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I-75 Corridor Conservation Action Plan in Monroe County: Stormwater Considerations



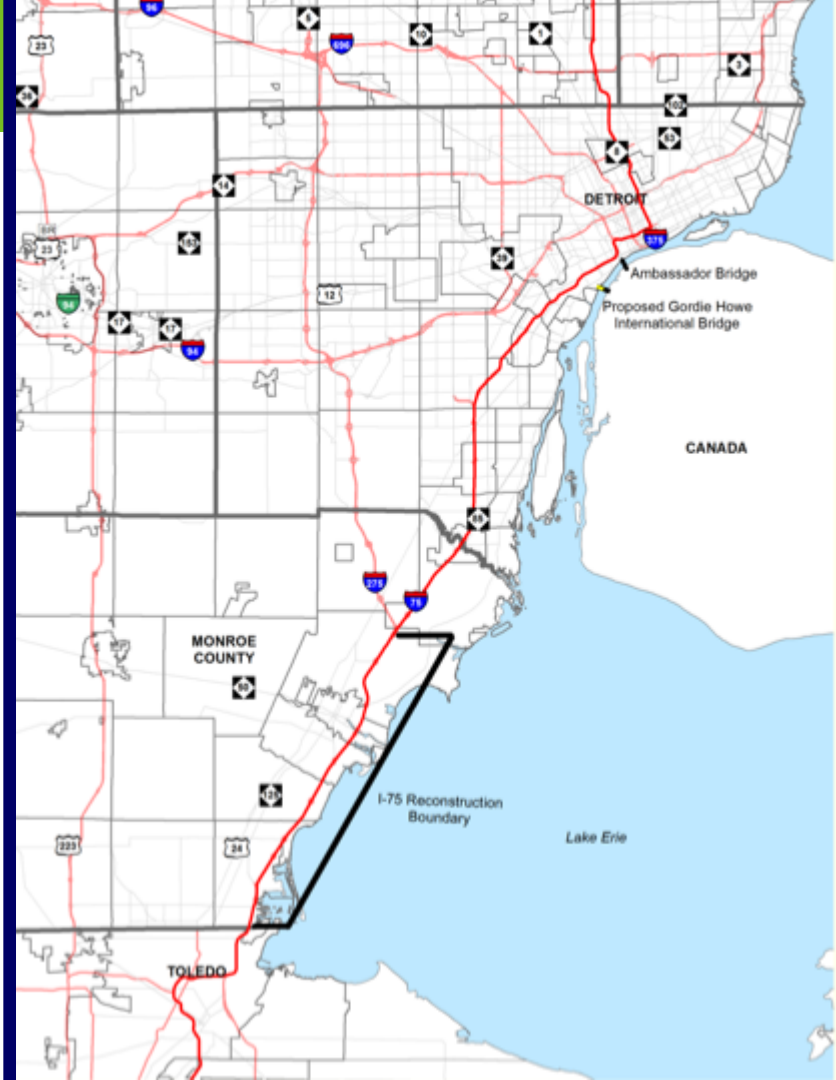
Project Overview

- **FHWA SHRP2 Program**
 - Address landscape-level environmental priorities during planning
- **20 year complete reconstruction**
 - I-75 Monroe County, Michigan



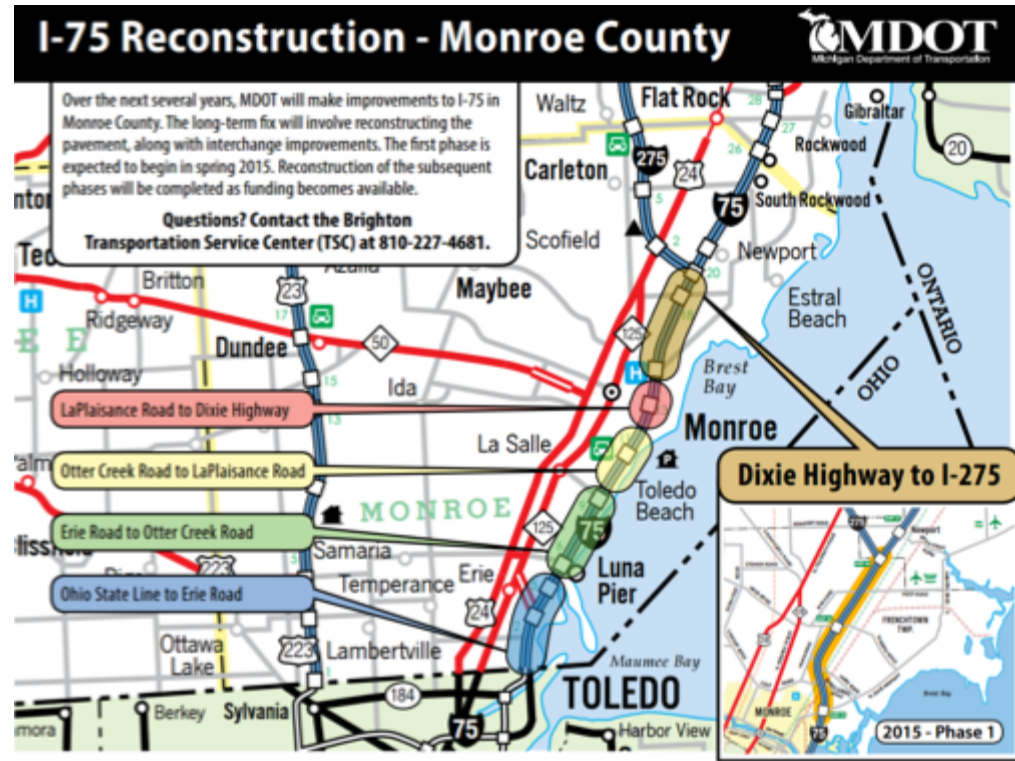
Monroe County, Michigan

- ***Corridor of Highest Significance***
 - Critical component of North American freight network
- **International connection**
 - Ambassador bridge
 - 40% of all trade with Canada transported through region
 - 2.5 million truck trips per year
 - 21% of all U.S. exports to Canada
 - Opening of Gordie Howe Bridge

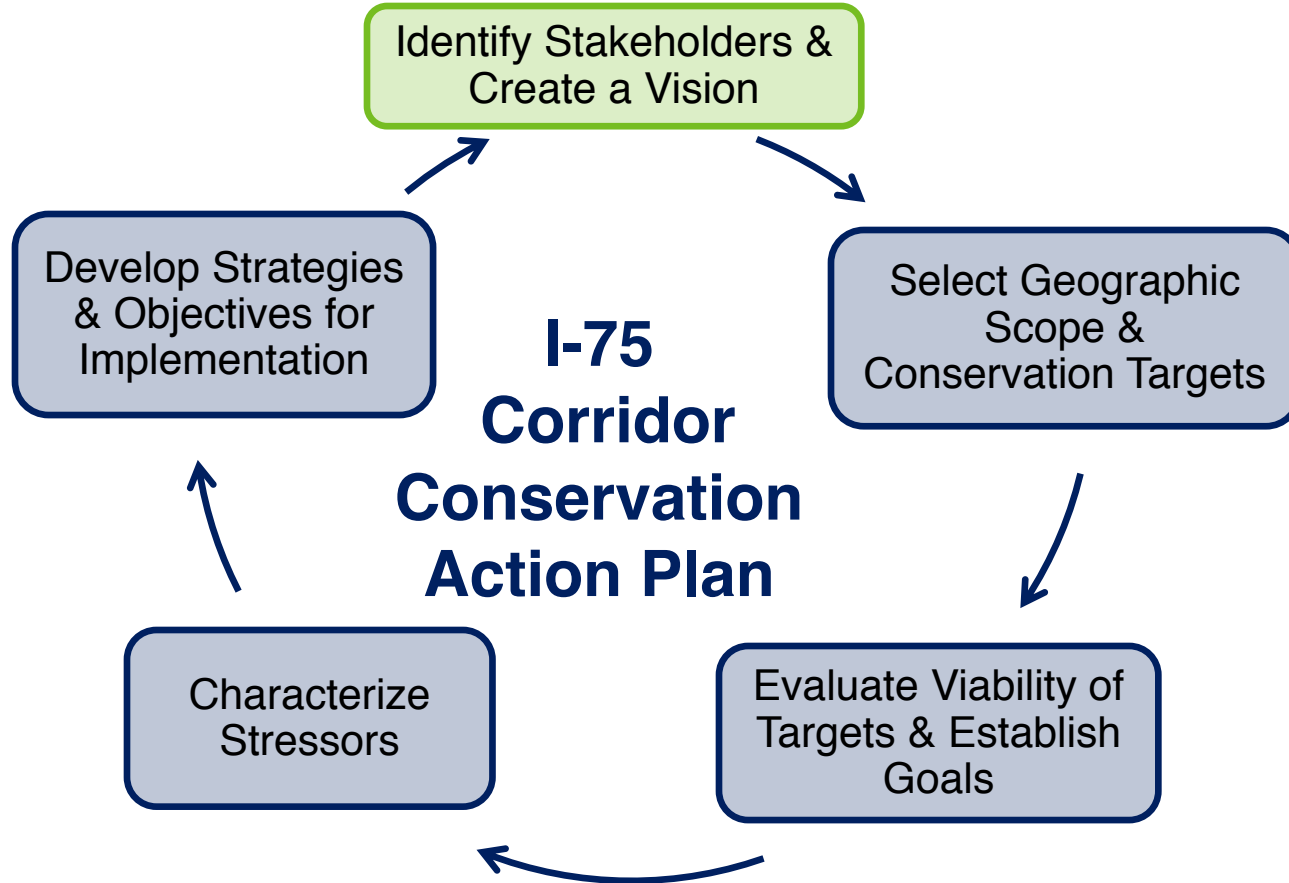


20 Year Reconstruction in Five Phases

- **20 year reconstruction of I-75 in 5 phases enables:**
 - Partnerships
 - Data collection
 - Consider environment
 - Design
 - Engineering
 - Construction
 - Align transportation plans with watershed plans
 - Adaptive management
 - Cost savings



Conservation Action Planning



Identify Stakeholders & Create a Vision


Technical Advisory Committee

- Michigan Department of Transportation
- Michigan Natural Features Inventory
- Southeast Michigan Council of Governments
- Michigan Department of Natural Resources
- Michigan Department of Environmental Quality
- Michigan Department of Rural and Agricultural Development
- Michigan Sea Grant
- Federal Highway Administration
- The Nature Conservancy of Michigan
- Natural Resources Conservation Service
- US Army Corps of Engineers
- Monroe County
- U.S. Fish and Wildlife Service

Local Implementation Partners

- Monroe County Road Commission
- Monroe County Drain Commission
- Monroe County Conservation District
- Monroe County Business Development Corporation
- City of Monroe
- Detroit River-Lake Erie Cooperative Weed Management Area
- Green Ribbon Initiative
- Southeast Michigan Land Conservancy
- Oak Openings Cooperative Weed Management Area
- The Nature Conservancy of Ohio
- Detroit River International Wildlife Refuge
- IHM Sisters

Vision

An aerial photograph of a multi-lane highway under construction. Several yellow excavators and trucks are visible on the right side of the road, working on a new section. The highway has multiple lanes with cars and trucks traveling. In the background, there are green trees and a tall metal tower. The entire image is covered with a semi-transparent blue overlay.

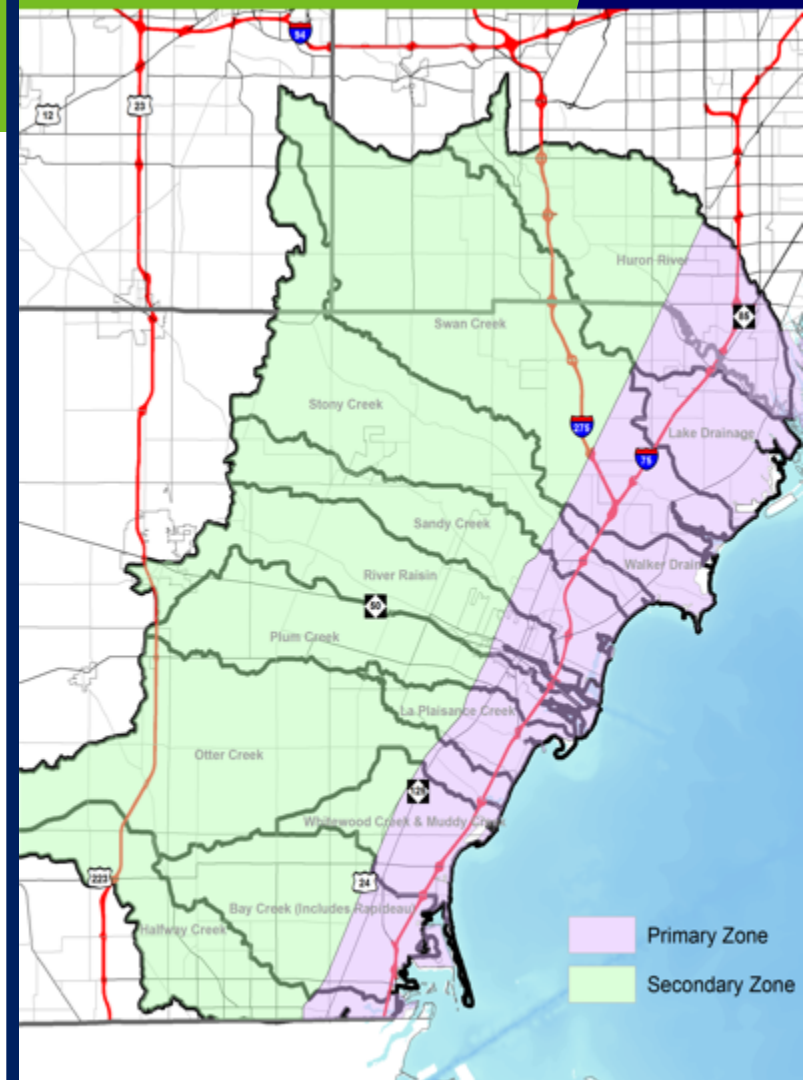
“Develop and implement a collaboratively based, landscape-scale conservation plan, that facilitates rebuilding the I-75 corridor while maximizing conservation and restoration outcomes in the region”

Select Geographic Scope

Geographic Scope

- **Primary Zone:**
 - Defined by historic lake level fluctuation
 - 575 ft. elevation contour
 - US-24/ Historical Native American trail
- **Secondary Zone:**
 - HUC-12 subwatersheds – western boundary
 - Northern boundary: Lower Huron River Watershed

Water Resources were considered from the beginning!

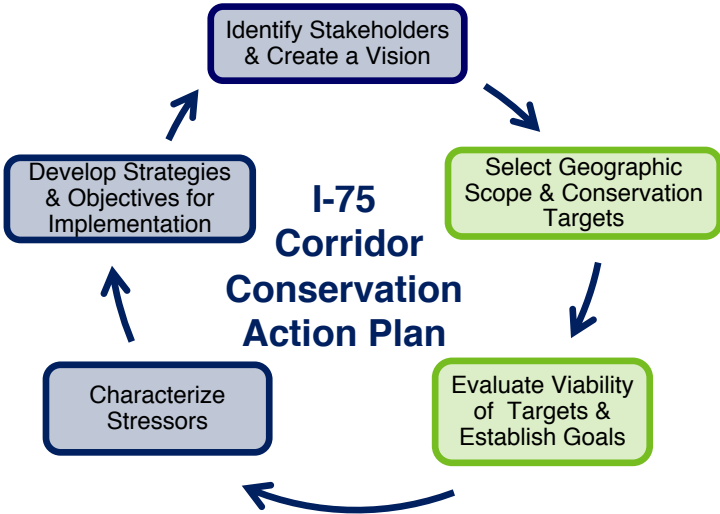


Data collection for planning

- Landscape Level Functional Wetland Assessment (LLFWA)
- Water Quality Data
- Land Use/ Landcover Analysis
- Conservation Targets



Conservation Action Planning Process

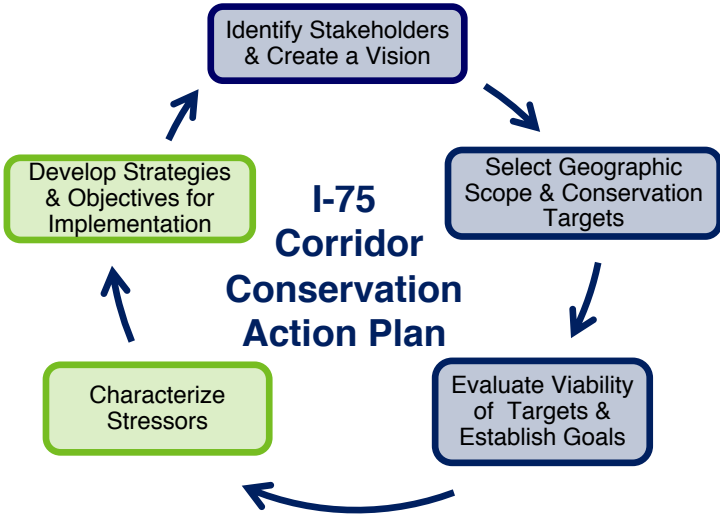


Conservation Targets:

- Coastal Tributaries - *Fair*
- Coastal Wetlands - *Fair*
- Migratory Fish - *Good*
- Herpetofauna Connectivity - *Fair*
- Globally Rare Natural Communities - *Poor*
- Aerial Migrants - *Fair*



Conservation Action Planning Process



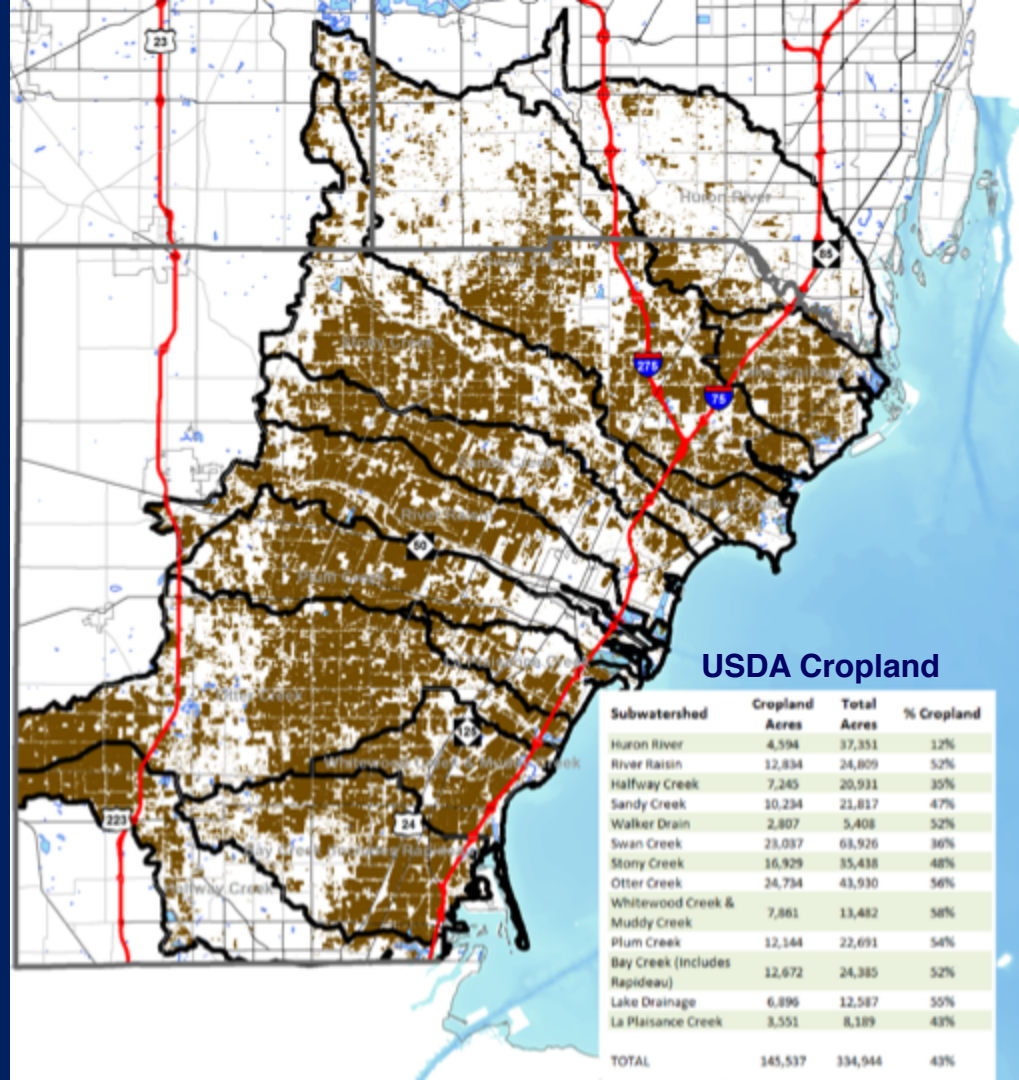
Top Stressors & Strategies:

- Agricultural Drainage and Runoff
- Urban Development and Runoff
- Poorly Functioning Road Stream Crossings
- Invasive Species



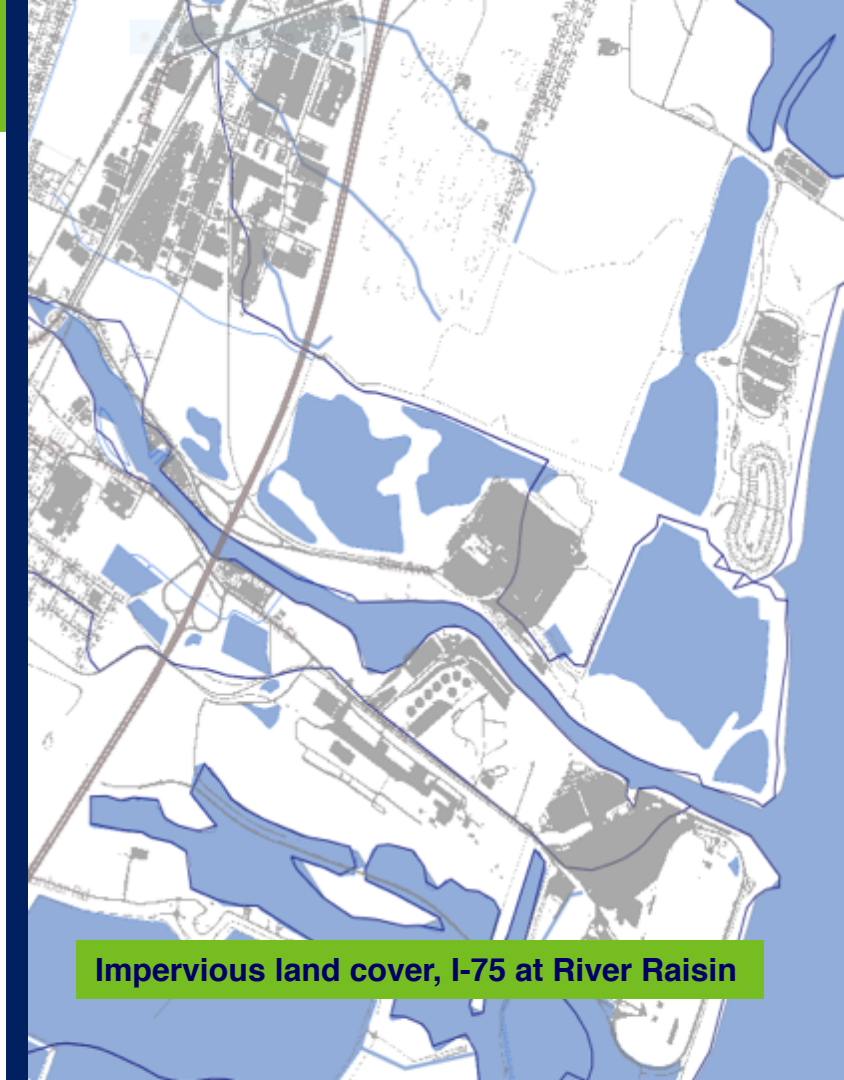
Strategies

- **Agricultural Drainage and Runoff**
 - **Priority Action:** Develop a Smart Drain Assessment Project that incentivizes the implementation of Lake plain BMPs



Strategies

- **Urban Development & Runoff**
 - **Priority Action:** Create a new County initiative that takes an integrative approach to economic development and ecological enhancement



Impervious land cover, I-75 at River Raisin

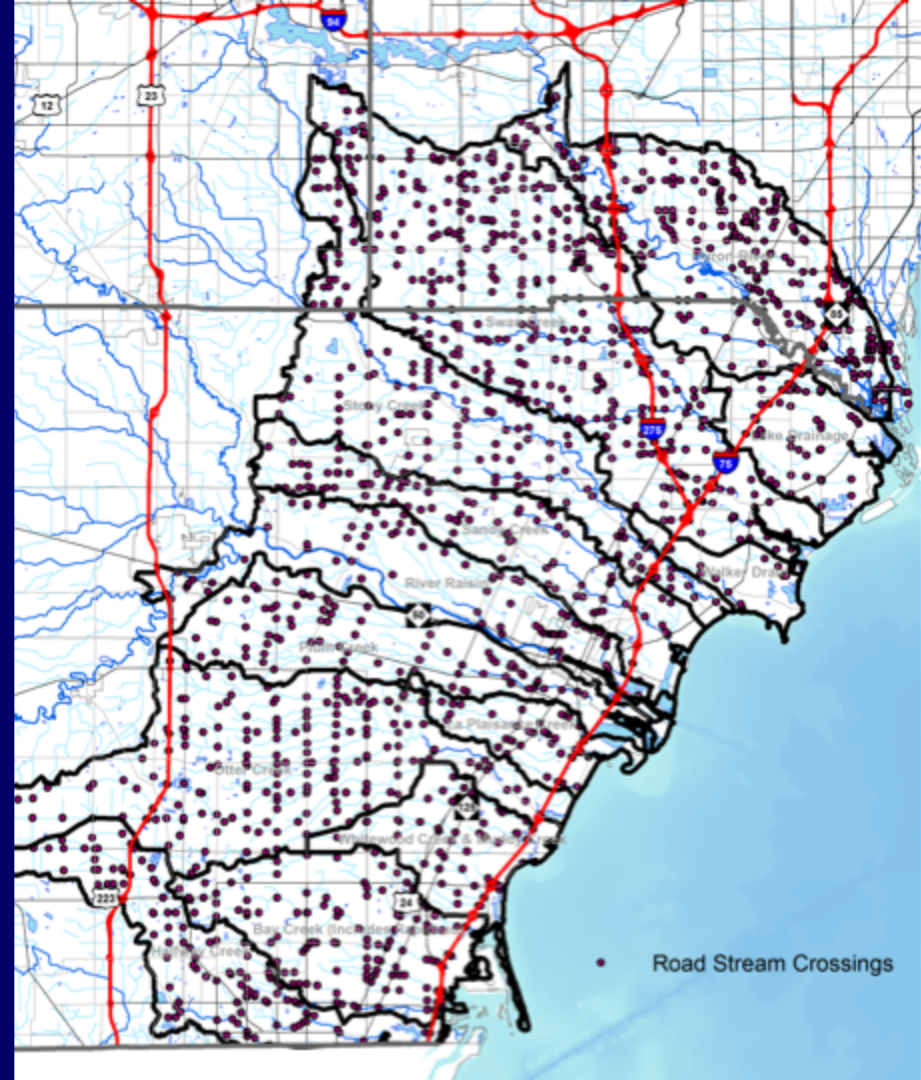
Strategies

- **Invasive Species:**
 - **Priority Action:**
Enhance the impact and capacity of existing Cooperative Weed Management Areas (CWMAs) in the I-75 Eco-Logical study area



Strategies

- **Road Stream Crossings**
 - **Priority Action:**
Conduct a comprehensive needs assessment for road stream crossings in the I-75 Eco-Logical study area



Implementation



MDOT Implementation

- **Urban & Agricultural Runoff**
 - **To manage runoff:**
 - Widened ditches to install BMPs
 - Swales for water quality volume and conveyance
 - Small infiltration component
 - Check dams



MDOT Implementation

- **Urban & Agricultural Runoff**

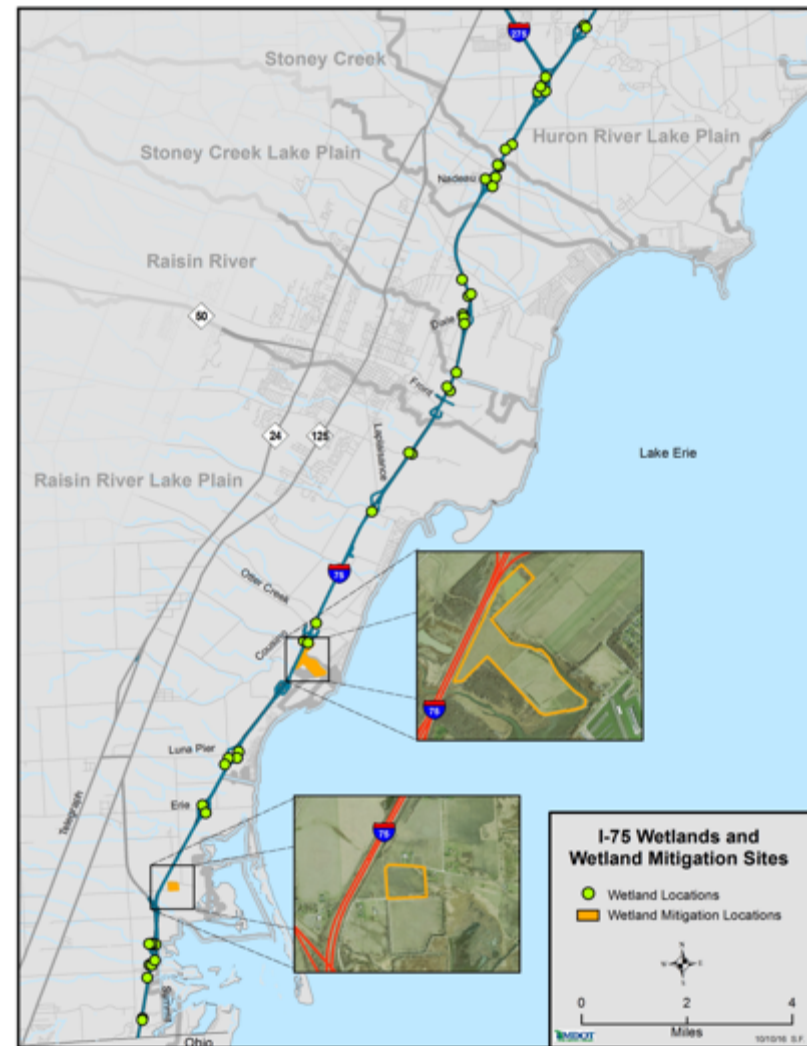
- Estimated annual volume and pollutant reductions*
 - **Water quality volume:** approx 1-inch over drainage area
 - **Runoff Volume:** 24% reduction
 - **Total Phosphorous (TP):** 44% reduction
 - **Total Suspended Solids (TSS):** 58% reduction

**Center for Watershed Protection Watershed Treatment Model*



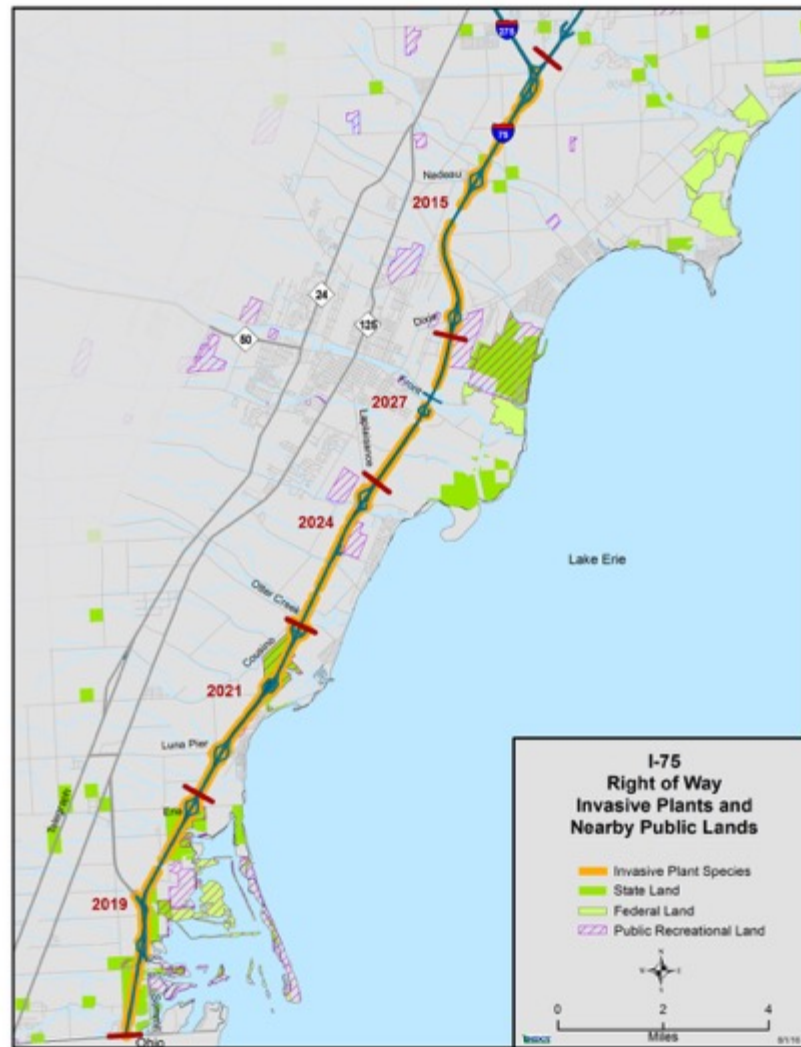
MDOT Implementation

- **Wetland Mitigation**
 - Coastal wetland restoration
 - Conversion of agricultural land to wetlands
 - Considered opportunities for Hibernacula



MDOT Implementation

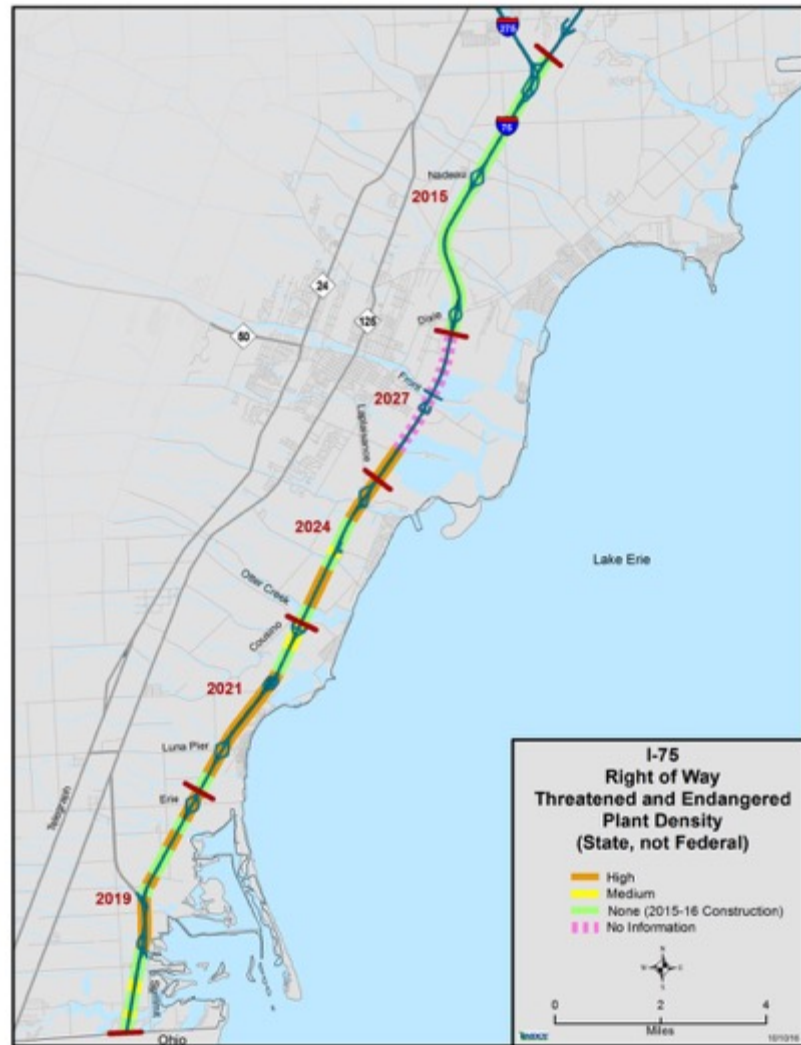
- **Invasive Species**
 - MDOT joining local CWMA
 - Creating management plan for I-75 corridor
 - Prioritizing control locations
 - Work with partners who seek access to ROW for treatment



MDOT Implementation

Native Plants

- *Largest plant mitigation in MDOT history!*
 - 16,000 state-listed threatened plants in ROW
- Relocated 1,550 Sullivant's Milkweed to Sterling State Park
 - Partnership with MDNR & Youth Corps

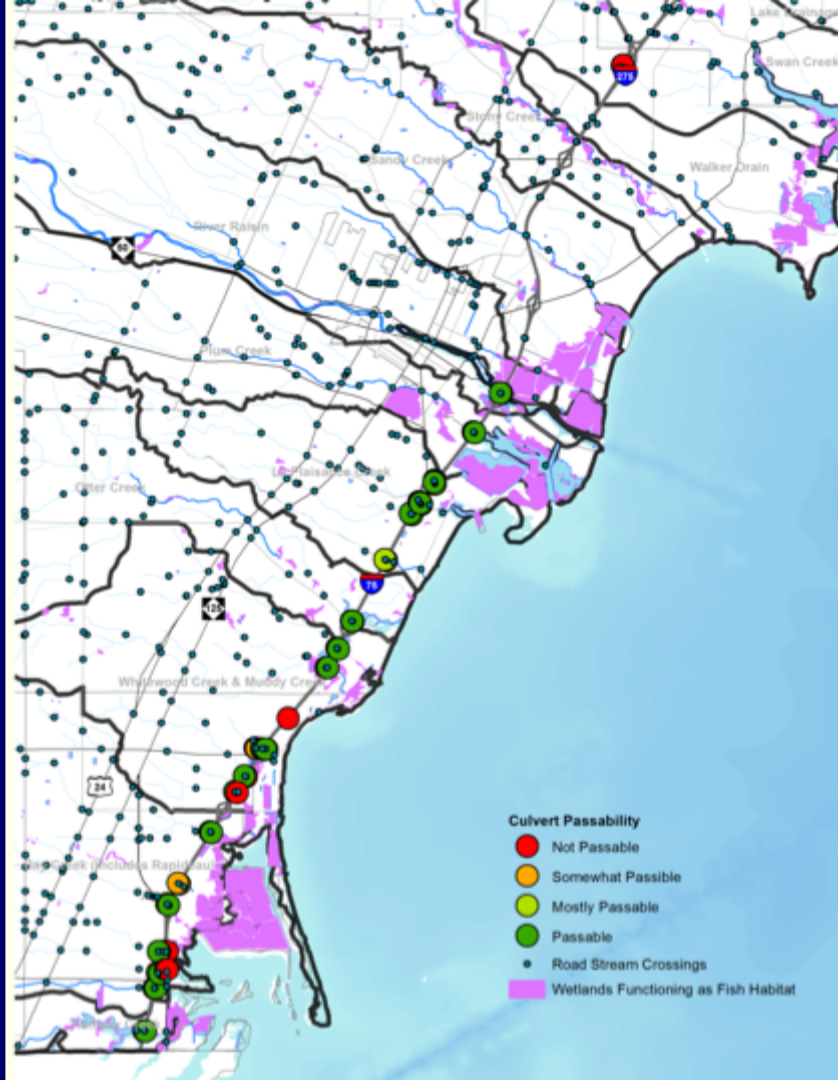


MDOT Implementation



MDOT Implementation

- **Road Stream Crossings**
 - *Monroe County has over 2,000 RSXs!*
 - Most miles of county drain in Michigan!
 - Survey on culvert passability
 - Established priorities for migratory fish

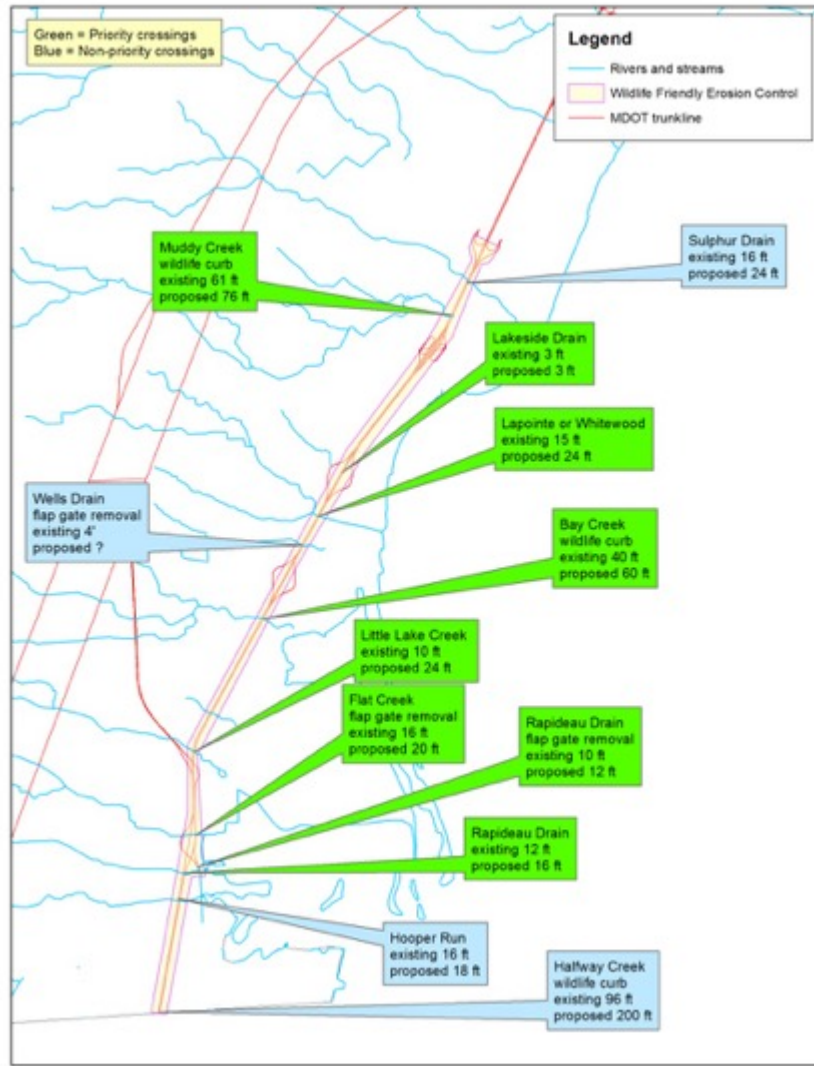
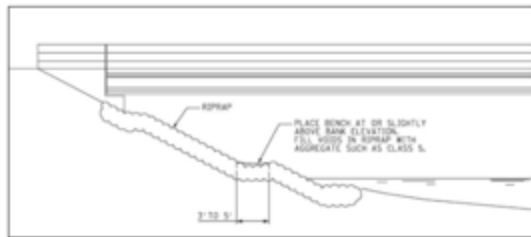


MDOT Implementation

Herpetofauna Survey

- Evaluated connectivity
- Established priorities for Herpetofauna and wildlife

Passage Bench Design



MDOT Implementation

- Improved Culvert Design
- Removal of Priority Flap Gates
- Extended Bridge Lengths
- Wildlife curbs and shelves
- Wildlife friendly erosion control



Water Course	Previous size or span length (1952)	New size or span length (2016)
I-75 over Sandy Creek	30 feet	80 feet
I-75 over Stony Creek	130 feet	167 feet
I-75 over Miller and Malosh Drain B	6 feet	10 feet
I-75 over Webb & Reisdorf Drain	8 feet	10 feet



MDOT Implementation

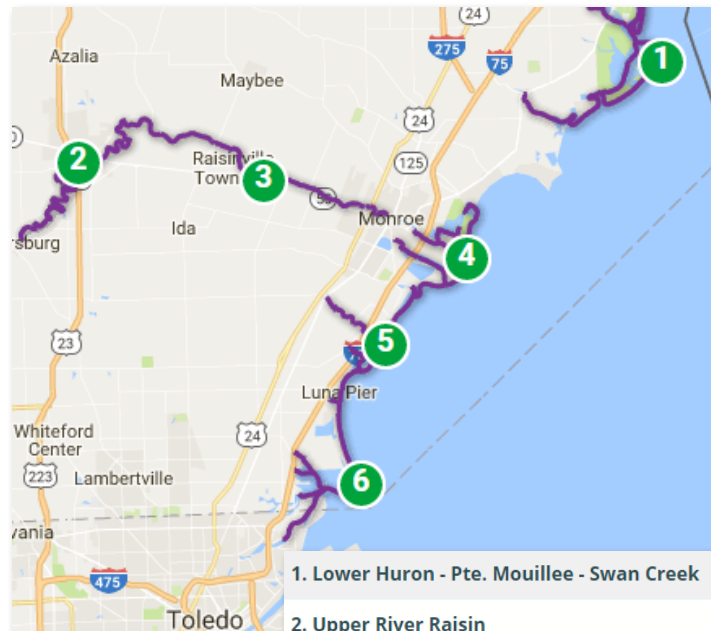


- **Benefits of improved culvert and bridge design:**
 - Reduces scour
 - Reduces flooding
 - Reduces velocity of flow

MDOT Implementation

Considering Recreation

- Otter Creek Water Trail:
 - Planned to reduce bridge clearance, but now increasing to accommodate water trail use!
 - Added a bridge span and smaller beam to increase clearance
- Bridge Clearance:
 - 6' to 8'



1. Lower Huron - Pte. Mouillee - Swan Creek
2. Upper River Raisin
3. Central River Raisin
4. Brest Bay - Lower Raisin - Bolles Harbor
5. Otter Creek - Toledo Beach - Luna Pier
6. Erie - North Maumee Bay



Migratory Fish Benefits

- **Improving water quality helps migratory fish**
 - **Western Banded Killifish**
 - Endangered in Ohio
 - No listing in Michigan
 - **Orangethroat Darter**
 - Species of Concern in Michigan
 - **Northern Pike**
 - Spawn in low gradient, vegetated, smaller tributaries
 - Benefit from removal of flap gates, increased culvert sizes



MDOT Implementation

- **Public Education**
 - **NOAA B-WET Grant**
 - **Year 1:** Piloting transportation and environment curriculum
 - Topics: water quality, invasive species, etc.
 - Monroe & Wayne County High School students creating interpretative material for MDOT Welcome Center
 - **Year 2:** Training more teachers on curriculum



MDOT Implementation

- **Cost Savings**
 - Saved \$1,000,000 in land acquisition costs through MDNR partnership
 - 50% Transplant Sullivant's milkweed to Sterling State Park
 - 50% from constructing 34 acres of coastal wetlands at Erie State Game Area
 - Partnership opened door for future MDOT/MDNR partnerships on wetland mitigation



Environment & Transportation

- **Reconstruction continues**
 - Adaptive management
 - Local implementation of Plan
- **Water Resources Plan for Southeast Michigan**
 - Regional policy on stormwater & transportation
- **Roads Action Team on Stormwater**
 - Discuss challenges related to managing road runoff
- **Updating SEMCOG Long Range Transportation Plan**
 - Environmental Sensitivity
 - Climate Resiliency

January 2017

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MICHIGAN STATE
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SEMCOG

Southeast Michigan Council of Governments

Developing Regional Solutions



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<http://www.semcog.org/Plans-for-the-Region/Transportation/Environmental>