

# Coopersville Community Trails Drain Preliminary Engineering Summary



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## Coopersville Community Trails Drain Board of Determination

Joe Bush

Ottawa County Water Resources Commissioner

October 21, 2021

Presented by Ryan C. McEnhill, PE, Eng., Inc.

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## PURPOSE OF ENGINEERING REVIEW:

- **Petition from the City of Coopersville for maintenance and improvement to the Drain**
- **Field review of the Coopersville Community Trails Drain system as well as any proposed branches/extensions**
- **Identify any potential drainage problems within the Drainage District**
- **Provide an independent and unbiased assessment of the storm water conditions within the Drainage District**
- **Summarize all information and report on those findings to a Board of Determination**



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## DISTRICT BOUNDARY OVERVIEW:

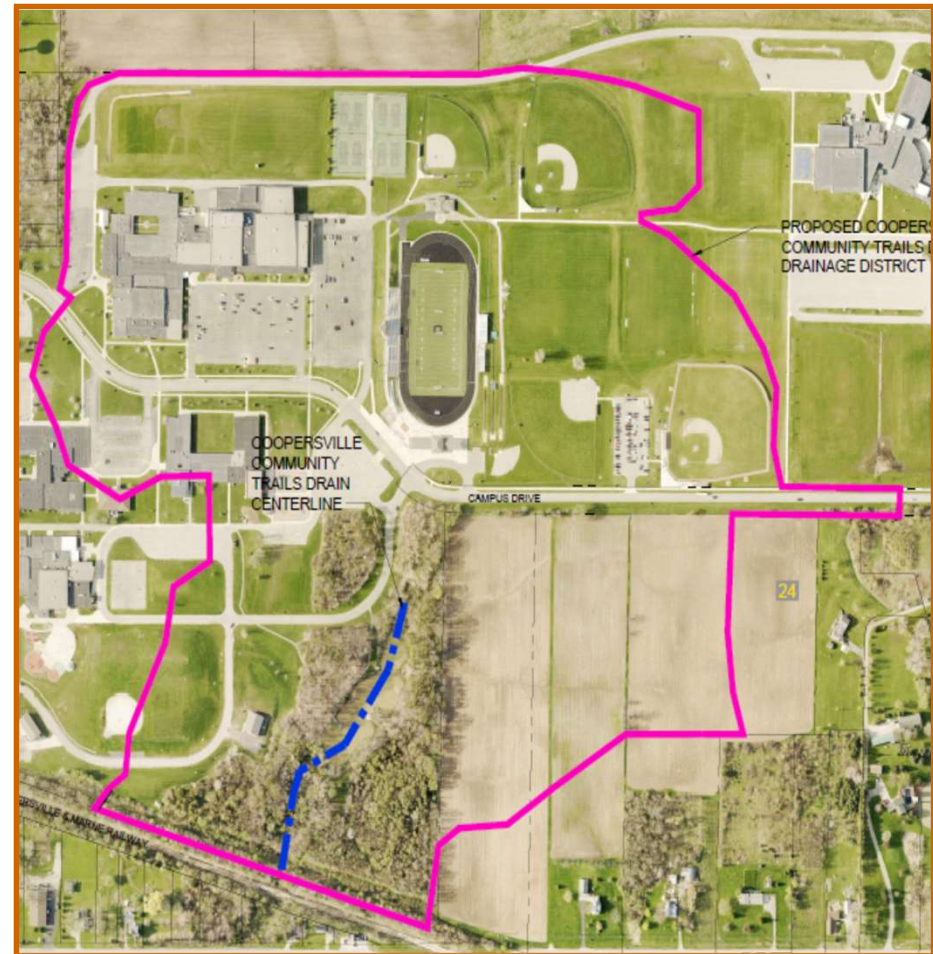
### DISTRICT BOUNDARIES:

#### How Determined:

- Topographic Maps
- Ottawa County GIS
- Storm Sewer Review
- Site Inspections

### Drainage District Boundary Information

- Proposed Drainage District boundary = 116 Acres +/-
- Entirely within City of Coopersville
- Four (4) properties



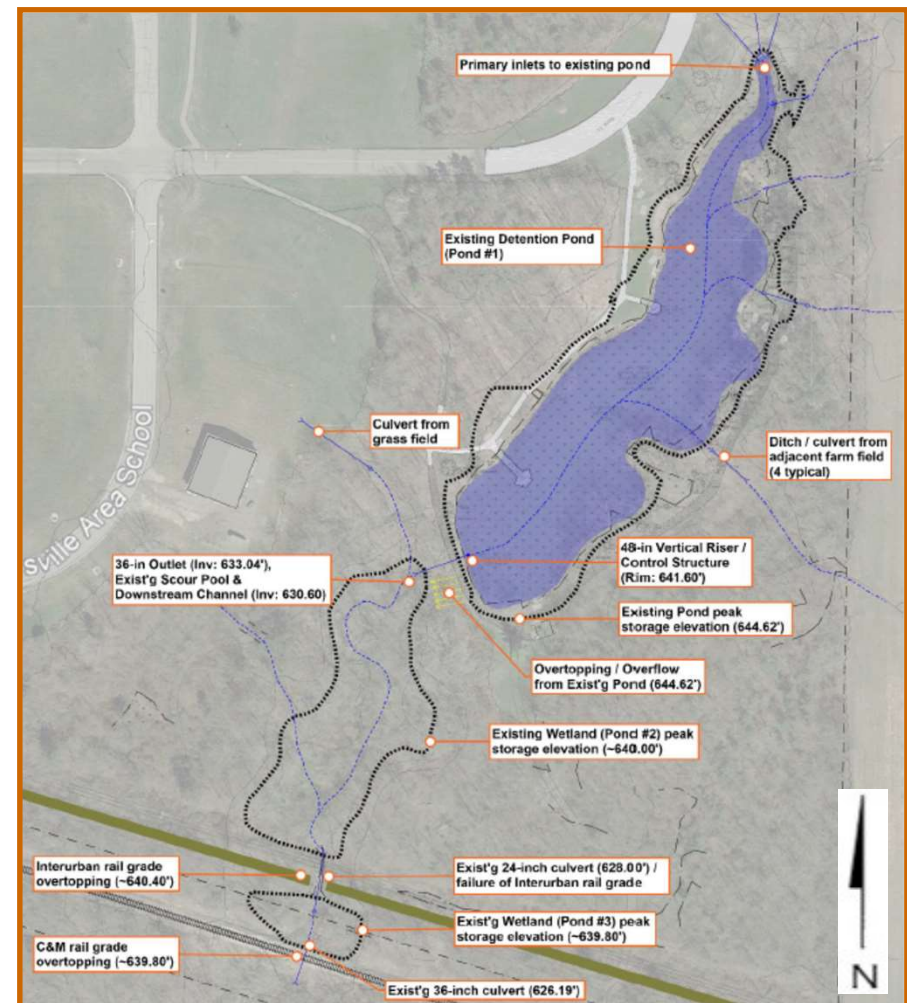
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## EXISTING DRAINAGE CONDITIONS OVERVIEW

- Heavy sediment and nutrient loading into existing detention pond
- Lack of 'actual' detention due to control structure design
- Grade control / erosion issues
- Coordinated effort between School and Drainage District to fully address issues



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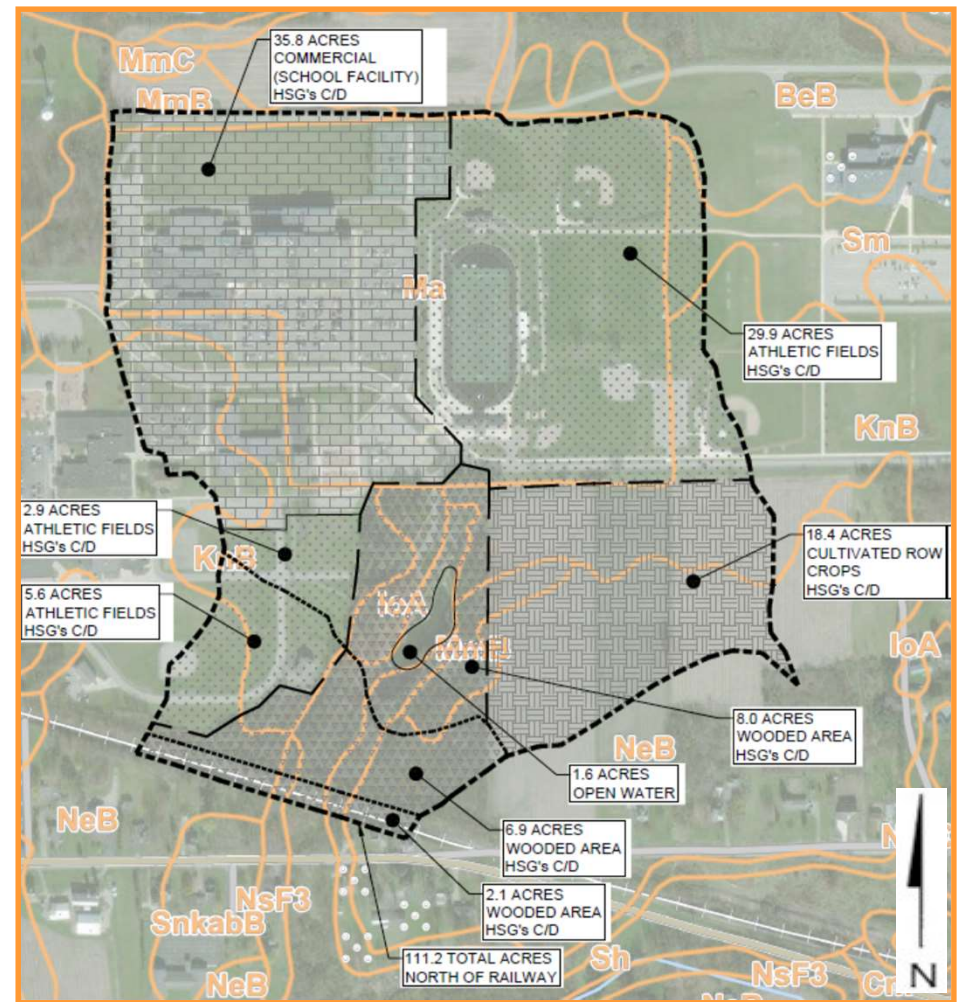
## EXISTING DRAINAGE CONDITIONS OVERVIEW

### SOIL CONDITIONS

KnB	Kawkawlin loam, 2 to 6 percent slopes	19.5%
Ma	Made land	32.4%
MmB	Menominee loamy sand, 2 to 6 percent slopes	3.1%
NeB	Perrinton loam, Lake Michigan Lobe, 2 to 6 percent slopes	32.3%

### Primary Soil Characteristics:

- ◆ **Clay Loam**
  - Depth to water table approximately 12-24 inches below grade
  - Runoff Class: High
  - Drainage Class: Poor to Moderate

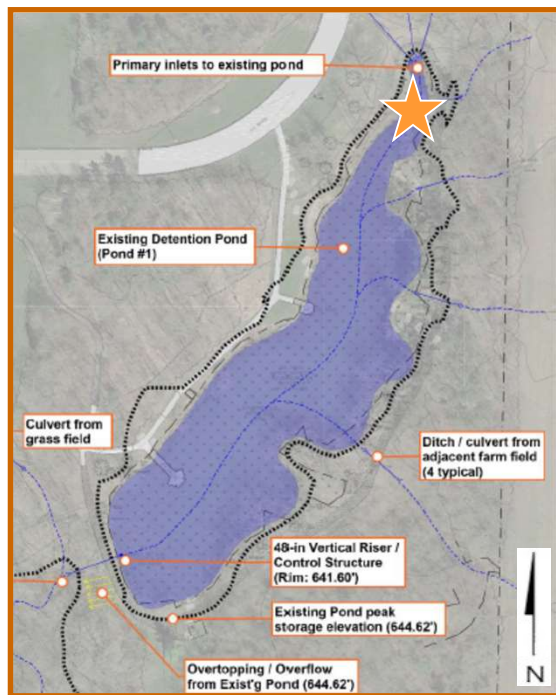


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## EXISTING DRAINAGE CONDITIONS OVERVIEW



★ Three (3) main School property discharge pipes at the north end of the pond

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## EXISTING DRAINAGE CONDITIONS OVERVIEW



★ 48-inch vertical riser / control structure at south end of pond

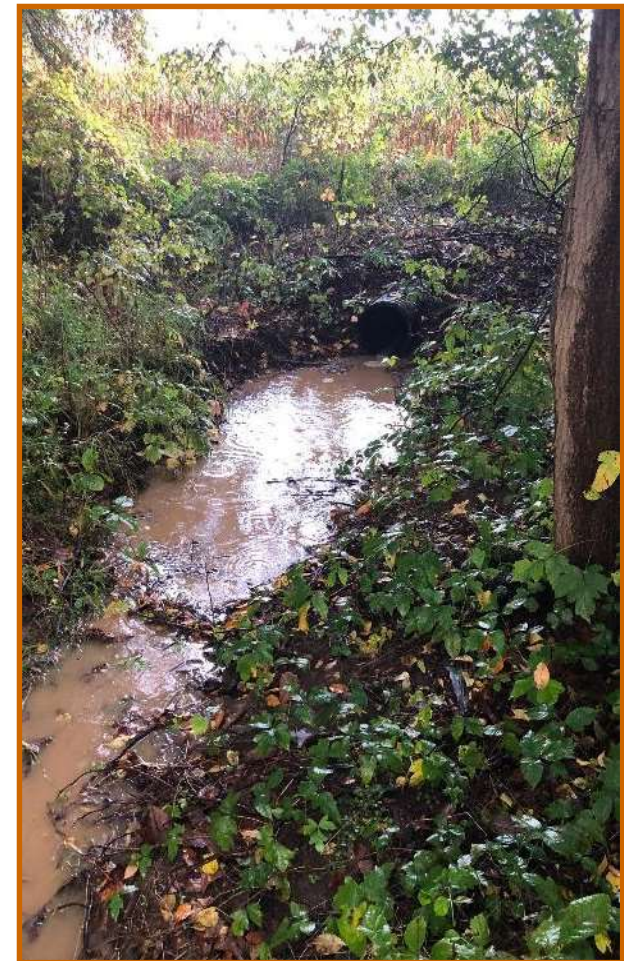
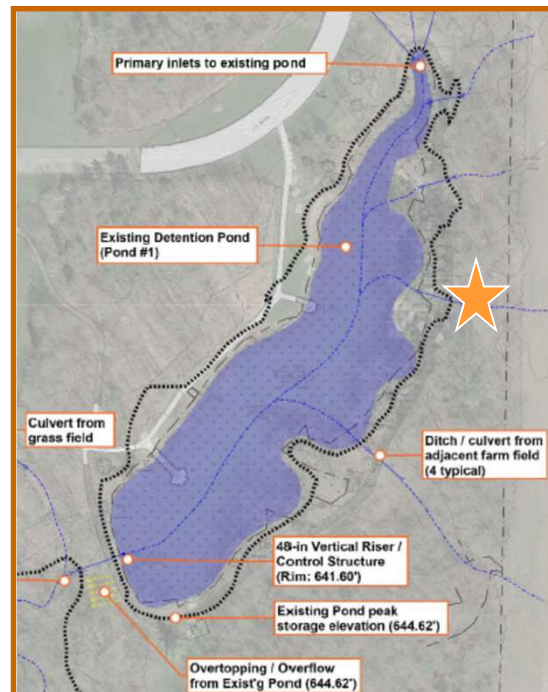
Nutrient loading within the pond

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## EXISTING DRAINAGE CONDITIONS OVERVIEW



★ Sediment laden surface water from the adjacent agricultural land use(s) and accumulating sediment

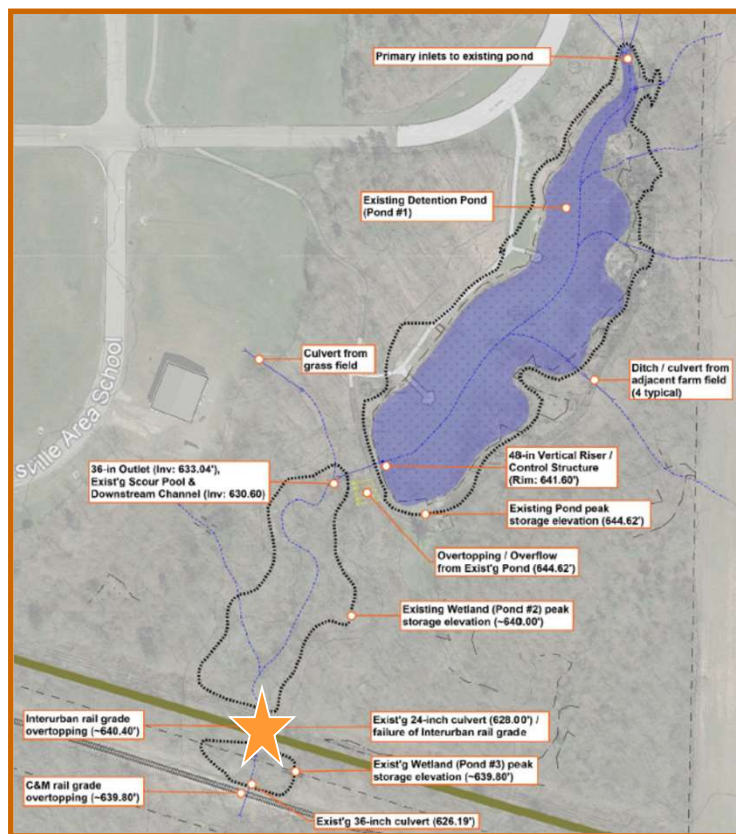


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## EXISTING DRAINAGE CONDITIONS OVERVIEW



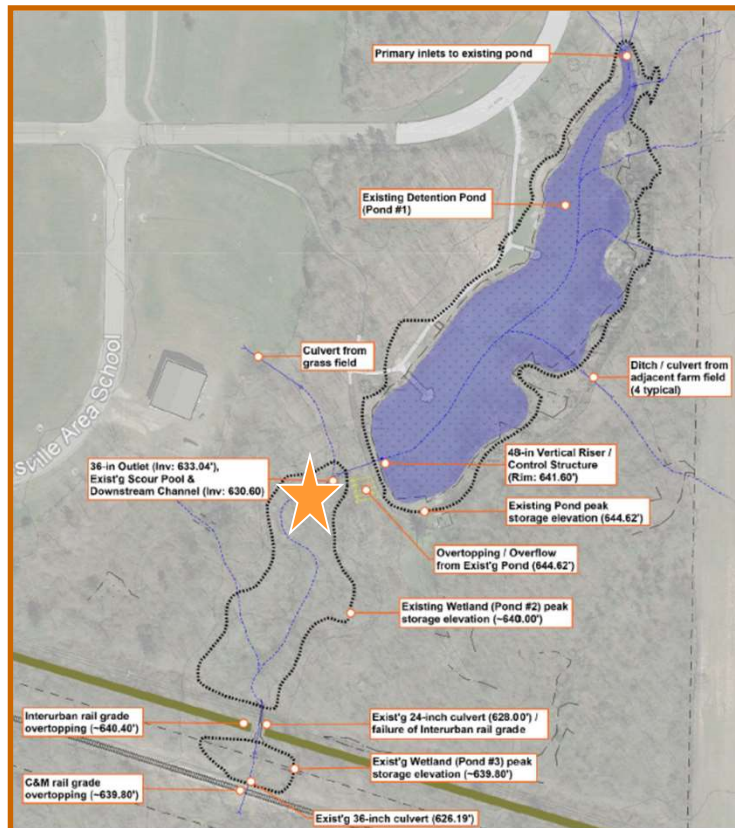
★ **24-inch Railroad bed culvert blowout downstream of pond**  
\* Recently replaced with 36-inch CSP culvert by Coopersville Schools

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## EXISTING DRAINAGE CONDITIONS OVERVIEW



**Eng.**  
Engineering & Surveying

★ Scour hole at outlet of 36-inch pipe from pond control structure  
\* Planned to be addressed with plunge pool by Coopersville Schools

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## EXISTING DRAINAGE CONDITIONS OVERVIEW

### SUMMARY

- **Portion of the maintenance and improvements being undertaken by Coopersville Schools (downstream of pond) by Agreement with Drainage District**
- **Major sedimentation and nutrient loading issues in main pond**
- **Lack of pre-treatment (from multiple conveyance systems prior to discharge to pond) leading to issues**



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## NEXT STEPS

- **Public testimony**
- **Board to determine Necessity of Petition**
- **If project found not necessary:**
  - **Project ends**
- **If project found necessary:**
  - **Evaluate scope of project and design alternatives**
  - **Finalize design (obtain easements and permits, if necessary, and prepare bid documents)**



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# Questions?