

# The Pokagon Band's Dowagiac River Restoration: A Tribal Wetland Project with a Decade of Progress



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Pokagon Band of Potawatomi

Pokégnek Bodéwadmik · Pokagon Band of Potawatomi





## RESTORING THE DOWAGIAC RIVER ON TRIBAL LANDS

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

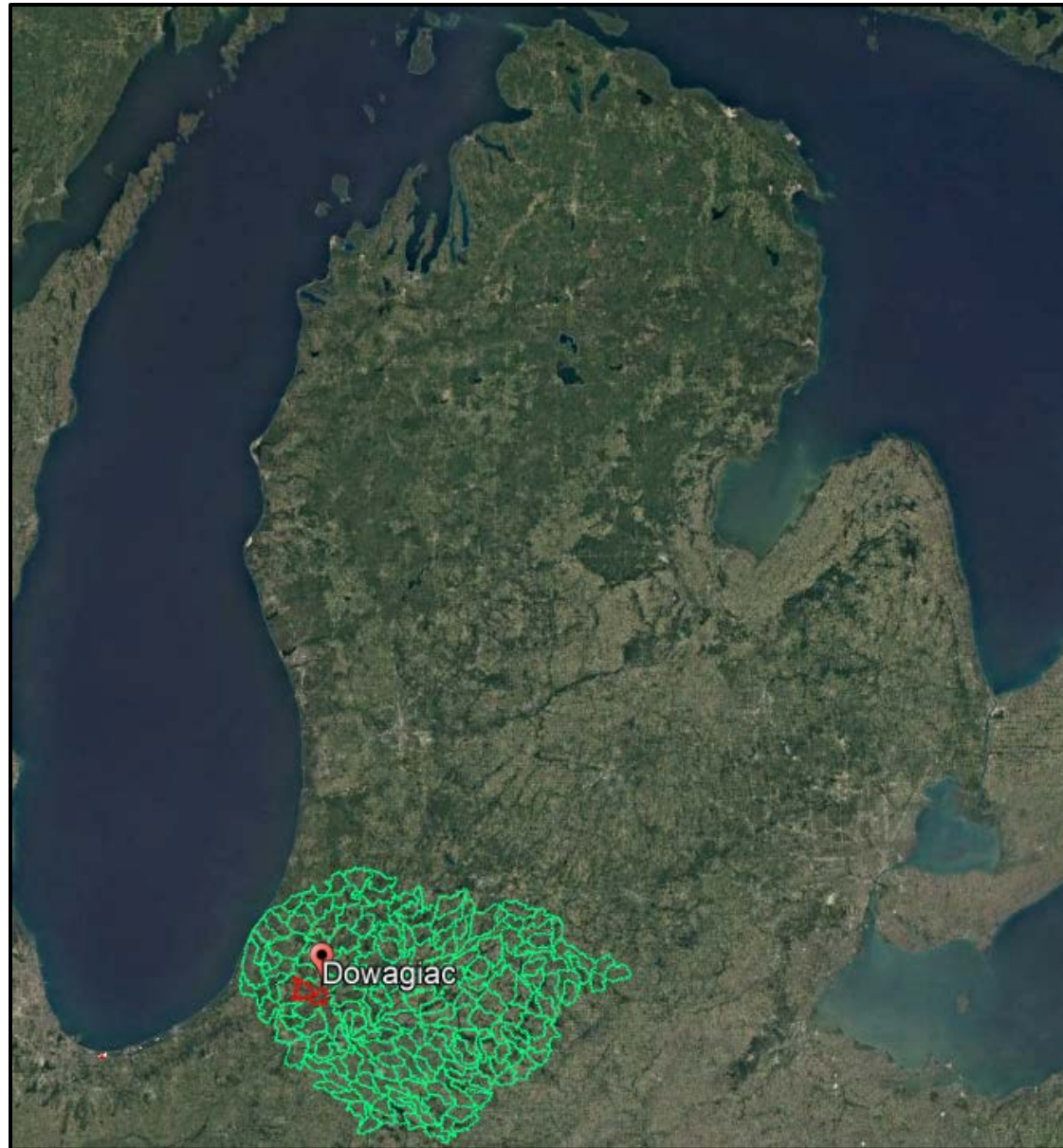
*a place to hunt, fish, and forage.*

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



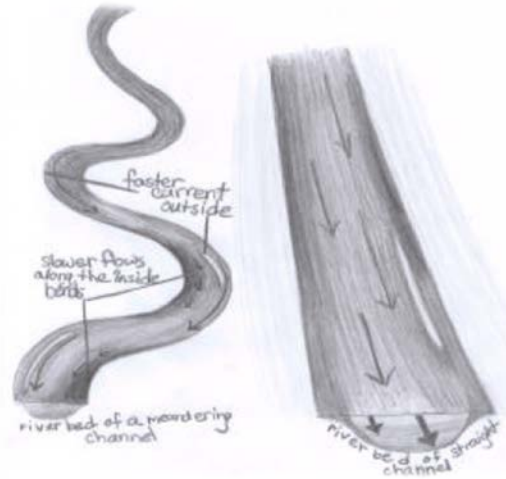


# Location – Berrien, Cass & Van Buren Counties, MI



# 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
- Mussel Diversity
  - At least five species of special concern or higher mussels below Pucker Street Dam



# Pucker Street Dam Removal

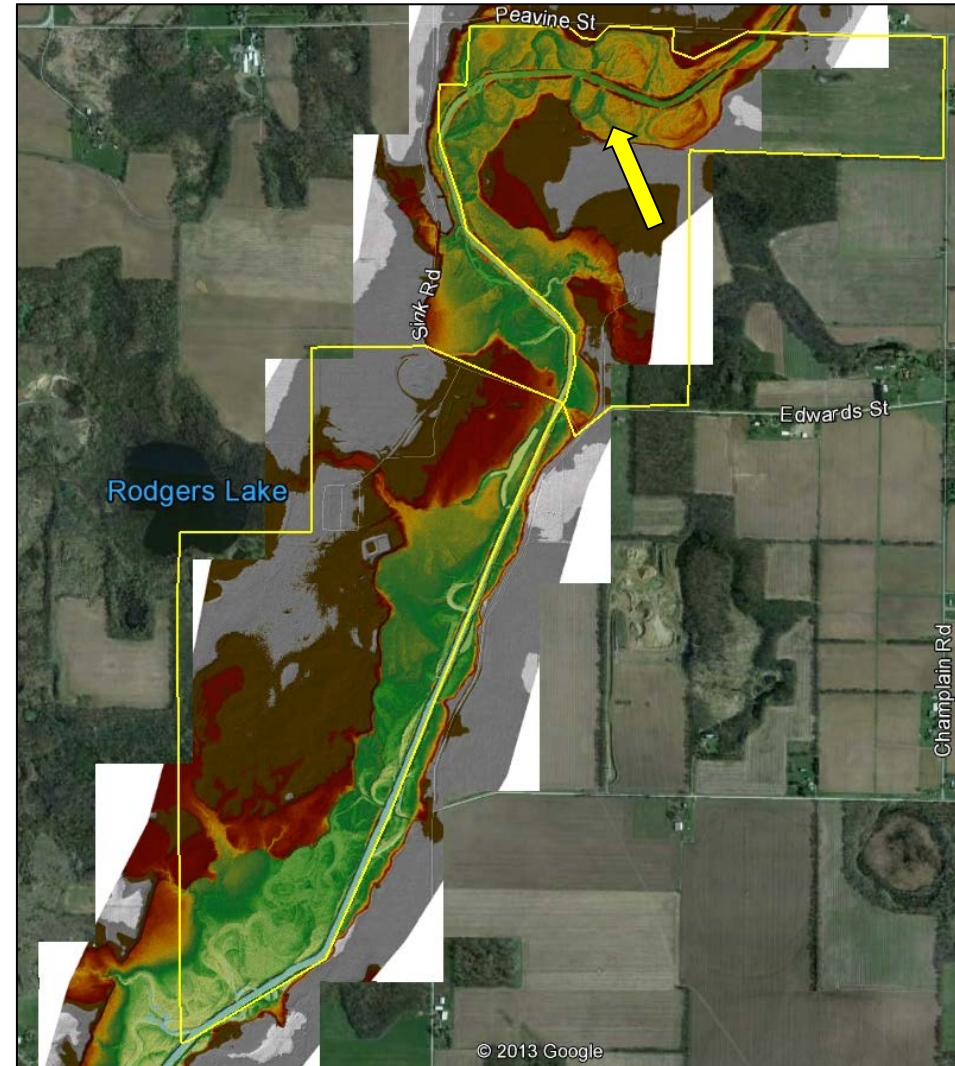


- Dam Removal Finalized in 2021
  - Re-connection of 159 miles of streams and tributaries



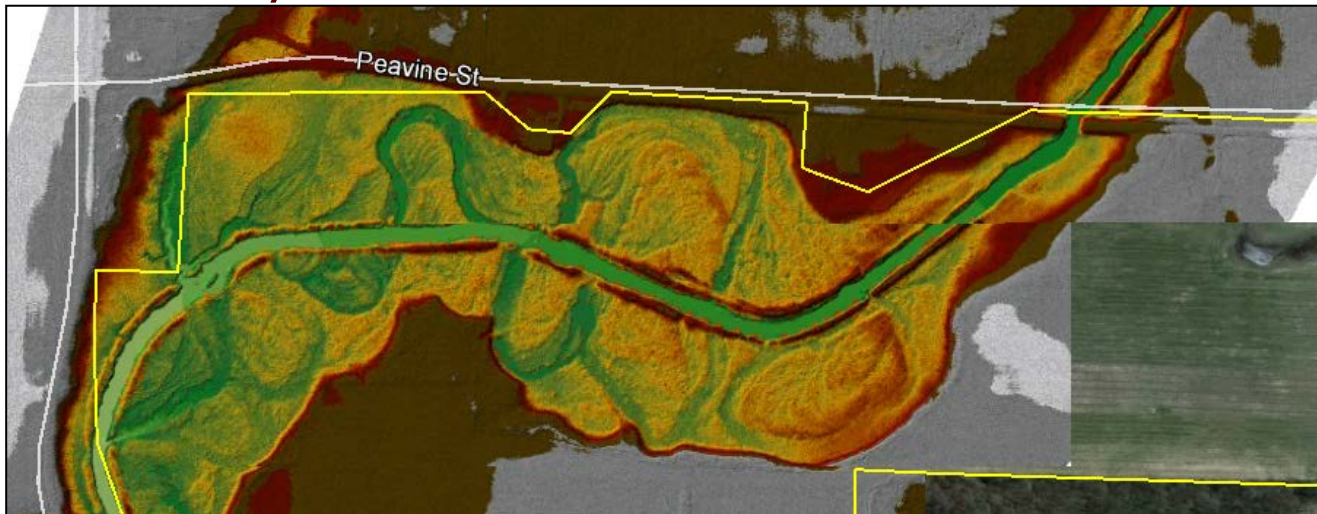
# Dowagiac River Mainstem Restoration

- 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



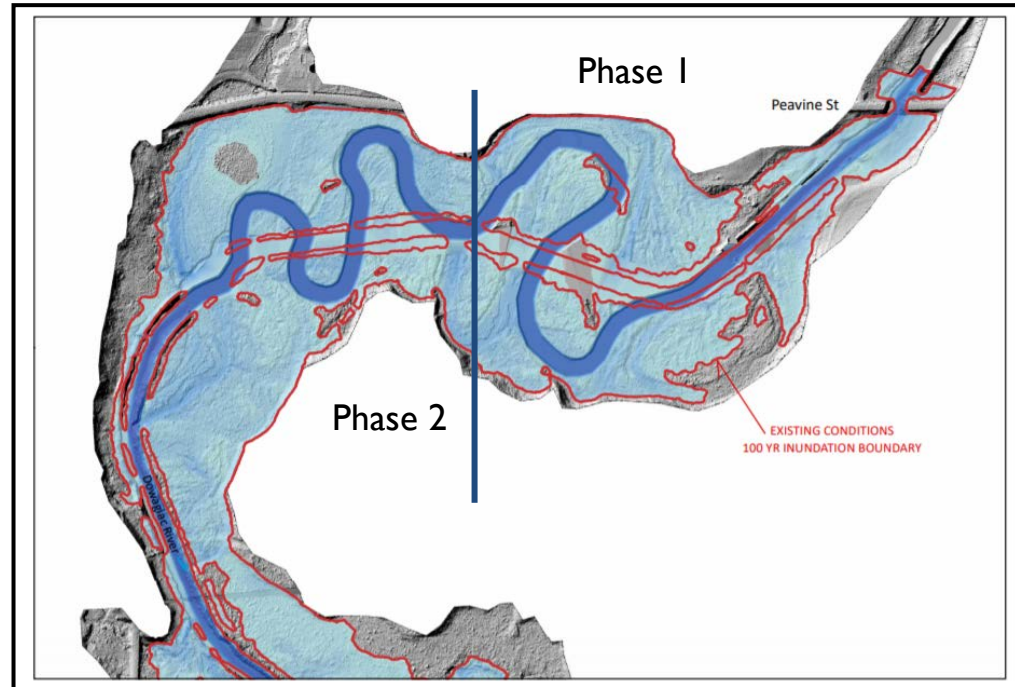


- Two phases due to complexity and cost

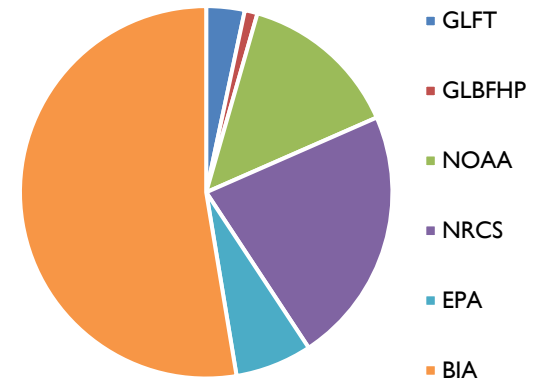
- Phase I: 1.5M
- Phase 2: 2.8M

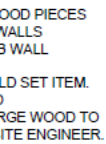
- Partners & Funding:

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



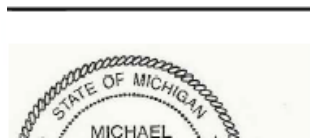
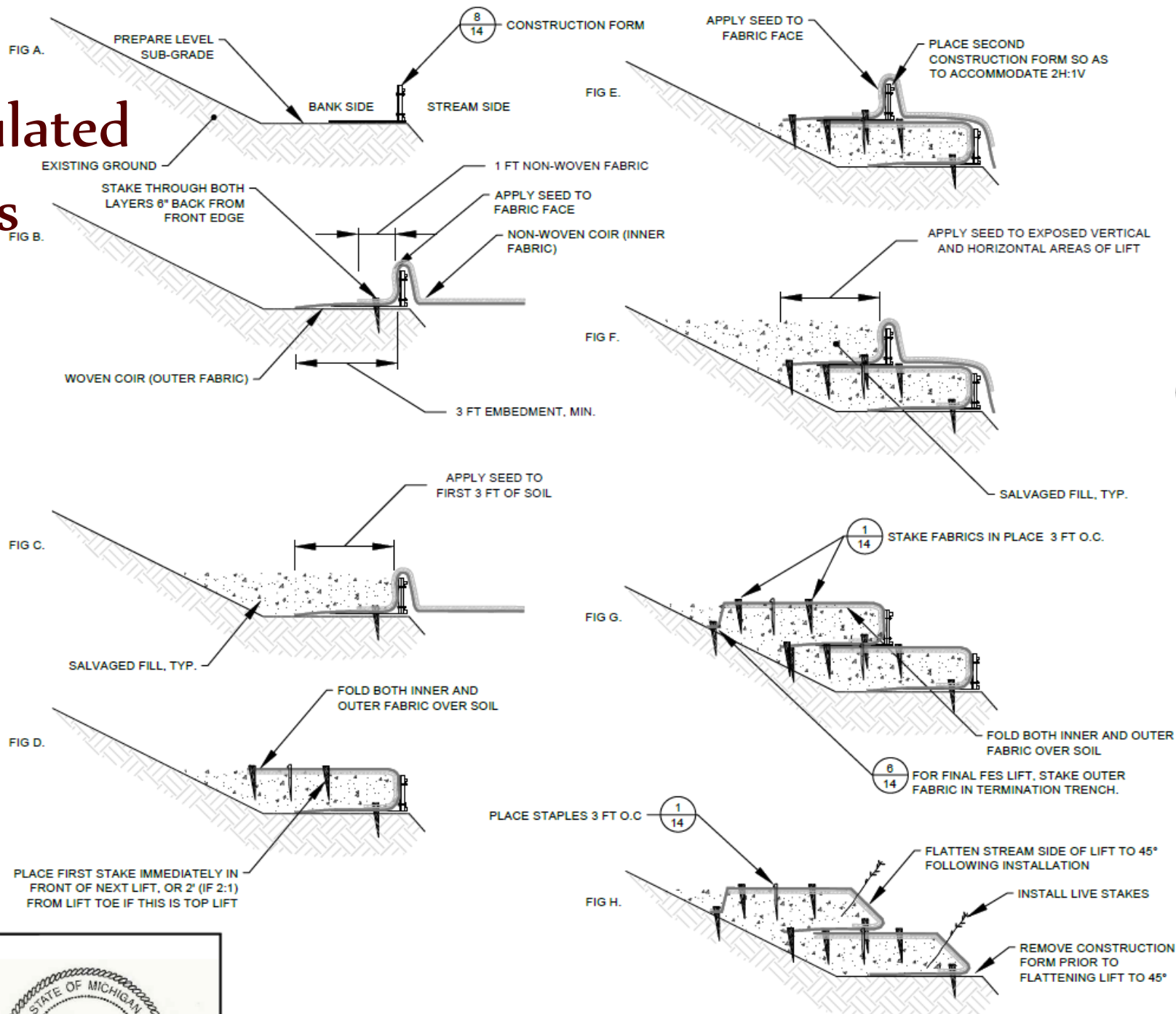
**Project Funding**



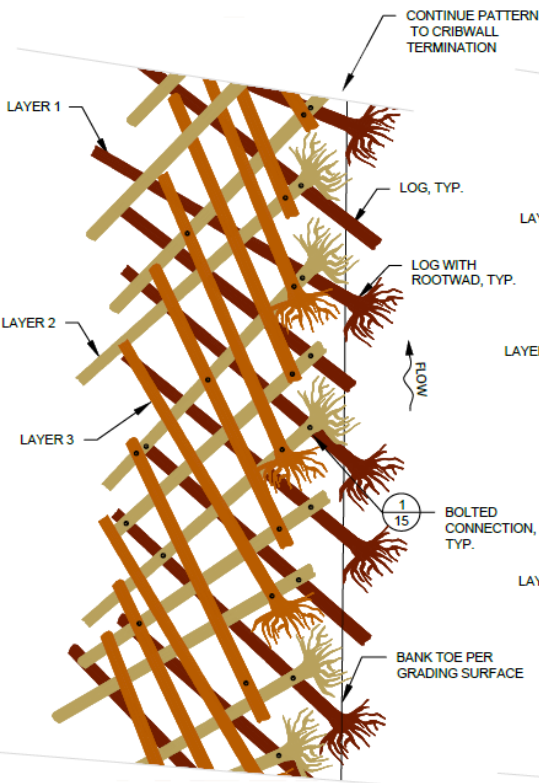
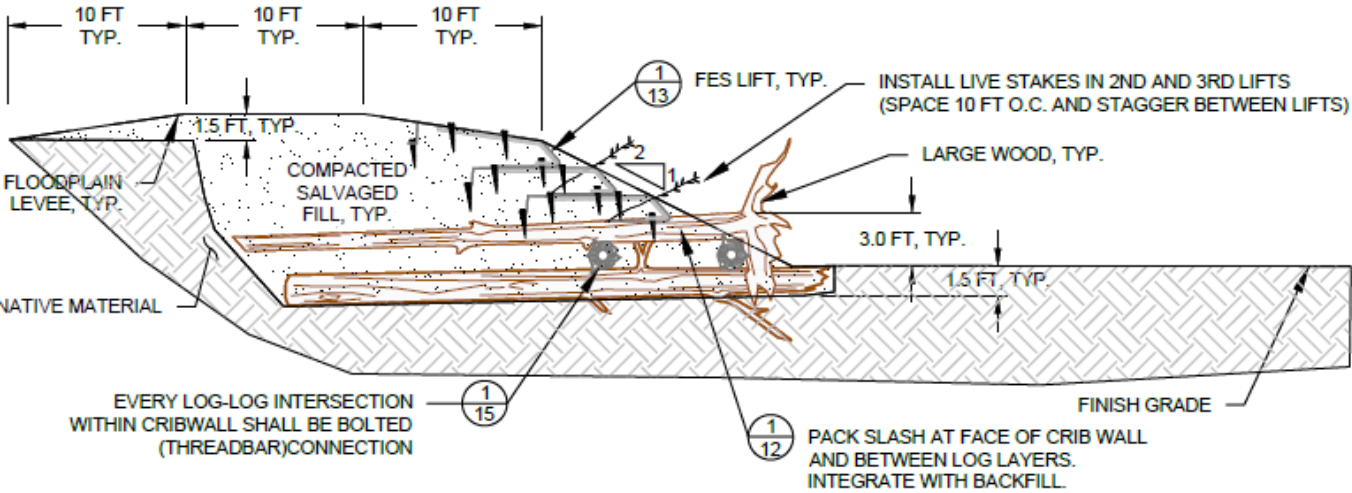




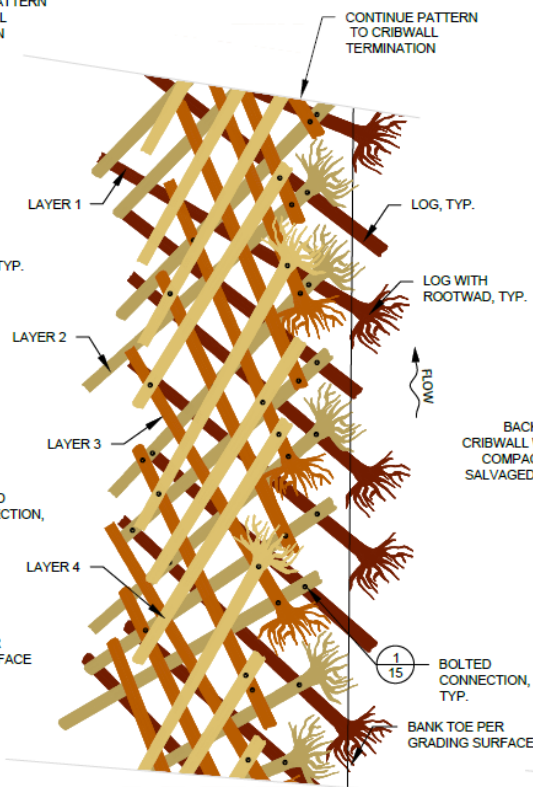
# Fabric Encapsulated Soil Lifts



# Cribwalls



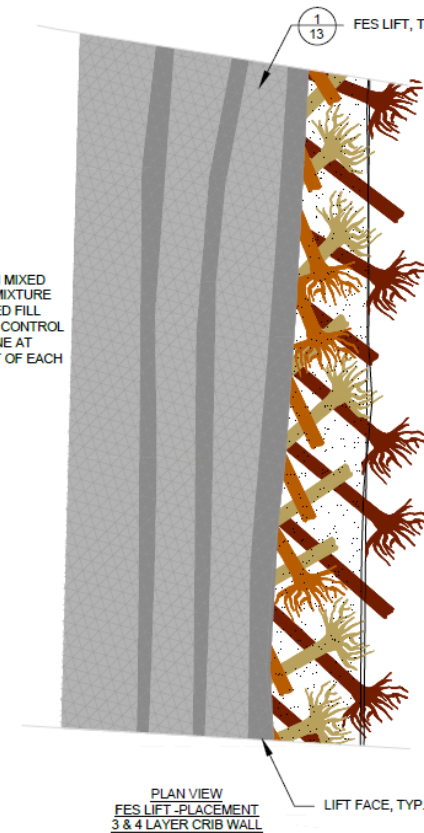
PLAN VIEW  
LARGE WOOD LAYOUT  
3 LAYER CRIB WALL



PLAN VIEW  
LARGE WOOD LAYOUT  
4 LAYER CRIB WALL

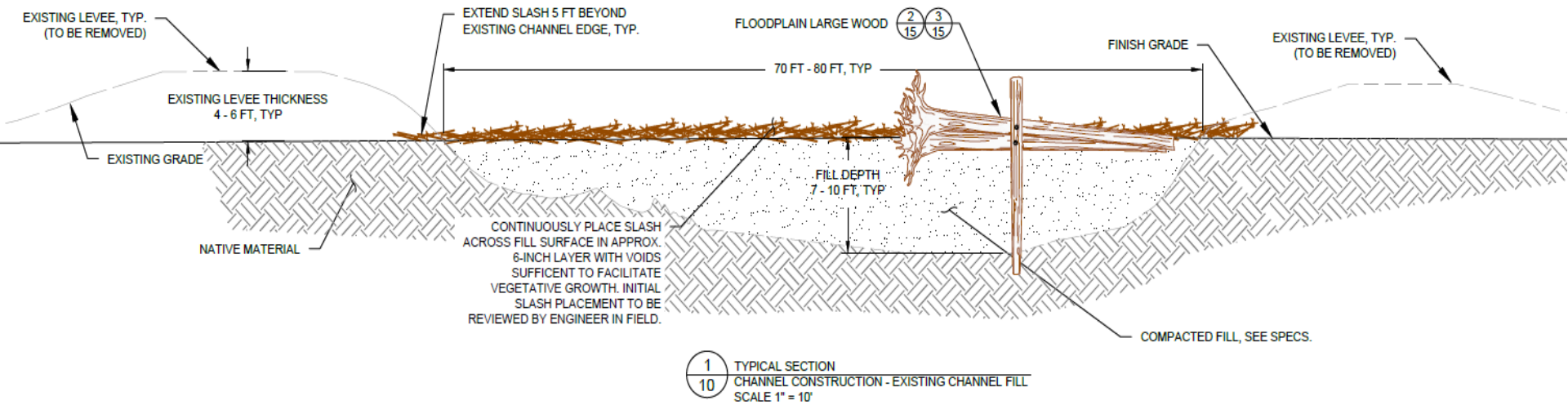


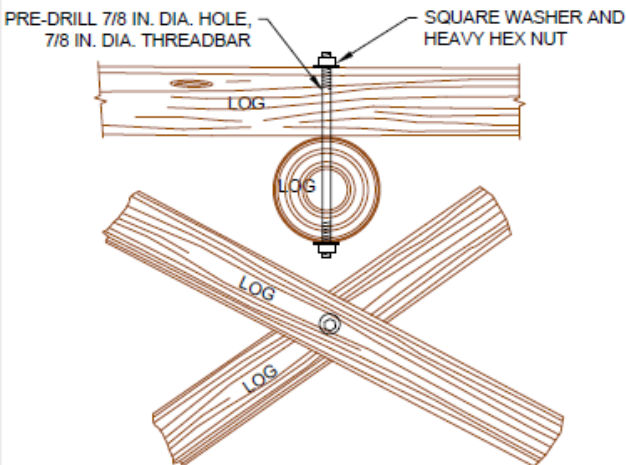
PLAN VIEW  
BACKFILL  
3 & 4 LAYER CRIB WALL





# Floodplain Jacks

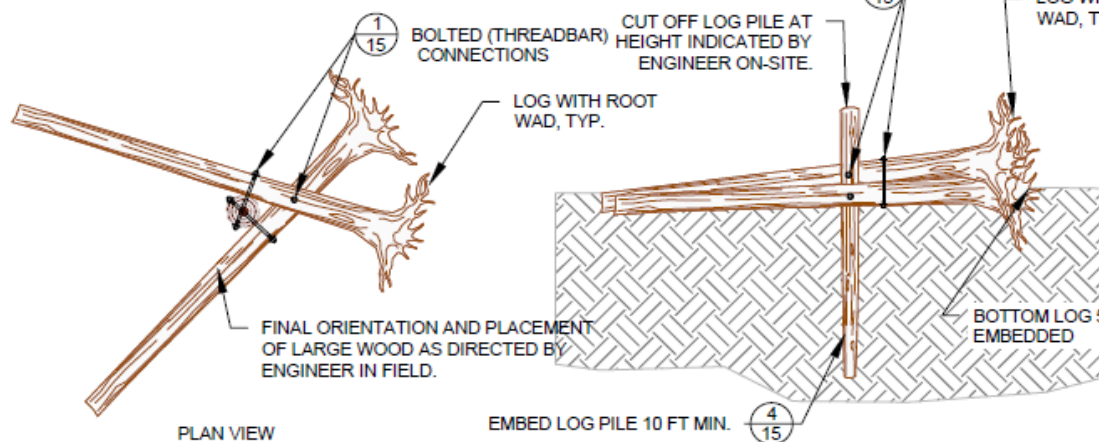




#### BOLTED CONNECT NOTES

##### PIN LOGS TO LOGS

1. DRILL 7/8" DIA HOLE THROUGH LOGS.
2. INSERT 7/8" DIA THREADBAR.
3. INSTALL STEEL PLATES AND HEAVY HEX NUTS. SECURE NUTS BY CHISELING THREADS OR MUSHROOMING EXPOSED ENDS OF ROD.
4. FILE OR GRIND OFF SHARP EDGES.

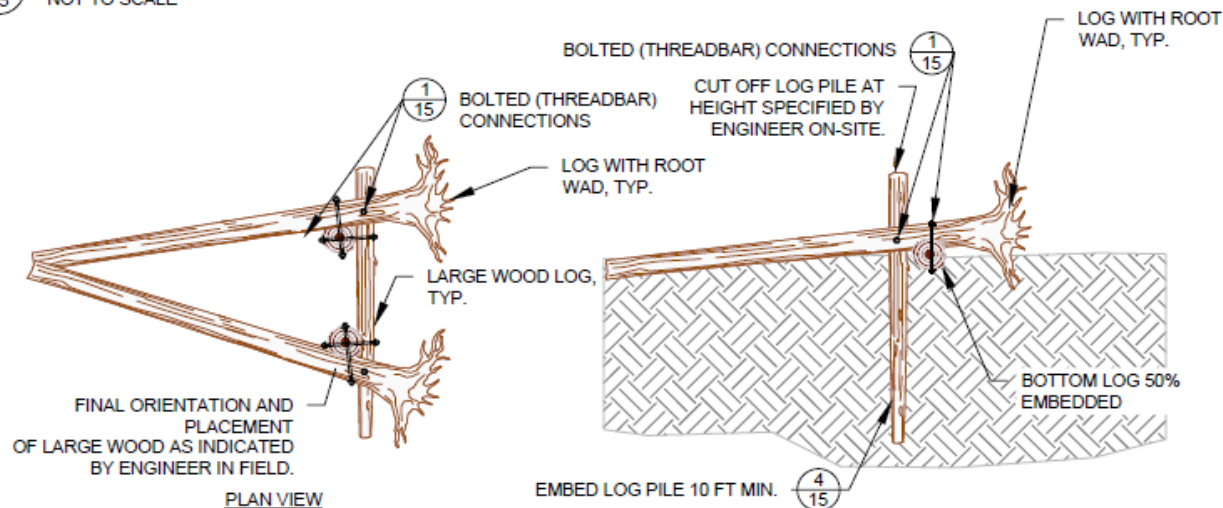


2  
15 FLOODPLAIN LARGE WOOD - 2 PIECE WITH 1 LOG PILE  
NOT TO SCALE

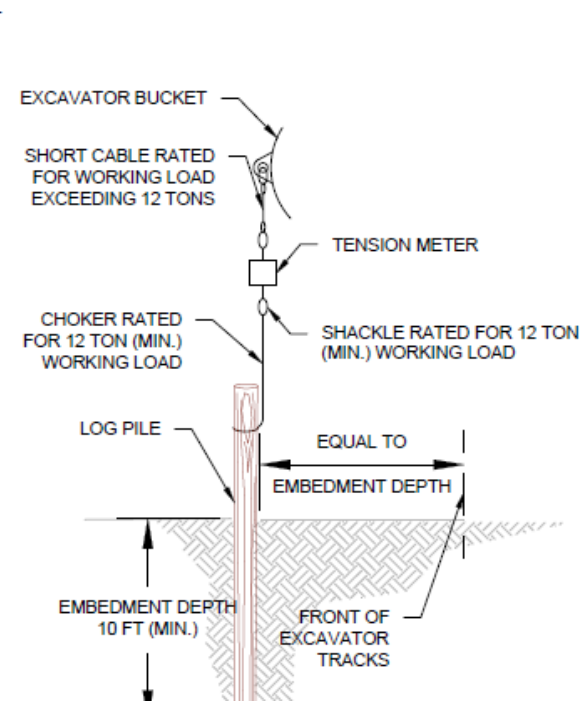
#### GENERAL NOTES

1. LARGE WOOD IS A FIELD SET ITEM.
2. FINAL LOCATIONS AND ORIENTATIONS OF LARGE WOOD TO BE INDICATED BY ONSITE ENGINEER.

1  
15 BOLTED (THREADBAR) CONNECTION  
NOT TO SCALE



3  
15 FLOODPLAIN LARGE WOOD - 3 PIECE WITH 2 LOG PILES  
NOT TO SCALE





# 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



- 
- Most of the Phase 2 trees, shrubs, and live stakes were planted the last week of October 2023.
  - Seeding and tree replacements will occur in areas where needed
  - Now that both phases 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



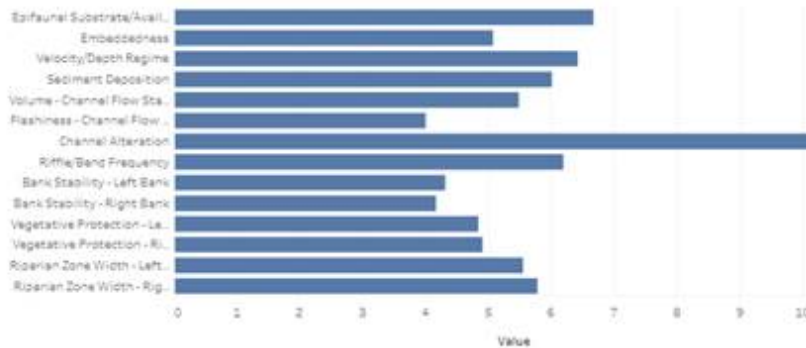
- MIEGLE permit (5 years)
  - Keep invasives out
  - Document 2 bankfull events
  - Document 1 overbank event
- Surveys (Started)
  - Mussels
  - Electrofishing
  - Macroinvertebrate
  - Habitat
  - Water quality
- Teaching opportunities
- Natural spring hydrogeologic investigation (2024)
- Potential to restore additional historic meanders further downstream (2024)
  - Some surrounded by tribal properties
  - Some would need significant work with adjacent landowners
- Dowagiac River Survey

# Dowagiac River – 360° Longitudinal Surveys

- Multiprobe Measurements – Temperature, Nitrates, Conductivity
- 360° Video (erosion, trash, water withdrawals)
- Habitat Measurements
- [Explore the Dowagiac River Environmental Condition Inventory](#)

P51 Habitat Assessment 2023 by Douglas McLaughlin

## Habitat Parameters



Site Average



Rating



Site Avg



Site Average

Site  
[Avg]

## Map



Details

Powered by Esri



Questions??



Species		
Common Name	Scientific Name	PLS lb/acre
<i>Grasses, sedges and rushes</i>		
Fringed brome	<i>Bromus ciliates</i>	1.0
Bluejoint	<i>Calamagrostis Canadensis</i>	0.06
Virginia Wild Rye	<i>Elymus virginicus</i>	6.0
Fowl Manna Grass	<i>Glyceria striata</i>	0.4
Rice Cut Grass	<i>Leersia oryoides</i>	0.04
Fowl Bluegrass	<i>Poa palustris</i>	0.06
Fox Sedge	<i>Carex vulpinoidea</i>	0.4
Soft Rush	<i>Juncus effusus</i>	0.04
<b>Total:</b>		<b>8.0 lbs/ Acre</b>
<i>Forbs</i>		
Swamp Milkweed	<i>Asclepias incarnata</i>	0.2
Sneezeweed	<i>Helenium autumnale</i>	0.16
Purple Coneflower	<i>Echinacea purpurea</i>	0.5
Blue vervain	<i>Verbena hastata</i>	0.2
Monkey Flower	<i>Mimulus ringens</i>	0.04

ETATION

6/28/2022

32 90 10-2

#### Dowagiac River Restoration Phase 2

<b>Forbs Totals:</b>		<b>1.1 lbs/acre</b>
<i>Cover Crops</i>		
Winter wheat or oats*	-	40.00 lbs/acre
Annual rye	-	10.00 lbs/acre



Species			
Common Name	Scientific Name	Pot Size	Quantity
<i>Trees</i>			
Silver maple	<i>Acer saccharinum</i>	5	35
Red maple	<i>Acer rubrum</i>	5	35
Common hackberry	<i>Celtis occidentalis</i>	5	35
Tuliptree	<i>Liriodendron tulipifera</i>	5	35
American sycamore	<i>Platanus occidentalis</i>	5	35

REVEGETATION

6/28/2022

32 90 10-3

#### Dowagiac River Restoration Phase 2

Northern white oak	<i>Quercus alba</i>	5	35
American basswood	<i>Tilia Americana</i>	5	35
American elm	<i>Ulmus Americana</i>	5	35
Cottonwood	<i>Populus Deltoides</i>	5	35
Shellbark Hickory	<i>Carya laciniosa</i>	5	35
Peachleaf Willow	<i>Salix Amygdaloides</i>	5	35
<i>Shrubs</i>			
Speckled alder	<i>Alnus incana</i>	BRS	90
American hornbeam	<i>Carpinus caroliniana</i>	BRS	90
Redbud	<i>Cercis Canadensis</i>	BRS	90
Alternate-leaf dogwood	<i>Cornus alternifolia</i>	BRS	90
Gray dogwood	<i>Cornus racemose</i>	BRS	90
American witch-hazel	<i>Hamamelis virginiana</i>	BRS	90
Northern spicebush	<i>Lindera benzoin</i>	BRS	90
Eastern hop-hornbeam	<i>Ostrya virginiana</i>	BRS	90
Choke cherry	<i>Prunus virginiana</i>	BRS	90
Wild black currant	<i>Ribes Americanum</i>	BRS	90
Eastern prickly	<i>Ribes cynosbati</i>	BRS	90
Black elder	<i>Sambucus nigra</i>	BRS	90
American bladderhut	<i>Staphylea trifolia</i>	BRS	90
Buttonbush	<i>Cephalanthus occidentalis</i>	BRS	90
Serviceberry	<i>Amelanchier arborea</i>	BRS	90
Highbush Cranberry	<i>Viburnum opulus</i>	BRS	90
Elderberry	<i>Sambucus Canadensis</i>	BRS	90