



PAW PAW LAKE

SPECIAL ASSESSMENT PROJECT ADVISORY COMMITTEE

April 18, 2023

OUTLINE

- Paw Paw Lake water quality yearly report
- Branch and Derby Drain water quality report
- Catch basin cleanout program update
- Water quality structure design review
- M-140 basin cleanout status
- Floodplain reconnection project status
- Heater farm erosion control update
- Other water quality projects

Paw Paw Lake water quality yearly report



2022 SUMMARY OF WATER QUALITY RESULTS PAW PAW LAKE

March 1, 2023

PREPARED FOR:

*Paw Paw Lake Special Assessment
Advisory Committee*

PREPARED BY:

*Spicer Group
2464 Byron Station Dr SW, Suite C
Byron Center, MI 49315
www.spicergroup.com*

SUMMARY:

*This document is intended to summarize
recent Paw Paw Lake water quality
monitoring efforts.*

Branch and Derby Drain water quality report



2022 BRANCH & DERBY INTERCOUNTY DRAIN WATER QUALITY REPORT

April 18, 2023

PREPARED FOR:

*Paw Paw Lake Special Assessment
Advisory Committee*



PREPARED BY:

*Spicer Group
2464 Byron Station Dr SW
Suite C
Byron Center, MI 49315
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SUMMARY:

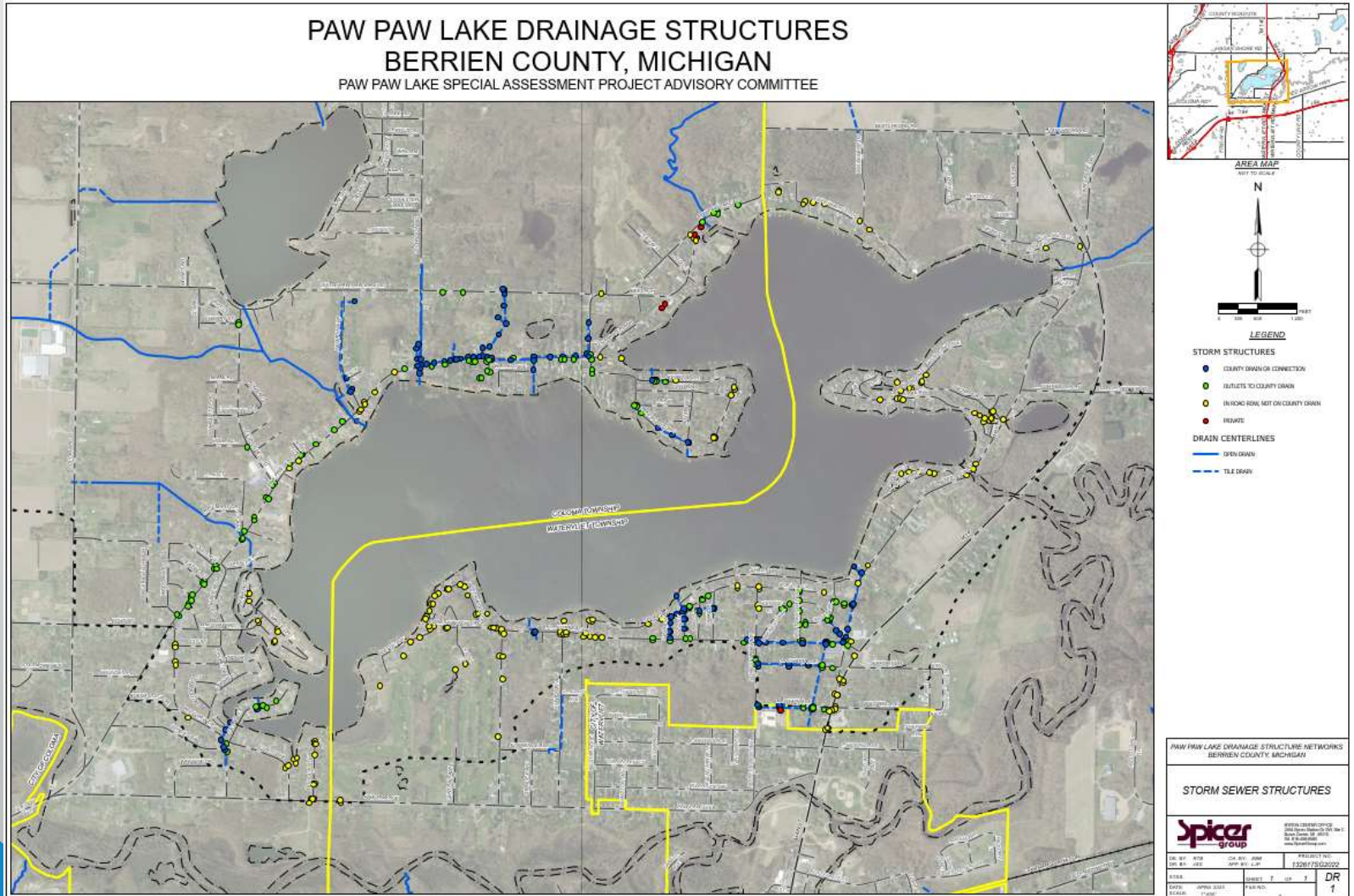
This document is intended to summarize recent Branch & Derby Intercounty Drain water quality monitoring efforts. The complete database of water quality results and supporting documents is maintained by Spicer Group.

Catch basin cleanout program update

Background

- PPLF paid \$22,168.75 for the cleaning, disposal, and inventory of 164 catch basins in the pilot area. (25k budgeted)
- PPL SAPAC cleaned another 232 catch basins around the rest of Paw Paw Lake for a total of \$65,283 (68k budgeted)
- A total of 396 catch basins were cleaned.

Catch basin cleanout program update



Catch basin cleanout program update

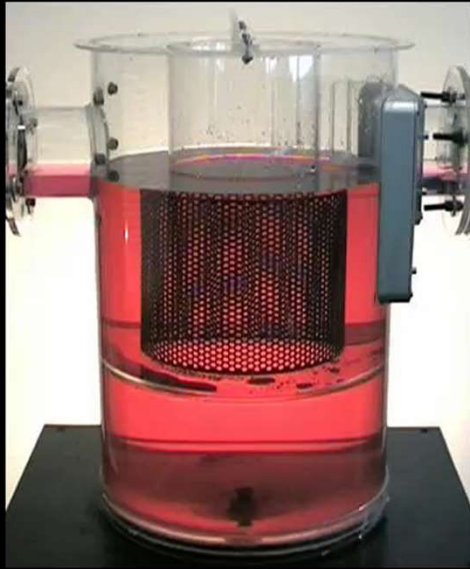
Possible next steps?

- Berrien County Drain Commissioner
- Water Quality Units (WQU)

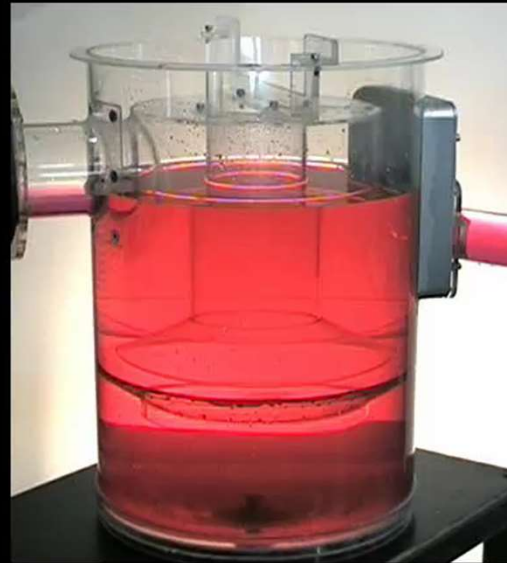
Water quality structure design review

The concept

Performance you can see



Internally bypassed system



Downstream Defender® Separator

*First 30 seconds replicates water quality flow for site, then it ramps up to the peak flow

Water quality structure design review

Estimated costs per structure

- Water Quality Units

WQU Size	ADS – Barracuda	Hydro Int'l Downstream Defender
3-feet	\$9,000	-
4-feet	\$12,000	\$19,000
6-feet	\$21,000	\$32,000
8-feet	\$33,000	\$67,000
10-feet	-	\$125,000

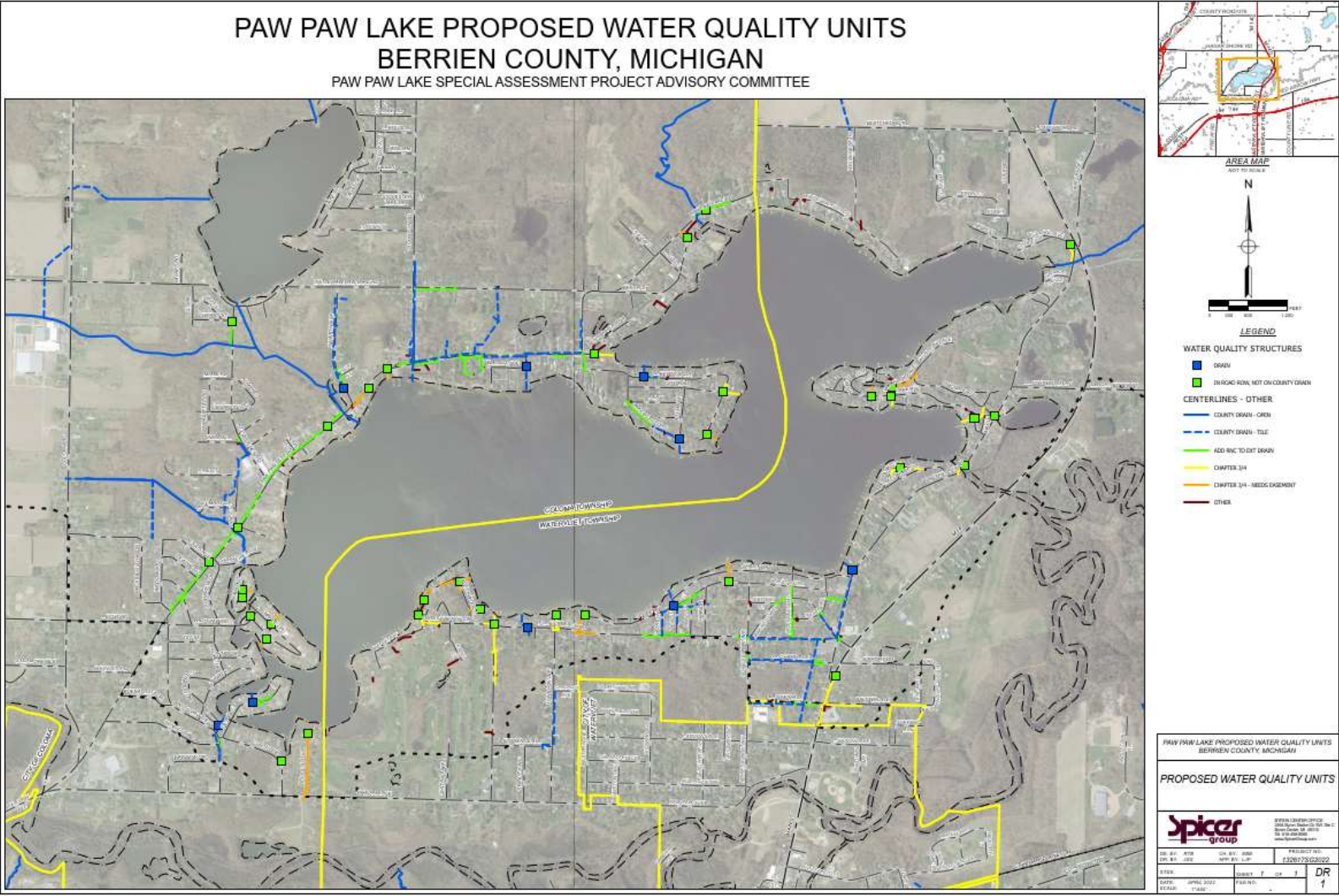
- Construction
 - Varies by location. Will likely range from \$10,000-\$100,000 per unit.
- Engineering
 - Varies by location. Will range from \$10,000-\$15,000 per unit.

Water quality structure design review

Total estimated costs per structure

WQU Size	ADS – Barracuda	Hydro Int'l D/S Defender	Rough Construction Estimate	Design, Survey & Inspection	ESTIMATED TOTAL
3-feet	\$9,000	-	\$10,000	\$10,000	\$29k +/-
4-feet	\$12,000	\$19,000	\$10,000	\$10,000	\$32-39k +/-
6-feet	\$21,000	\$32,000	\$14,000	\$12,000	\$47-58k +/-
8-feet	\$33,000	\$67,000	\$20,000	\$14,000	\$67-101k +/-
10-feet	-	\$125,000	\$25,000	\$15,000	\$165k +/-

Water quality structures - *Proposed Locations*



Water quality structure design review

Sizes Needed

WQU Size	Proposed Locations
3-feet	5
4-feet	26
6-feet	7
8-feet	5
10-feet	1

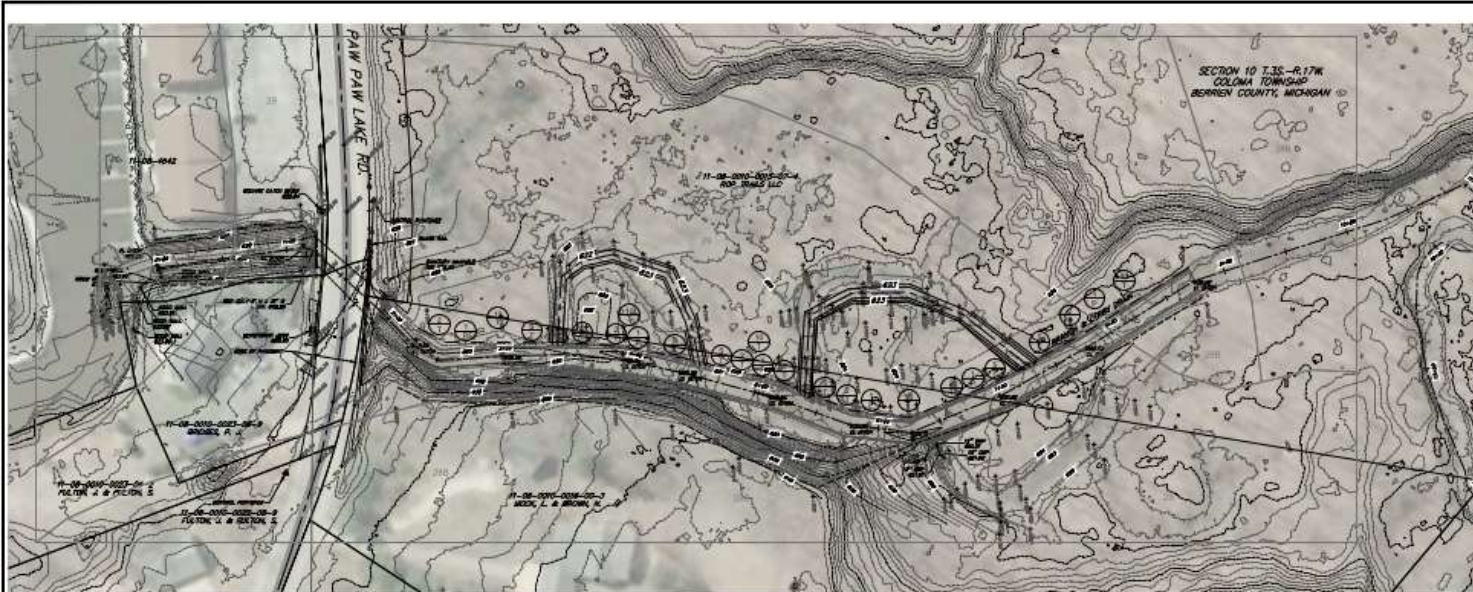
M140 Basin Cleanout Status



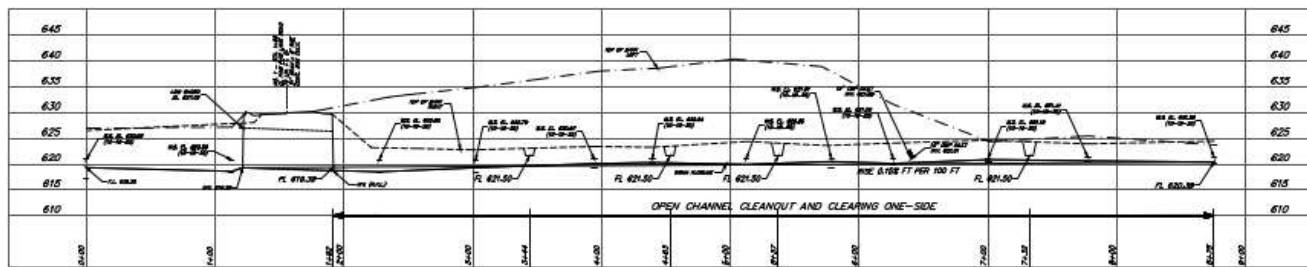
FLOODPLAIN RECONNECTION PROJECT



FLOODPLAIN RECONNECTION PROJECT



LEGEND
 --- DRAIN CENTERLINE
 --- ROAD CENTERLINE
 --- SECTION LINE



BENCH MARK
 BM#4000 SET BEARING IN NORTH FACE OF POWER POLE 100' SOUTH OF CL OF PAW PAW LAKE ROAD, 25' EAST OF THE WIND WALL ON THE BOY DUTCHY.
 BACK 630.82

FIG. 1 - SECTION 11-08 - PAW PAW LAKE ROAD AND BRIDGE

SOIL EROSION & SEDIMENTATION CONTROL TABLE					
NO.	PROG. STATION	TO STATION	SOIL	DESCRIPTION	QTY.
1	REV. 0	REV. 0	LEFT	SEEDING	400 LBS./AC.

TIMING AND SEQUENCE OF EACH PROPOSED EARTH CHANGE		
SEQUENCE	KEY #	DESCRIPTION
1		INSTALL TEMPORARY STABILIZED CONSTRUCTION ACCESS MEASURES
2		OPEN CHANNEL CLEANOUT / BANK STABILIZATION

GENERAL DESCRIPTION OF CONSTRUCTION WORK AND EARTH CHANGE ACTIVITIES	
1.	INSTALL FINAL SED. MEASURES
2.	CLEANING
3.	OPEN CHANNEL CLEANOUT / BANK STABILIZATION

SOILS LEGEND	
SOIL SYMBOL	SOIL COMPOSITION
200	Other heavy fine sand, 0 to 4 percent silt
20	Coarser sandy loam
200	Shout silt, 0 to 4 percent clay

BY	REVISION	DATE

BRANCH AND DERBY INTERCOUNTY DRAIN
 BERRIEN COUNTY, MICHIGAN

PLAN & PROFILE
 STA. 0+00 TO 9+00





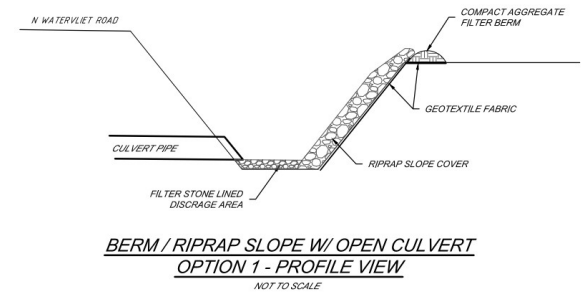
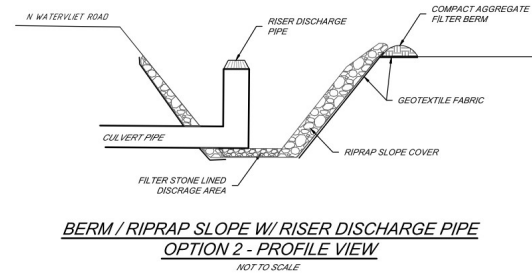
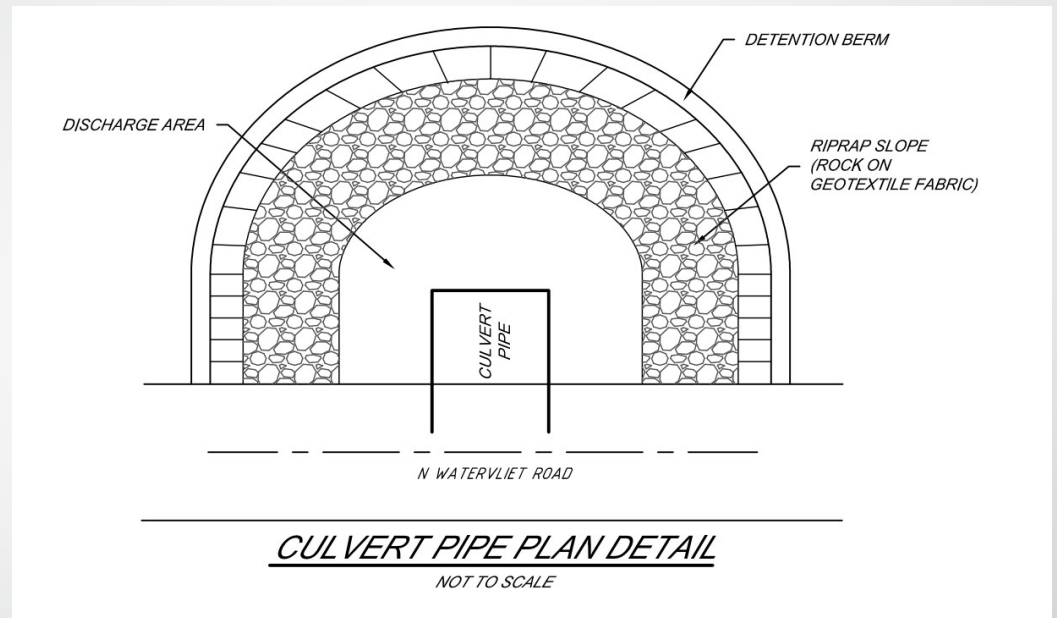
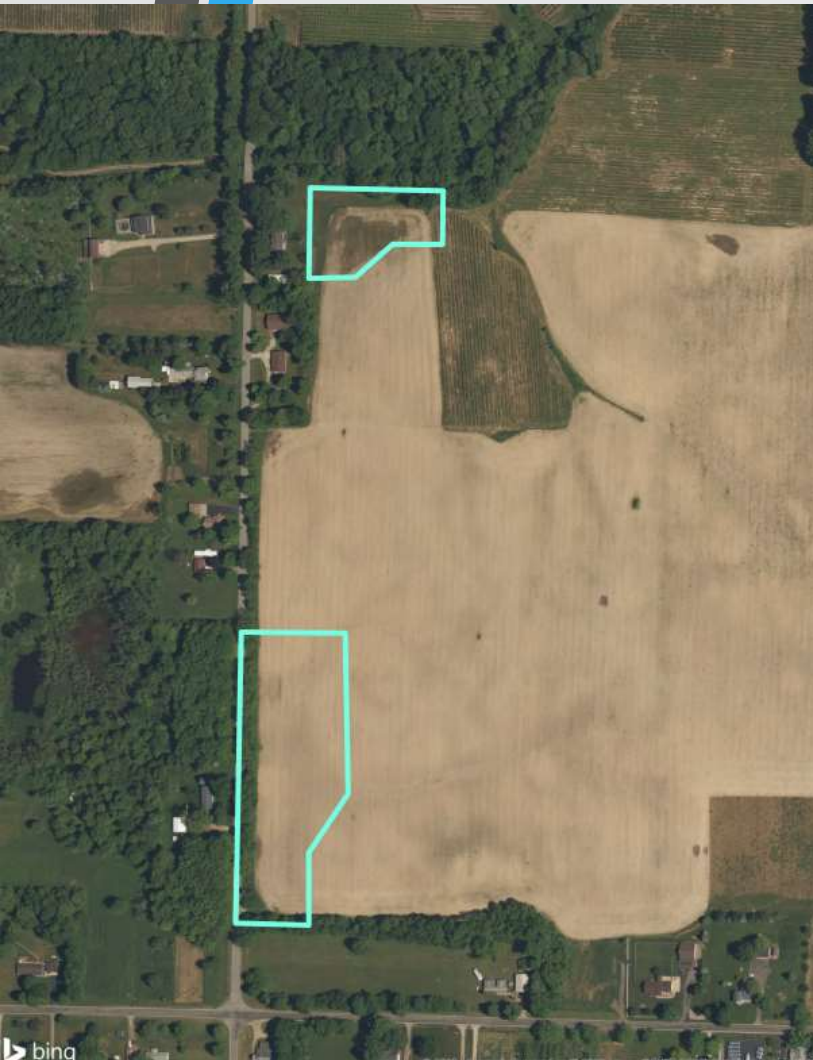
FLOODPLAIN RECONNECTION PROJECT

- REMOVAL OF SPOILS TO ALLOW FLOWS TO ENTER FLOODPLAIN
- REMOVAL OF SEDIMENT IN MAIN CHANNEL AFTER FIRST YEAR
- KEEP MAJORITY OF SEDIMENT FROM ENTERING THE LAKE
- BUDGET
 - INITIAL CONSTRUCTION ESTIMATE \$25 to 40k – SPOIL REMOVAL
 - ANNUAL MAINTENANCE ESTIMATE \$15k to 20k – SEDIMENT REMOVAL

HEATER FARM EROSION CONTROL UPDATE



HEATER FARM EROSION CONTROL UPDATE



HEATER FARM EROSION CONTROL UPDATE



M140 TREATMENT



M140 TREATMENT



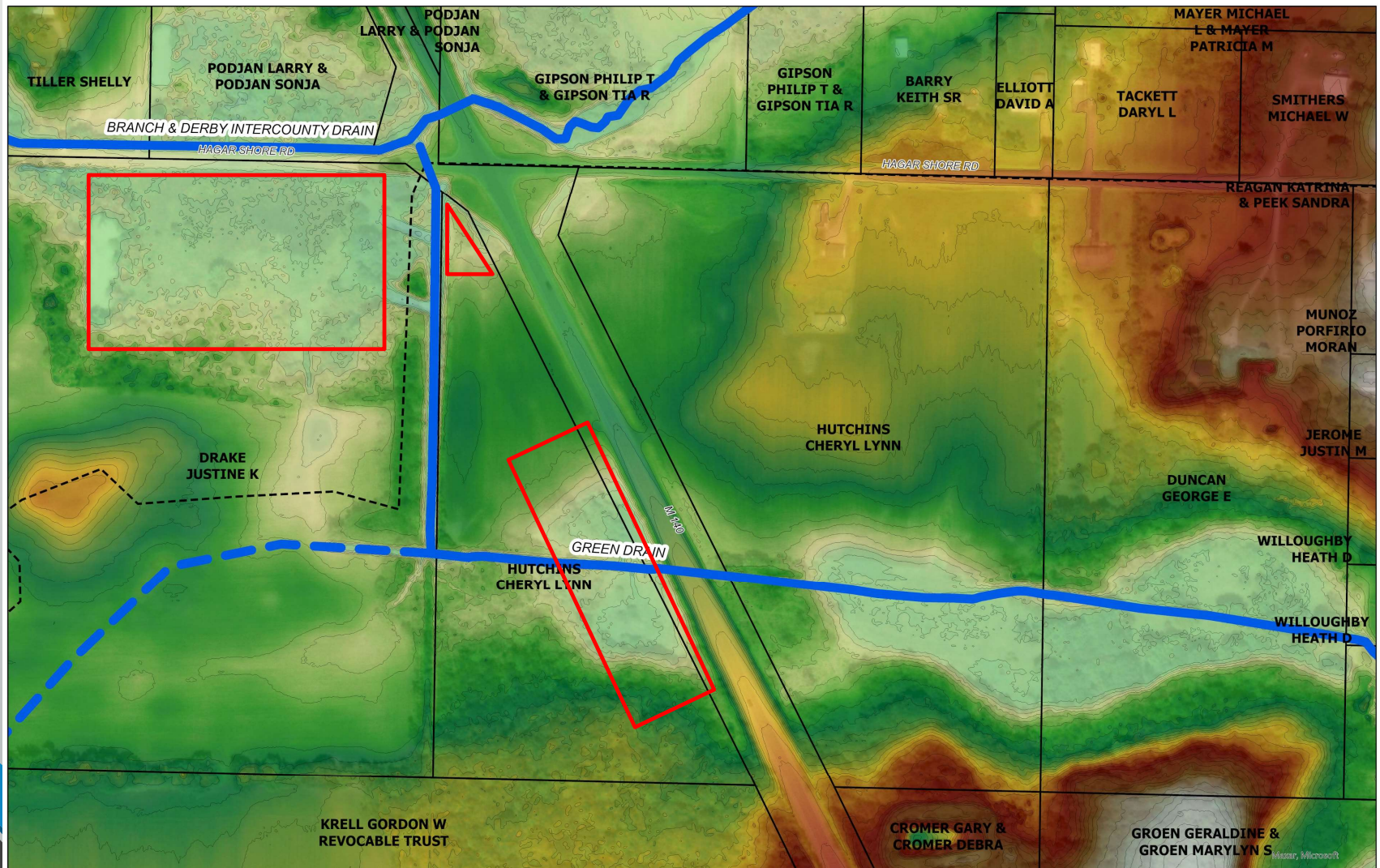
M140 TREATMENT



M₁₄₀ TREATMENT

- The contractor who is cleaning out the M-140 basin quoted this work.
- PPLF has agreed to fund pending MDOT approval.

GREEN DRAIN TREATMENT



GREEN DRAIN TREATMENT





GREEN DRAIN TREATMENT

- DIVERT WATER FROM GREEN DRAIN
- RESTRICT THE OUTLET TO THE BRANCH AND DERBY DRAIN
- EXISTING WETLAND COMPLEX WOULD PROVIDE TREATMENT
- EXISTING WETLAND WOULD BE ENHANCED BY ADDITIONAL FLOWS
- BUDGET \$55k TO \$75k

BUDGET: May 2022 – April 2023

	Budgeted	Spent
2022 Water quality testing on Paw Paw Lake	\$66,400	\$63,381
2022 Water quality testing on the Branch & Derby Drain	\$46,500	\$23,250
Catch Basin Cleanout program	\$68,000	\$65,283
Water Quality Unit Installation and Cleanout Program	\$10,000	\$9,478
Green Drain Treatment Wetland	\$75,000	\$4,000
Hagar Shore Road Treatment	\$55,000	\$2,000
Water Quality Projects - General	\$20,000	\$22,950
TOTAL	\$181,871*	\$168,345*

**As of April 14, 2023*

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