

Michigan's Wetland Monitoring and Assessment Program

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Wetlands, Lakes and Streams Program

Michigan DEQ



Michigan's Wetland Monitoring & Assessment Strategy

State of Michigan Wetland Monitoring and Assessment Strategy



Department of Environmental Quality
Water Resources Division

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3-Tiered Technical Approach

Products/Applications

Level 1 – Landscape Assessment

Use GIS and remote sensing to gain a landscape view of watershed and wetland condition. Typical assessment indicators include wetland cover age (NWI), land use, and land cover.

- Status and Trends
- Targeting restoration and monitoring
- Landscape condition assessment
- Integrated Reporting (BIA, 505-00/505-00)

Level 2 – Rapid Wetland Assessment

Evaluate the general condition of individual wetlands using relatively simple field indicators. Assessment is often based on the characterization of stressors known to limit wetland functions, e.g. road crossings, tile drainage, ditching.

- 401/404 permit decisions
- Integrated Reporting
- Watershed Planning
- Implementation monitoring of restoration projects

Level 3 – Intensive Site Assessment

Produce quantitative data with known certainty on wetland condition within an assessment area, used to refine rapid wetland assessment methods and diagnose the causes of wetland degradation. Assessment is typically accomplished using BIA or HQA.

- WQS development, including use designation
- Integrated Reporting
- Compensatory mitigation performance standards
- Verify Levels 1 and 2 methods

Wetland Monitoring & Assessment Strategy



Objective 1: Inventory of Michigan's wetland resources

Objective 2: Updating of National Wetland Inventory maps for use in status and trends reporting

Objective 3: Tracking permitted impacts and mitigation, as well as documented unauthorized impacts and restoration measures

Wetland Monitoring & Assessment Strategy



Objective 4: Apply Landscape Level wetland assessment on a watershed scale.

Objective 5: Use Michigan Rapid Assessment Method, to assess wetland functions and values, regardless of ecological type.

Objective 6: Use Indices of Biological Integrity (IBI's) and related methods to monitor wetlands.

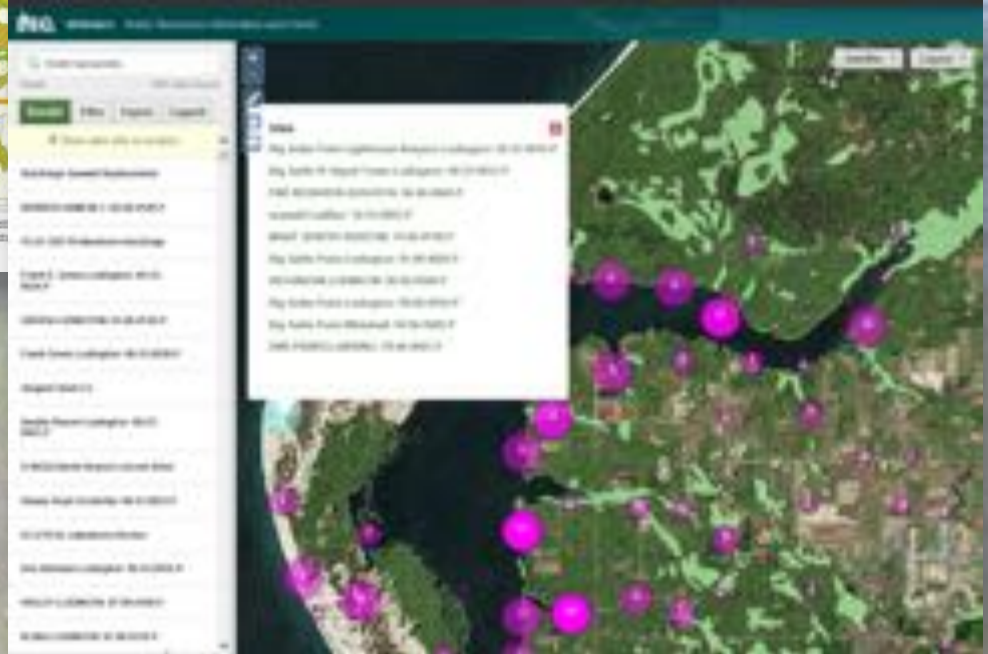
Wetland Monitoring & Assessment Strategy



Objective 7: Provide for the evaluation of Michigan's most outstanding wetland resources, especially Great Lakes coastal wetlands.

Objective 8: Assess statewide wetland quality by through routine wetland monitoring program that includes the National Wetland Condition Assessment.

The screenshot displays the Michigan Department of Environmental Quality's Wetlands Map Viewer. The interface features a search bar at the top left, navigation tools, and a list of layers on the left. The main map area shows a wetland map with roads and water bodies. A sidebar on the right shows a search results panel.



Status and Trends of Michigan's Wetlands: Pre-European Settlement to 2005



July 23, 2014

2010 Environmental Assessment Report
Michigan DEEA www.michigan.gov/deea

Tracking One Wetland Through Time



Wetland Loss by Region Since Pre-European Settlement



**NORTHERN LOWER
PENINSULA:**
20% LOSS
(387,000 ACRES)

**SOUTHERN LOWER
PENINSULA:**
66% LOSS
(3,320,000 ACRES)

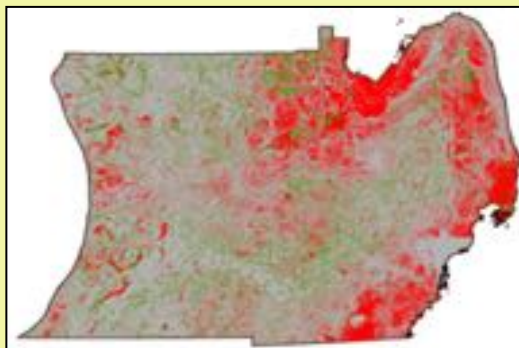
UPPER PENINSULA :
17% LOSS
(638,000 ACRES)

Wetland Loss by Region Since Pre-European Settlement

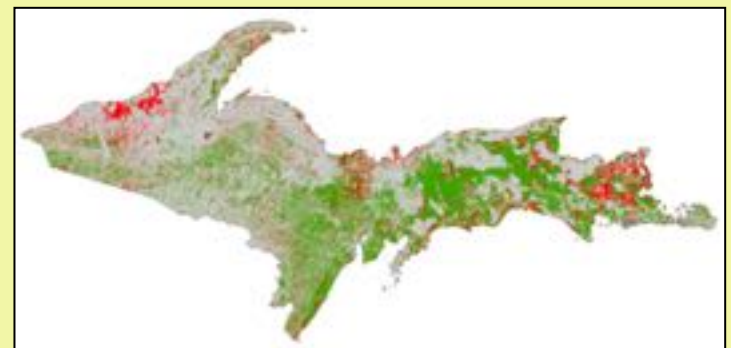
■ Presettlement Wetland Inventory
■ 2005 Wetland Inventory



Northern Lower Peninsula

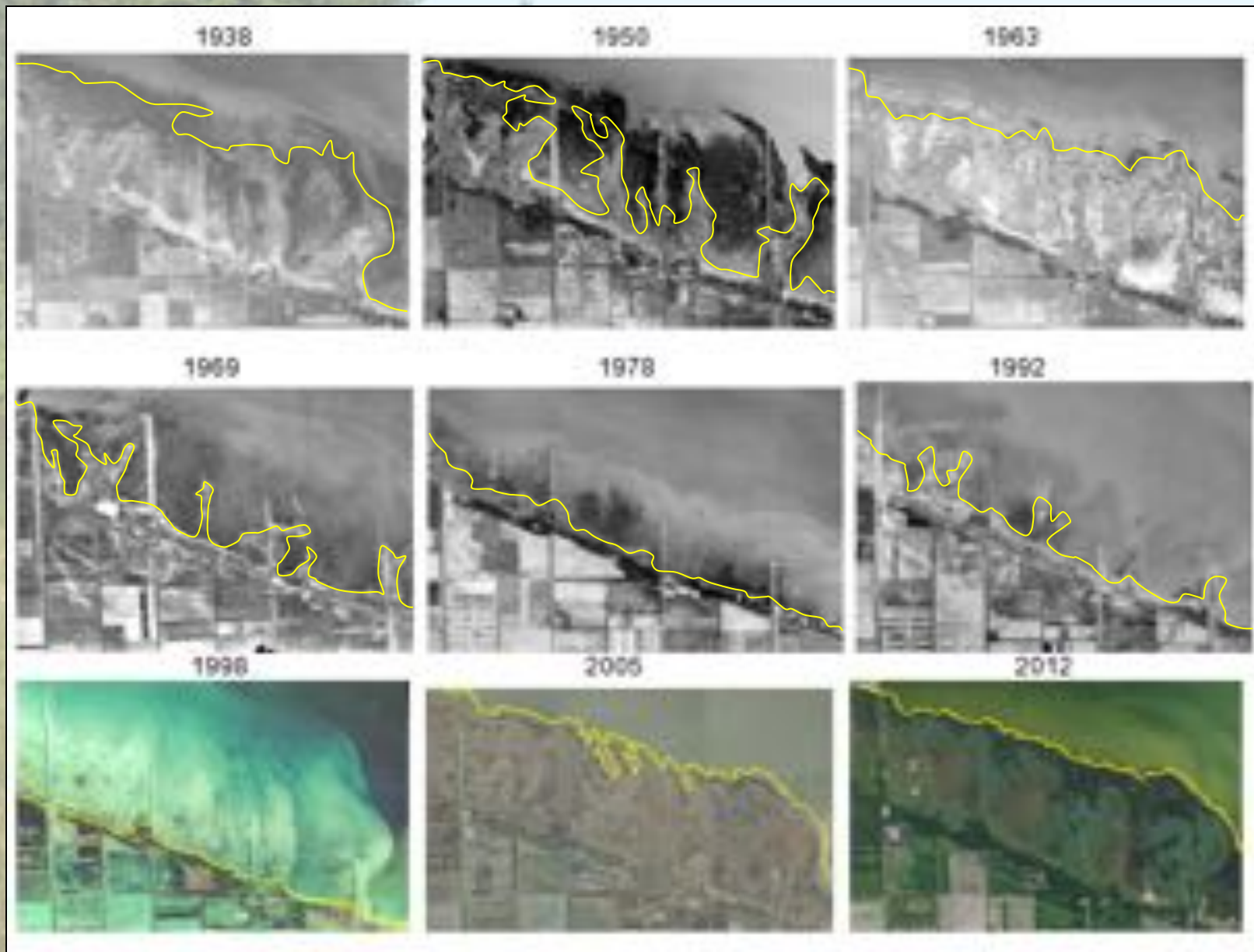


Southern Lower Peninsula



Upper Peninsula

Tracking Coastal Wetland Change



Wetland Gains : “New” Wetlands?

ISSUES

- Vast majority of ‘gains’ were in the Open Water class (i.e., Ponds)
- Mapping of ‘missed’ wetlands
 - Old coding problems

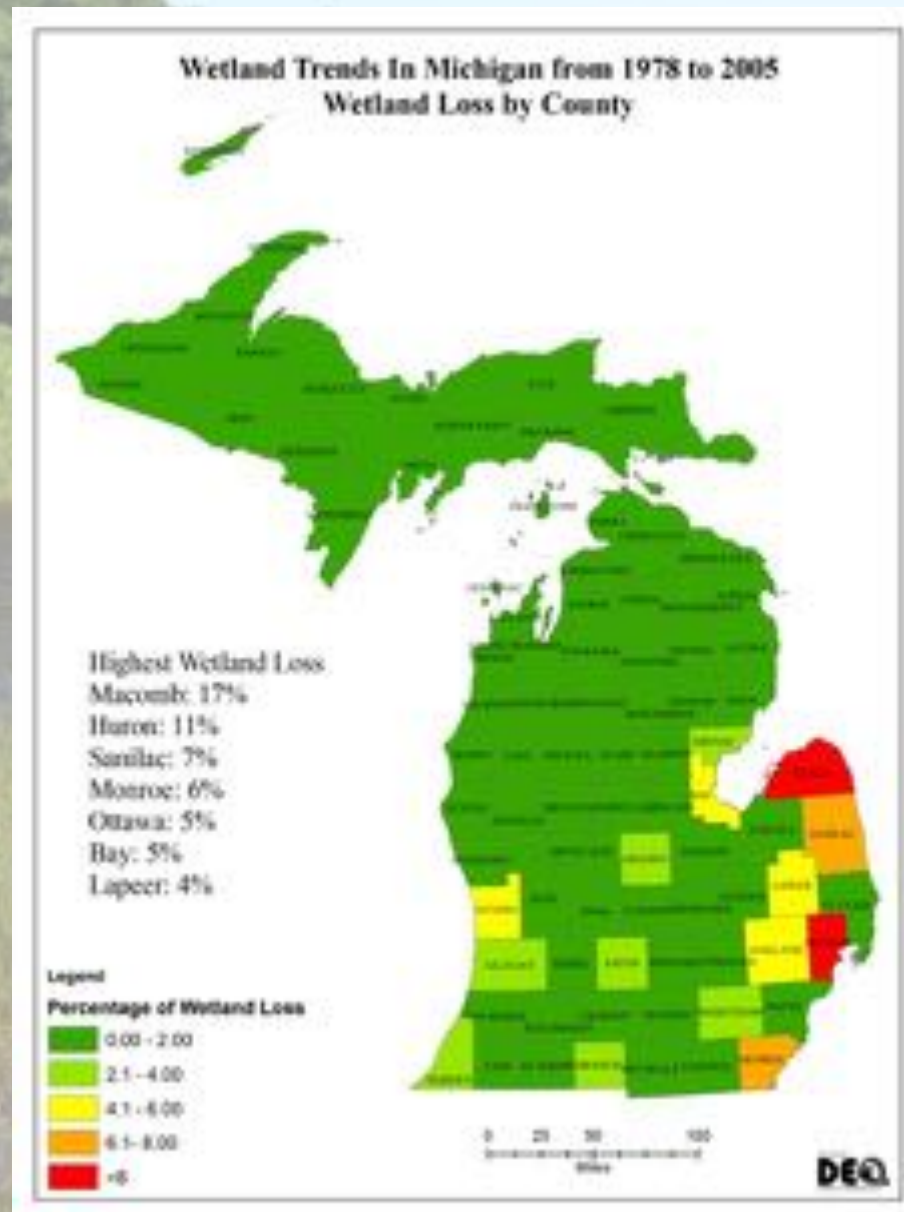


RESULTS: Wetland Loss by County: Pre-European Settlement vs. 2005



Comparing hydric soils data and presettlement resource inventories to Current NWI Totals allows analysis of wetland loss since European settlement of the State

Results: Statewide Comparison 1978 to 2005



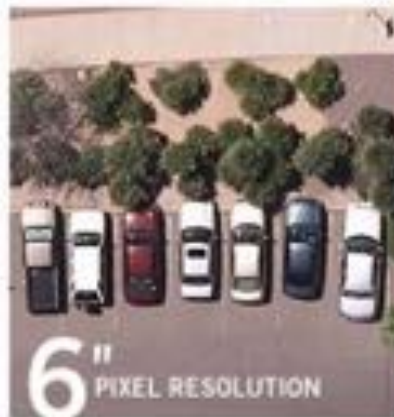
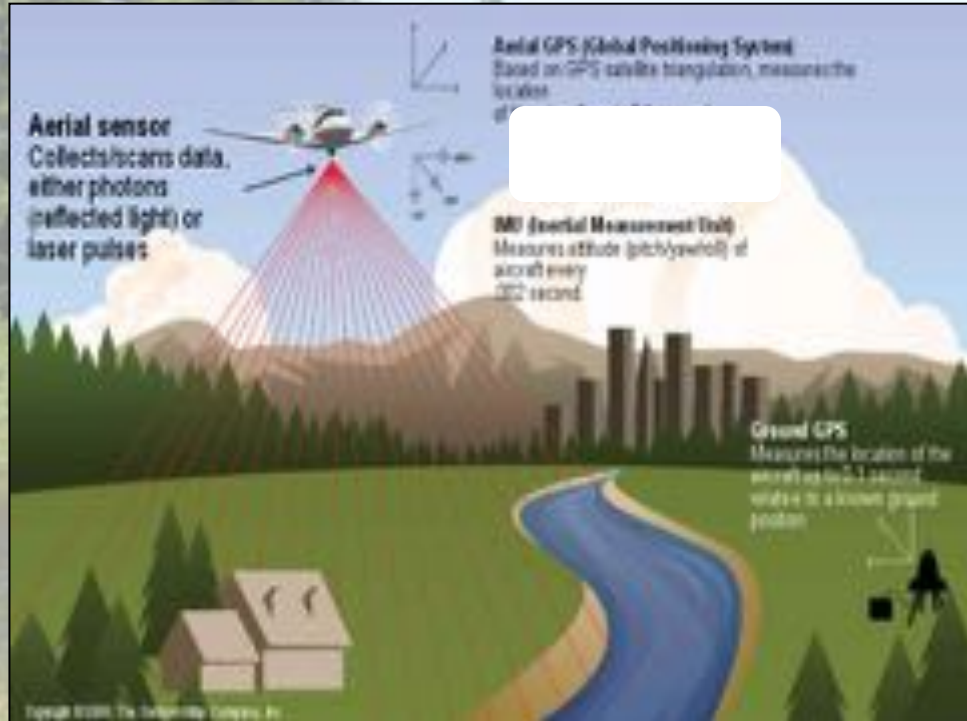
New High Resolution Imagery

IMAGERY TYPES

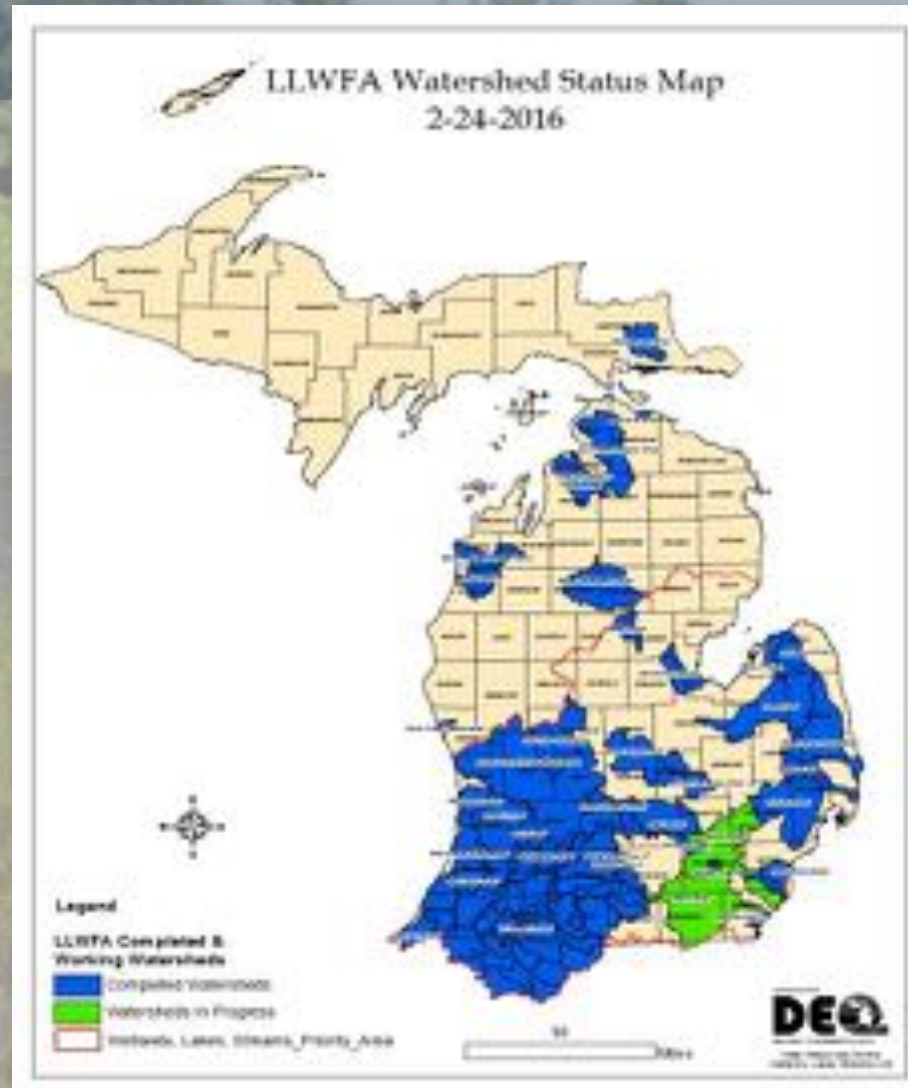
Aerial
Imagery

LIDAR

RADAR



Level 1 – Wetland Assessment and Monitoring Methods and Activities: Landscape Scale



Level 2 – Wetland Assessment and Monitoring Methods and Activities: Rapid Wetland Assessment

- MiRAM was finalized in 2010
- Used primarily in Michigan's Wetland Monitoring Program
- Occasionally used in regulatory program – alternatives analyses, preservation sites, violations, etc.



“Functional Value”

- MiRAM Assesses a Combination of
 - Function,
 - Value,
 - and Condition.



MiRAM Components

- MiRAM Rating Form Contains:

- Introduction,
- Background info,
- Field datasheet,
- Narrative Rating,
- Quantitative Rating,
- and MiRAM Summary



- MiRAM Users Manual

- Detailed instructions on how to complete the MiRAM and each of the above sections
- Each Metric (Question) is supported with scientifically based, peer reviewed literature (citations provided in the manual)

Narrative Rating

Wetlands with Exceptional Ecological Value

- Critical Habitat (Hine's Emerald Dragonfly, Piping Plover, Poweshiek Skipperling, Kirtland's Warbler)
- T/E Species
- Rare Wetland Communities
- Great Lake Coastal Wetlands



Quantitative Rating

7 Metrics for Measuring a Wetland Functional Value

- Wetland Size and Distribution
- Buffers and Surrounding Land Use
- Hydrology
- Habitat Alteration and Habitat Structure Development
- Special Situations
- Vegetation, Interspersion, and Habitat Features
- Scenic, Recreational, and Cultural Value



State of Michigan Wetland Monitoring Sites



Level 3 – Wetland Assessment and Monitoring Methods and Activities: Intensive Site Assessment

Great Lakes Coastal Wetland Monitoring Project

- MDEQ is a partner on the GLRI-funded Great Lakes Coastal Wetland Project being led by Central Michigan University
- Facilitate communication between researchers and agencies



Level 3 – Wetland Assessment and Monitoring Methods and Activities: Intensive Site Assessment

Michigan Wetland Monitoring Project (MIWM)

100 sites, 17 NWCA sites + 83 MIWM sites



Michigan Wetland Monitoring Project (MIWM)

- Began field work in 2016
- Aligned with 2016 National Wetland Condition Assessment
- MIWM Protocols
 - MiRAM
 - NWCA vegetation
 - Invertebrates IBI (CMU)
 - Water Chemistry



State of Michigan Wetland Monitoring Sites



Next Steps

- Report on condition of Michigan's wetlands
- Update the Status and Trends of Michigan's wetlands





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