

The Pokagon Band's Dowagiac River and Grand Kankakee Marsh Restorations: Two Tribal Wetland Projects with a Decade of Progress



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RESTORING THE DOWAGIAC RIVER ON TRIBAL LANDS

The word *Dowagiac* comes from
the Potawatomi language and means

a place to hunt, fish, and forage.

- Seven Generations
- Restoration of ecosystem functions
- Enhance water quality
- Provide optimal habitat

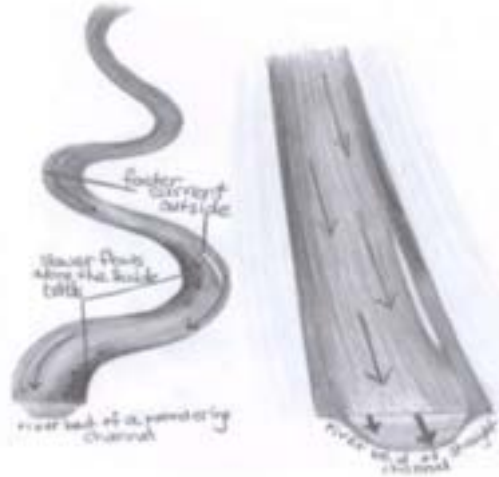


Location – Berrien, Cass & Van Buren Counties, MI



Historic Impacts

- Dredging/Straightening/Wetland Draining



- Pucker St. Dam



Coldwater System – Unique for SW MI

- Overall good water quality
- Cold / Coolwater System
- Fish Diversity
 - 41 species collected downstream of Pucker Street Dam
 - 37 native species; 4 salmonid species



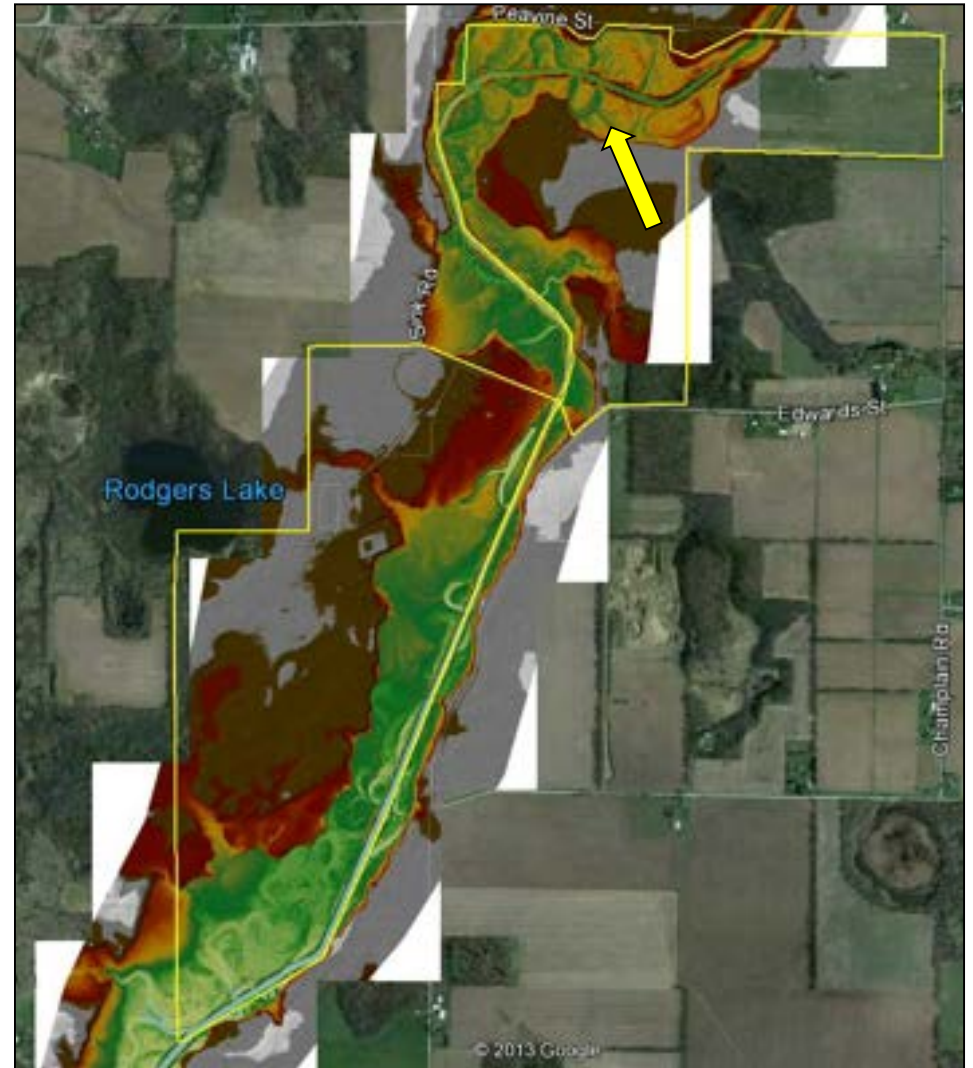
Pucker Street Dam Removal



- Dam Removal Finalized in 2021
 - Re-connection of 159 miles of streams and tributaries

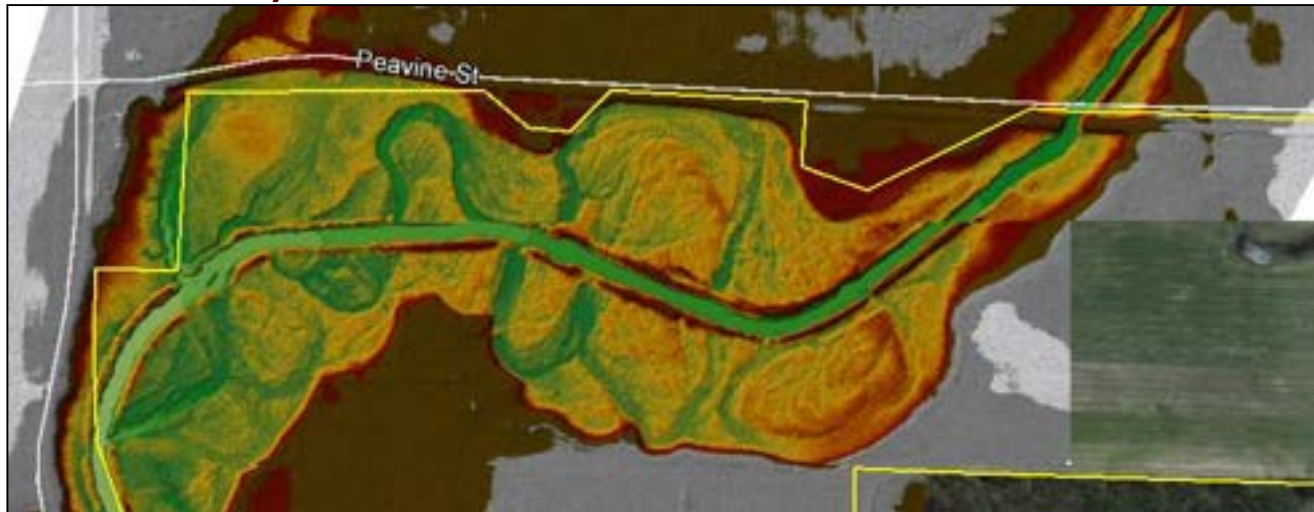
Dowagiac River Mainstem Restoration

- 2007 Arthur Dodd
- 2011 – Application for first funding
- Feasibility Study
 - Feasible: Surrounded by tribal properties
- LiDAR
- Depth to Refusal
- Soil Borings
- Adjacent Landowner Meetings
- Funding
 - Multiple years of funding and multiple sources in order to continue project



Dowagiac River Mainstem Restoration

- Environmental Assessment
- T & E Surveys
- THPO Review
- Wetland Delineation
- Hydraulic Analysis
- Permitting / Agreements
 - Drain Commissioner
 - MIEGLE / ACOE: Project and Temporary River Crossings
 - Soil Erosion & Sediment Control
 - County

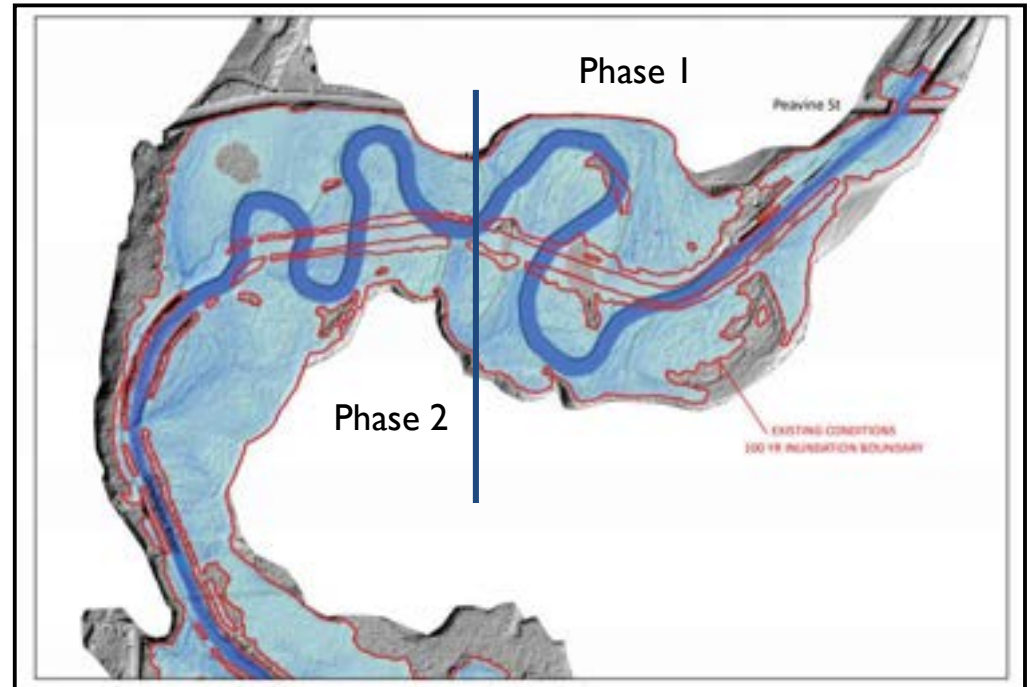


- Two phases due to complexity and cost

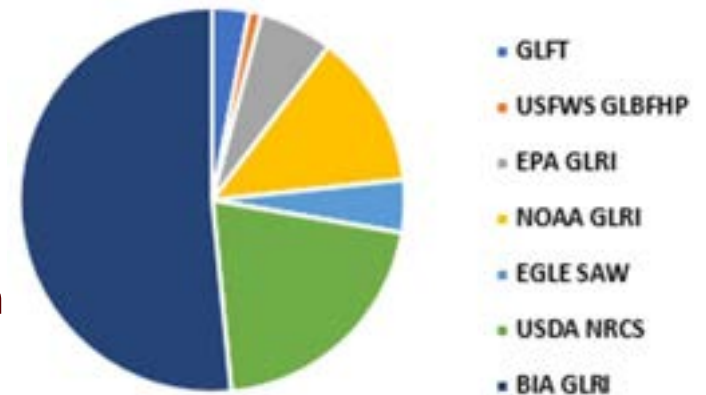
- Phase I: 1.5M
- Phase 2: 2.8M

- Partners & Funding:

- BIA GLRI
- EPA GLRI
- EPA GAP/I06
- USFWS
- USDA NRCS
- GLFT
- GLBFHP
- NOAA GLRI
- MIEGLE
- MEANDRS
- Interfluve
- St. Joseph River Basin Commission
- Friends of the St. Joseph River



Project Funding



Phase I - Start Date March 12, 2022

2/3/2023 – West Project View



- Straw & seeding:
September 9, 2022
- Native shrub, tree, and seed restoration:
October 24, 2022



Phase 2 Started November 15, 2022

8/15/2023 View Facing West




Aerial of Restoration Area August 24, 2023



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- Trees, shrubs, and live stakes need to be planted yet in Phase 2
 - Seeding and tree replacements will occur in areas where needed
 - Now that both phases are almost complete, 0.66 miles of dredged, straightened, and floodplain disconnected river has been restored to 1.29 miles of historic sinuosity with re-connection to the floodplains
 - Hydrology is being restored to over 53 acres of wetlands within the floodplains
 - Enhanced habitats for plant and animal species of cultural significance to the Pokagon Band
 - Niche habitats for migratory fish and needed spawning, feeding, and fry habitat
 - Migratory fish for the first time in almost a century
 - More resilient to climate change
 - Additional flood storage and reduced sedimentation within the river

Future Planned Work



- MIEGLE permit
 - Keep invasives out
 - Document 2 bankfull events
 - Document 1 overbank event
- Surveys (Started)
 - Mussels
 - Electrofishing
 - Macroinvertebrate
 - Habitat
 - Water quality
- 360° Video along the entire Dowagiac River (75% Complete)
 - Habitat & Water quality surveys
- Teaching opportunities
- Natural spring hydrogeologic investigation (2024)
- Potential to restore additional historic meanders further downstream (start late 2023)
 - Some surrounded by tribal properties
 - Some would need significant work with adjacent landowners



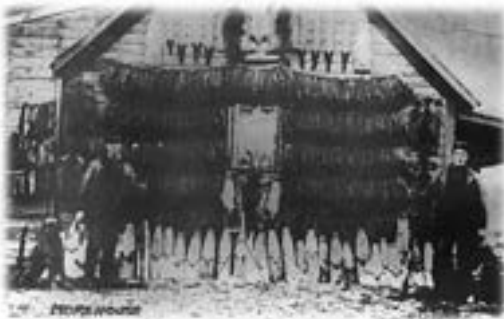
North Liberty Grand Kankakee Wetland Restoration



Grand Kankakee Marsh

– History

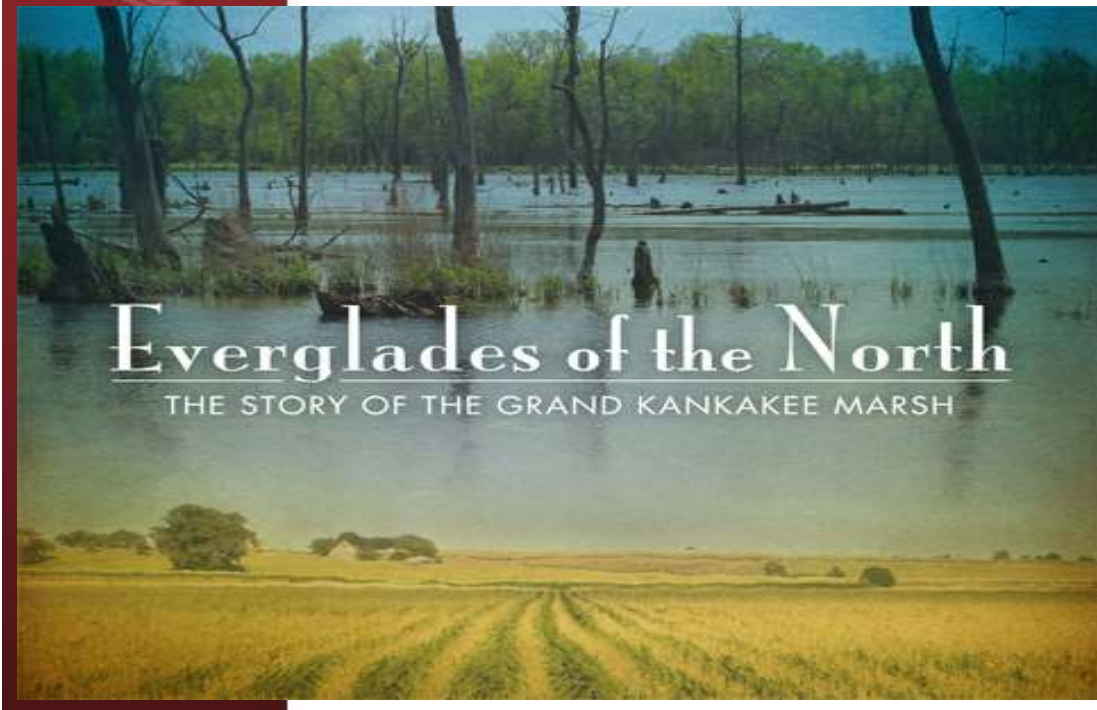
- One of the largest freshwater complexes in the United States
 - 500,000 acres of wetland in eight Indiana counties
 - Supported some of the highest concentrations of wildlife on the planet
 - Local economy built around waterfowl and fur trade



Grand Kankakee Marsh

– History

- Fertile soils provided for great ability to grow crops
 - Between 1852 and 1917 dredging in Indiana reduced the Kankakee River length from 250 miles to 90 miles of straight ditches, removing 2,000 river bends
 - Marsh reduced to 30,000 acres or 6% of original size
 - » Losses: wetland functions, flooding control, habitat and wildlife



Current Impairments – The Kankakee River

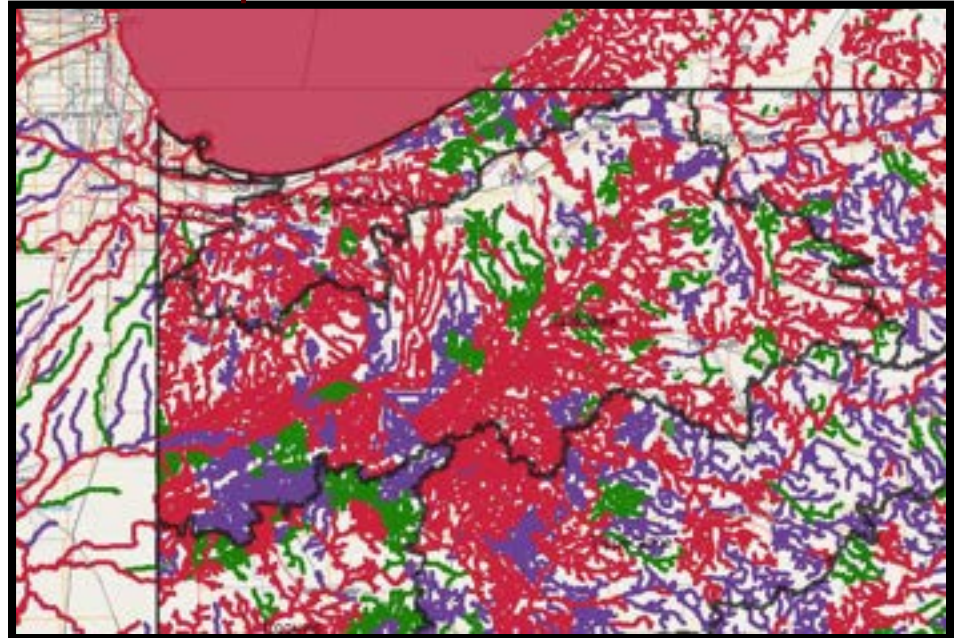
Impaired:

- Aquatic life
- Fish consumption
- Swimming & Boating

Issues:

- Bacteria other microbes
- Degraded aquatic life
- PCBs

Indiana Impaired Waters e303d Tool



<https://www.in.gov/idem/nps/online-e303d-tool/>

- Good
- Impaired
- Condition Unknown

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Restoring the Grand Marsh

– Multiple entities are in favor of restoring the Grand Kankakee Marsh

- Friends of the Kankakee
- USDA NRCS
- INDNR
- USFWS
- Audubon Society
- Among Others

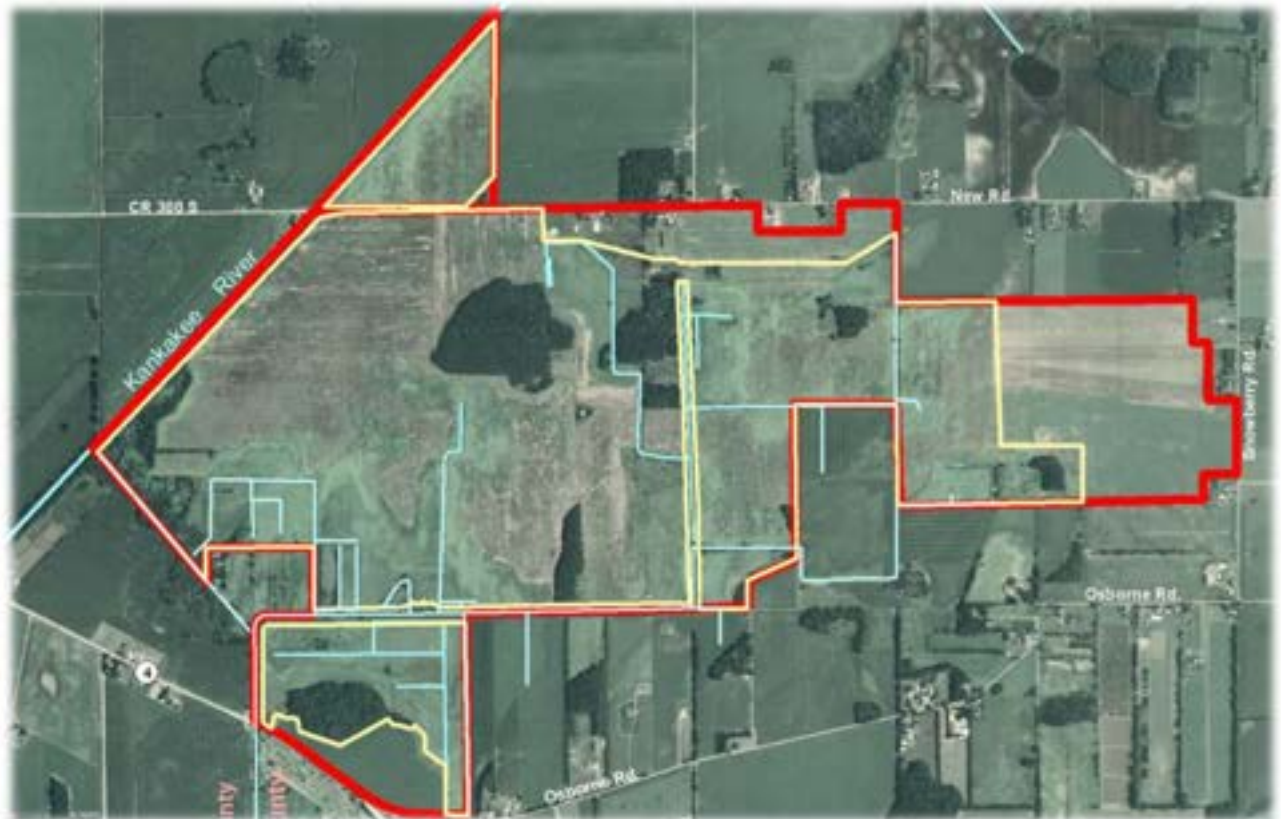


Wetland Reserve Easement

A little step towards restoring a once grand marsh

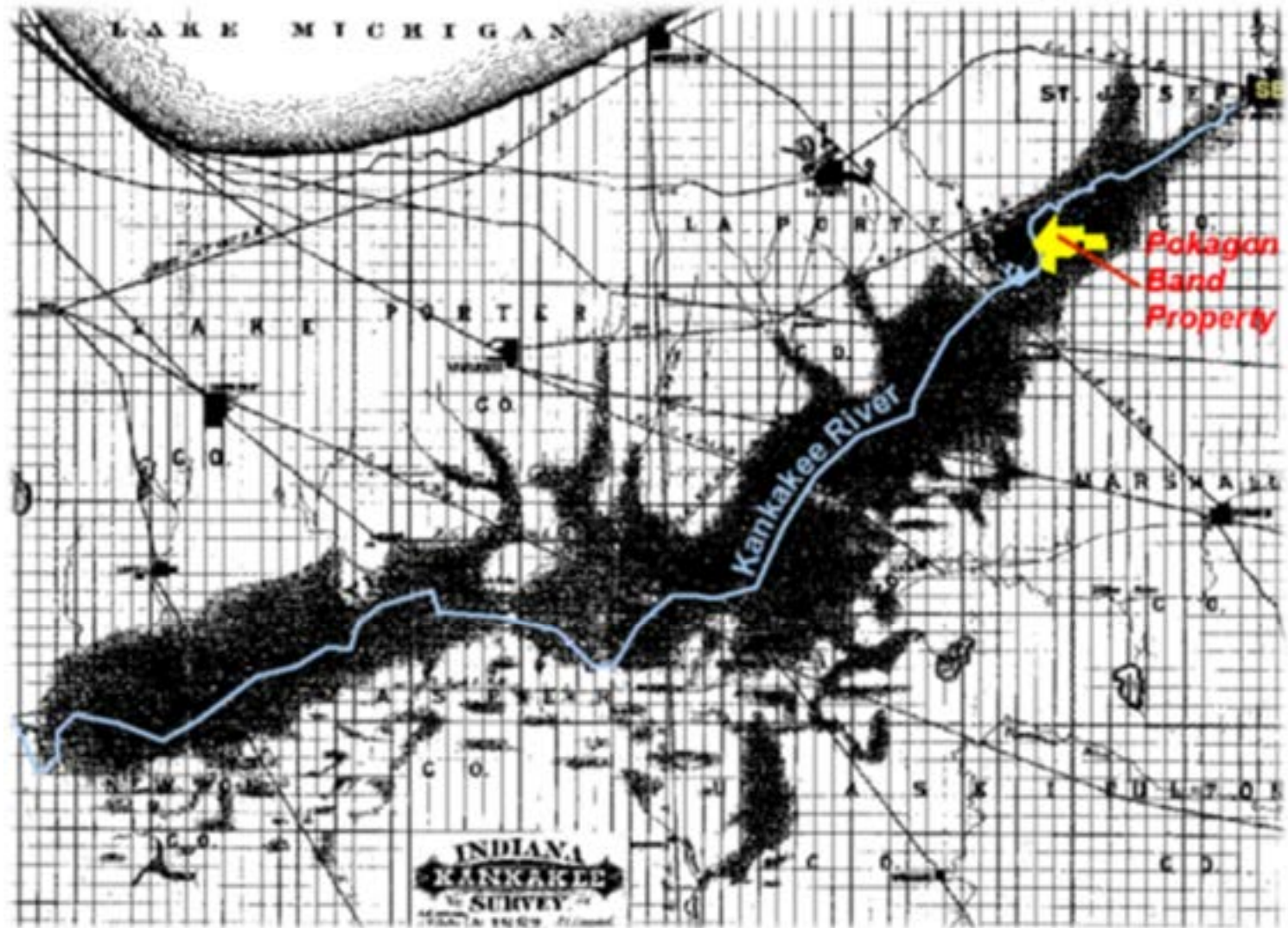
– Pokagon Band purchased 1,447 acres and 1,147 were eligible to enroll into WRE (WRP)

- 75% of the site has restorable wetlands and hydrology



Wetland Reserve Easement - North Liberty

– Location within historic Grand Kankakee Marsh



North Liberty

– Previous Restoration & Enhancement Activities

- Planting of 180 acres of warm season grasses and forbs
- Prescribed Burning
- Creation of 110 acres of shallow marsh



North Liberty

– Recent Restoration and Enhancement Activities

- 4 Wetland Scrapes = 20 additional wetland acres
- Drainage Ditch Fill
- Levee Repair



North Liberty

2019



Water Quality

– 800 ac-feet (261 million gallons) of water storage and slowed runoff (before 20 acres of additional wetlands)

- Reduction of flooding severity
- Reduction in sedimentation and nutrient transport



– Water Quality Monitoring

- Discharge measurements, Dissolved Oxygen, Turbidity, Conductivity, pH, Temperature, & Nutrients

– Electrofishing



1 million gallons is:



or

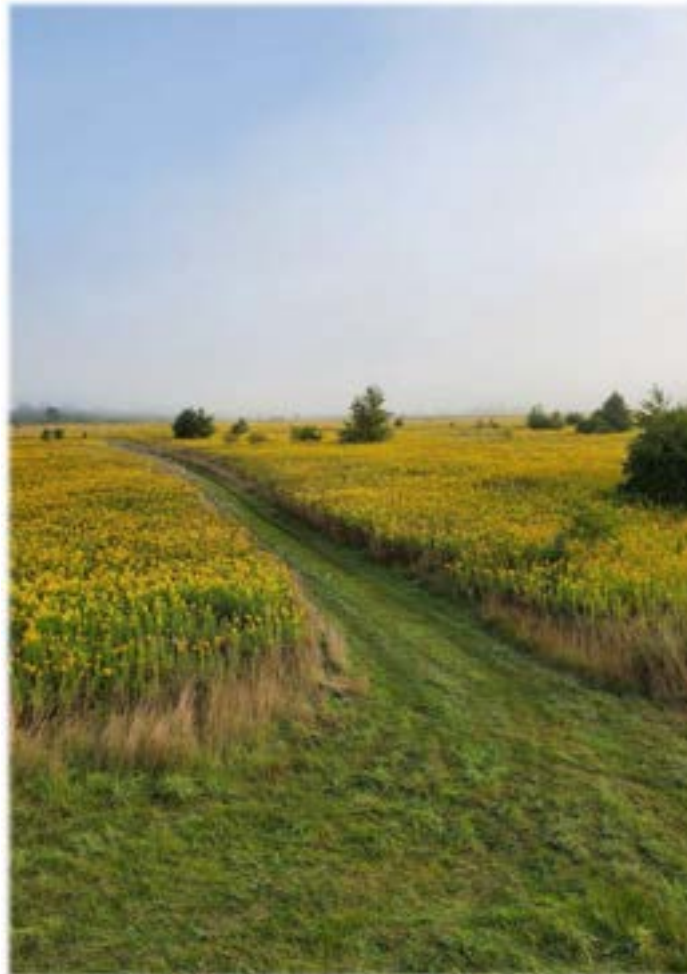


-An Olympic-sized pool is only 660,000 gallons of water

-261 million gallons = 395 Olympic-sized pools

Current Restoration & Enhancement Activities

- 2 Observation Platforms
- 80-acre Monarch Habitat Enhancement
- Kestrel, Bluebird, Wood Duck, and Owl Nest Boxes





Current Restoration & Enhancement Activities

- Prescribed Burning
- Warm Season Grass & Forb Plantings



Current Restoration & Enhancement Activities

- American Chestnut
 - Ten 99% American Chestnut planted in 2017
- Wildlife Plantings in Agricultural Fields
 - The Band leases 222 acres for agricultural production
 - » Standing crops for wildlife
 - » No-till practices
- Beehives
 - Assist with pollination



North Liberty – Habitats & Surveys

- Prairie
 - Submergent Wetlands
 - Emergent Wetlands
 - Open Water
 - Woodlots and Upland
 - Agricultural Fields
- Multiple surveys have been completed or are ongoing
 - Birds
 - » Including bats
 - Fish
 - Mammals
 - Reptiles and Amphibians



– Wildlife: Birds

- Audubon Society Surveys
 - 191 species identified 2015-2022
 - Records of 11 state endangered species and 12 state special concern
- Point-Count Surveys
- Trail Camera Surveys
- Acoustic Surveys





Osprey



Dickcissel



Common Yellowthroat



Savannah Sparrow



Red-winged Blackbird



Tree Swallow



Sandhill Crane



Great-horned Owl



Northern Harrier



Great-horned Owl Fledgling



Short-eared Owl

– Wildlife: Mammals

- Trail Camera Surveys
- Scent Station Surveys



– Mammals: Bats

- 9 Species

- Federally endangered species (2): Indiana bat & Northern long-eared bat
- Indiana state endangered (3): Little brown myotis (currently under federal review), Tri-colored bat (currently under federal review), Evening bat
- Indiana state special concern (3): Silver-haired bat, Eastern red bat, Hoary bat
- Big brown bat



Indiana bat



Northern long-eared bat



– Wildlife: Reptiles & Amphibians

- Trapping and Cover Boards
 - 7 species of amphibians (all frogs)
 - » Northern Leopard frog, Spring peeper, Green frog, Bullfrog, Gray Tree Frog, Eastern American Toad, Western Chorus Frog
 - 7 species of reptiles
 - » Eastern Gartersnake, Northern Ribbonsnake, Eastern Hog-nosed Snake
 - » Snapping turtle, Painted turtle, Red-eared slider, Spiny softshell
- eDNA
 - eDNA was collected in 2022
 - » Awaiting results



Future Projects

- **Butterfly Surveys** (underway)
- **eDNA Surveys** (equipment purchased)
- **Continued Surveys and Management**
- **Working with the USDA RCPP & EPA GHP** (funded)
 - **Floating wetlands**
 - Nutrient reductions
 - **Water quality monitoring**
 - Nutrient reductions
 - **Farming Equipment**
 - Nutrient reductions



Questions??

