services



# NAACC Crossings Database

[www.streamcontinuity.org](http://www.streamcontinuity.org)

Welcome to our search results mapping page!

(Note that 25 of 25 surveyed records in your search results have been mapped. Only surveyed records having valid xy crossing codes or GPS information can be mapped. Only one record of records with duplicate crossing codes will be mapped.)

Map information

Click to show/hide map information

NAACC Display Crossing - Google Chrome  
https://www.streamcontinuity.org/cdb2/naacc\_display\_crossing.cfm?naaccCrossId=275

North Atlantic Aquatic Connectivity Collaborative  
Search Crossings Login

NAACC Data Set

Survey Id: 27583 Crossing Code: xy4446211073836850 (approved)  
AOP Course Screen: No AOP NAACC Aquatic Passability Score: 0.00  
Data checked and accurate by Jaime Masterson on 01-04-2016

**Crossing Data:**

Coordinator: Jaime Masterson  
Crossing Code: xy4446211073836850  
Date observed in field: 07-29-2015  
First entered: 12-14-2015



# Coming Soon...

- Modules to assess:
  - Aquatic passability for tidal streams
  - Terrestrial wildlife passage
- Undocumented dam inventory AOP
- Salmonid scoring system (Great Lakes)
- Risk of failure methodologies
- Funding mechanisms moving forward





Join us!

[www.streamcontinuity.org](http://www.streamcontinuity.org)

Thank you



# Northeast Aquatic Connectivity Assessment Project (NEACAP)

<http://maps.freshwaternet.org/northeast/>

- Prioritize dams and road-stream crossings
- Explore consensus anadromous fish results from stakeholder group
- Develop customized prioritizations for barrier removal

