

**AGRICULTURAL CONSERVATION PLANNING FRAMEWORK
SUMMARY**

**SUGAR CREEK HUC-12 (04100010 04 01)
&
LACARPE CREEK OUTLET #4-PORTAGE RIVER HUC-12
(04100010 04 02)**

OTTAWA & SANDUSKY COUNTIES

Prepared for:

OTTAWA SOIL AND WATER CONSERVATION DISTRICT

Prepared by:

**CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
TOLEDO, OH**

CEC Project 343-633

OCTOBER 2025



Civil & Environmental Consultants, Inc.

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1.0 PROJECT SUMMARY

The Ottawa Soil and Water Conservation District (SWCD) received an Agricultural Conservation Planning Framework (ACPF) Mini-Grant from the Great Lakes Commission (GLC) in 2024 to prepare an ACPF model for the Sugar Creek HUC-12 (04100010 04 01) and Lacarpe Creek Outlet #4-Portage River HUC-12 (04100010 04 02) watershed assessment units. The models were prepared according to the *Agricultural Conservation Planning Framework ArcGIS® Toolbox User's Manual*, using the tool's default settings for all best management practice (BMP) parameters, except impoundment height of wetlands, in which the impoundment height was set to 0.8 meters for the Sugar Creek HUC-12 and 0.9 meters for the Lacarpe Creek Outlet #4-Portage River HUC-12.

Model results for potential grassed waterways, contour buffer strips, drainage water management structures, bioreactors, nutrient removal wetlands, water and sediment control basins (WASCOBs), saturated buffers and two-stage ditches are presented in Section 2.0 and 3.0 (Tables 1-4) as well as visually in Appendix A and Appendix B. The Ottawa SWCD has prioritized outreach for higher critical runoff risk (Very High + High) parcels that have potential for nutrient removal wetlands, contoured buffer strips and/or drainage water management control structures. A summary of targeted outreach parcels is presented in Section 4.0.

2.0 SUMMARY OF RESULTS FOR SUGAR CREEK HUC-12 (04100010 04 01)

Table 1. Sugar Creek HUC-12 ACPF Results

Sugar Creek HUC-12 (04100010 04 01)			
Critical Runoff Risk (acres)*			
Very High	High	Moderate	Low
1,368	4,402	9,897	12,177
Best Management Practice Output			
Best Management Practice	Number of Potential Locations	Total Size	Treated Acreage
Grassed waterways	125	6.9 miles	--
Contour buffer strips	175	35 acres	--
Drainage water management structures	236	--	6,870
Bioreactors	94	--	4,243
Nutrient removal wetlands	13	36 acres (pool) 83 acres (vegetated buffer)	6,327 [^]
Water and sediment control basins (WASCOBs)	46	--	537
Saturated buffers	180	28.1 miles	5,560
Two-stage ditch	126	32.8 miles	--

(Source: ACPF model run for the Ottawa Soil and Water Conservation District by CEC, Inc.)

NOTES

* The ACPF model analyzes drainage area based upon high-resolution imagery. Watershed boundaries may be redrawn based upon drainage patterns and extend beyond those shown in the current Watershed Boundary Dataset (WBD); therefore, acreage may not be equal to acreage calculated in the WBD¹. Total acreage of the Sugar Creek HUC-12 is approximately 37,968 acres.

[^] Treated wetland acres may overlap, based on placement of nutrient removal wetlands or may contain acreage outside of the HUC-12 watershed boundaries.

Table 2. Sugar Creek HUC-12 Riparian Function Results

Sugar Creek HUC-12 (04100010 04 01)			
Classification	Locations Identified	Miles	Contributing Acres
Critical zone	8	1.0	1,503
Deep rooted vegetation	177	23.3	1,042
Multi-species buffer	52	6.7	6,178
Stiff stemmed grasses	180	24.5	18,372
Streambank stabilization	607	82.4	4,104

(Source: ACPF model run for the Ottawa Soil and Water Conservation District by CEC, Inc.)

¹ United States Geological Survey (USGS). 2023. Watershed Boundary Dataset. <https://www.usgs.gov/national-hydrography/watershed-boundary-dataset>. Accessed January 1, 2023.

3.0 SUMMARY OF RESULTS FOR LACARPE CREEK OUTLET #4-PORTAGE RIVER HUC-12 (04100010 04 02)

Table 3. Lacarpe Creek Outlet #4-Portage River HUC-12 ACPF Results

Lacarpe Creek Outlet #4-Portage River HUC-12 (04100010 04 02)			
Critical Runoff Risk (acres)*			
Very High	High	Moderate	Low
507	1,526	4,598	7,391
Best Management Practice Output			
Best Management Practice	Number of Potential Locations	Total Size	Treated Acreage
Grassed waterways	29	1.5 miles	--
Contour buffer strips	72	16 acres	--
Drainage water management structures	173	--	5,701
Bioreactors	49	--	2,376
Nutrient removal wetlands	5	10 acres (pool) 17 acres (vegetated buffer)	1,169 [^]
Water and sediment control basins (WASCOBs)	34	--	352
Saturated buffers	54	6.7 miles	842
Two-stage ditch	8	1.3 miles	--

(Source: ACPF model run for the Ottawa Soil and Water Conservation District by CEC, Inc.)

NOTES

* The ACPF model analyzes drainage area based upon high-resolution imagery. Watershed boundaries may be redrawn based upon drainage patterns and extend beyond those shown in the current Watershed Boundary Dataset (WBD); therefore, acreage may not be equal to acreage calculated in the WBD². Total acreage of the Lacarpe Creek Outlet #4-Portage River HUC-12 is approximately 17,827 acres.

[^] Treated wetland acres may overlap, based on placement of nutrient removal wetlands or may contain acreage outside of the HUC-12 watershed boundaries.

Table 4. Lacarpe Creek Outlet #4-Portage River HUC-12 Riparian Function Results

Lacarpe Creek Outlet #4-Portage River HUC-12 (04100010 04 02)			
Classification	Locations Identified	Miles	Contributing Acres
Critical zone	0	--	--
Deep rooted vegetation	67	9.7	386
Multi-species buffer	17	2.5	1,131
Stiff stemmed grasses	101	15.5	12,617
Streambank stabilization	408	59.2	1,902

(Source: ACPF model run for the Ottawa Soil and Water Conservation District by CEC, Inc.)

² United States Geological Survey (USGS). 2023. Watershed Boundary Dataset. <https://www.usgs.gov/national-hydrography/watershed-boundary-dataset>. Accessed January 1, 2023.

4.0 OUTREACH PLAN

An outreach priority matrix was created for the two watershed assessment units. The ACPF output data was paired with county parcel data to identify parcels that the ACPF has identified as potential sites for conservation practices. Parcels were then prioritized through a ranking system that focused on a two-tiered priority level. Parcels with Very High and High critical runoff risk factors were ranked higher than those with Moderate or Low critical runoff risk factors. (Table 5).

Table 5. Critical Runoff Risk Priority Ranking

Critical Runoff Risk	Priority (Highest-4 to Lowest-1)
Very High	4
High	3
Moderate	2
Low	1

Parcels that were identified for the potential for priority BMPs within their boundaries: nutrient removal wetlands, contoured buffer strips and drainage water management control structures were then extracted from the data and assigned a number (1, 2 or 3) based on the number of priority BMP types identified on the parcel. The highest score a parcel could receive was 7, while the lowest score a parcel could receive was 1. A total of 2,152 parcels in the Sugar Creek HUC-12 were identified in the priority matrix, while 1,781 parcels were identified in the Lacarpe Creek Outlet #4-Portage River HUC-12. Summary results for priority rankings are in Tables 6-8.

Table 6. Summary Rankings

Critical Runoff Risk	Number of Parcels	
	Sugar Creek HUC-12	Lacarpe Creek Outlet #4-Portage River HUC-12
Very High	114	66
High	368	209
Moderate	710	686
Low	898	837

Table 7. Priority Scores in Sugar Creek HUC-12

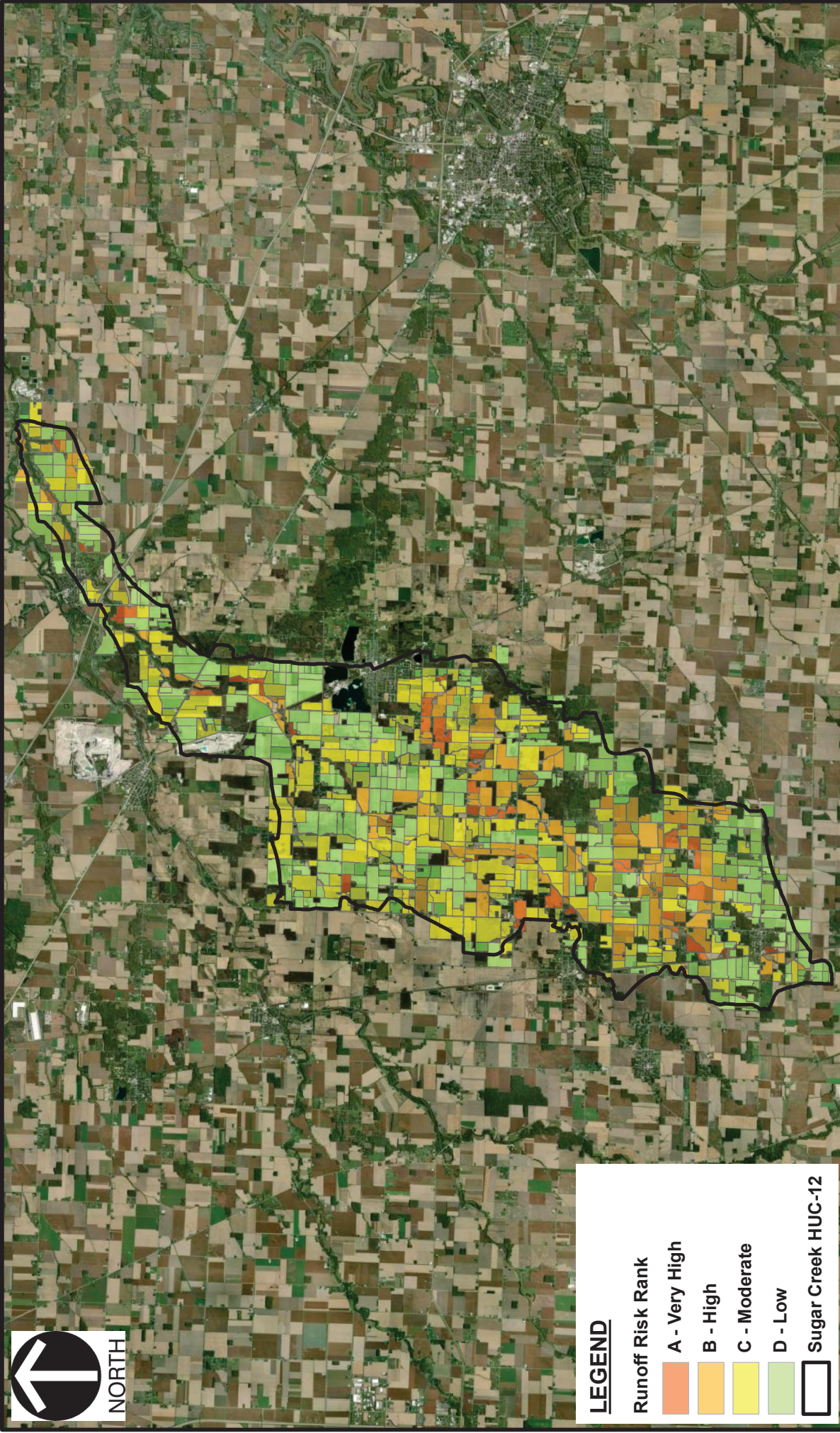
Priority Ranking	Number of Parcels	
	Ottawa	Sandusky
7	--	3
6	2	20
5	--	94
4	25	185
3	49	417
2	185	578
1	98	496

Table 8. Priority Scores in Lacarpe Creek Outlet #4-Portage River HUC-12

Priority Ranking	Number of Parcels		
	Ottawa	Sandusky	Wood
7	--	2	--
6	--	5	--
5	16	3	20
4	56	53	32
3	204	63	78
2	387	276	133
1	169	157	127

A full listing of landowners is maintained at the Ottawa SWCD office. Outreach efforts will begin with those parcels with the highest priority ranking (i.e., 7, 6, 5, etc.) in each watershed assessment unit through direct mailers and other means.

APPENDIX A – SUGAR CREEK HUC-12 MAPS



LEGEND

Runoff Risk Rank

- A - Very High
- B - High
- C - Moderate
- D - Low
- Sugar Creek HUC-12



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
[HTTP://GTO_TOPO.ARCGISONLINE.COM/MAPS/](http://gto topo.arcgisonline.com/maps/)
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ART

APPROVED BY: DMB*

FIGURE NO: A-1

DATE:

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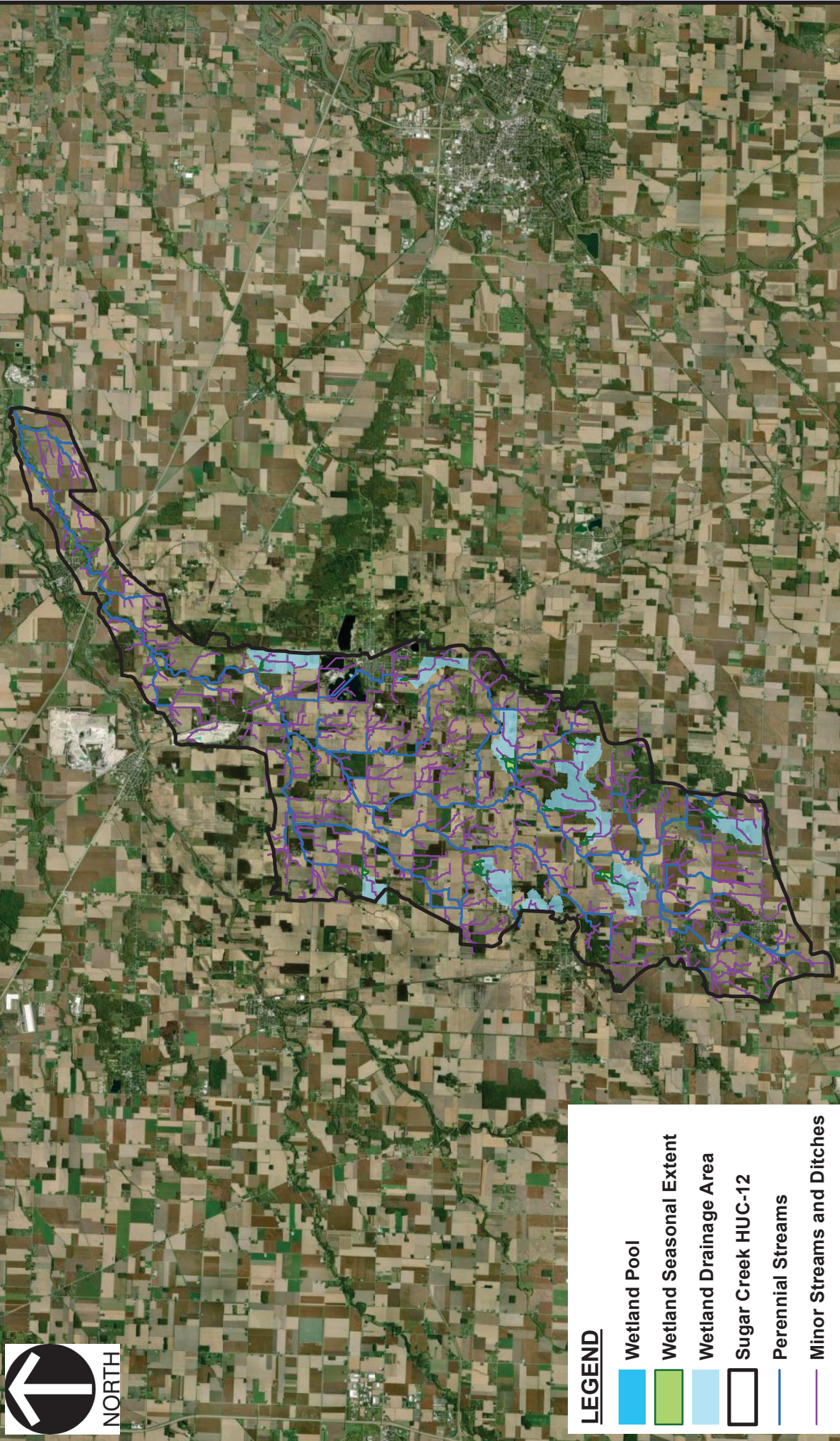
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1" = 2.75 miles

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SUGAR CREEK HUC-12

FIELD RUNOFF RISK



LEGEND

Wetland Pool

Wetland Seasonal Extent

Wetland Drainage Area

Sugar Creek HUC-12

Perennial Streams

Minor Streams and Ditches

02.755.5

Miles

REFERENCE
USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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SCALE:

1" = 2.75 miles

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SUGAR CREEK HUC-12

POTENTIAL WETLAND LOCATIONS

DRAWN BY:

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APPROVED BY:

DMB*

FIGURE NO:

A-2

PROJECT NO:

343-633

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LEGEND

Riparian Attribute Function

- Critical Zone (CZ)
- Multi Species Buffer (MSB)
- Deep Rooted Vegetation (DRV)
- Stiff Stemmed Grasses (SSG)
- Stream Bank Stabilization (SBS)
- Sugar Creek HUC-12
- Perennial Streams
- Minor Streams and Ditches



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
[HTTP://GOTO.ARCGISONLINE.COM/MAPS/](http://gto.arcgis.com/maps/usa_topo_maps)
 USA_TOPO_MAPS, ACCESSED 3/19/2025



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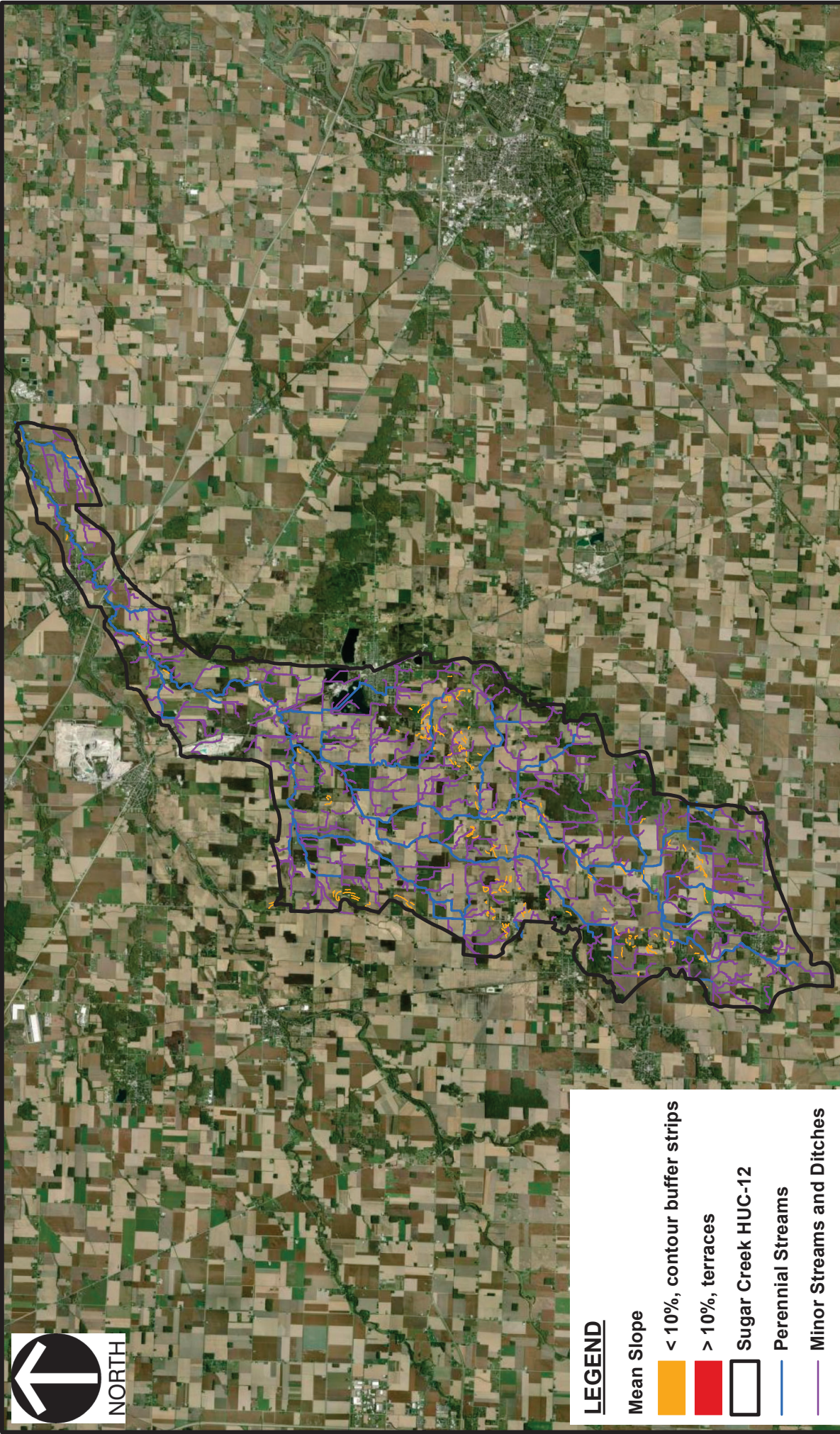
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SUGAR CREEK HUC-12

RIPARIAN FUNCTION MAP

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	343-633	A-3



LEGEND

- Mean Slope**
- < 10%, contour buffer strips
 - > 10%, terraces
- Sugar Creek HUC-12**
- Perennial Streams
 - Minor Streams and Ditches



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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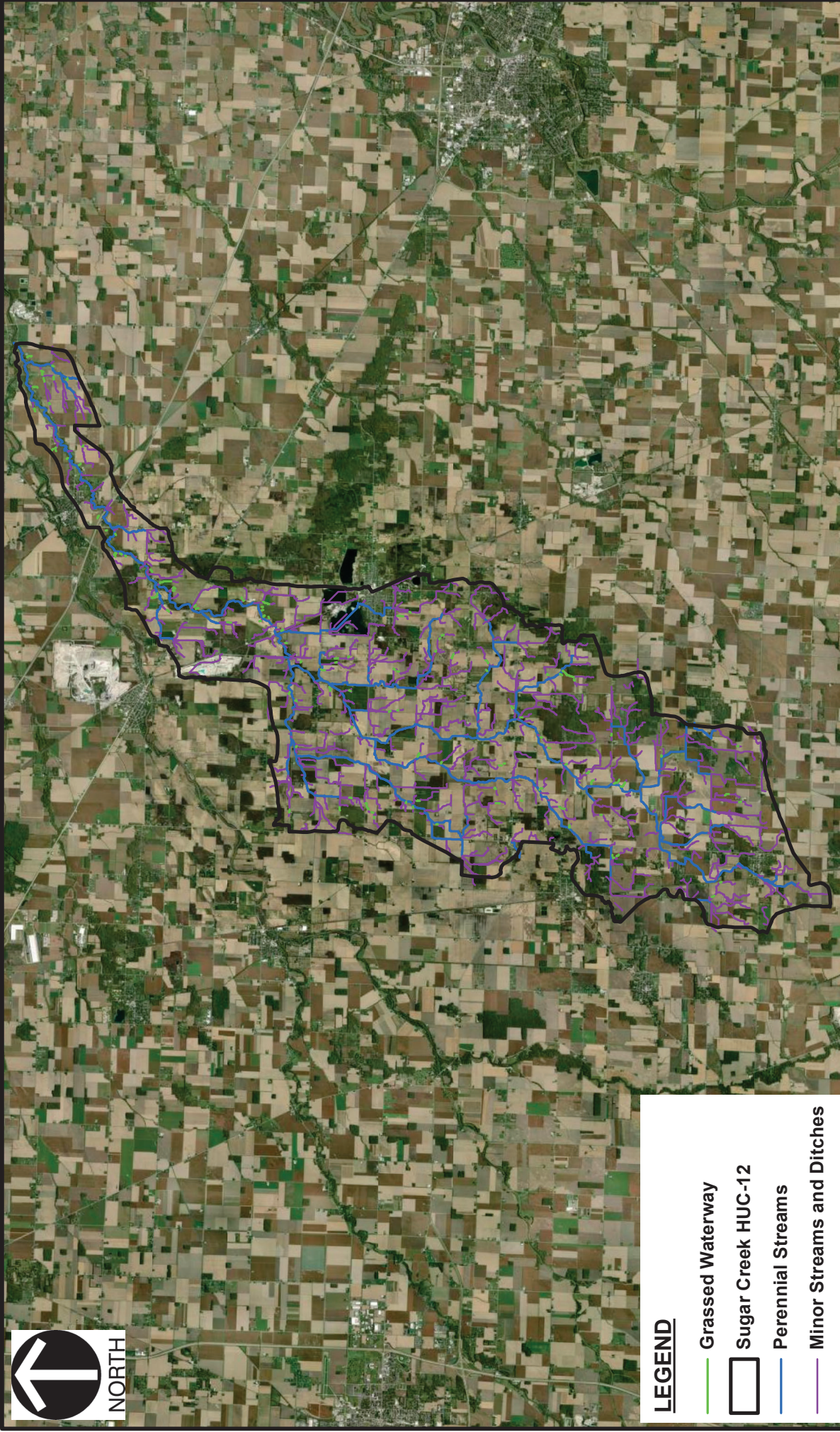
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POTENTIAL CONTOUR BUFFER STRIP LOCATIONS

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LEGEND

- Grassed Waterway
- Sugar Creek HUC-12
- Perennial Streams
- Minor Streams and Ditches



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
[HTTP://GTO.ARCGISONLINE.COM/MAPS/USA_TOPO_MAPS](http://gto.arcgis.com/arcgisonline.com/maps/usa_topo_maps), ACCESSED 3/19/2025



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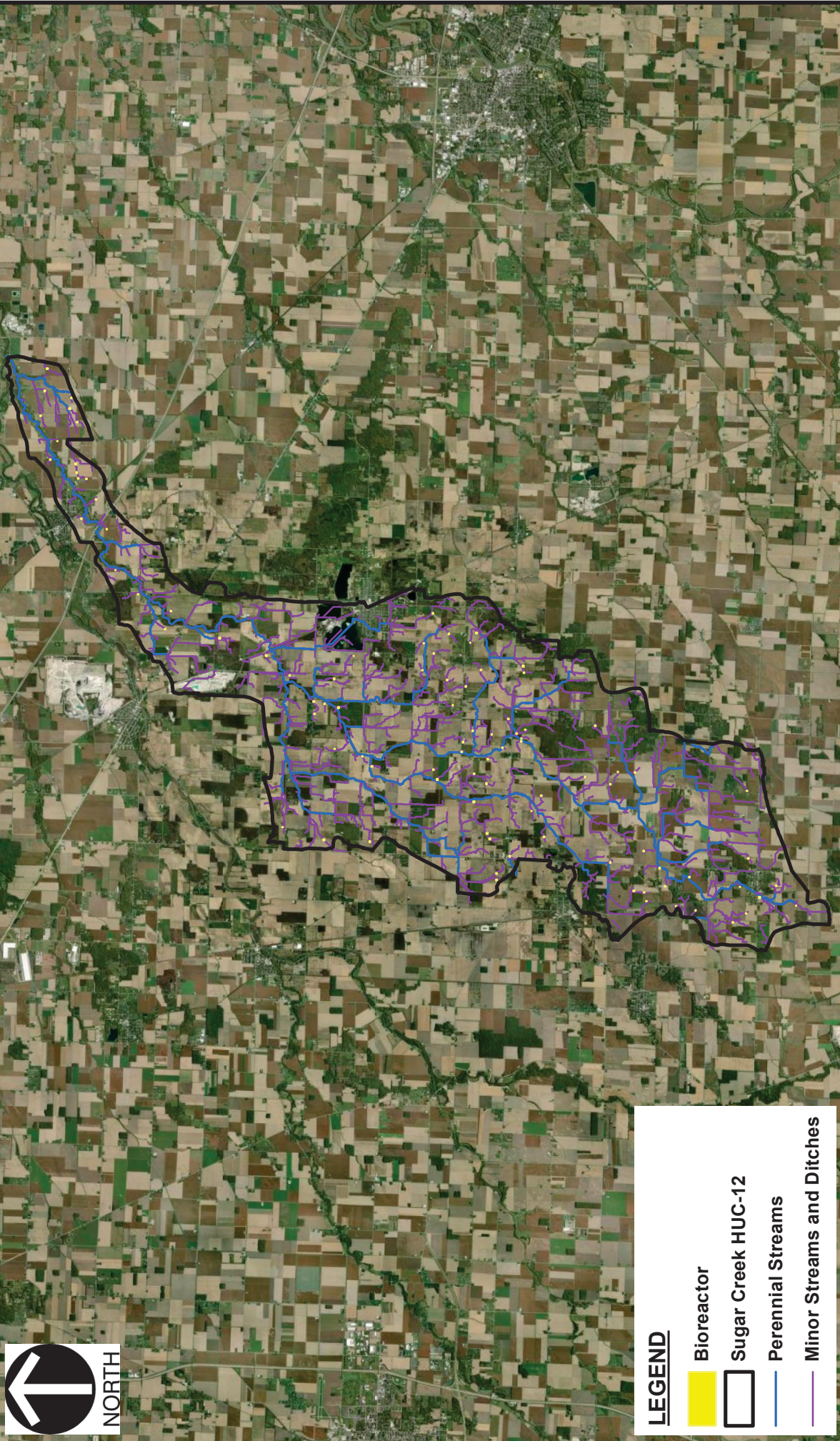
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POTENTIAL GRASSED WATERWAY LOCATIONS

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LEGEND

- Bioreactor
- Sugar Creek HUC-12
- Perennial Streams
- Minor Streams and Ditches



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
[HTTP://GOTO.ARCGISONLINE.COM/MAPS/](http://gto.arcgis.com/maps/usa_topo_maps)
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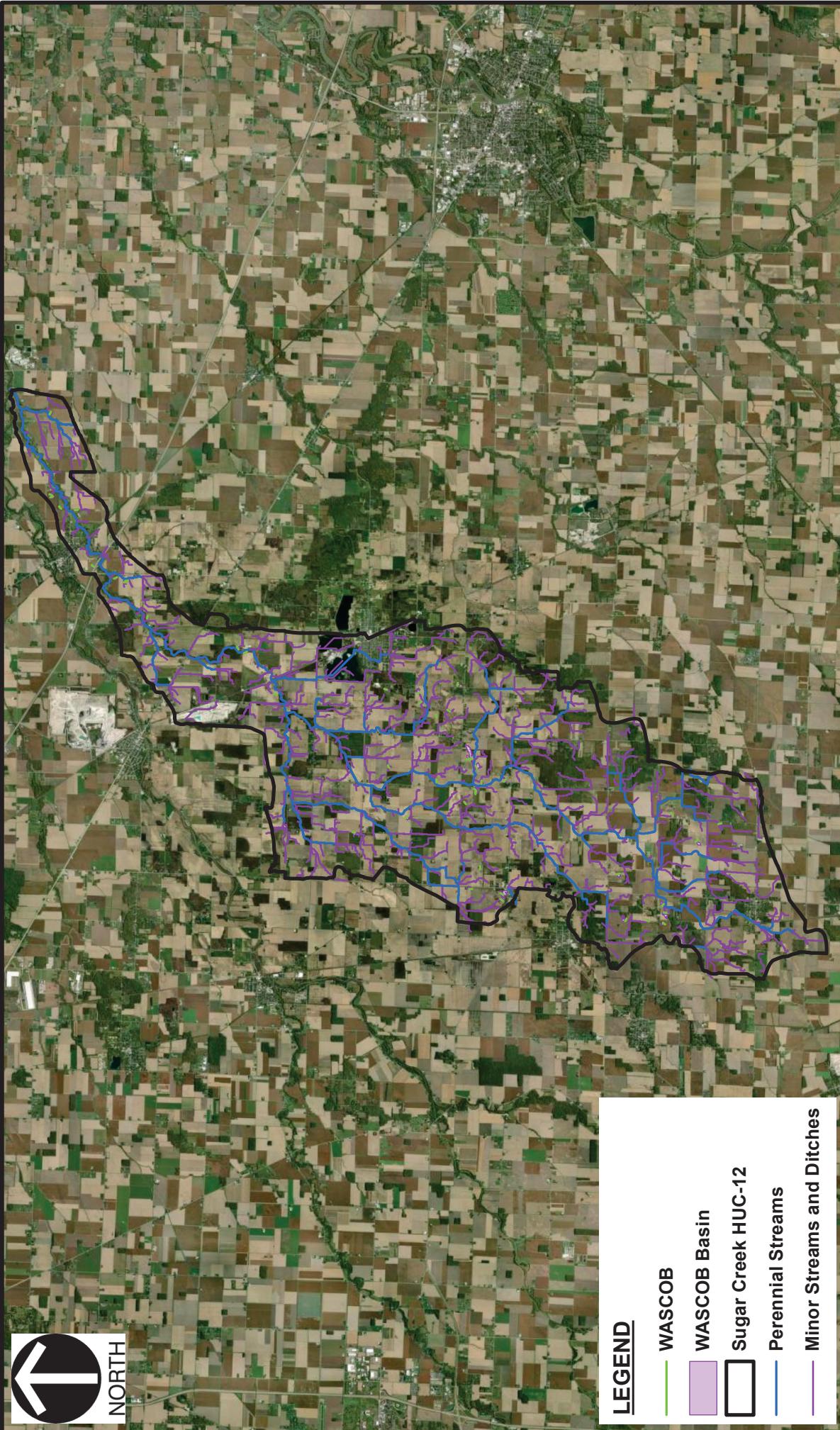
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POTENTIAL BIOREACTOR LOCATIONS

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LEGEND

- WASCOB
- WASCOB Basin
- Sugar Creek HUC-12
- Perennial Streams
- Minor Streams and Ditches

REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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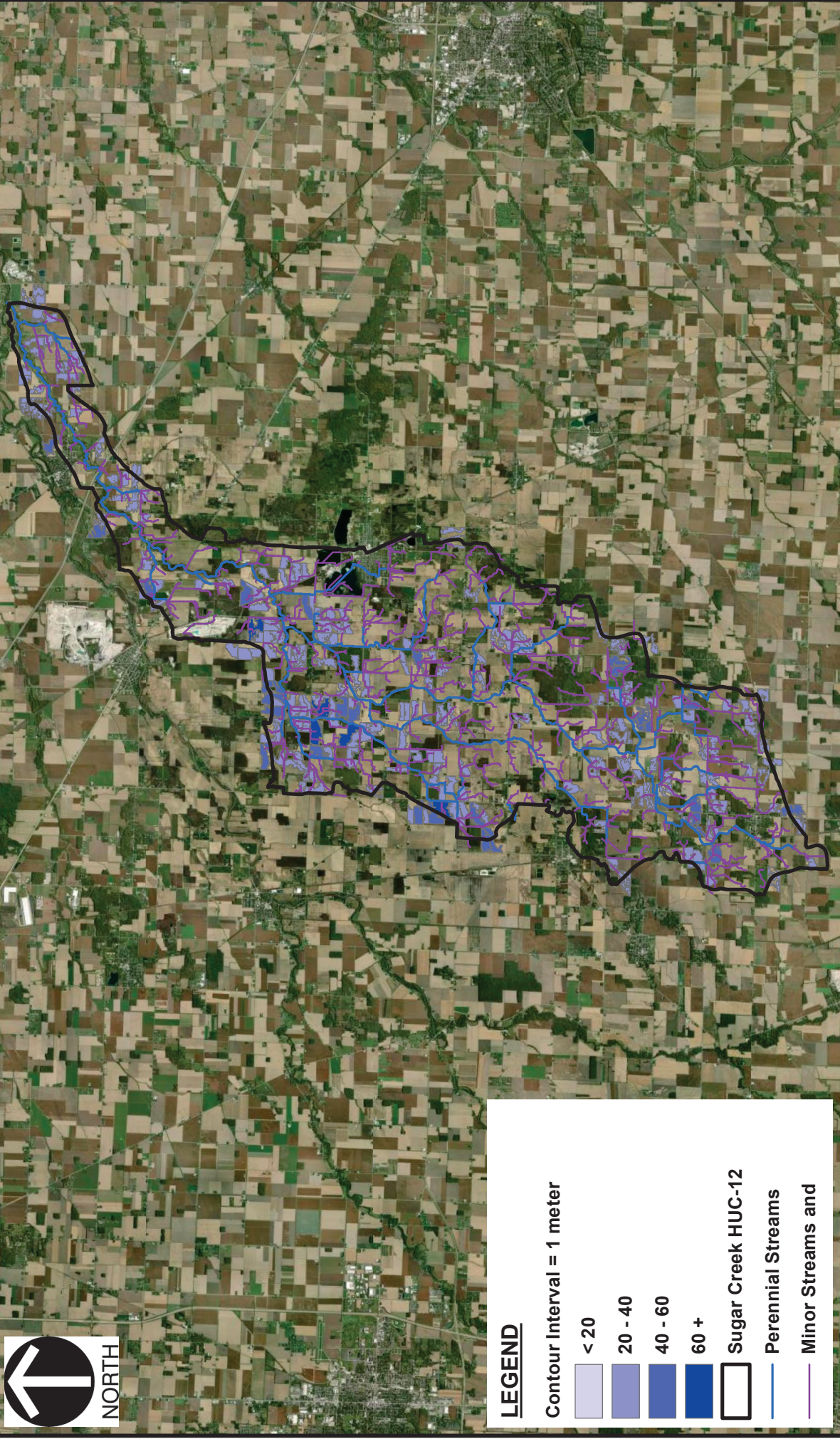
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POTENTIAL WASCOB LOCATIONS

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LEGEND

Contour Interval = 1 meter



< 20



20 - 40



40 - 60



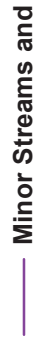
60 +



Sugar Creek HUC-12



Perennial Streams



Minor Streams and
Intermittent Streams



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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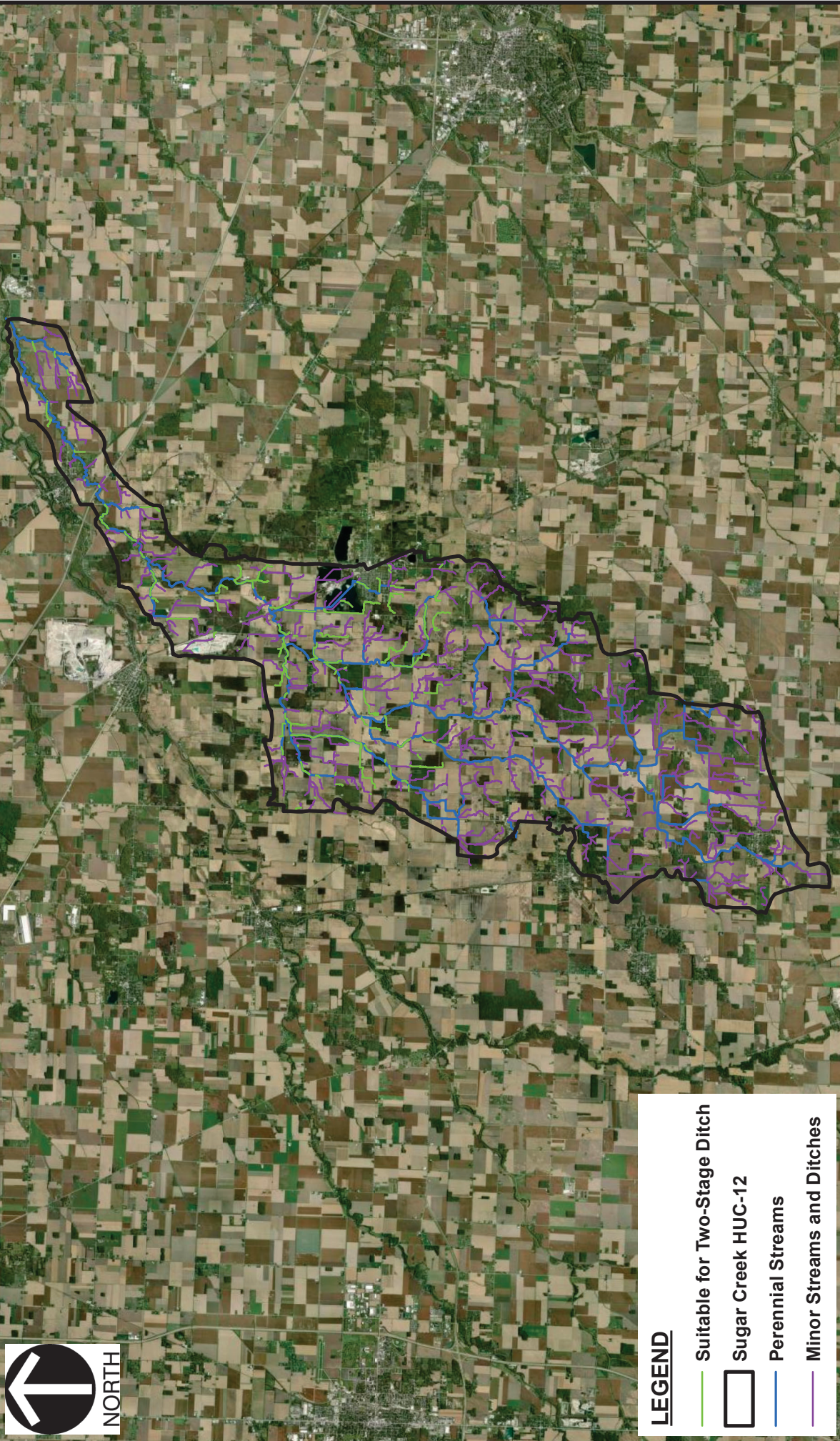
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SUGAR CREEK HUC-12

POTENTIAL DRAINAGE WATER MANAGEMENT LOCATIONS

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PROJECT NO: 343-633

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LEGEND

- Suitable for Two-Stage Ditch
- Sugar Creek HUC-12
- Perennial Streams
- Minor Streams and Ditches

REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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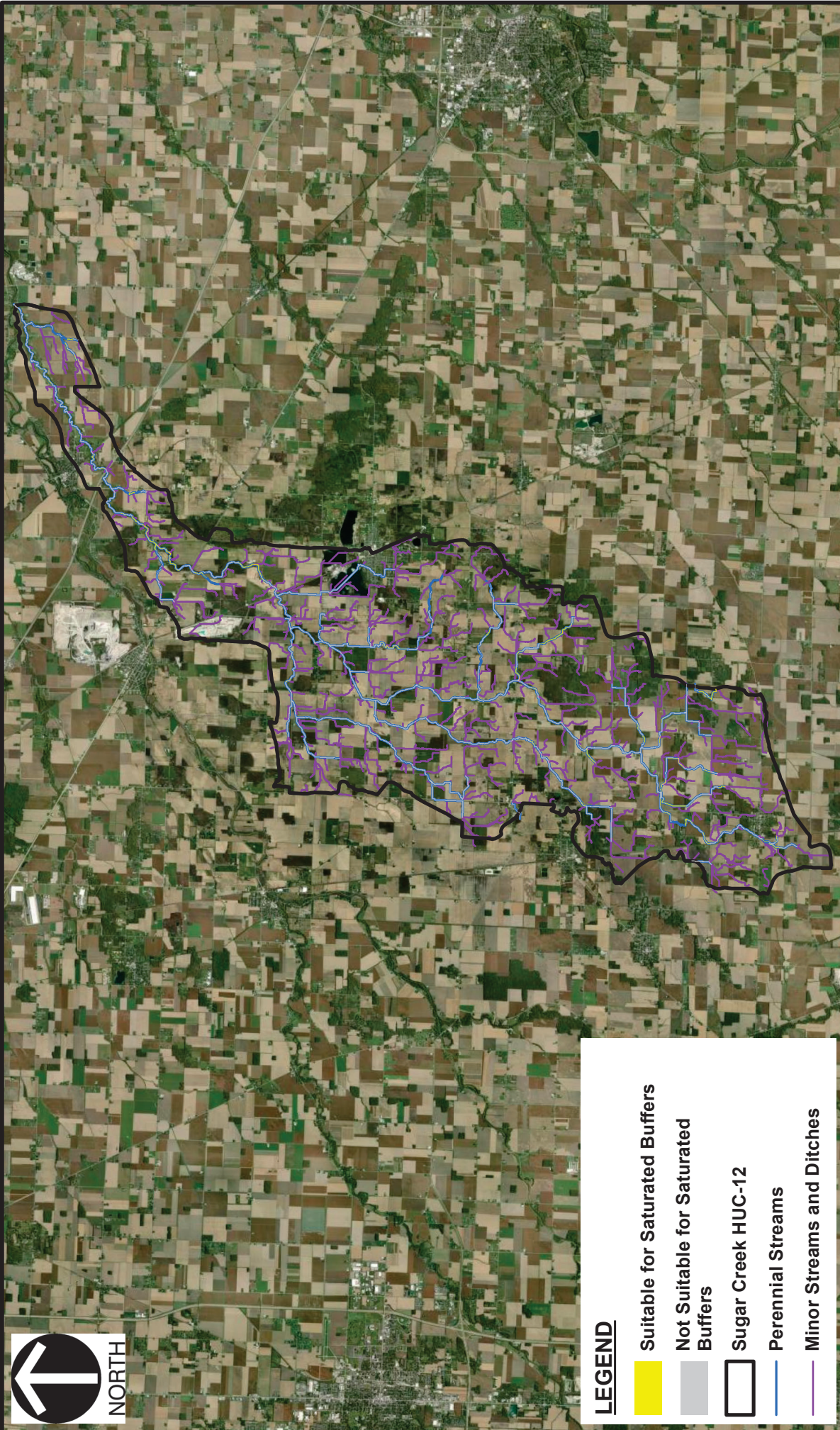
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POTENTIAL TWO-STAGE DITCH LOCATIONS

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LEGEND

- Suitable for Saturated Buffers
- Not Suitable for Saturated Buffers
- Sugar Creek HUC-12
- Perennial Streams
- Minor Streams and Ditches

REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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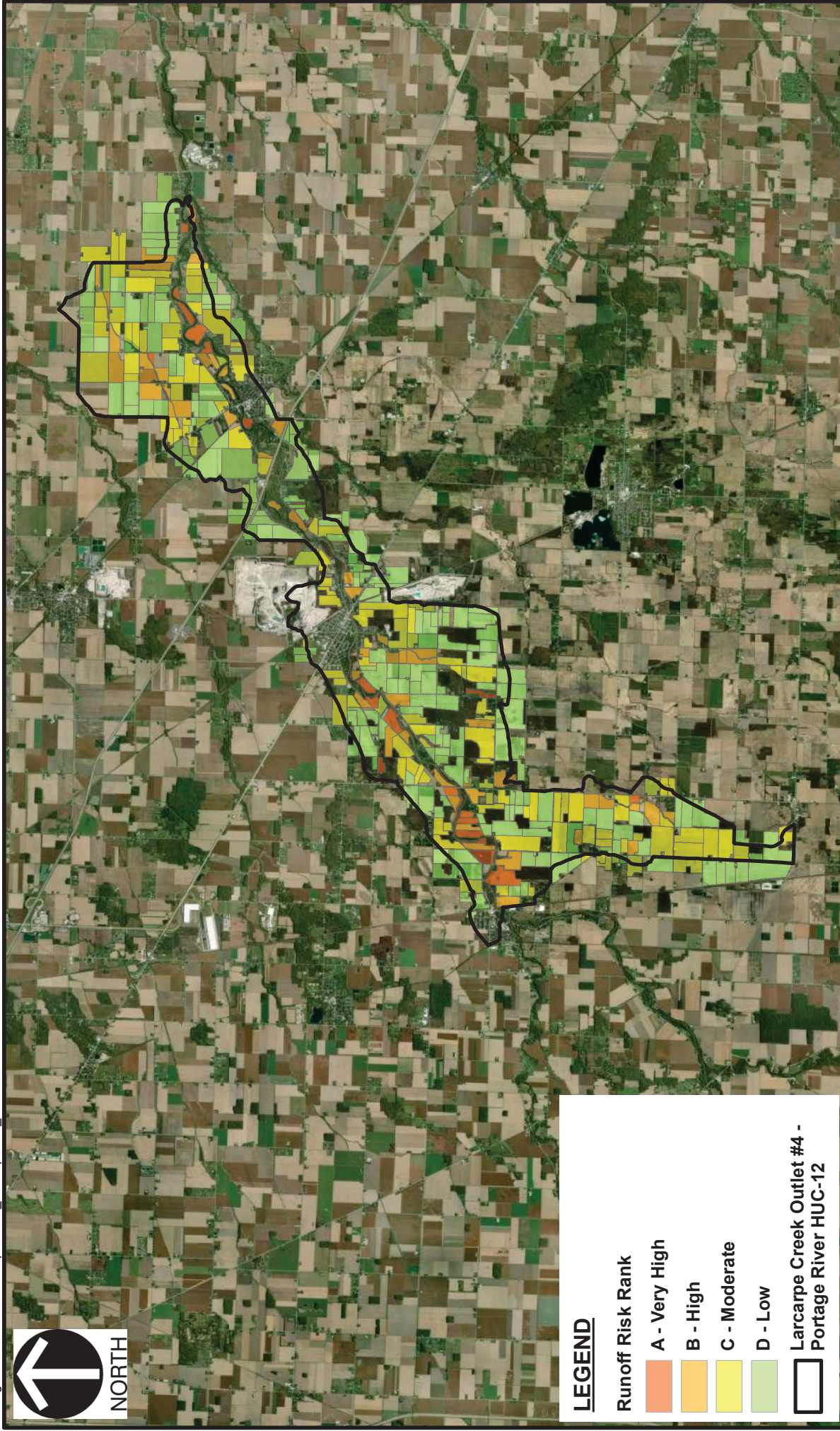
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SUGAR CREEK HUC-12**

POTENTIAL SATURATED BUFFER LOCATIONS

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**APPENDIX B – LACARPE CREEK OUTLET #4-PORTAGE RIVER
HUC-12 MAPS**



LEGEND

Runoff Risk Rank

- A - Very High
- B - High
- C - Moderate
- D - Low

Lacarpe Creek Outlet #4 -
Portage River HUC-12



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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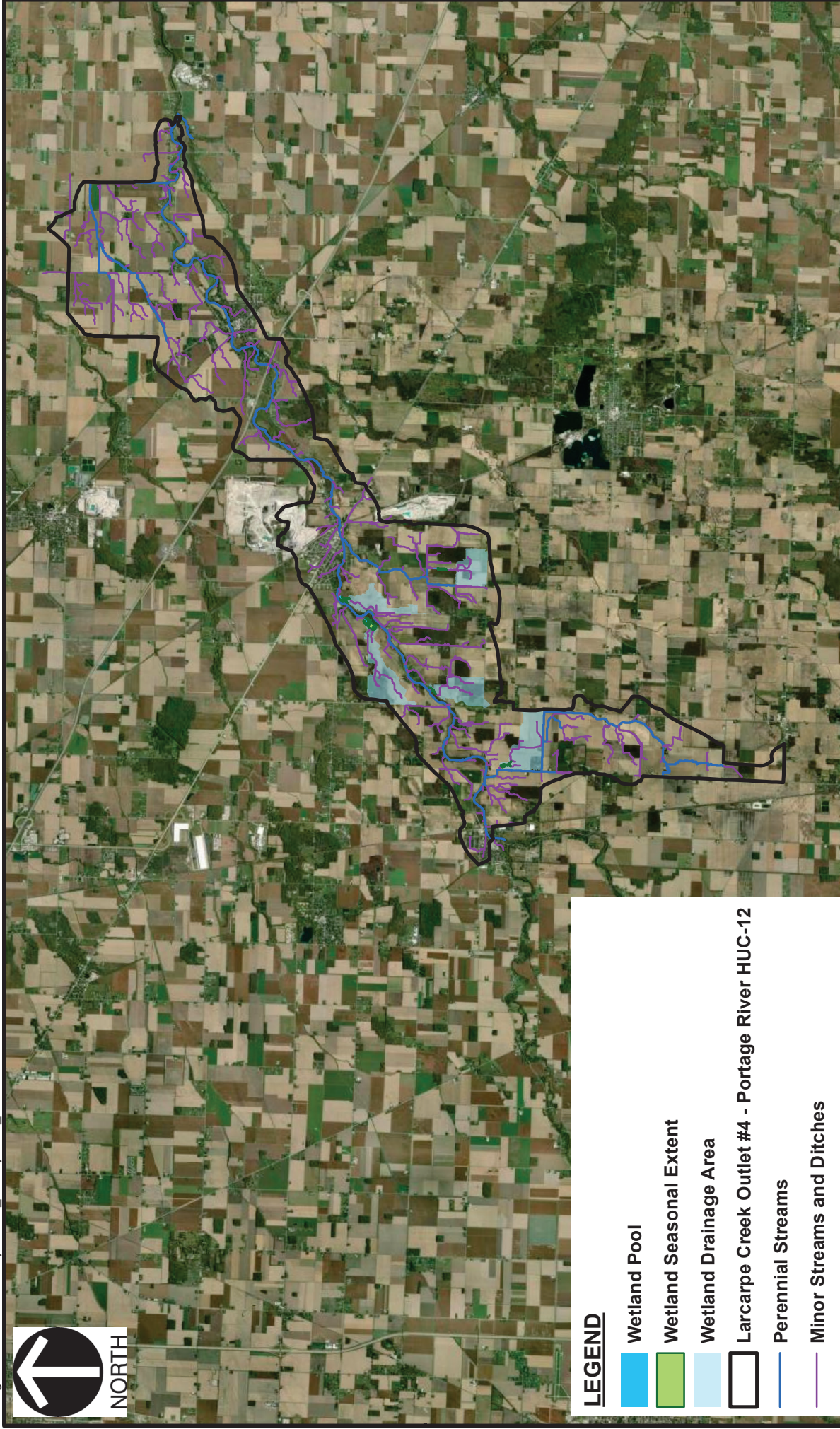
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LACARPE CREEK OUTLET #4 -
PORTAGE RIVER HUC-12

FIELD RUNOFF RISK

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PROJECT NO:	343-633	A-1

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LEGEND

- Wetland Pool
- Wetland Seasonal Extent
- Wetland Drainage Area
- Lacarpe Creek Outlet #4 - Portage River HUC-12
- Perennial Streams
- Minor Streams and Ditches



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
[HTTP://GOTO.ARCGISONLINE.COM/MAPS/USA_TOPO_MAPS](http://gto.toarcgisonline.com/maps/usa_topo_maps), ACCESSED 4/2/2025



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APPROVED BY:	DMB*	FIGURE NO:
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OTTAWA SOIL AND WATER
CONSERVATION DISTRICT
LACARPE CREEK OUTLET #4 -
PORTAGE RIVER HUC-12

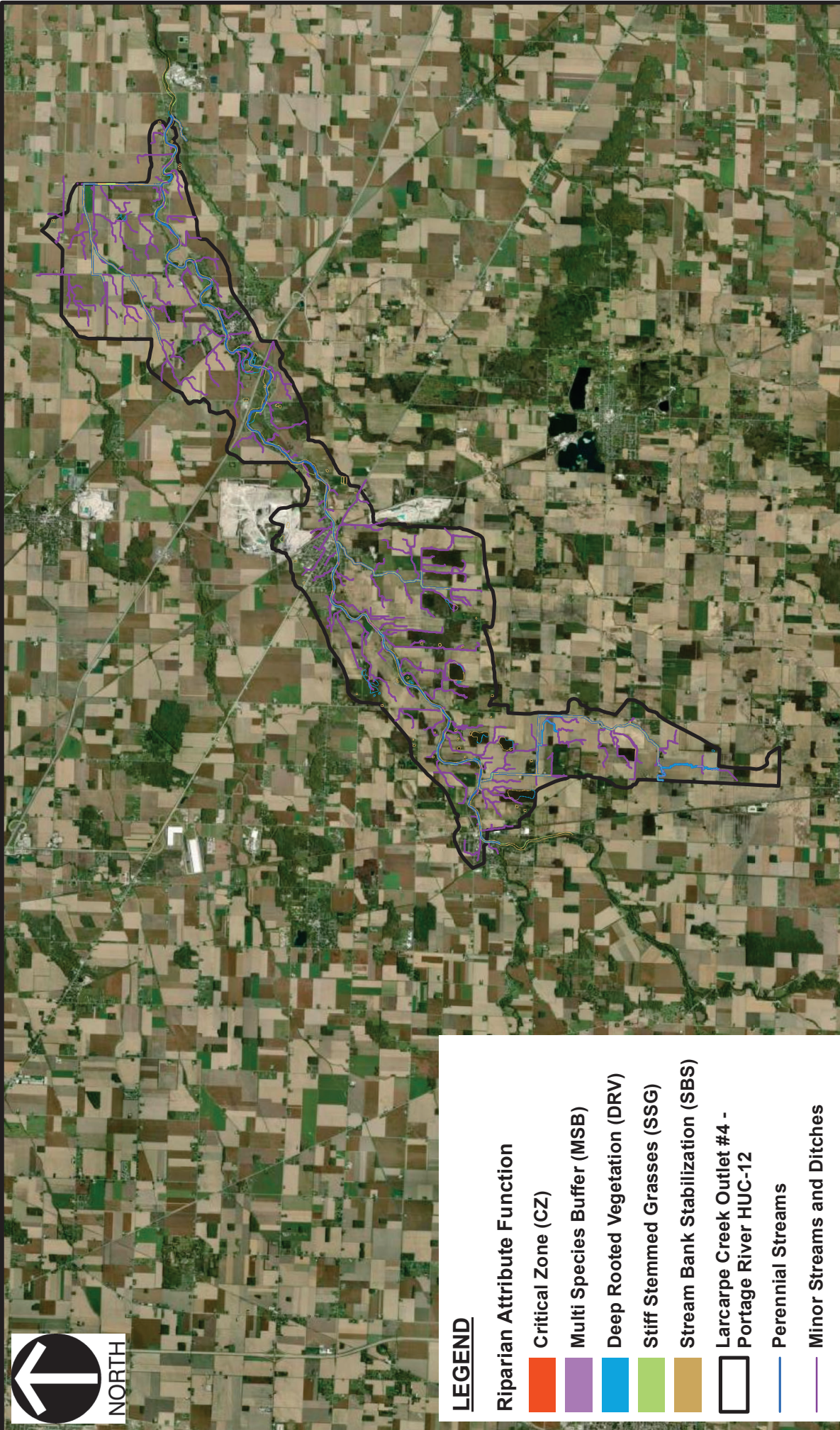
POTENTIAL WETLAND LOCATIONS



LEGEND

Riparian Attribute Function

- Critical Zone (CZ)
- Multi Species Buffer (MSB)
- Deep Rooted Vegetation (DRV)
- Stiff Stemmed Grasses (SSG)
- Stream Bank Stabilization (SBS)
- Lacarbe Creek Outlet #4 - Portage River HUC-12
- Perennial Streams
- Minor Streams and Ditches



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LACARPE CREEK OUTLET #4 -
PORTAGE RIVER HUC-12

RIPARIAN FUNCTION MAP

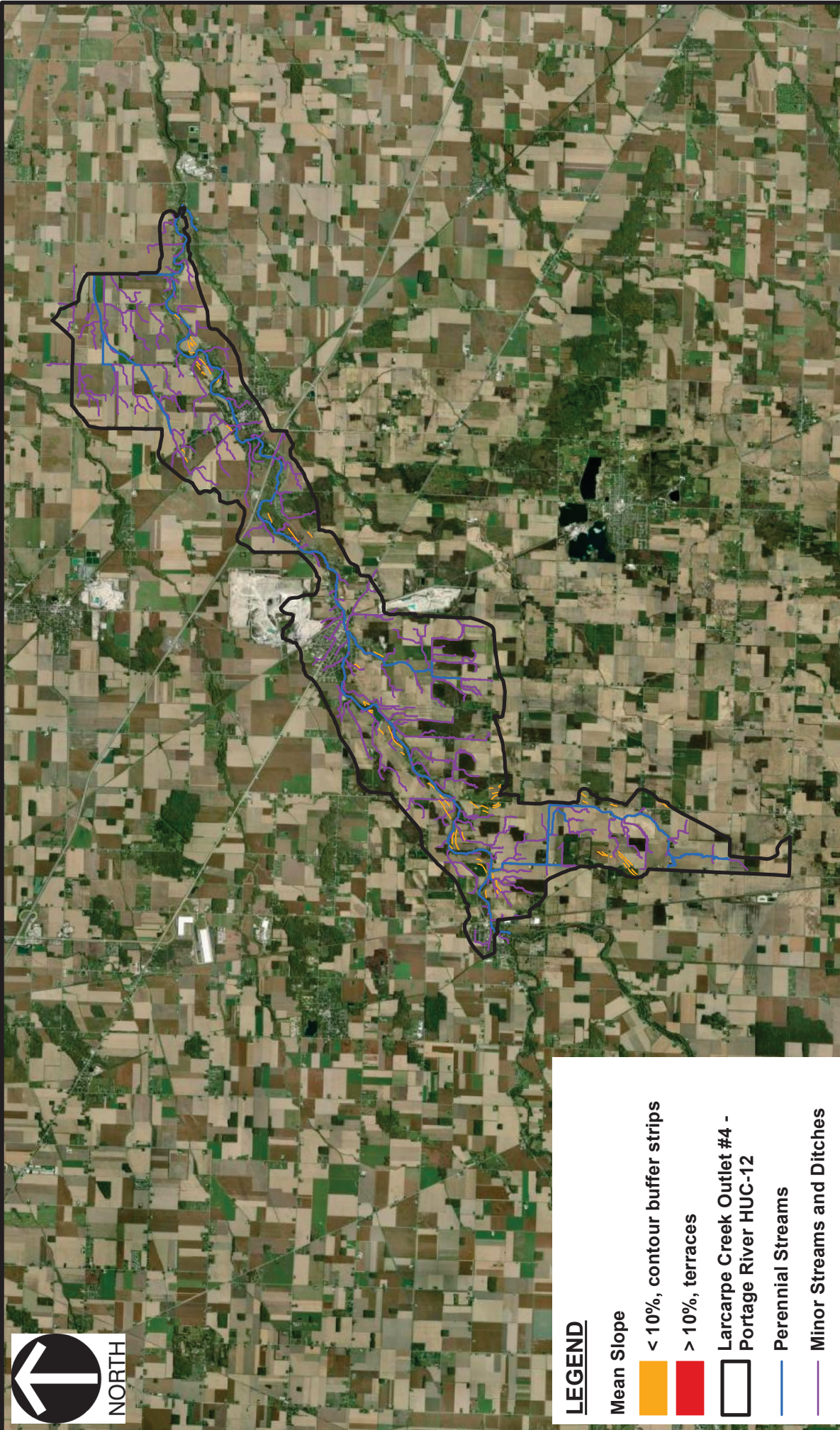
REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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DATE:	4/2/2025	SCALE:	1" = 2.25 miles	PROJECT NO:	343-633	A-3

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LEGEND

Mean Slope

 < 10%, contour buffer strips

 > 10%, terraces

 Lacarpe Creek Outlet #4 -
Portage River HUC-12

 Perennial Streams

 Minor Streams and Ditches



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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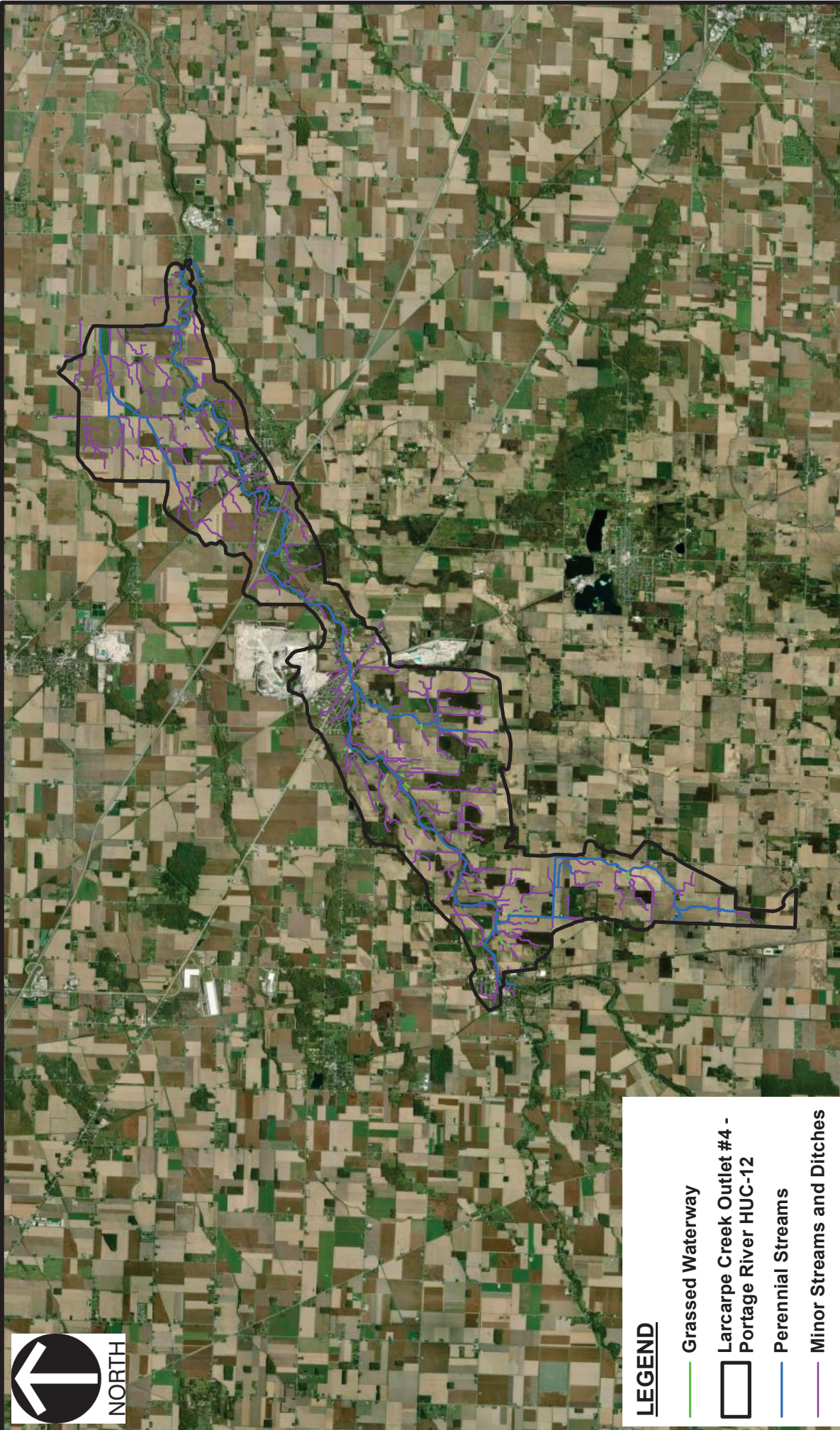
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DATE:	4/2/2025	SCALE:	1" = 2.25 miles

OTTAWA SOIL AND WATER
CONSERVATION DISTRICT
LACARPE CREEK OUTLET #4 -
PORTAGE RIVER HUC-12

POTENTIAL CONTOUR BUFFER STRIP LOCATIONS

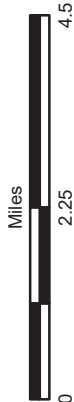
APPROVED BY:	DMB*	FIGURE NO:
PROJECT NO:	343-633	A-4

* Hand signature on file



LEGEND

-  Grassed Waterway
-  Lacarpe Creek Outlet #4 - Portage River HUC-12
-  Perennial Streams
-  Minor Streams and Ditches



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
[HTTP://GOTO_ARCGISONLINE.COM/MAPS/](http://gto topo.arcgis.com/maps/usa_topo_maps)
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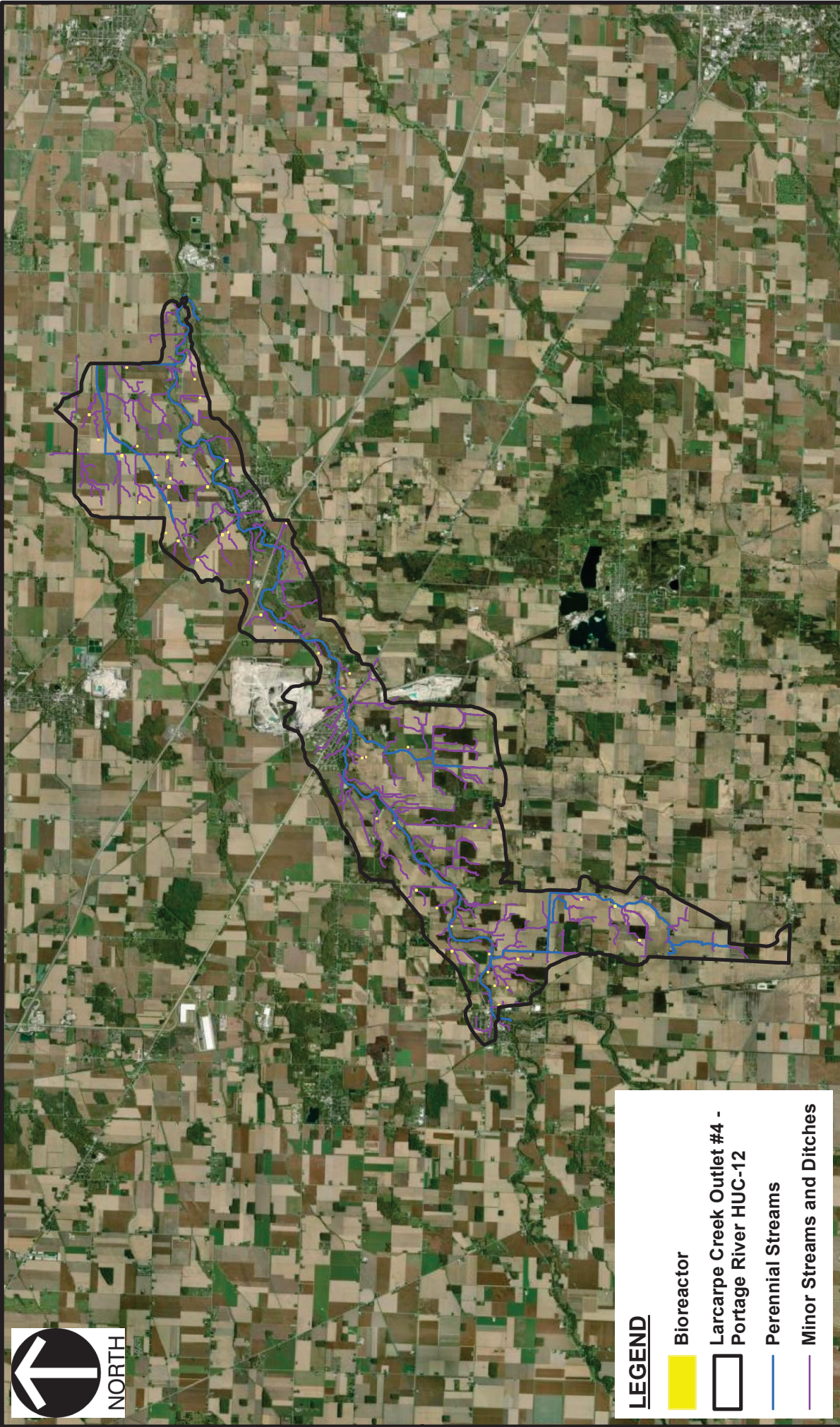
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LACARPE CREEK OUTLET #4 -
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POTENTIAL GRASSED WATERWAY LOCATIONS

APPROVED BY:	DMB*	FIGURE NO:
PROJECT NO:	343-633	A-5

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LEGEND

-  Bioreactor
-  Lacarbe Creek Outlet #4 -
Portage River HUC-12
-  Perennial Streams
-  Minor Streams and Ditches



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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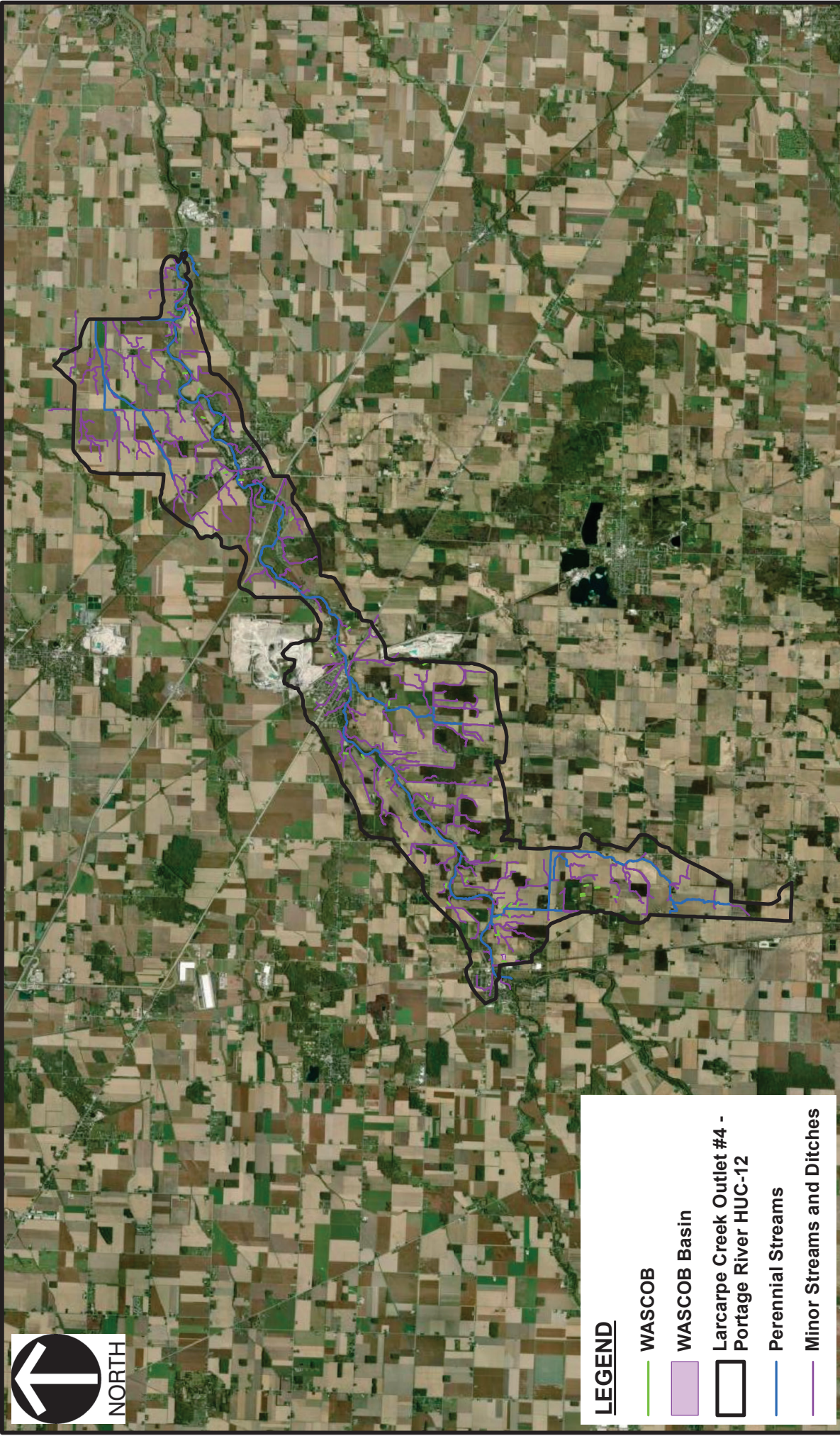
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OTTAWA SOIL AND WATER
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POTENTIAL BIOREACTOR LOCATIONS

APPROVED BY:	DMB*	FIGURE NO:
	343-633	A-6

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LEGEND

- WASCOB
- WASCOB Basin
- Lacarbe Creek Outlet #4 - Portage River HUC-12
- Perennial Streams
- Minor Streams and Ditches



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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PROJECT NO: 343-633

FIGURE NO: **A-7**

OTTAWA SOIL AND WATER
CONSERVATION DISTRICT
LACARPE CREEK OUTLET #4 -
PORTAGE RIVER HUC-12

POTENTIAL WASCOB LOCATIONS



LEGEND

Acres Within the Contour Interval

Contour Interval = 1 meter

- < 20
- 20 - 40
- 40 - 60
- 60 +

Lacarbe Creek Outlet #4 - Portage River HUC-12

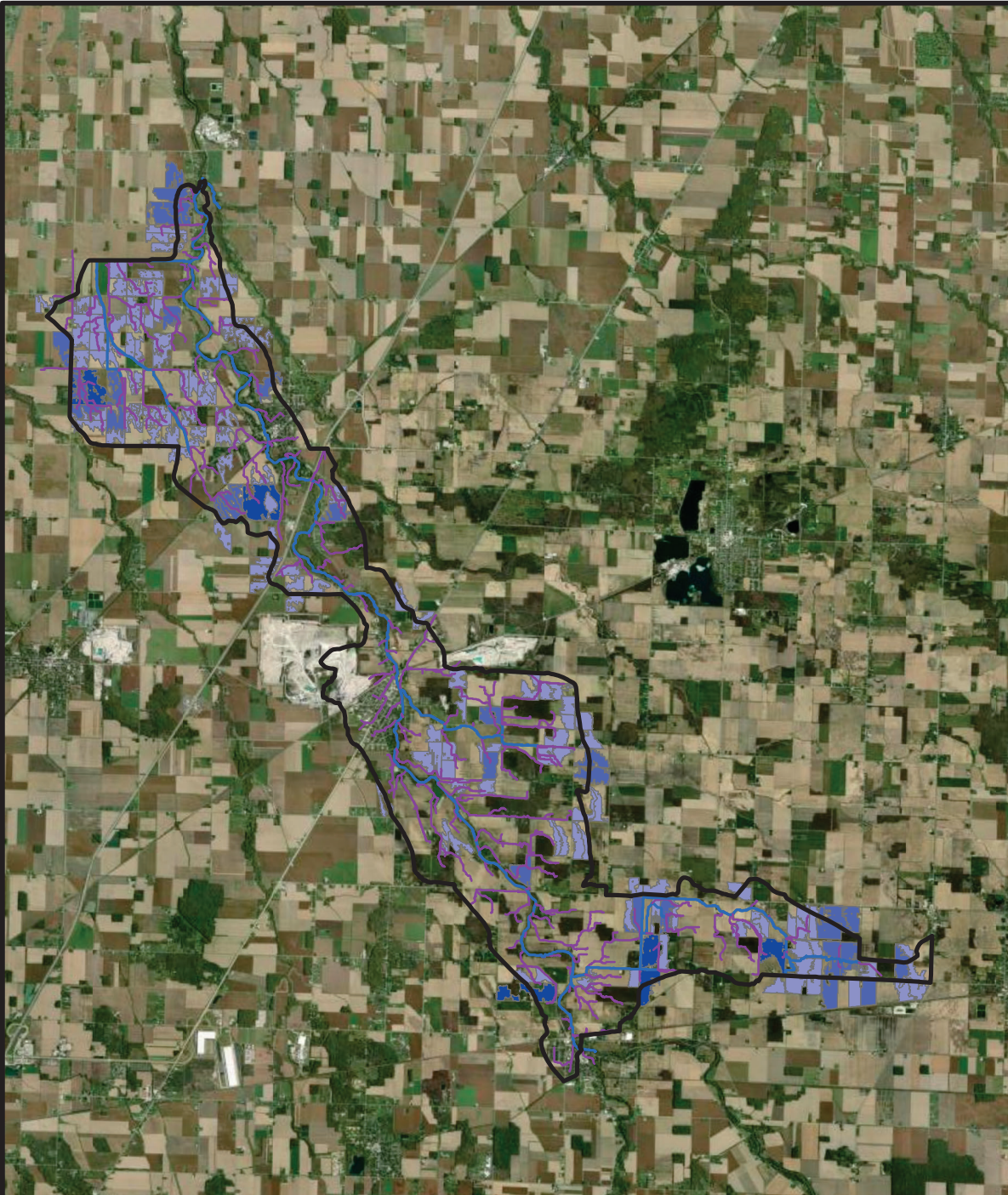
Perennial Streams

Minor Streams and Ditches



REFERENCE

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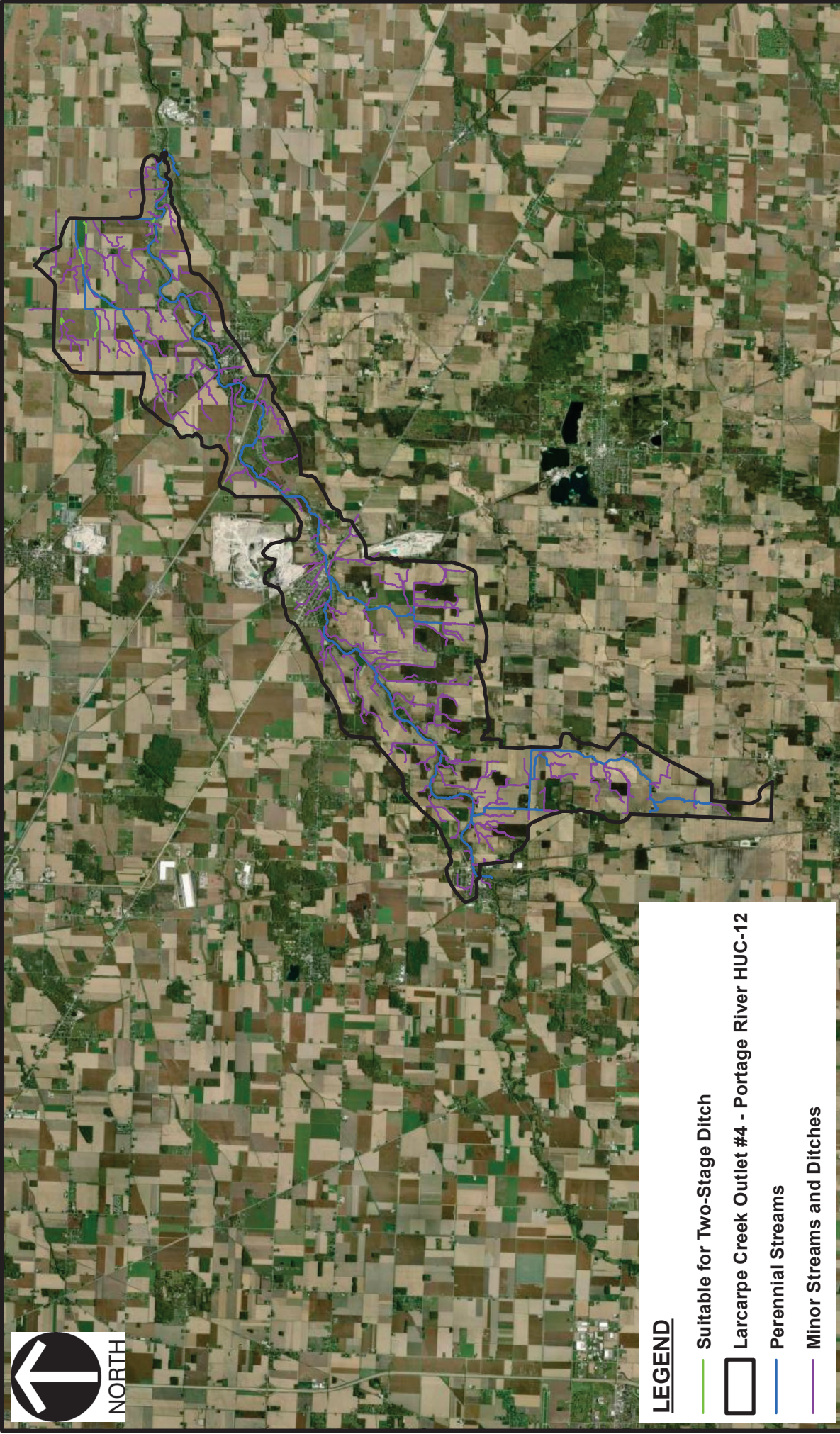
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POTENTIAL DRAINAGE WATER MANAGEMENT LOCATIONS

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LEGEND

- Suitable for Two-Stage Ditch
- Lacarbe Creek Outlet #4 - Portage River HUC-12
- Perennial Streams
- Minor Streams and Ditches



REFERENCE

USGS TOPOGRAPHIC MAP/ARCGIS MAP SERVICE:
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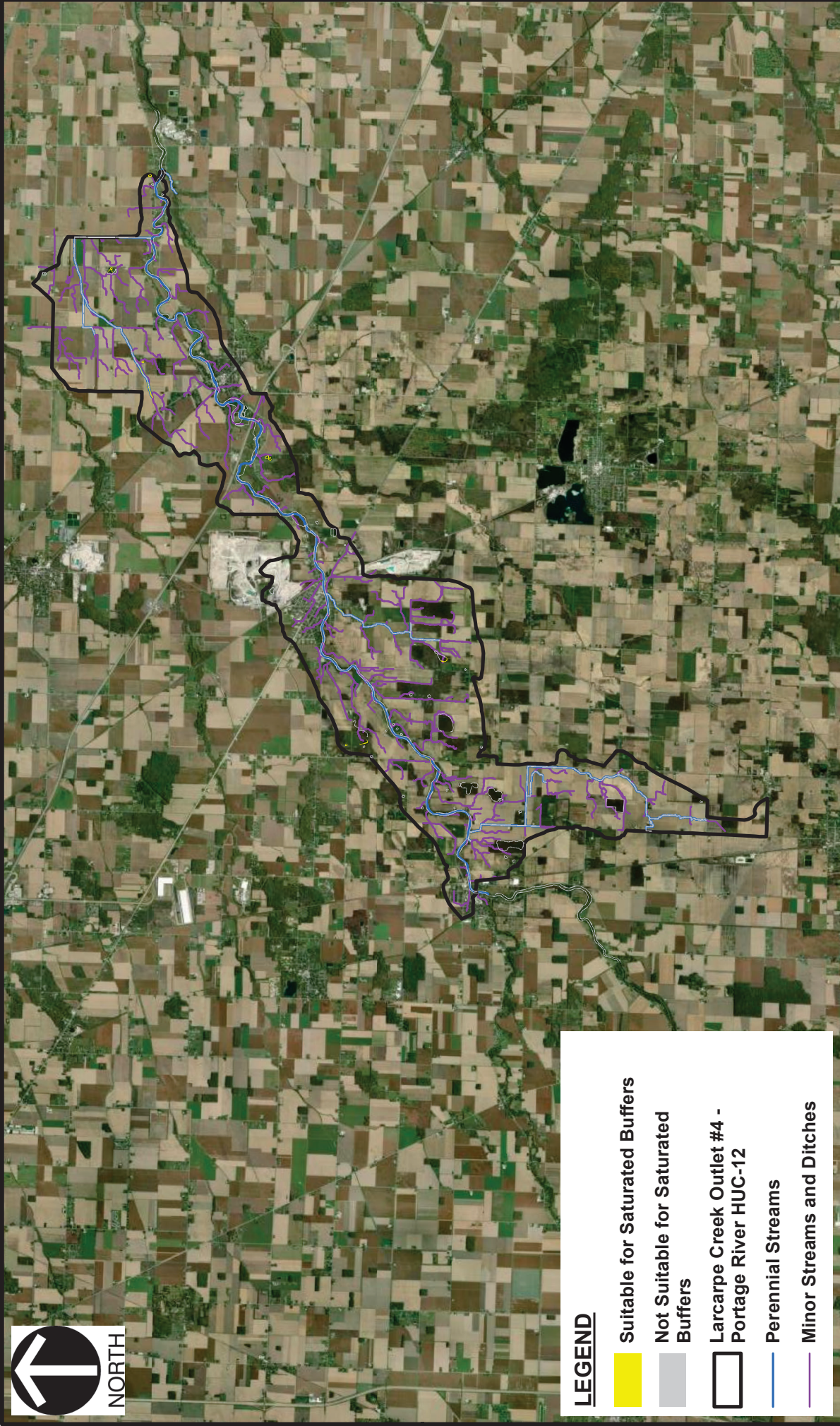
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OTTAWA SOIL AND WATER
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POTENTIAL TWO-STAGE DITCH LOCATIONS

APPROVED BY:	DMB*	FIGURE NO:
PROJECT NO:	343-633	A-9

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LEGEND

- Suitable for Saturated Buffers
- Not Suitable for Saturated Buffers
- Lacarpe Creek Outlet #4 - Portage River HUC-12
- Perennial Streams
- Minor Streams and Ditches



REFERENCE

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POTENTIAL SATURATED BUFFER LOCATIONS

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