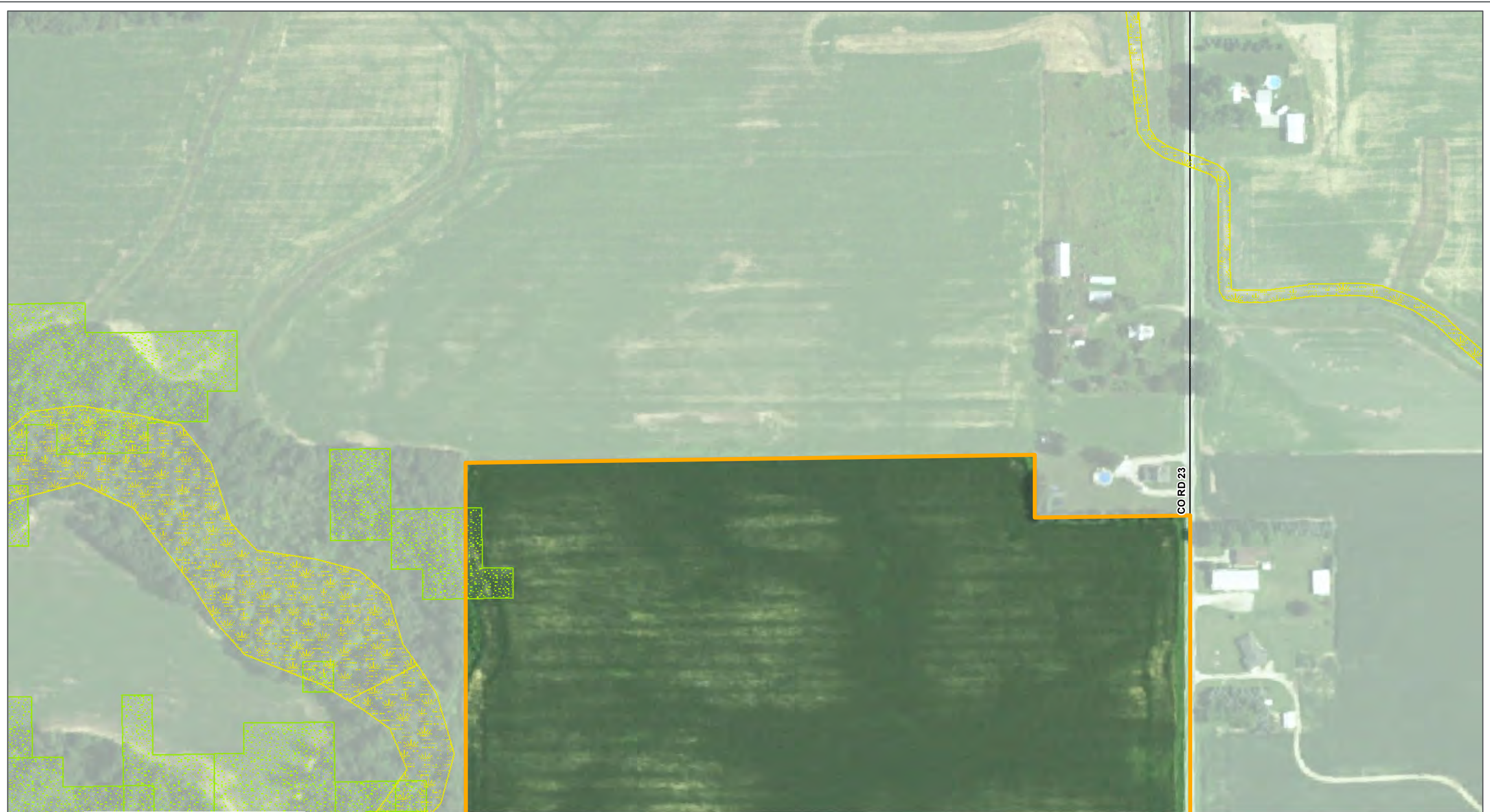


Arche Solar Project

APPENDIX

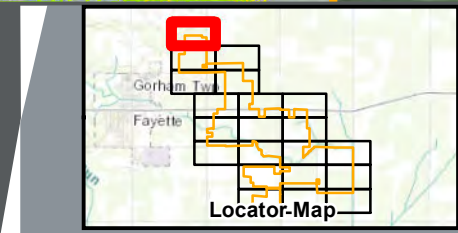
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WETLAND AND WATERBODY MAPS

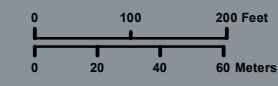


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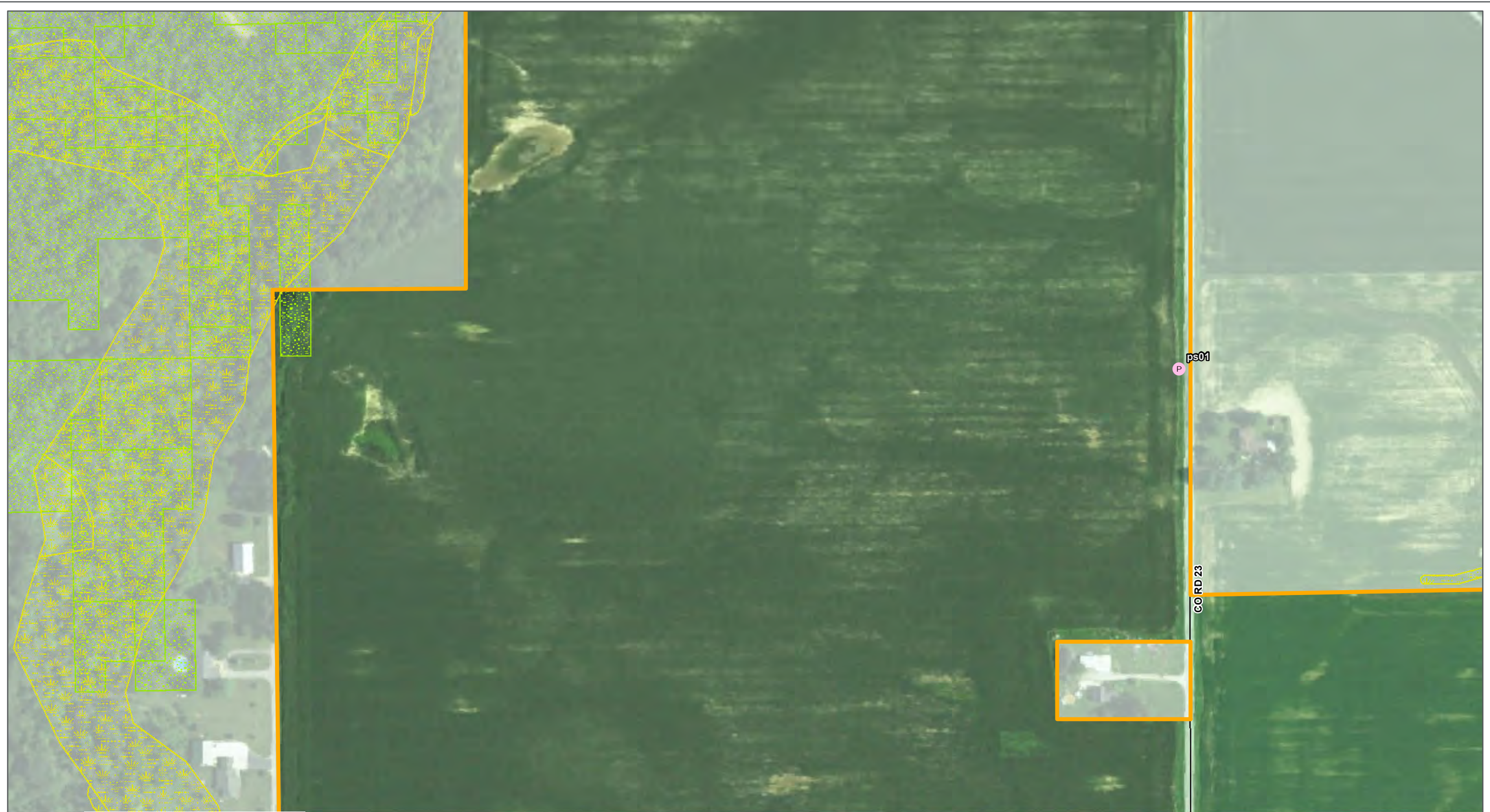
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Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



**Wetland and Waterbody Maps
(Sheet 1 of 21)
Arche Solar Project
Fulton County, Ohio**

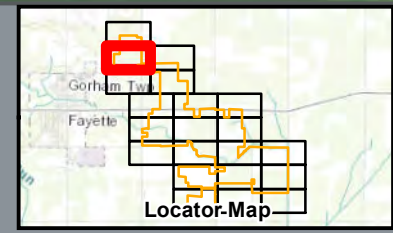


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Legend

- GPS_PhotoStation
- Upland Datapoint
- Wetland Datapoint
- Field Delineated Stream
- Local Road
- State Road
- US Highway
- Field Delineated Wetland
- ODNR Wetland
- Field Delineated Pond
- NWI Wetlands
- Survey Area



**Wetland and Waterbody Maps
(Sheet 2 of 21)
Arche Solar Project
Fulton County, Ohio**

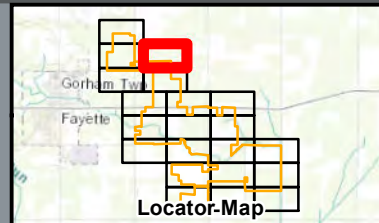


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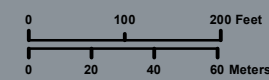


Legend

GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



**Wetland and Waterbody Maps
(Sheet 3 of 21)
Arche Solar Project
Fulton County, Ohio**

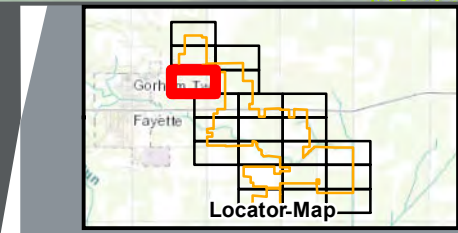


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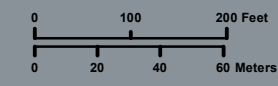


Legend

GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



Wetland and Waterbody Maps
 (Sheet 4 of 21)
 Arche Solar Project
 Fulton County, Ohio

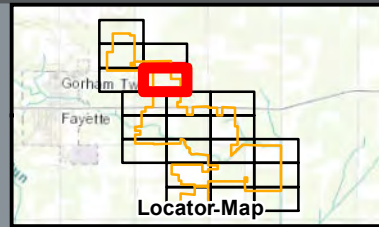


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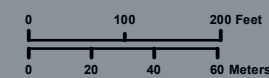


Legend

GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



**Wetland and Waterbody Maps
(Sheet 5 of 21)
Arche Solar Project
Fulton County, Ohio**

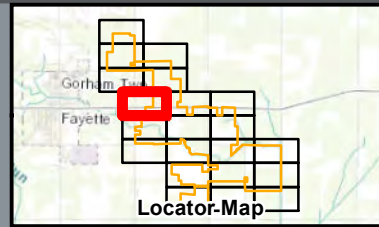


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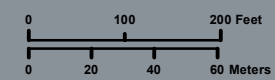


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GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



**Wetland and Waterbody Maps
(Sheet 6 of 21)
Arche Solar Project
Fulton County, Ohio**

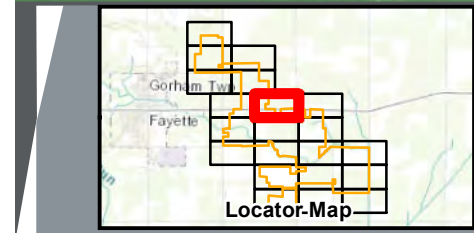


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Legend

GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



**Wetland and Waterbody Maps
(Sheet 7 of 21)
Arche Solar Project
Fulton County, Ohio**

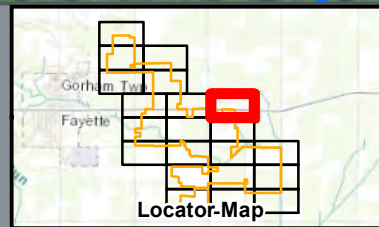


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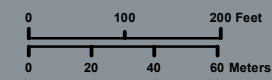


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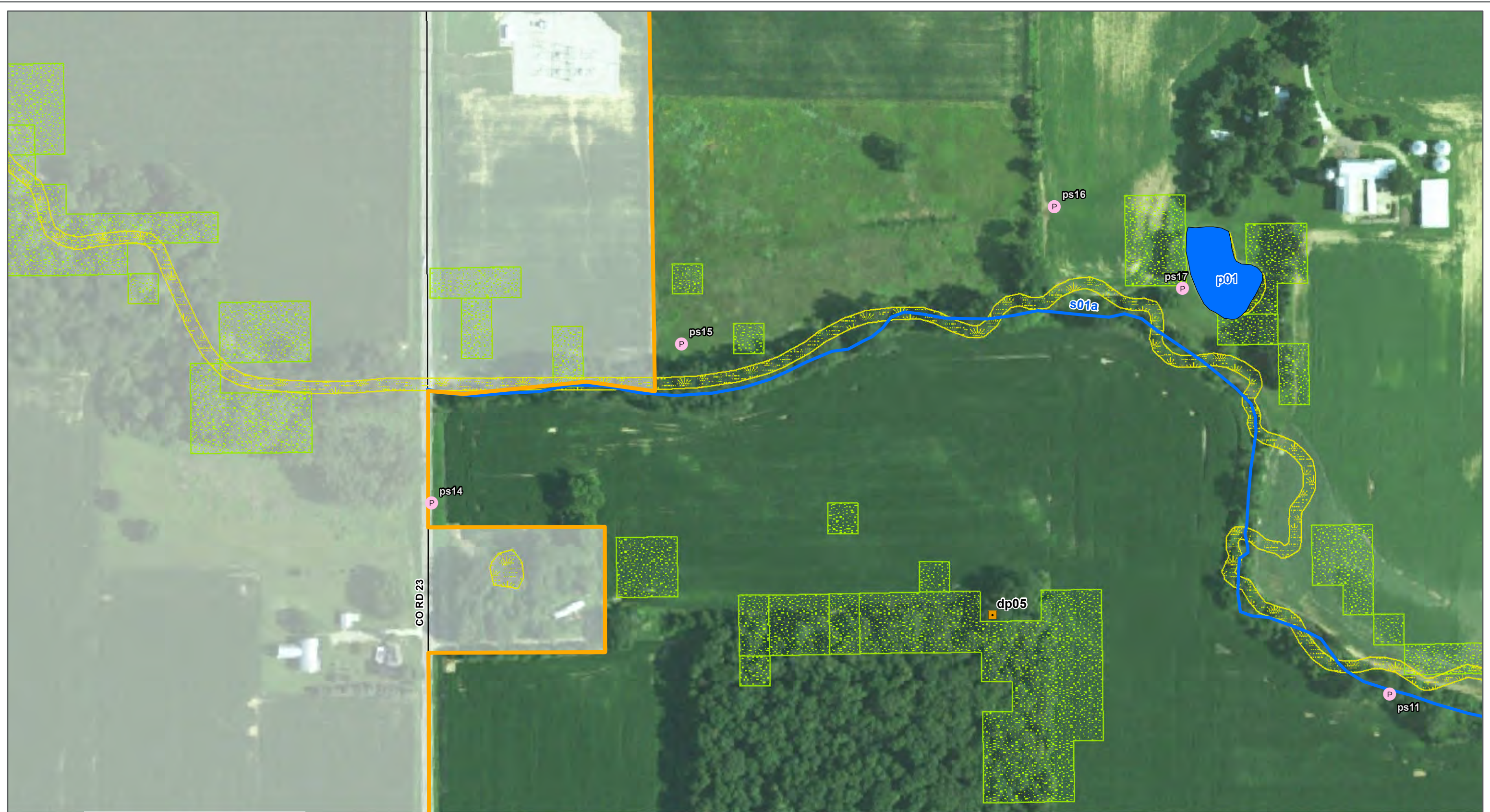
GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



**Wetland and Waterbody Maps
(Sheet 8 of 21)
Arche Solar Project
Fulton County, Ohio**

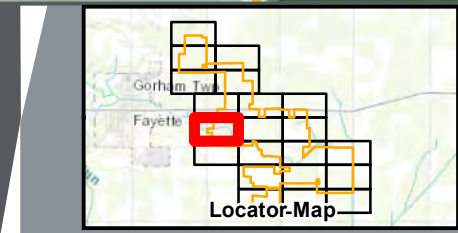


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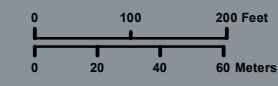


Legend

GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



**Wetland and Waterbody Maps
(Sheet 9 of 21)
Arche Solar Project
Fulton County, Ohio**

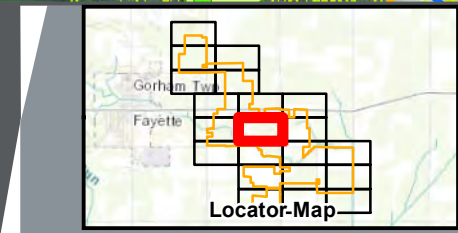


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Legend

- P GPS_PhotoStation
- Upland Datapoint
- Wetland Datapoint
- Field Delineated Stream
- Local Road
- State Road
- US Highway
- Field Delineated Wetland
- ODNR Wetland
- Field Delineated Pond
- - - NWI Wetlands
- Survey Area



**Wetland and Waterbody Maps
(Sheet 10 of 21)
Arche Solar Project
Fulton County, Ohio**

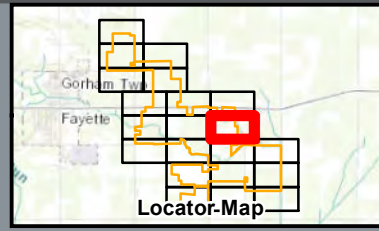


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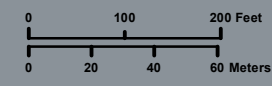


Legend

- GPS_PhotoStation
- Upland Datapoint
- Wetland Datapoint
- Field Delineated Stream
- Local Road
- State Road
- US Highway
- Field Delineated Wetland
- ODNR Wetland
- Field Delineated Pond
- NWI Wetlands
- Survey Area



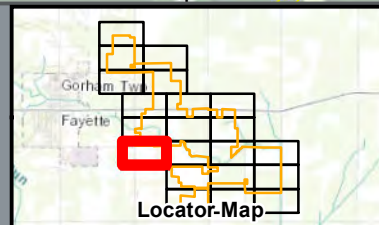
**Wetland and Waterbody Maps
(Sheet 11 of 21)
Arche Solar Project
Fulton County, Ohio**



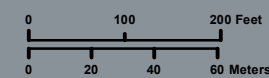
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- Legend**
- P GPS_PhotoStation
 - Upland Datapoint
 - Wetland Datapoint
 - Field Delineated Stream
 - Local Road
 - State Road
 - US Highway
 - Field Delineated Wetland
 - ODNR Wetland
 - Field Delineated Pond
 - NWI Wetlands
 - Survey Area



**Wetland and Waterbody Maps
(Sheet 12 of 21)
Arche Solar Project
Fulton County, Ohio**

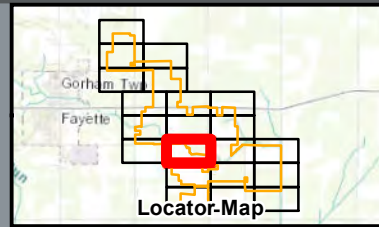


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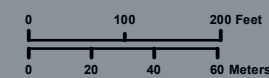


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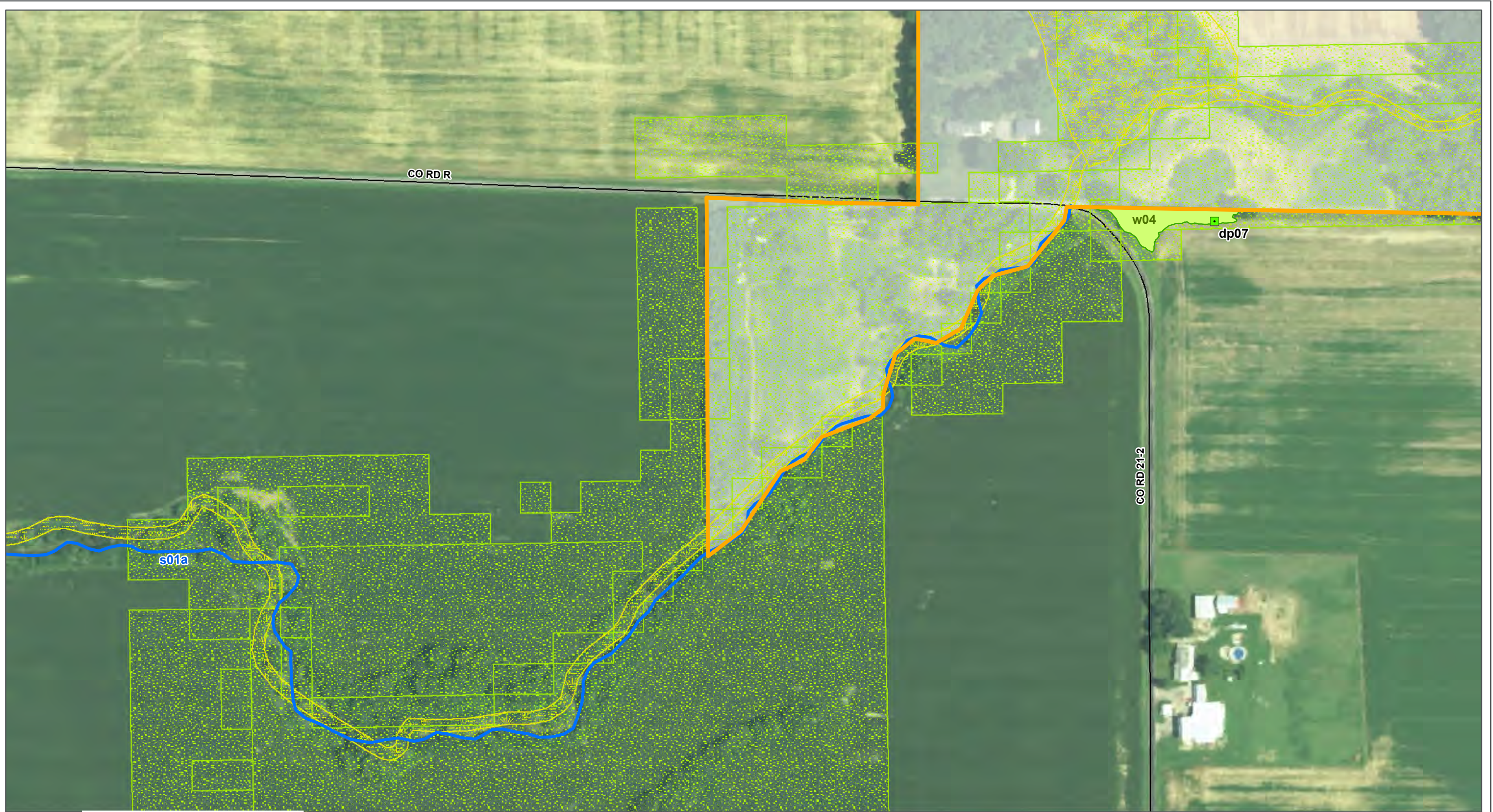
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Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



Wetland and Waterbody Maps
 (Sheet 13 of 21)
 Arche Solar Project
 Fulton County, Ohio

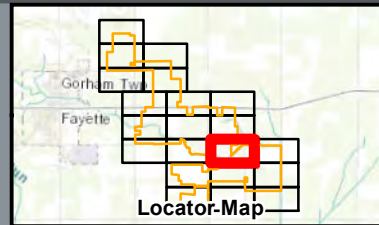


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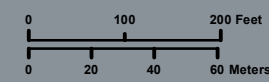


Legend

GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



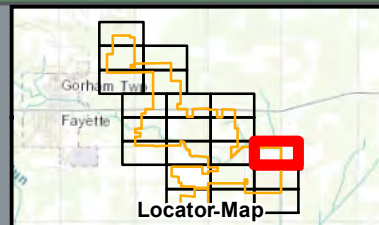
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(Sheet 14 of 21)
Arche Solar Project
Fulton County, Ohio**



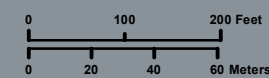
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- Legend**
- P GPS_PhotoStation
 - Upland Datapoint
 - Wetland Datapoint
 - Field Delineated Stream
 - Local Road
 - State Road
 - US Highway
 - ▨ Field Delineated Wetland
 - ▨ ODNR Wetland
 - ▨ NWI Wetlands
 - ▭ Survey Area



**Wetland and Waterbody Maps
(Sheet 15 of 21)
Arche Solar Project
Fulton County, Ohio**



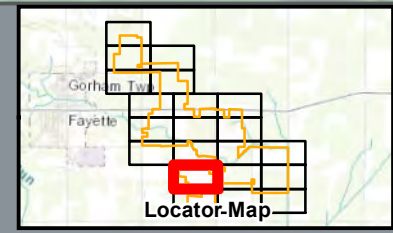
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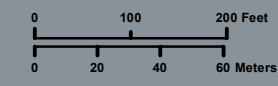
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Legend

- GPS_PhotoStation
- Upland Datapoint
- Wetland Datapoint
- Field Delineated Stream
- Local Road
- State Road
- US Highway
- Field Delineated Wetland
- ODNR Wetland
- Field Delineated Pond
- NWI Wetlands
- Survey Area



**Wetland and Waterbody Maps
(Sheet 16 of 21)
Arche Solar Project
Fulton County, Ohio**



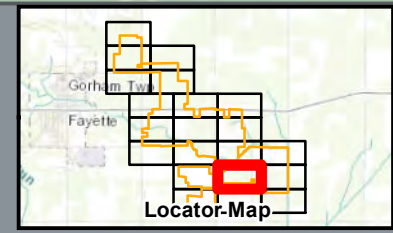
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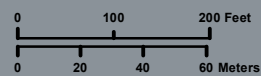
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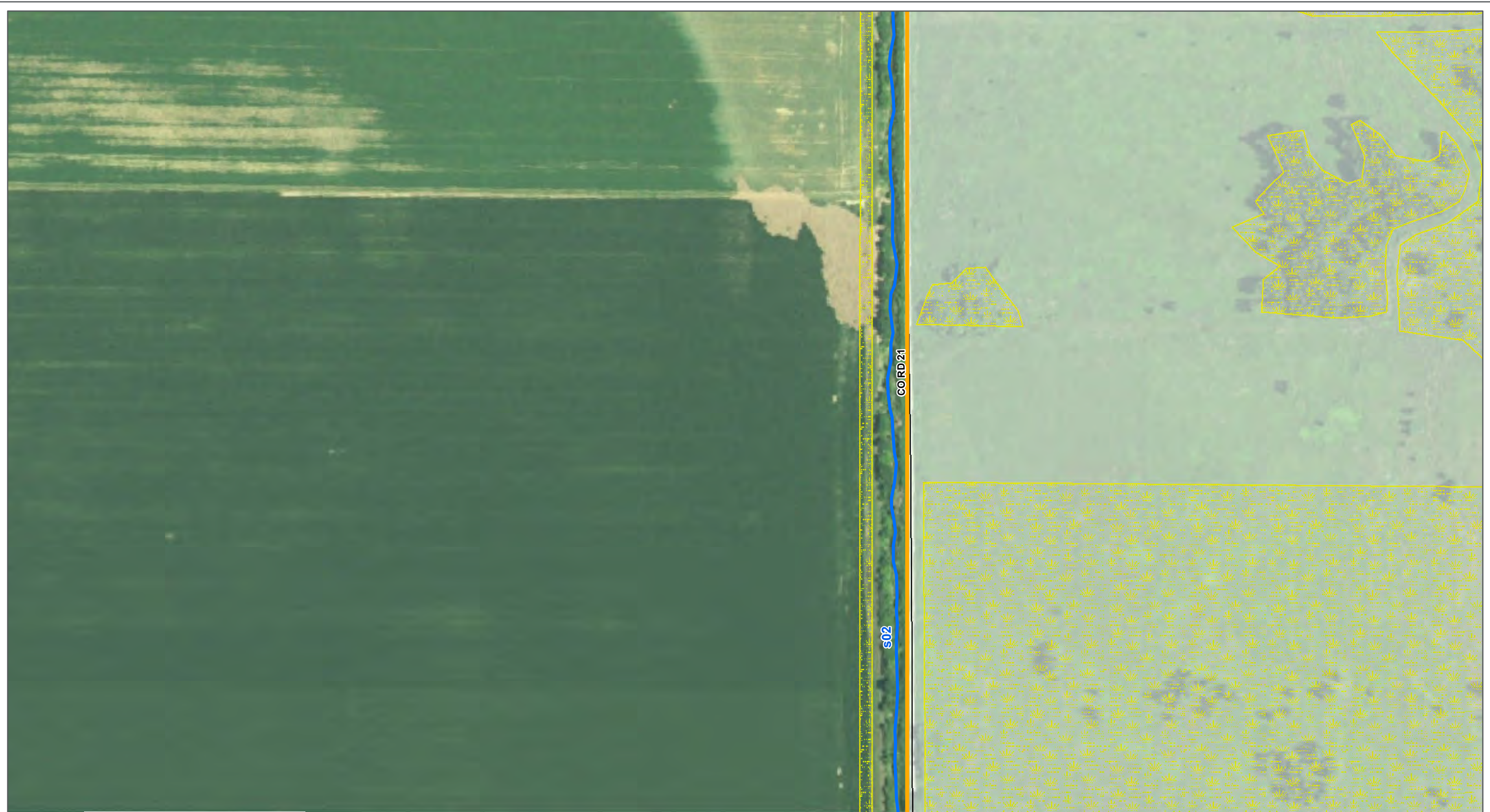
GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



Wetland and Waterbody Maps
 (Sheet 17 of 21)
 Arche Solar Project
 Fulton County, Ohio

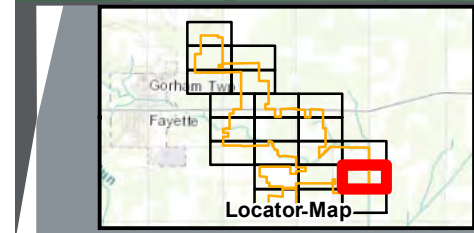


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Legend

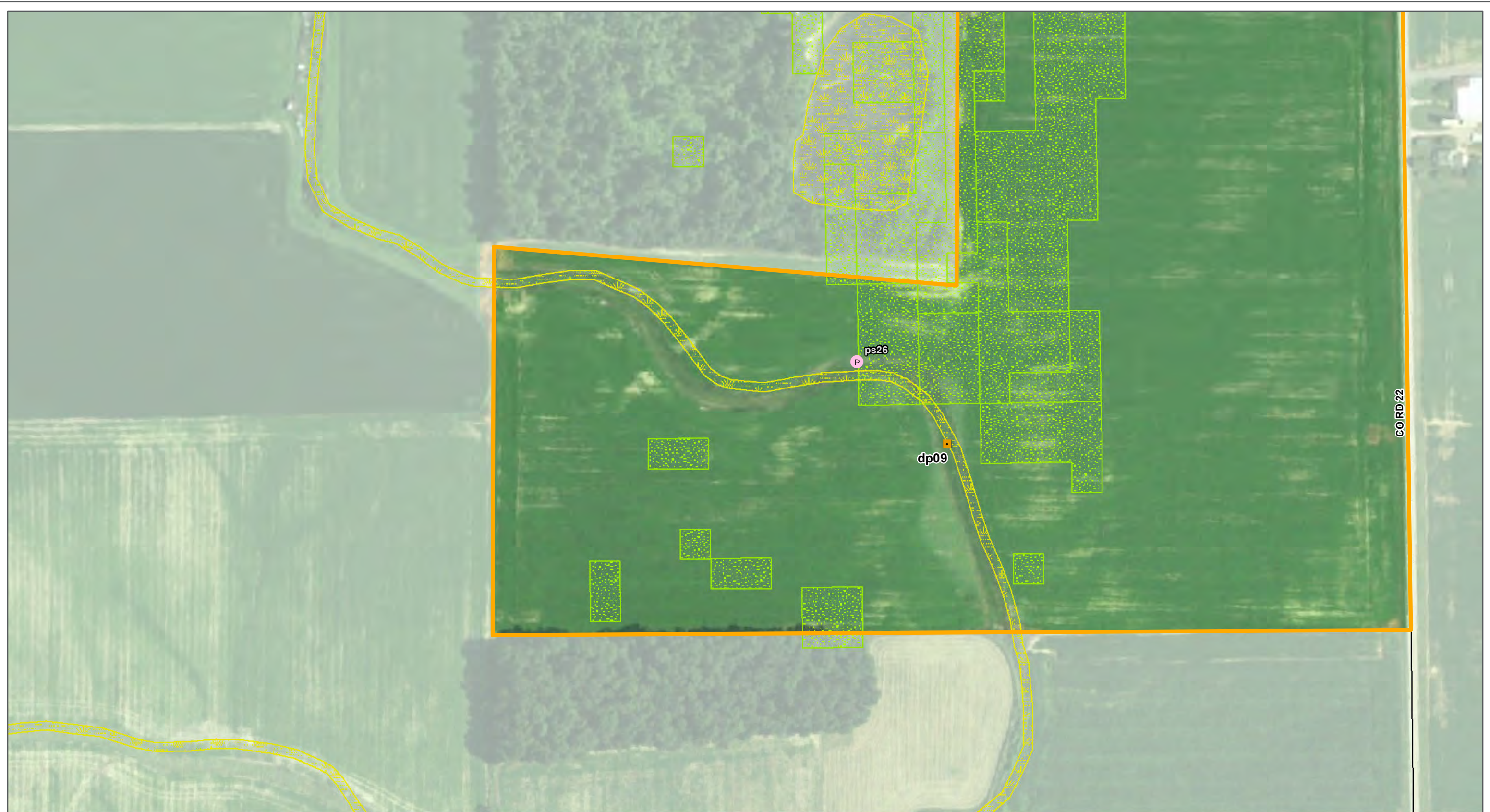
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Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



Wetland and Waterbody Maps
 (Sheet 18 of 21)
 Arche Solar Project
 Fulton County, Ohio

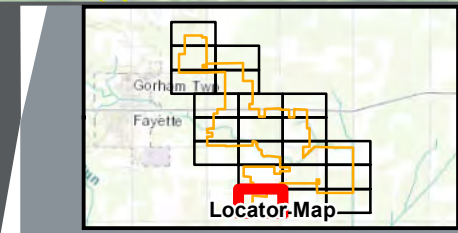


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Legend

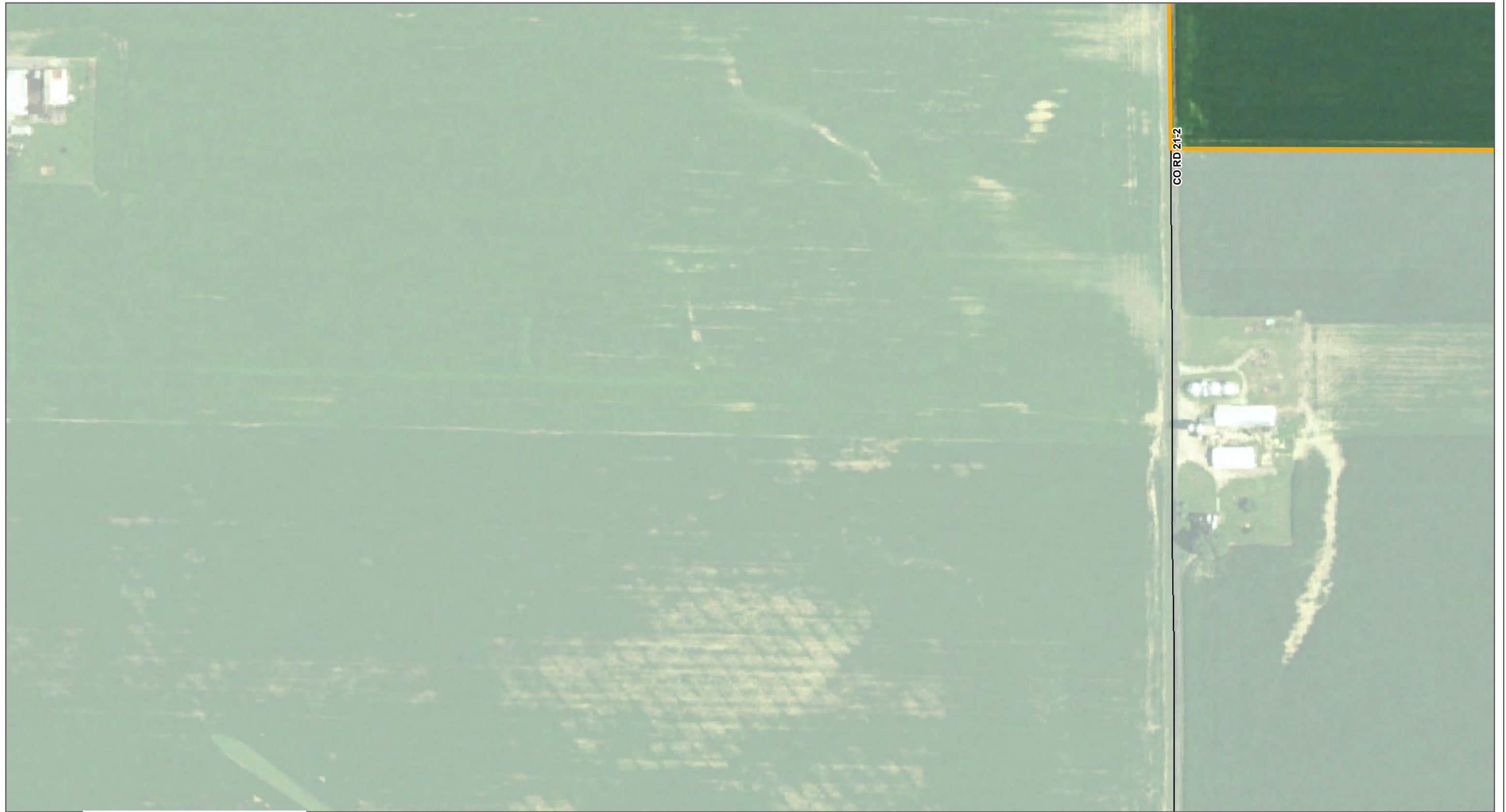
GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



**Wetland and Waterbody Maps
(Sheet 19 of 21)
Arche Solar Project
Fulton County, Ohio**



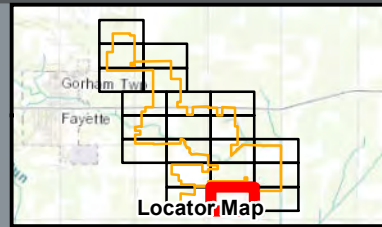
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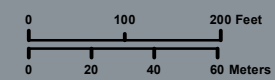
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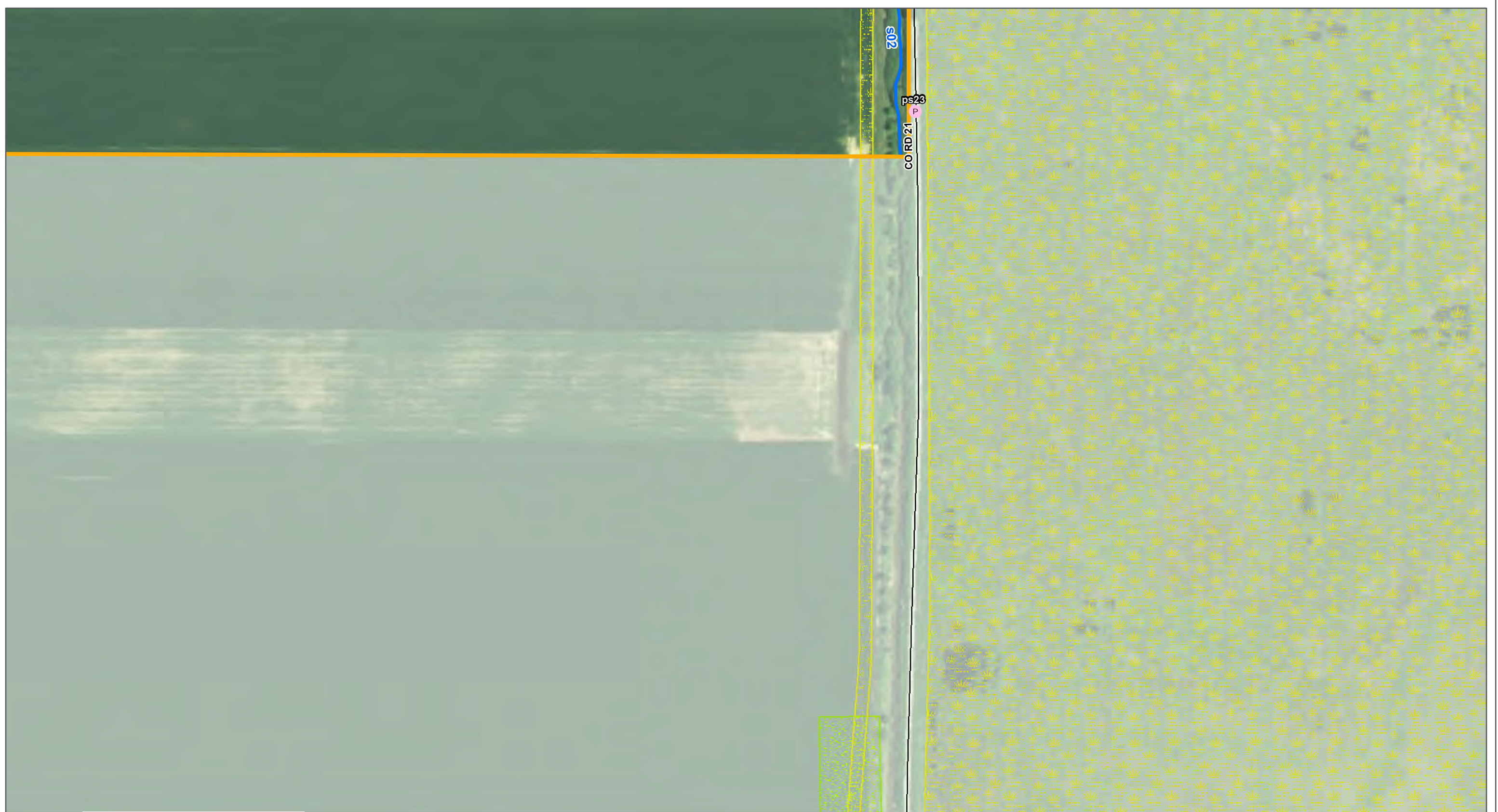
GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



Wetland and Waterbody Maps
 (Sheet 20 of 21)
 Arche Solar Project
 Fulton County, Ohio

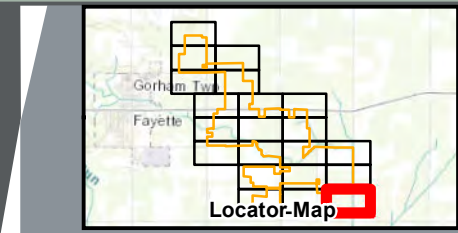


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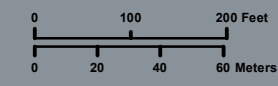


Legend

GPS_PhotoStation	US Highway
Upland Datapoint	Field Delineated Wetland
Wetland Datapoint	ODNR Wetland
Field Delineated Stream	Field Delineated Pond
Local Road	NWI Wetlands
State Road	Survey Area



**Wetland and Waterbody Maps
(Sheet 21 of 21)
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Arche Solar Project

APPENDIX

C

WETLAND DELINEATION AND
ASSESSMENT FORMS

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/21/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp01
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S21 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): concave
 Slope (%): 3% Lat: 41.66778118 Long: -84.29607681 Datum: NAD83 UTM16N
 Soil Map Unit Name: Sloan silty clay loam, frequently flooded (So) NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u>	No <u> </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u> </u>		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B)
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
= Total Cover				

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ That Are OBL, FACW, or FAC: _____ A/B OBL species x1 = _____ FACW species 105% x2 = <u>2.10</u> FAC species 15% x3 = <u>0.45</u> FACU species x4 = _____ UPL species x5 = _____ Column Totals: <u>120%</u> (A) <u>2.55</u> (B) Prevalence Index = B/A = <u>2.13</u>
1. <u>Morus alba</u>	5%	No	FAC	
2. <u>Ulmus americana</u>	5%	No	FACW	
3. <u>Ulmus rubra</u>	10%	Yes	FAC	
4. <u>Acer saccharinum</u>	10%	Yes	FACW	
5. _____				
30% = Total Cover				

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: _____ 1-Rapid Test for Hydrophytic Vegetation <u>X</u> 2-Dominance Test is >50% <u>X</u> 3-Prevalence Index is ≤3.0 ¹ _____ 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Symphytotrichum lateriflorum</u>	30%	Yes	FACW	
2. <u>Lysimachia nummularia</u>	20%	Yes	FACW	
3. <u>Cinna arundinacea</u>	20%	Yes	FACW	
4. <u>Pilea pumila</u>	20%	Yes	FACW	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
13. _____				
14. _____				
15. _____				
16. _____				
17. _____				
18. _____				
19. _____				
20. _____				
90% = Total Cover				

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. _____				
2. _____				
= Total Cover				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 3/1	90	10YR 3/6	10	C	M	Silt Loam	
6-20"	10YR 3/1	80	10YR 3/6	20	C	M	Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input checked="" type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>6"</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>Surface</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Sampling Point: dp02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8"	10YR 3/3	100					Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/21/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp03
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S21 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): concave
 Slope (%): 1% Lat: 41.66723282 Long: -84.29590511 Datum: NAD83 UTM16N
 Soil Map Unit Name: Sloan silty clay loam, frequently flooded (So) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u>	No <u> </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u> </u>		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B)
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	= Total Cover			

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ That Are OBL, FACW, or FAC: _____ A/B OBL species <u>30%</u> x1 = <u>0.30</u> FACW species <u>90%</u> x2 = <u>1.80</u> FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: <u>120%</u> (A) <u>2.10</u> (B) Prevalence Index = B/A = <u>1.75</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
	= Total Cover			

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1-Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2-Dominance Test is >50% <input checked="" type="checkbox"/> 3-Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <i>Lysimachia nummularia</i>	40%	Yes	FACW	
2. <i>Phalaris arundinacea</i>	40%	Yes	FACW	
3. <i>Boehmeria cylindrica</i>	20%	No	OBL	
4. <i>Carex lupulina</i>	10%	No	OBL	
5. <i>Leersia virginica</i>	10%	No	FACW	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
13. _____				
14. _____				
15. _____				
16. _____				
17. _____				
18. _____				
19. _____				
20. _____				
	120% = Total Cover			

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. _____				
2. _____				
	= Total Cover			

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 3/1	85	10YR 4/6	15	C	M	Silty Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	³ The hydric soil indicators have been updated to comply with the <i>Field Indicators of Hydric Soils in the United States</i> , Version 8.0, 2016.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input checked="" type="checkbox"/> Redox Depressions (F8)		

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>6"</u>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>Surface</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/21/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp04
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S21 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): convex
 Slope (%): 2% Lat: 41.66737593 Long: -84.29557042 Datum: NAD83 UTM16N
 Soil Map Unit Name: Sloan silty clay loam, frequently flooded (So) NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>		
Remarks:				

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Quercus macrocarpa</u>	10%	No	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B)
2. <u>Gleditsia triacanthos</u>	25%	Yes	FACU	
3. <u>Morus alba</u>	10%	No	FAC	
4. <u>Aesculus glabra</u>	25%	Yes	FAC	
5. <u> </u>	70%	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u> </u>				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> That Are OBL, FACW, or FAC: <u> </u> A/B OBL species <u> </u> x1 = <u> </u> FACW species <u>10%</u> x2 = <u>0.20</u> FAC species <u>90%</u> x3 = <u>2.70</u> FACU species <u>50%</u> x4 = <u>2.00</u> UPL species <u>10%</u> x5 = <u>0.50</u> Column Totals: <u>160%</u> (A) <u>5.40</u> (B) Prevalence Index = B/A = <u>3.38</u>
2. <u> </u>				
3. <u> </u>				
4. <u> </u>				
5. <u> </u>				

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Lysimachia nummularia</u>	10%	Yes	FACW	Hydrophytic Vegetation Indicators: <u> </u> 1-Rapid Test for Hydrophytic Vegetation <u>X</u> 2-Dominance Test is >50% <u> </u> 3-Prevalence Index is ≤3.0 ¹ <u> </u> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Geum canadense</u>	10%	Yes	FAC	
3. <u>Carex blanda</u>	5%	No	FAC	
4. <u>Ambrosia trifida</u>	20%	Yes	FAC	
5. <u>Hesperis matronalis</u>	10%	Yes	FACU	
6. <u>Asarum canadense</u>	15%	Yes	FACU	
7. <u>Lamium purpureum</u>	10%	Yes	UPL	
8. <u>Hydrophyllum virginianum</u>	10%	Yes	FAC	
9. <u> </u>				
10. <u> </u>				
11. <u> </u>				
12. <u> </u>				
13. <u> </u>				
14. <u> </u>				
15. <u> </u>				
16. <u> </u>				
17. <u> </u>				
18. <u> </u>				
19. <u> </u>				
20. <u> </u>	90%	= Total Cover		

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u> </u>				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
2. <u> </u>				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8"	10YR 3/3	100					Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/21/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp05
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S21 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): concave
 Slope (%): 1% Lat: 41.6688546 Long: -84.30301796 Datum: NAD83 UTM16N
 Soil Map Unit Name: Millgrove loam (Mo) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u> </u>	No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>			

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Quercus rubra</u>	<u>40%</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Ulmus americana</u>	<u>35%</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Acer saccharum</u>	<u>20%</u>	<u>No</u>	<u>FACU</u>	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
4. <u>Populus deltoides</u>	<u>20%</u>	<u>No</u>	<u>FAC</u>	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67%</u> (A/B)
	<u>115%</u>	<u>= Total Cover</u>		

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	OBL species <u> </u> x1 = <u> </u> FACW species <u>35%</u> x2 = <u>0.70</u> FAC species <u>75%</u> x3 = <u>2.25</u> FACU species <u>60%</u> x4 = <u>2.40</u> UPL species <u> </u> x5 = <u> </u> Column Totals: <u>170%</u> (A) <u>5.35</u> (B)
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Prevalence Index = B/A = <u>3.15</u>
	<u> </u>	<u> </u>	<u> </u>	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Viola sororia</u>	<u>10%</u>	<u>No</u>	<u>FAC</u>	
2. <u>Toxicodendron radicans</u>	<u>40%</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Persicaria virginiana</u>	<u>5%</u>	<u>No</u>	<u>FAC</u>	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Remarks: (Include photo numbers here or on a separate sheet.)
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
11. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
12. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
13. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
14. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
15. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
16. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
17. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
18. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
19. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
20. <u> </u>	<u>55%</u>	<u>= Total Cover</u>		

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>
	<u> </u>	<u> </u>	<u> </u>

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 3/2	100					Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/21/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp06
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S27 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): concave
 Slope (%): 1% Lat: 41.66671023 Long: -84.27431176 Datum: NAD83 UTM16N
 Soil Map Unit Name: Sloan silty clay loam, frequently flooded (So) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u>X</u>	Is the Sampled Area within a Wetland?	Yes <u> </u>	No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u> </u>			

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B)
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
= Total Cover				

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ That Are OBL, FACW, or FAC: _____ A/B OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species <u>25%</u> x3 = <u>0.75</u> FACU species <u>65%</u> x4 = <u>2.60</u> UPL species _____ x5 = _____ Column Totals: <u>90%</u> (A) <u>3.35</u> (B) Prevalence Index = B/A = <u>3.72</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
= Total Cover				

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: _____ 1-Rapid Test for Hydrophytic Vegetation _____ 2-Dominance Test is >50% _____ 3-Prevalence Index is ≤3.0 ¹ _____ 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Setaria pumila</u>	<u>25%</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Poa annua</u>	<u>60%</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Stellaria media</u>	<u>5%</u>	<u>No</u>	<u>FACU</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
13. _____				
14. _____				
15. _____				
16. _____				
17. _____				
18. _____				
19. _____				
20. _____				
<u>90%</u> = Total Cover				

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1. _____				
2. _____				
= Total Cover				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10"	10YR 3/2	100					Silt Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes <u>X</u> No _____
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/21/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp07
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S27 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): concave
 Slope (%): 0% Lat: 41.66687614 Long: -84.27800512 Datum: NAD83 UTM16N
 Soil Map Unit Name: Sloan silty clay loam, frequently flooded (So) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u>	No <u> </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u> </u>		

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B)
1. <u>Ulmus rubra</u>	10%	Yes	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
	10%	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
		= Total Cover		

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td></td> <td>Multiply by:</td> <td></td> </tr> <tr> <td>That Are OBL, FACW, or FAC:</td> <td></td> <td></td> <td>A/B</td> </tr> <tr> <td>OBL species</td> <td>15%</td> <td>x1 =</td> <td>0.15</td> </tr> <tr> <td>FACW species</td> <td>90%</td> <td>x2 =</td> <td>1.80</td> </tr> <tr> <td>FAC species</td> <td>30%</td> <td>x3 =</td> <td>0.90</td> </tr> <tr> <td>FACU species</td> <td></td> <td>x4 =</td> <td></td> </tr> <tr> <td>UPL species</td> <td></td> <td>x5 =</td> <td></td> </tr> <tr> <td>Column Totals:</td> <td>135%</td> <td>(A)</td> <td>2.85 (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.11</u>	Total % Cover of:		Multiply by:		That Are OBL, FACW, or FAC:			A/B	OBL species	15%	x1 =	0.15	FACW species	90%	x2 =	1.80	FAC species	30%	x3 =	0.90	FACU species		x4 =		UPL species		x5 =		Column Totals:	135%	(A)	2.85 (B)
Total % Cover of:		Multiply by:																																		
That Are OBL, FACW, or FAC:			A/B																																	
OBL species	15%	x1 =	0.15																																	
FACW species	90%	x2 =	1.80																																	
FAC species	30%	x3 =	0.90																																	
FACU species		x4 =																																		
UPL species		x5 =																																		
Column Totals:	135%	(A)	2.85 (B)																																	
1. <u>Phalaris arundinacea</u>	60%	Yes	FACW																																	
2. <u>Echinochloa crus-galli</u>	10%	No	FACW																																	
3. <u>Carex lacustris</u>	15%	No	OBL																																	
4. <u>Panicum dichotomiflorum</u>	20%	Yes	FACW																																	
5. <u>Setaria pumila</u>	20%	Yes	FAC																																	
6. _____																																				
7. _____																																				
8. _____																																				
9. _____																																				
10. _____																																				
11. _____																																				
12. _____																																				
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14. _____																																				
15. _____																																				
16. _____																																				
17. _____																																				
18. _____																																				
19. _____																																				
20. _____																																				
	125%	= Total Cover																																		

Hydrophytic Vegetation Indicators:

 1-Rapid Test for Hydrophytic Vegetation
X 2-Dominance Test is >50%
X 3-Prevalence Index is ≤3.0¹
 4-Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Woody Vine Stratum (Plot size: 30' radius)				Hydrophytic Vegetation Present?
1. _____				
2. _____				
		= Total Cover		

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 3/1	98	10YR 3/4	2	C	PL	Silty Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>2"</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>NA</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/21/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp08
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S27 T9S R1E
 Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): none
 Slope (%): 4% Lat: 41.66244396 Long: -84.28427416 Datum: NAD83 UTM16N
 Soil Map Unit Name: Haskins loam, 0 to 3 percent slopes (HkA) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u> X </u>	Is the Sampled Area within a Wetland?		
Hydric Soil Present?	Yes <u> </u>	No <u> X </u>		Yes <u> </u>	No <u> X </u>
Wetland Hydrology Present?	Yes <u> </u>	No <u> X </u>			
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Morus alba</u>	60%	Yes	FAC		Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 2 </u> (A) Total Number of Dominant Species Across All Strata: <u> 4 </u> (B)
2. <u>Gleditsia triacanthos</u>	30%	Yes	FACU		
3. <u>Prunus serotina</u>	5%	No	FACU		
4. <u> </u>					
5. <u> </u>					
	95%	= Total Cover			

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Crataegus crus-galli</u>	5%	Yes	FAC		Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> That Are OBL, FACW, or FAC: <u> </u> A/B OBL species <u> </u> x1 = <u> </u> FACW species <u> 5% </u> x2 = <u> 0.10 </u> FAC species <u> 79% </u> x3 = <u> 2.37 </u> FACU species <u> 127% </u> x4 = <u> 5.08 </u> UPL species <u> 10% </u> x5 = <u> 0.50 </u> Column Totals: <u> 221% </u> (A) <u> 8.05 </u> (B) Prevalence Index = B/A = <u> 3.64 </u>
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
	5%	= Total Cover			

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Carex blanda</u>	10%	No	FAC		Hydrophytic Vegetation Indicators: <u> </u> 1-Rapid Test for Hydrophytic Vegetation <u> </u> 2-Dominance Test is >50% <u> </u> 3-Prevalence Index is ≤3.0 ¹ <u> </u> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Rubus occidentalis</u>	5%	No	UPL		
3. <u>Poa pratensis</u>	2%	No	FAC		
4. <u>Geum canadense</u>	2%	No	FAC		
5. <u>Urtica dioica</u>	5%	No	FACW		
6. <u>Arctium minus</u>	10%	No	FACU		
7. <u>Galium aparine</u>	2%	No	FACU		
8. <u>Hesperis matronalis</u>	80%	Yes	FACU		
9. <u>Leonurus cardiaca</u>	5%	No	UPL		
10. <u> </u>					
11. <u> </u>					
12. <u> </u>					
13. <u> </u>					
14. <u> </u>					
15. <u> </u>					
16. <u> </u>					
17. <u> </u>					
18. <u> </u>					
19. <u> </u>					
20. <u> </u>					
	121%	= Total Cover			

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u> </u>					Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>
2. <u> </u>					
				= Total Cover	

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 3/2	100					Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/21/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp09
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S28 T9S R1E
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): none
 Slope (%): 3% Lat: 41.65594161 Long: -84.29143322 Datum: NAD83 UTM16N
 Soil Map Unit Name: Lenawee silty clay loam, 0 to 1 percent slopes (Lf) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u>X</u>	Is the Sampled Area within a Wetland?		
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>		Yes <u> </u>	No <u>X</u>
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>			
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
= Total Cover					

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
= Total Cover					

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <i>Cirsium arvense</i>	5%	No	FACU		
2. <i>Schedonorus arundinaceus</i>	20%	Yes	FACU		
3. <i>Trifolium repens</i>	20%	Yes	FACU		
4. <i>Bromus inermis</i>	50%	Yes	FACU		
5. <i>Setaria faberi</i>	5%	No	FACU		
6. <i>Taraxacum officinale</i>	5%	No	FACU		
7. <i>Ambrosia trifida</i>	15%	No	FAC		
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
13. _____					
14. _____					
15. _____					
16. _____					
17. _____					
18. _____					
19. _____					
20. _____					
120% = Total Cover					

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
That Are OBL, FACW, or FAC: <u> </u>	<u>A/B</u>
OBL species <u> </u> x1 = <u> </u>	
FACW species <u> </u> x2 = <u> </u>	
FAC species <u>15%</u> x3 = <u>0.45</u>	
FACU species <u>105%</u> x4 = <u>4.20</u>	
UPL species <u> </u> x5 = <u> </u>	
Column Totals: <u>120%</u> (A)	<u>4.65</u> (B)

Prevalence Index = B/A = 3.88

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____					
2. _____					
= Total Cover					

Hydrophytic Vegetation Present? Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp09

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 3/2	100					Silt Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Sampling Point: dp10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 4/2	100					Silty Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/22/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp11
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S22 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): concave
 Slope (%): 3% Lat: 41.6720395 Long: -84.28123583 Datum: NAD83 UTM16N
 Soil Map Unit Name: Shinrock silty clay loam, 2 to 6 percent slopes, eroded (SfB2) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No <u> </u>
Hydric Soil Present?	Yes <u>X</u>	No <u> </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u> </u>			
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix nigra</u>	20%	Yes	OBL	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B)
2. <u>Juglans nigra</u>	10%	Yes	FACU	
3. _____				
4. _____				
5. _____				
30% = Total Cover				

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix interior</u>	10%	Yes	FACW	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ That Are OBL, FACW, or FAC: _____ A/B OBL species <u>20%</u> x1 = <u>0.20</u> FACW species <u>115%</u> x2 = <u>2.30</u> FAC species <u>10%</u> x3 = <u>0.30</u> FACU species <u>15%</u> x4 = <u>0.60</u> UPL species _____ x5 = _____ Column Totals: <u>160%</u> (A) <u>3.40</u> (B) Prevalence Index = B/A = <u>2.13</u>
2. <u>Sambucus nigra</u>	10%	Yes	FAC	
3. _____				
4. _____				
5. _____				
20% = Total Cover				

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Phalaris arundinacea</u>	100%	Yes	FACW	Hydrophytic Vegetation Indicators: <u> </u> 1-Rapid Test for Hydrophytic Vegetation <u>X</u> 2-Dominance Test is >50% <u>X</u> 3-Prevalence Index is ≤3.0 ¹ <u> </u> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Cirsium arvense</u>	5%	No	FACU	
3. <u>Urtica dioica</u>	5%	No	FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
13. _____				
14. _____				
15. _____				
16. _____				
17. _____				
18. _____				
19. _____				
20. _____				
110% = Total Cover				

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
2. _____				
_____ = Total Cover				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 4/2	85	5YR 5/8	15	C	M	Silty Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>Surface</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/22/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp12
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S22 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): none
 Slope (%): 4% Lat: 41.67202848 Long: -84.28244154 Datum: NAD83 UTM16N
 Soil Map Unit Name: Lenawee silty clay loam, 0 to 1 percent slopes (Lf) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u> X </u>	Is the Sampled Area within a Wetland?		
Hydric Soil Present?	Yes <u> </u>	No <u> X </u>		Yes <u> </u>	No <u> X </u>
Wetland Hydrology Present?	Yes <u> </u>	No <u> X </u>			
Remarks:					

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: 30' radius)				
1. <u>Morus alba</u>	20%	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 3 </u> (A) Total Number of Dominant Species Across All Strata: <u> 7 </u> (B)
2. <u>Juglans nigra</u>	10%	Yes	FACU	
3. <u>Ulmus rubra</u>	5%	No	FAC	
4. <u>Fraxinus pennsylvanica</u>	5%	No	FACW	
5. <u> </u>				
	40%	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)					Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 43% </u> (A/B)
1. <u>Ulmus americana</u>	5%	Yes	FACW		
2. <u>Juglans nigra</u>	10%	Yes	FACU		
3. <u>Fraxinus pennsylvanica</u>	5%	Yes	FACW		
4. <u> </u>					
5. <u> </u>					
	20%	= Total Cover			

	Absolute % Cover	Dominant Species?	Indicator Status	
Herb Stratum (Plot size: 5' radius)				
1. <u>Bromus inermis</u>	60%	Yes	FACU	Prevalence Index worksheet: Total % Cover of: <u> 170% </u> (A) Multiply by: <u> A/B </u> That Are OBL, FACW, or FAC: OBL species <u> </u> x1 = <u> </u> FACW species <u> 25% </u> x2 = <u> 0.50 </u> FAC species <u> 30% </u> x3 = <u> 0.90 </u> FACU species <u> 115% </u> x4 = <u> 4.60 </u> UPL species <u> </u> x5 = <u> </u> Column Totals: <u> 170% </u> (A) <u> 6.00 </u> (B) Prevalence Index = B/A = <u> 3.53 </u>
2. <u>Phalaris arundinacea</u>	10%	No	FACW	
3. <u>Hesperis matronalis</u>	25%	Yes	FACU	
4. <u>Solidago altissima</u>	10%	No	FACU	
5. <u>Verbena urticifolia</u>	5%	No	FAC	
6. <u> </u>				
7. <u> </u>				
8. <u> </u>				
9. <u> </u>				
10. <u> </u>				
11. <u> </u>				
12. <u> </u>				
13. <u> </u>				
14. <u> </u>				
15. <u> </u>				
16. <u> </u>				
17. <u> </u>				
18. <u> </u>				
19. <u> </u>				
20. <u> </u>				
	110%	= Total Cover		

Woody Vine Stratum (Plot size: 30' radius)					Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>
1. <u> </u>					
2. <u> </u>					
				= Total Cover	

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 4/2	100					Silty Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/22/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp13
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S22 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): concave
 Slope (%): 1% Lat: 41.67245661 Long: -84.28356941 Datum: NAD83 UTM16N
 Soil Map Unit Name: Shinrock silty clay loam, 2 to 6 percent slopes, eroded (SfB2) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u> </u>	No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u> </u>			
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83%</u> (A/B)
1. <u>Acer saccharum</u>	40%	Yes	FACU	
2. <u>Acer saccharinum</u>	10%	No	FACW	
3. <u>Ulmus rubra</u>	25%	Yes	FAC	
4. <u> </u>				
5. <u> </u>				
	75%	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> That Are OBL, FACW, or FAC: <u> </u> A/B OBL species <u>15%</u> x1 = <u>0.15</u> FACW species <u>26%</u> x2 = <u>0.52</u> FAC species <u>107%</u> x3 = <u>3.21</u> FACU species <u>40%</u> x4 = <u>1.60</u> UPL species <u> </u> x5 = <u> </u> Column Totals: <u>188%</u> (A) <u>5.48</u> (B) Prevalence Index = B/A = <u>2.91</u>
1. <u> </u>				
2. <u> </u>				
3. <u> </u>				
4. <u> </u>				
5. <u> </u>				
		= Total Cover		

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <u> </u> 1-Rapid Test for Hydrophytic Vegetation <u>X</u> 2-Dominance Test is >50% <u> </u> 3-Prevalence Index is ≤3.0 ¹ <u> </u> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Toxicodendron radicans</u>	15%	Yes	FAC	
2. <u>Geum canadense</u>	25%	Yes	FAC	
3. <u>Impatiens capensis</u>	5%	No	FACW	
4. <u>Elymus virginicus</u>	5%	No	FACW	
5. <u>Persicaria punctata</u>	10%	No	OBL	
6. <u>Carex grayi</u>	5%	No	FACW	
7. <u>Symphotrichum lanceolatum</u>	25%	Yes	FAC	
8. <u>Glyceria striata</u>	2%	No	OBL	
9. <u>Pilea pumila</u>	1%	No	FACW	
10. <u>Persicaria virginiana</u>	2%	No	FAC	
11. <u>Boehmeria cylindrica</u>	3%	No	OBL	
12. <u>Ranunculus sardous</u>	15%	Yes	FAC	
13. <u> </u>				
14. <u> </u>				
15. <u> </u>				
16. <u> </u>				
17. <u> </u>				
18. <u> </u>				
19. <u> </u>				
20. <u> </u>				
	113%	= Total Cover		

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1. <u> </u>				
2. <u> </u>				
		= Total Cover		

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 4/2	100					Silty Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): <u>NA</u>	Wetland Hydrology Present? Yes <u>X</u> No _____
Water Table Present?	Yes <u>X</u> No _____	Depth (inches): <u>3"</u>	
Saturation Present? (includes capillary fringe)	Yes <u>X</u> No _____	Depth (inches): <u>Surface</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/22/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp14
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S22 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): concave
 Slope (%): 4% Lat: 41.67219025 Long: -84.28325446 Datum: NAD83 UTM16N
 Soil Map Unit Name: Shinrock silty clay loam, 2 to 6 percent slopes, eroded (SfB2) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> x </u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u> </u>	No <u> x </u>
Hydric Soil Present?	Yes <u> </u>	No <u> x </u>			
Wetland Hydrology Present?	Yes <u> x </u>	No <u> </u>			

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	50%	Yes	FAC
2. <i>Juglans nigra</i>	5%	No	FACU
3. <i>Fraxinus pennsylvanica</i>	5%	No	FACW
4. _____			
5. _____			
	60% = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Crataegus mollis</i>	5%	Yes	FAC
2. <i>Aesculus glabra</i>	5%	Yes	FAC
3. <i>Fraxinus pennsylvanica</i>	10%	Yes	FACW
4. _____			
5. _____			
	20% = Total Cover		

Prevalence Index worksheet:

That Are OBL, FACW, or FAC:	<u>6</u>	Multiply by:	<u>A/B</u>
OBL species	<u> </u>	x1 =	<u> </u>
FACW species	<u>85%</u>	x2 =	<u>1.70</u>
FAC species	<u>105%</u>	x3 =	<u>3.15</u>
FACU species	<u>5%</u>	x4 =	<u>0.20</u>
UPL species	<u> </u>	x5 =	<u> </u>
Column Totals:	<u>195%</u> (A)		<u>5.05</u> (B)
Prevalence Index = B/A =			<u>2.59</u>

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Toxicodendron radicans</i>	35%	Yes	FAC
2. <i>Elymus virginicus</i>	20%	No	FACW
3. <i>Carex grayi</i>	50%	Yes	FACW
4. <i>Symphotrichum lanceolatum</i>	10%	No	FAC
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			
13. _____			
14. _____			
15. _____			
16. _____			
17. _____			
18. _____			
19. _____			
20. _____			
	115% = Total Cover		

Hydrophytic Vegetation Indicators:

 1-Rapid Test for Hydrophytic Vegetation
 X 2-Dominance Test is >50%
 3-Prevalence Index is ≤3.0¹
 4-Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
	<u> </u> = Total Cover		

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 4/2	100					Silty Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :	Test Indicators of Hydric Soils:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)
	<input type="checkbox"/> Iron-Manganese Masses (F12)
	<input type="checkbox"/> Very Shallow Dark Surface (F22)
	<input type="checkbox"/> Other (Explain in Remarks)

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required: check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> True Aquatic Fauna (B13)
	<input type="checkbox"/> True Aquatic Plants (B14)
	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
	<input type="checkbox"/> Presence of Reduced Iron (C4)
	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
	<input type="checkbox"/> Thin Muck Surface (C7)
	<input type="checkbox"/> Gauge or Well Data (D9)
	<input type="checkbox"/> Other (Explain in Remarks)

<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>NA</u></p> <p>Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>3"</u></p> <p>Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>Surface</u></p> <p>(includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes <u>X</u> No _____</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Arche Solar City/County: Fayette/Fulton Sampling Date: 10/22/2019
 Applicant/Owner: 7X Energy State: OH Sampling Point: dp15
 Investigator(s): Ben Hess & Maggie Mason Section, Township, Range: S28 T9S R1E
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): concave
 Slope (%): 5% Lat: 41.6651479 Long: -84.28936123 Datum: NAD83 UTM16N
 Soil Map Unit Name: Sloan silty clay loam, frequently flooded (So) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u>X</u>	Is the Sampled Area within a Wetland?	Yes <u> </u>	No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u> </u>			

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
= Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
= Total Cover			

Prevalence Index worksheet:

That Are OBL, FACW, or FAC:	_____	Multiply by:	_____
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	<u>90%</u>	x5 =	<u>4.50</u>
Column Totals:	<u>90%</u> (A)		<u>4.50</u> (B)

Prevalence Index = B/A = 5.00

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Glycine max</u>	<u>90%</u>	<u>Yes</u>	<u>UPL</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
13. _____	_____	_____	_____
14. _____	_____	_____	_____
15. _____	_____	_____	_____
16. _____	_____	_____	_____
17. _____	_____	_____	_____
18. _____	_____	_____	_____
19. _____	_____	_____	_____
20. _____	_____	_____	_____
90% = Total Cover			

Hydrophytic Vegetation Indicators:

____ 1-Rapid Test for Hydrophytic Vegetation
 ____ 2-Dominance Test is >50%
 ____ 3-Prevalence Index is ≤3.0¹
 ____ 4-Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
= Total Cover			

Hydrophytic Vegetation Present? Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: dp15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20"	10YR 4/2	100					Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators ³ :	Test Indicators of Hydric Soils:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)
	<input type="checkbox"/> Iron-Manganese Masses (F12)
	<input type="checkbox"/> Very Shallow Dark Surface (F22)
	<input type="checkbox"/> Other (Explain in Remarks)

³The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required: check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Surface Soil Cracks (B6)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Stunted or Stressed Plants (D1)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> FAC-Neutral Test (D5)

<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>NA</u></p> <p>Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>3"</u></p> <p>Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>Surface</u></p> <p>(includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes <u>X</u> No _____</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site: w01	Rater(s): BRH & MM	Date: October 21, 2019
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1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2 pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

Project: Arche Solar

7	8
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

24	32
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<ul style="list-style-type: none"> <input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input 	<ul style="list-style-type: none"> <input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other

13	45
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- None or none apparent (4)
- Recovered (3)
- Recovering (2)
- Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- Excellent (7)
- Very good (6)
- Good (5)
- Moderately good (4)
- Fair (3)
- Poor to fair (2)
- Poor (1)

4c. Habitat alteration. Score one or double check and average.

- None or none apparent (9)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<ul style="list-style-type: none"> <input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input checked="" type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants 	<ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

45
subtotal this page

0

subtotal this page

Project: Arche Solar

max 10 pts subtotal

Metric 5. Special Wetlands

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)
- Not Applicable (0)

0
0

max 20 pts subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- 0 Forest
- Mudflats
- Open water
- Other

6b. Horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high (4)
- Moderate (3)
- Moderately low (2)
- X Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- Extensive >75% cover (-5)
- Moderate 25-75% cover (-3)
- X Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 0 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but no always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

45

Grand Total (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/dsw/401/401.html>

Comments:

Site: w02	Rater(s): BRH & MM	Date: October 21, 2019
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1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2 pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

Project: Arche Solar

4	5
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

23	28
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other

13	41
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- None or none apparent (4)
- Recovered (3)
- Recovering (2)
- Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- Excellent (7)
- Very good (6)
- Good (5)
- Moderately good (4)
- Fair (3)
- Poor to fair (2)
- Poor (1)

4c. Habitat alteration. Score one or double check and average.

- None or none apparent (9)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input checked="" type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

41
subtotal this page

0

subtotal this page

Project: Arche Solar

max 10 pts subtotal

Metric 5. Special Wetlands

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)
- Not Applicable (0)

0
0

max 20 pts subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- 0 Forest
- Mudflats
- Open water
- Other

6b. Horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high (4)
- Moderate (3)
- Moderately low (2)
- X Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- Extensive >75% cover (-5)
- Moderate 25-75% cover (-3)
- X Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 0 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but no always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

41

Grand Total (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/dsw/401/401.html>

Comments:

Site: w03	Rater(s): BRH & MM	Date: October 22, 2019
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3	3
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2 pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

Project: Arche Solar

1	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

21	25
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> ditch <input checked="" type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input 	<ul style="list-style-type: none"> <input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other

10	35
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- None or none apparent (4)
- Recovered (3)
- Recovering (2)
- Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- Excellent (7)
- Very good (6)
- Good (5)
- Moderately good (4)
- Fair (3)
- Poor to fair (2)
- Poor (1)

4c. Habitat alteration. Score one or double check and average.

- None or none apparent (9)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<ul style="list-style-type: none"> <input type="checkbox"/> mowing <input checked="" type="checkbox"/> grazing <input checked="" type="checkbox"/> clearcutting <input checked="" type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants 	<ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

35
subtotal this page

5

subtotal this page

Project: Arche Solar

max 10 pts subtotal

Metric 5. Special Wetlands

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)
- Not Applicable (0)

5

5

max 20 pts subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 1 Emergent
- 0 Shrub
- 2 Forest
- Mudflats
- Open water
- Other

6b. Horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high (4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- Extensive >75% cover (-5)
- Moderate 25-75% cover (-3)
- Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but no always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

40

Grand Total (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/dsw/401/401.html>

Comments:

Site: w04	Rater(s): BRH & MM	Date: October 22, 2019
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3	3
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2 pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

Project: Arche Solar

1	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

17	21
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<ul style="list-style-type: none"> <input type="checkbox"/> ditch <input checked="" type="checkbox"/> tile <input checked="" type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input 	<ul style="list-style-type: none"> <input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other

8	29
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- None or none apparent (4)
- Recovered (3)
- Recovering (2)
- Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- Excellent (7)
- Very good (6)
- Good (5)
- Moderately good (4)
- Fair (3)
- Poor to fair (2)
- Poor (1)

4c. Habitat alteration. Score one or double check and average.

- None or none apparent (9)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> mowing <input type="checkbox"/> grazing <input checked="" type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants 	<ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

29
subtotal this page

3

subtotal this page

Project: Arche Solar

max 10 pts subtotal

Metric 5. Special Wetlands

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)
- Not Applicable (0)

3
3

max 20 pts subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 1 Emergent
- 0 Shrub
- 1 Forest
- Mudflats
- Open water
- Other

6b. Horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high (4)
- Moderate (3)
- X Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- Extensive >75% cover (-5)
- Moderate 25-75% cover (-3)
- X Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussocks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but no always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

32
Grand Total (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/dsw/401/401.html>

Comments:

Arche Solar Project

APPENDIX

D

STREAM ASSESSMENT FORMS

River Code: _____ **RM:** _____ **Stream:** Spring Creek (S01a)
Date: 11/21/2019 **Location:** Fulton County, Ohio
Scorers Full Name: Ben Hess **Affiliation:** Cardno

1.) SUBSTRATE

(Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE	<u>Pool</u>	<u>Riffle</u>		<u>Pool</u>	<u>Riffle</u>		
<input type="checkbox"/>	BLDR/SLBS (10)	<input type="checkbox"/>	<input type="checkbox"/>	GRAVEL (7)	35	25	SUBSTRATE ORIGIN
<input type="checkbox"/>	BOULDER (9)	5	10	<input checked="" type="checkbox"/>	SAND (6)	40	20
<input checked="" type="checkbox"/>	COBBLE (8)	15	30	<input type="checkbox"/>	BEDROCK (5)		
<input type="checkbox"/>	HARDPAN (4)		10	<input type="checkbox"/>	DETRITUS (3)		
<input type="checkbox"/>	MUCK (2)			<input type="checkbox"/>	ARTIFICIAL (0)		
<input type="checkbox"/>	SILT (2)	5	5	NOTE: Ignore Sludge Originating			
				From Point Sources			
NUMBER OF SUBSTRATE TYPES:				<input type="checkbox"/> 4 or More (2)			
(High Quality Only, Score 5 or >)				<input checked="" type="checkbox"/> 3 or Less (0)			
COMMENTS: _____							

SILT:	SUBSTRATE QUALITY
<input type="checkbox"/> SILT HEAVY (-2)	<input type="checkbox"/> SILT HEAVY (-2)
<input type="checkbox"/> SILT MODERATE (-1)	<input checked="" type="checkbox"/> SILT MODERATE (-1)
<input type="checkbox"/> SILT NORMAL (0)	<input type="checkbox"/> SILT NORMAL (0)
<input type="checkbox"/> SILT FREE (1)	<input type="checkbox"/> SILT FREE (1)
<input type="checkbox"/> EXTENSIVE (-2)	<input type="checkbox"/> EXTENSIVE (-2)
<input type="checkbox"/> MODERATE (-1)	<input type="checkbox"/> MODERATE (-1)
<input type="checkbox"/> NORMAL (0)	<input type="checkbox"/> NORMAL (0)
<input type="checkbox"/> NONE (1)	<input type="checkbox"/> NONE (1)

15
Max 20

2.) INSTREAM COVER

(Give each cover type a score of 0 to 3; see back for instructions)

AMOUNT: (Check ONLY One or

(Structure)	TYPE: Score All that Occur	Check 2 & AVERAGE)
<input type="checkbox"/> UNDERCUT BANKS (1)	<input type="checkbox"/> POOLS >70 cm (2)	<input type="checkbox"/> EXTENSIVE >75% (11)
<input type="checkbox"/> OVERHANGING VEGETATION (1)	<input type="checkbox"/> ROOTWADS (1)	<input type="checkbox"/> MODERATE 25-75% (7)
<input type="checkbox"/> 1 SHALLOWS (IN SLOW WATER) (1)	<input type="checkbox"/> BOULDERS (1)	<input checked="" type="checkbox"/> SPARSE 5-25% (3)
<input type="checkbox"/> ROOTMATS (1)	<input type="checkbox"/> 1 LOGS AND WOODY DEBRIS (1)	<input type="checkbox"/> NEARLY ABSENT <5%
COMMENTS: _____		

5
Max 20

3.) CHANNEL MORPHOLOGY

(Check ONLY One per Category OR Check 2 & AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS / OTHER
<input type="checkbox"/> HIGH (4)	<input type="checkbox"/> EXCELLENT (7)	<input type="checkbox"/> NONE (6)	<input type="checkbox"/> HIGH (3)	<input type="checkbox"/> SNAGGING
<input type="checkbox"/> MODERATE (3)	<input type="checkbox"/> GOOD (5)	<input type="checkbox"/> RECOVERED (4)	<input type="checkbox"/> MODERATE (2)	<input type="checkbox"/> RELOCATION
<input checked="" type="checkbox"/> LOW (2)	<input type="checkbox"/> FAIR (3)	<input type="checkbox"/> RECOVERING (3)	<input checked="" type="checkbox"/> LOW (1)	<input checked="" type="checkbox"/> CANOPY REMOVAL
<input type="checkbox"/> NONE (1)	<input checked="" type="checkbox"/> POOR (1)	<input checked="" type="checkbox"/> RECENT OR NO RECOVERY (1)		<input checked="" type="checkbox"/> DREDGING
COMMENTS: _____				

5
Max 20

4.) RIPARIAN ZONE AND BANK EROSION

(Check ONE box per bank OR Check 2 & AVERAGE per bank)

River Right Looking Downstream

RIPARIAN WIDTH	FLOOD PLAIN QUALITY (Past 100 ft Riparian)	BANK EROSION
(Per Bank)	(Most Predominant Per Bank)	(Per Bank)
<input type="checkbox"/> WIDE >50M (4)	<input type="checkbox"/> FOREST, SWAMP (3)	<input type="checkbox"/> NONE / LITTLE (3)
<input checked="" type="checkbox"/> MODERATE 10-50M (3)	<input type="checkbox"/> SHRUB OR OLD FIELD (2)	<input checked="" type="checkbox"/> MODERATE (2)
<input type="checkbox"/> NARROW 5-10M (2)	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD (1)	<input type="checkbox"/> HEAVY / SEVERE (1)
<input type="checkbox"/> VERY NARROW <5M (1)	<input type="checkbox"/> FENCED PASTURE (1)	
<input type="checkbox"/> NONE (0)		
COMMENTS: _____		

4
Max 10

5.) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX DEPTH	MORPHOLOGY	CURRENT VELOCITY (POOLS & RIFFLES!)
(Check 1 ONLY!)	(Check 1 or 2 & AVERAGE)	(Check All that Apply)
<input type="checkbox"/> >1m (6)	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH (2)	<input type="checkbox"/> EDDIES (1)
<input type="checkbox"/> 0.7-1m (4)	<input checked="" type="checkbox"/> POOL WIDTH = RIFFLE WIDTH (1)	<input type="checkbox"/> FAST (1)
<input type="checkbox"/> 0.4-0.7m (2)	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH (0)	<input checked="" type="checkbox"/> MODERATE (1)
<input checked="" type="checkbox"/> 0.2-0.4m (1)		<input checked="" type="checkbox"/> SLOW (1)
<input type="checkbox"/> <0.2m (pool = 0)	COMMENTS: _____	<input type="checkbox"/> TORRENTIAL (-1)
		<input type="checkbox"/> INTERSTITIAL (-1)
		<input type="checkbox"/> INTERMITTENT (-2)
		<input type="checkbox"/> VERY FAST (1)

4
Max 12

CHECK ONE OR CHECK 2 & AVERAGE			
RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input type="checkbox"/> *BEST AREAS >10cm (2)	<input type="checkbox"/> MAX >50cm (2)	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder (2)	<input type="checkbox"/> NONE (2)
<input checked="" type="checkbox"/> BEST AREAS 5-10cm (1)	<input checked="" type="checkbox"/> MAX <50cm (1)	<input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel (1)	<input type="checkbox"/> LOW (1)
<input type="checkbox"/> BEST AREAS <5cm (RIFFLE=0)		<input type="checkbox"/> UNSTABLE (Fine Gravel, Sand (0)	<input checked="" type="checkbox"/> MODERATE (0)
COMMENTS: _____			<input type="checkbox"/> EXTENSIVE (-1)
			<input type="checkbox"/> NO RIFFLE (Metric = 0)

3
Max 8

10
Max 10

6.) GRADIENT (ft/mi): <u>9</u>	DRAINAGE AREA (sq. mi.): <u>10.7</u>	%POOL: 20	%GLIDE: 40
		%RIFFLE: 20	%RUN: 20

*Best areas must be large enough to support a population of riffle-obligate species

Is Sampling Reach Representative of the Stream? (Y/N) Yes In Not, Explain _____

4	4
Subjective Rating (1-10)	Aesthetic Rating (1-10)

Gear:	Distance:	Water Clarity:	Water Stage:	Canopy % Open:
_____	_____	_____	_____	75

Gradient: Low Moderate High

Stream Measurements:

Average Width (ft)	Average Depth (ft)	Maximum Depth (ft)	Av Bankfull Width (ft)	Bankfull Mean Depth (ft)	W/D Ratio	Bankfull Max Depth (ft)	Floodprone Area Width (ft)	Entrench. Ratio
22	0.5	1	25	1	25.00	1.5	200	8.00

Major Suspected Sources of Impacts (Check All That Apply):

None	<input type="checkbox"/>
Industrial	<input type="checkbox"/>
WWTP	<input type="checkbox"/>
Ag	<input checked="" type="checkbox"/>
Livestock	<input type="checkbox"/>
Silviculture	<input type="checkbox"/>
Construction	<input type="checkbox"/>
Urban Runoff	<input type="checkbox"/>
CSOs	<input type="checkbox"/>
Suburban Impacts	<input type="checkbox"/>
Mining	<input type="checkbox"/>
Channelization	<input type="checkbox"/>
Riparian Removal	<input checked="" type="checkbox"/>
Landfills	<input type="checkbox"/>
Natural	<input type="checkbox"/>
Dams	<input type="checkbox"/>
Other Flow Alterations	<input type="checkbox"/>
Other:	<input type="checkbox"/>

instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 – Cover type absent; 1 – Cover type present in very small amounts or if more common of marginal quality; 2 – Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 – Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No

<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is Stream Ephemeral (no pools, totally dry or only damp spots)?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is There Water Upstream?
		How Far: _____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is There Water Close Downstream?
		How Far: _____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is Dry Channel Mostly Natural?



Qualitative Habitat Evaluation Index Field Sheet

QHEI Score: 41

River Code: _____ **RM:** _____ **Stream:** Spring Creek (S01b)
Date: 11/21/2019 **Location:** Fulton County, Ohio
Scorers Full Name: Ben Hess **Affiliation:** Cardno

1.) SUBSTRATE

(Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE	Pool	Riffle	Pool	Riffle
<input type="checkbox"/> BLDR/SLBS (10)	_____	_____	<input type="checkbox"/> GRAVEL (7)	20 25
<input type="checkbox"/> BOULDER (9)	_____	_____	<input checked="" type="checkbox"/> SAND (6)	40 15
<input type="checkbox"/> COBBLE (8)	15	10	<input type="checkbox"/> BEDROCK (5)	_____
<input checked="" type="checkbox"/> HARDPAN (4)	_____	30	<input type="checkbox"/> DETRITUS (3)	_____
<input type="checkbox"/> MUCK (2)	_____	_____	<input type="checkbox"/> ARTIFICIAL (0)	_____
<input type="checkbox"/> SILT (2)	25	20	NOTE: Ignore Sludge Originating	

From Point Sources
 4 or More (2)
 3 or Less (0)

SUBSTRATE ORIGIN		SUBSTRATE QUALITY	
Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)	
<input type="checkbox"/> LIMESTONE (1)	SILT:	<input type="checkbox"/> SILT HEAVY (-2)	11 Max 20
<input checked="" type="checkbox"/> TILLS (1)	<input type="checkbox"/> SILT MODERATE (-1)	<input type="checkbox"/> SILT NORMAL (0)	
<input type="checkbox"/> WETLANDS (0)	<input type="checkbox"/> SILT FREE (1)	<input type="checkbox"/> EXTENSIVE (-2)	
<input type="checkbox"/> HARDPAN (0)	<input type="checkbox"/> MODERATE (-1)	<input type="checkbox"/> NORMAL (0)	
<input type="checkbox"/> SANDSTONE (0)	<input type="checkbox"/> EMBEDDED NESS:	<input type="checkbox"/> NONE (1)	
<input type="checkbox"/> RIP/RAP (0)	<input type="checkbox"/> SHALE (-1)		
<input type="checkbox"/> LACUSTRINE (0)	<input type="checkbox"/> COAL FINES (-2)		

NUMBER OF SUBSTRATE TYPES:
(High Quality Only, Score 5 or >)

COMMENTS: _____

2.) INSTREAM COVER

(Give each cover type a score of 0 to 3; see back for instructions)

AMOUNT: (Check ONLY One or

(Structure)	TYPE: Score All that Occur	Check 2 & AVERAGE)	Cover
<input type="checkbox"/> UNDERCUT BANKS (1)	<input type="checkbox"/> POOLS >70 cm (2)	<input type="checkbox"/> EXTENSIVE >75% (11)	5 Max 20
<input type="checkbox"/> OVERHANGING VEGETATION (1)	<input type="checkbox"/> ROOTWADS (1)	<input type="checkbox"/> MODERATE 25-75% (7)	
<input type="checkbox"/> 1 SHALLOWS (IN SLOW WATER) (1)	<input type="checkbox"/> BOULDERS (1)	<input checked="" type="checkbox"/> SPARSE 5-25% (3)	
<input type="checkbox"/> ROOTMATS (1)	<input type="checkbox"/> 1 LOGS AND WOODY DEBRIS (1)	<input type="checkbox"/> NEARLY ABSENT <5%	
COMMENTS: _____			

3.) CHANNEL MORPHOLOGY

(Check ONLY One per Category OR Check 2 & AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS / OTHER	Channel
<input type="checkbox"/> HIGH (4)	<input type="checkbox"/> EXCELLENT (7)	<input type="checkbox"/> NONE (6)	<input type="checkbox"/> HIGH (3)	<input type="checkbox"/> SNAGGING	5 Max 20
<input type="checkbox"/> MODERATE (3)	<input type="checkbox"/> GOOD (5)	<input type="checkbox"/> RECOVERED (4)	<input type="checkbox"/> MODERATE (2)	<input type="checkbox"/> RELOCATION	
<input checked="" type="checkbox"/> LOW (2)	<input type="checkbox"/> FAIR (3)	<input type="checkbox"/> RECOVERING (3)	<input checked="" type="checkbox"/> LOW (1)	<input checked="" type="checkbox"/> CANOPY REMOVAL	
<input type="checkbox"/> NONE (1)	<input checked="" type="checkbox"/> POOR (1)	<input checked="" type="checkbox"/> RECENT OR NO RECOVERY (1)		<input checked="" type="checkbox"/> DREDGING	
				<input checked="" type="checkbox"/> ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

4.) RIPARIAN ZONE AND BANK EROSION

(Check ONE box per bank OR Check 2 & AVERAGE per bank)

River Right Looking Downstream

RIPARIAN WIDTH		FLOOD PLAIN QUALITY (Past 100 ft Riparian)		BANK EROSION		Riparian
(Per Bank)	R	(Most Predominant Per Bank)	L	R	(Per Bank)	
<input type="checkbox"/> WIDE >50M (4)	<input type="checkbox"/>	<input type="checkbox"/> FOREST, SWAMP (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> NONE / LITTLE (3)	3 Max 10
<input checked="" type="checkbox"/> MODERATE 10-50M (3)	<input type="checkbox"/>	<input type="checkbox"/> SHRUB OR OLD FIELD (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> MODERATE (2)	
<input type="checkbox"/> NARROW 5-10M (2)	<input type="checkbox"/>	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD (1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> HEAVY / SEVERE (1)	
<input type="checkbox"/> VERY NARROW <5M (1)	<input type="checkbox"/>	<input type="checkbox"/> FENCED PASTURE (1)	<input type="checkbox"/>	<input type="checkbox"/>		
<input checked="" type="checkbox"/> NONE (0)	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		

COMMENTS: _____

5.) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX DEPTH

MORPHOLOGY

CURRENT VELOCITY (POOLS & RIFFLES!)

(Check 1 ONLY!)	(Check 1 or 2 & AVERAGE)	(Check All that Apply)	Pool/ Current
<input type="checkbox"/> >1m (6)	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH (2)	<input type="checkbox"/> EDDIES (1)	4 Max 12
<input type="checkbox"/> 0.7-1m (4)	<input checked="" type="checkbox"/> POOL WIDTH = RIFFLE WIDTH (1)	<input type="checkbox"/> FAST (1)	
<input type="checkbox"/> 0.4-0.7m (2)	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH (0)	<input checked="" type="checkbox"/> MODERATE (1)	
<input checked="" type="checkbox"/> 0.2-0.4m (1)		<input checked="" type="checkbox"/> SLOW (1)	
<input type="checkbox"/> <0.2m (pool = 0)	COMMENTS: _____	<input type="checkbox"/> TORRENTIAL (-1)	

CHECK ONE OR CHECK 2 & AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS	Riffle/Run
<input type="checkbox"/> *BEST AREAS >10cm (2)	<input type="checkbox"/> MAX >50cm (2)	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder (2)	<input type="checkbox"/> NONE (2)	3 Max 8
<input checked="" type="checkbox"/> BEST AREAS 5-10cm (1)	<input checked="" type="checkbox"/> MAX <50cm (1)	<input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel (1)	<input type="checkbox"/> LOW (1)	
<input type="checkbox"/> BEST AREAS <5cm (RIFFLE=0)		<input type="checkbox"/> UNSTABLE (Fine Gravel, Sand (0)	<input checked="" type="checkbox"/> MODERATE (0)	

COMMENTS: _____ NO RIFFLE (Metric = 0)

Gradient 10
Max 10

6.) GRADIENT (ft/mi): 7.1 **DRAINAGE AREA** (sq. mi.): 11.9 **%POOL:** 25 **%GLIDE:** 25

%RIFFLE: 25 **%RUN:** 25

*Best areas must be large enough to support a population of riffle-obligate species

Is Sampling Reach Representative of the Stream? (Y/N) Yes In Not, Explain _____

3	3
Subjective Rating (1-10)	Aesthetic Rating (1-10)

Gear:	Distance:	Water Clarity:	Water Stage:	Canopy % Open:
_____	_____	_____	_____	75

Gradient: Low Moderate High

Stream Measurements:									
Average Width (ft)	Average Depth (ft)	Maximum Depth (ft)	Av Bankfull Width (ft)	Bankfull Mean Depth (ft)	W/D Ratio	Bankfull Max Depth (ft)	Floodprone Area Width (ft)	Entrench. Ratio	
10	0.5	1	12	1	12.00	1.5	200	16.67	

Major Suspected Sources of Impacts (Check All That Apply):	
None	<input type="checkbox"/>
Industrial	<input type="checkbox"/>
WWTP	<input type="checkbox"/>
Ag	<input checked="" type="checkbox"/>
Livestock	<input type="checkbox"/>
Silviculture	<input type="checkbox"/>
Construction	<input type="checkbox"/>
Urban Runoff	<input type="checkbox"/>
CSOs	<input type="checkbox"/>
Suburban Impacts	<input type="checkbox"/>
Mining	<input type="checkbox"/>
Channelization	<input type="checkbox"/>
Riparian Removal	<input checked="" type="checkbox"/>
Landfills	<input type="checkbox"/>
Natural	<input type="checkbox"/>
Dams	<input type="checkbox"/>
Other Flow Alterations	<input type="checkbox"/>
Other:	<input type="checkbox"/>

instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 – Cover type absent; 1 – Cover type present in very small amounts or if more common of marginal quality; 2 – Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 – Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No	
<input type="checkbox"/> <input checked="" type="checkbox"/>	Is Stream Ephemeral (no pools, totally dry or only damp spots)?
<input type="checkbox"/> <input checked="" type="checkbox"/>	Is There Water Upstream?
<input type="checkbox"/> <input checked="" type="checkbox"/>	Is There Water Close Downstream?
<input type="checkbox"/> <input checked="" type="checkbox"/>	Is Dry Channel Mostly Natural?



Qualitative Habitat Evaluation Index Field Sheet

QHEI Score: 26

River Code: _____ **RM:** _____ **Stream:** Deer Creek (S02)
Date: 11/22/2019 **Location:** Fulton County, Ohio
Scorers Full Name: Ben Hess **Affiliation:** Cardno

1.) SUBSTRATE

(Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE		Pool	Riffle	Pool	Riffle	SUBSTRATE ORIGIN		SUBSTRATE QUALITY	
<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)	
<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	LIMESTONE (1)	SILT:	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>					<input checked="" type="checkbox"/>	TILLS (1)		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	WETLANDS (0)		<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	HARDPAN (0)		<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input type="checkbox"/>	SANDSTONE (0)	EMBEDDED	<input type="checkbox"/>
						<input type="checkbox"/>	RIP/RAP (0)	NESS:	<input type="checkbox"/>
						<input type="checkbox"/>	LACUSTRINE (0)		<input type="checkbox"/>
						<input type="checkbox"/>	SHALE (-1)		<input type="checkbox"/>
						<input type="checkbox"/>	COAL FINES (-2)		<input type="checkbox"/>

BLDR/SLBS (10) _____ GRAVEL (7) _____
BOULDER (9) _____ SAND (6) 40 40
COBBLE (8) _____ BEDROCK (5) _____
HARDPAN (4) 10 10 DETRITUS (3) _____
MUCK (2) _____ ARTIFICIAL (0) _____
SILT (2) 50 50 NOTE: Ignore Sludge Originating

From Point Sources
 4 or More (2)
 3 or Less (0)

NUMBER OF SUBSTRATE TYPES: _____
(High Quality Only, Score 5 or >)

COMMENTS: _____

Substrate 5
Max 20

2.) INSTREAM COVER

(Give each cover type a score of 0 to 3; see back for instructions)

AMOUNT: (Check ONLY One or

(Structure)		TYPE: Score All that Occur		Check 2 & AVERAGE)	
<input type="checkbox"/>	UNDERCUT BANKS (1)	<input type="checkbox"/>	POOLS >70 cm (2)	<input type="checkbox"/>	EXTENSIVE >75% (11)
<input type="checkbox"/>	OVERHANGING VEGETATION (1)	<input type="checkbox"/>	ROOTWADS (1)	<input type="checkbox"/>	MODERATE 25-75% (7)
<u>1</u>	SHALLOWS (IN SLOW WATER) (1)	<input type="checkbox"/>	BOULDERS (1)	<input type="checkbox"/>	SPARSE 5-25% (3)
<input type="checkbox"/>	ROOTMATS (1)	<input type="checkbox"/>	OXBOWS, BACKWATERS (1)	<input checked="" type="checkbox"/>	NEARLY ABSENT <5%
		<input type="checkbox"/>	AQUATIC MACROPHYTES (1)		
		<input type="checkbox"/>	LOGS AND WOODY DEBRIS (1)		

COMMENTS: _____

Cover 2
Max 20

3.) CHANNEL MORPHOLOGY

(Check ONLY One per Category OR Check 2 & AVERAGE)

SINUOSITY		DEVELOPMENT		CHANNELIZATION		STABILITY		MODIFICATIONS / OTHER	
<input type="checkbox"/>	HIGH (4)	<input type="checkbox"/>	EXCELLENT (7)	<input type="checkbox"/>	NONE (6)	<input type="checkbox"/>	HIGH (3)	<input type="checkbox"/>	SNAGGING
<input type="checkbox"/>	MODERATE (3)	<input type="checkbox"/>	GOOD (5)	<input type="checkbox"/>	RECOVERED (4)	<input type="checkbox"/>	MODERATE (2)	<input checked="" type="checkbox"/>	RELOCATION
<input type="checkbox"/>	LOW (2)	<input type="checkbox"/>	FAIR (3)	<input type="checkbox"/>	RECOVERING (3)	<input checked="" type="checkbox"/>	LOW (1)	<input checked="" type="checkbox"/>	CANOPY REMOVAL
<input checked="" type="checkbox"/>	NONE (1)	<input checked="" type="checkbox"/>	POOR (1)	<input checked="" type="checkbox"/>	RECENT OR NO RECOVERY (1)			<input checked="" type="checkbox"/>	DREDGING
								<input checked="" type="checkbox"/>	IMPOUND ISLANDS
									LEVEED
									BANK SHAPING
									ONE SIDE CHANNEL MODIFICATIONS

COMMENTS: _____

Channel 4
Max 20

4.) RIPARIAN ZONE AND BANK EROSION

(Check ONE box per bank OR Check 2 & AVERAGE per bank)

River Right Looking Downstream

RIPARIAN WIDTH		FLOOD PLAIN QUALITY (Past 100 ft Riparian)		BANK EROSION	
<input type="checkbox"/>	WIDE >50M (4)	<input type="checkbox"/>	FOREST, SWAMP (3)	<input type="checkbox"/>	NONE / LITTLE (3)
<input type="checkbox"/>	MODERATE 10-50M (3)	<input type="checkbox"/>	SHRUB OR OLD FIELD (2)	<input checked="" type="checkbox"/>	MODERATE (2)
<input type="checkbox"/>	NARROW 5-10M (2)	<input type="checkbox"/>	RESIDENTIAL, PARK, NEW FIELD (1)	<input checked="" type="checkbox"/>	HEAVY / SEVERE (1)
<input checked="" type="checkbox"/>	VERY NARROW <5M (1)	<input type="checkbox"/>	FENCED PASTURE (1)	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	NONE (0)	<input type="checkbox"/>		<input type="checkbox"/>	

COMMENTS: _____

Riparian 2
Max 10

5.) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX DEPTH		MORPHOLOGY		CURRENT VELOCITY (POOLS & RIFFLES!)	
(Check 1 ONLY!)		(Check 1 or 2 & AVERAGE)		(Check All that Apply)	
<input type="checkbox"/>	>1m (6)	<input type="checkbox"/>	POOL WIDTH > RIFFLE WIDTH (2)	<input type="checkbox"/>	EDDIES (1)
<input type="checkbox"/>	0.7-1m (4)	<input checked="" type="checkbox"/>	POOL WIDTH = RIFFLE WIDTH (1)	<input type="checkbox"/>	FAST (1)
<input type="checkbox"/>	0.4-0.7m (2)	<input type="checkbox"/>	POOL WIDTH < RIFFLE WIDTH (0)	<input checked="" type="checkbox"/>	MODERATE (1)
<input checked="" type="checkbox"/>	0.2-0.4m (1)			<input checked="" type="checkbox"/>	SLOW (1)
<input type="checkbox"/>	<0.2m (pool = 0)				TORRENTIAL (-1)

COMMENTS: _____

Pool/Current 4
Max 12

RIFPLE DEPTH		RUN DEPTH		RIFPLE/RUN SUBSTRATE		RIFPLE/RUN EMBEDDEDNESS	
<input type="checkbox"/>	*BEST AREAS >10cm (2)	<input type="checkbox"/>	MAX >50cm (2)	<input type="checkbox"/>	STABLE (e.g., Cobble, Boulder (2)	<input type="checkbox"/>	NONE (2)
<input checked="" type="checkbox"/>	BEST AREAS 5-10cm (1)	<input checked="" type="checkbox"/>	MAX <50cm (1)	<input checked="" type="checkbox"/>	MOD. STABLE (e.g., Large Gravel (1)	<input type="checkbox"/>	LOW (1)
<input type="checkbox"/>	BEST AREAS <5cm (RIFPLE=0)			<input type="checkbox"/>	UNSTABLE (Fine Gravel, Sand (0)	<input checked="" type="checkbox"/>	MODERATE (0)
						<input type="checkbox"/>	EXTENSIVE (-1)

COMMENTS: _____ NO RIFPLE (Metric = 0)

Riffle/Run 3
Max 8

Gradient 6
Max 10

6.) GRADIENT (ft/mi): 4.8 **DRAINAGE AREA** (sq. mi.): 17.7 **%POOL:** **%GLIDE:** 100
%RIFPLE: **%RUN:**

*Best areas must be large enough to support a population of riffle-obligate species

Is Sampling Reach Representative of the Stream? (Y/N) Yes In Not, Explain _____

2	2
Subjective Rating (1-10)	Aesthetic Rating (1-10)

Gear:	Distance:	Water Clarity:	Water Stage:	Canopy % Open:
_____	_____	_____	_____	100

Gradient: Low Moderate High

Stream Measurements:									
Average Width (ft)	Average Depth (ft)	Maximum Depth (ft)	Av Bankfull Width (ft)	Bankfull Mean Depth (ft)	W/D Ratio	Bankfull Max Depth (ft)	Floodprone Area Width (ft)	Entrench. Ratio	
15	0.5	1	20	1	20.00	1.5	350	17.50	

Major Suspected Sources of Impacts (Check All That Apply):	
None	<input type="checkbox"/>
Industrial	<input type="checkbox"/>
WWTP	<input type="checkbox"/>
Ag	<input checked="" type="checkbox"/>
Livestock	<input type="checkbox"/>
Silviculture	<input type="checkbox"/>
Construction	<input type="checkbox"/>
Urban Runoff	<input type="checkbox"/>
CSOs	<input type="checkbox"/>
Suburban Impacts	<input type="checkbox"/>
Mining	<input type="checkbox"/>
Channelization	<input type="checkbox"/>
Riparian Removal	<input checked="" type="checkbox"/>
Landfills	<input type="checkbox"/>
Natural	<input type="checkbox"/>
Dams	<input type="checkbox"/>
Other Flow Alterations	<input type="checkbox"/>
Other:	<input type="checkbox"/>

instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 – Cover type absent; 1 – Cover type present in very small amounts or if more common of marginal quality; 2 – Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 – Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No	
<input type="checkbox"/> <input checked="" type="checkbox"/>	Is Stream Ephemeral (no pools, totally dry or only damp spots)?
<input checked="" type="checkbox"/> <input type="checkbox"/>	Is There Water Upstream?
	How Far: _____
<input checked="" type="checkbox"/> <input type="checkbox"/>	Is There Water Close Downstream?
	How Far: _____
<input type="checkbox"/> <input checked="" type="checkbox"/>	Is Dry Channel Mostly Natural?



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

52

SITE NAME/LOCATION Arche Solar
 SITE NUMBER s03 RIVER BASIN Maumee River DRAINAGE AREA (mi²) 0.98641
 LENGTH OF STREAM REACH (ft) 2153 LAT 41.671533 LONG -84.287682 RIVER CODE _____ RIVER MILE _____
 DATE 10/22/2019 SCORER B Hess & M Mason COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY
 MODIFICATIONS:

1. **SUBSTRATE** (Est. % of every type of substrate present. Check ONLY 2 predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is A + B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 PTS]	45
<input type="checkbox"/> BOULDER (>256mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 PTS]	10
<input type="checkbox"/> BEDROCK [16 PTS]		<input type="checkbox"/> FINE DETRITUS [3 PTS]	
<input type="checkbox"/> COBBLE (65-256mm) [12 pts]		<input type="checkbox"/> CLAY or HARDPAN [0 PT]	
<input type="checkbox"/> GRAVEL (2-64mm) [9 pts]		<input type="checkbox"/> MUCK [0 PT]	
<input checked="" type="checkbox"/> SAND (<2mm) [6 pts]	45	<input type="checkbox"/> ARTIFICIAL [3 PTS]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, & Bedrock 0 (A) **9** (B) **3**
 SCORE OF 2 MOST PREDOMINANT SUBSTRATE TYPES: **9** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points
 Substrate Max = 40
12
 A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61m (200') evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input checked="" type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm - 10 cm [15 pts]	41
<input type="checkbox"/> >22.5 - 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]	
<input type="checkbox"/> >10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]	
COMMENTS _____		

Pool Depth Max = 30
20

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m - 1.5 m (>3'3" - 4'8") [15 pts]	2.1
<input checked="" type="checkbox"/> >3.0 m - 4.0 m (>9'7" - 13') [25 pts]	<input type="checkbox"/> ≤1.0 m (≤ 3'3") [5 pts]	
<input checked="" type="checkbox"/> >1.5 m - 3.0 m (>4'8" - 9'7") [20 pts]		
COMMENTS _____		AVERAGE BANKFULL WIDTH (meters)

Bankfull Width Max = 30
20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY * NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Wide >10m
 Moderate 5-10m
 Narrow <5m
 None
 Mature Forest, Wetland
 Immature Forest, Shrub, or Old Field
 Residential, Park, New Field
 Fenced Pasture
 Conservation Tillage
 Urban or Industrial
 Open Pasture, Row Crop
 Mining or Construction

Comments _____

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

Comments _____

SINUOSITY (Number of bends per 61m (200ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5ft/100ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2ft/100ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10ft/100ft)
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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

s03

QHEI PERFORMED? Yes No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: _____ Distance from Evaluated Stream _____

CWH Name: _____ Distance from Evaluated Stream _____

EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: _____ Township/City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photographer Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 0

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. And attach results) Lab Number _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream? (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Hedwater Habitat Assessment Manual)

Fish observed? (Y/N) N Voucher(Y/N) N Salamander Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher(Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

32

SITE NAME/LOCATION Arche Solar
 SITE NUMBER s04 RIVER BASIN Maumee River DRAINAGE AREA (mi²) 0.06
 LENGTH OF STREAM REACH (ft) 1210 LAT 41.672039 LONG -84.283083 RIVER CODE _____ RIVER MILE _____
 DATE 10/22/2019 SCORER B Hess & M Mason COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY
 MODIFICATIONS:

1. **SUBSTRATE** (Est. % of every type of substrate present. Check ONLY 2 predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is A + B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 PTS]	65
<input type="checkbox"/> BOULDER (>256mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 PTS]	10
<input type="checkbox"/> BEDROCK [16 PTS]		<input type="checkbox"/> FINE DETRITUS [3 PTS]	
<input type="checkbox"/> COBBLE (65-256mm) [12 pts]		<input type="checkbox"/> CLAY or HARDPAN [0 PT]	
<input type="checkbox"/> GRAVEL (2-64mm) [9 pts]		<input type="checkbox"/> MUCK [0 PT]	
<input checked="" type="checkbox"/> SAND (<2mm) [6 pts]	25	<input type="checkbox"/> ARTIFICIAL [3 PTS]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, & Bedrock 0 (A) **9** (B) **3**
 SCORE OF 2 MOST PREDOMINANT SUBSTRATE TYPES: **9** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points
 Substrate Max = 40
12
 A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61m (200') evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> >30 centimeters [20 pts]	<input checked="" type="checkbox"/> >5 cm - 10 cm [15 pts]	8
<input type="checkbox"/> >22.5 - 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]	
<input type="checkbox"/> >10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]	

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): **8**

Pool Depth Max = 30
15

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m - 1.5 m (>3'3" - 4'8") [15 pts]	0.6
<input type="checkbox"/> >3.0 m - 4.0 m (>9'7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤ 3'3") [5 pts]	
<input type="checkbox"/> >1.5 m - 3.0 m (>4'8" - 9'7") [20 pts]		

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) **0.6**

Bankfull Width Max = 30
5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY * NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)			
L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wide >10m		Mature Forest, Wetland		Conservation Tillage	
Moderate 5-10m		Immature Forest, Shrub, or Old Field		Urban or Industrial	
Narrow <5m		Residential, Park, New Field		Open Pasture, Row Crop	
None		Fenced Pasture		Mining or Construction	

Comments _____

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

Comments _____

SINUOSITY (Number of bends per 61m (200ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5ft/100ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2ft/100ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10ft/100ft)
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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

s04

QHEI PERFORMED? Yes No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: _____ Distance from Evaluated Stream _____

CWH Name: _____ Distance from Evaluated Stream _____

EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: _____ Township/City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photographer Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 0

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. And attach results) Lab Number _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream? (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Hedwater Habitat Assessment Manual)

Fish observed? (Y/N) N Voucher(Y/N) N Salamander Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher(Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

47

SITE NAME/LOCATION Arche Solar
 SITE NUMBER s05 RIVER BASIN Maumee River DRAINAGE AREA (mi²) 0.14
 LENGTH OF STREAM REACH (ft) 647 LAT 41.672269 LONG -84.284932 RIVER CODE _____ RIVER MILE _____
 DATE 10/22/2019 SCORER B Hess & M Mason COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY
 MODIFICATIONS:

1. **SUBSTRATE** (Est. % of every type of substrate present. Check *ONLY* 2 predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is A + B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 PTS]	50
<input type="checkbox"/> BOULDER (>256mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 PTS]	10
<input type="checkbox"/> BEDROCK [16 PTS]		<input type="checkbox"/> FINE DETRITUS [3 PTS]	
<input type="checkbox"/> COBBLE (65-256mm) [12 pts]		<input type="checkbox"/> CLAY or HARDPAN [0 PT]	
<input type="checkbox"/> GRAVEL (2-64mm) [9 pts]		<input type="checkbox"/> MUCK [0 PT]	
<input checked="" type="checkbox"/> SAND (<2mm) [6 pts]	40	<input type="checkbox"/> ARTIFICIAL [3 PTS]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, & Bedrock 0 (A) **9** (B) **3**
 SCORE OF 2 MOST PREDOMINANT SUBSTRATE TYPES: **9** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points
 Substrate Max = 40
12
 A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61m (200') evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> >30 centimeters [20 pts]	<input checked="" type="checkbox"/> >5 cm - 10 cm [15 pts]	8
<input type="checkbox"/> >22.5 - 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]	
<input type="checkbox"/> >10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]	

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): **8**

Pool Depth Max = 30
15

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m - 1.5 m (>3'3" - 4'8") [15 pts]	1.5
<input type="checkbox"/> >3.0 m - 4.0 m (>9'7" - 13') [25 pts]	<input type="checkbox"/> ≤1.0 m (≤ 3'3") [5 pts]	
<input checked="" type="checkbox"/> >1.5 m - 3.0 m (>4'8" - 9'7") [20 pts]		

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): **1.5**

Bankfull Width Max = 30
20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY * NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)			
L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wide >10m		Mature Forest, Wetland		Conservation Tillage	
Moderate 5-10m		Immature Forest, Shrub, or Old Field		Urban or Industrial	
Narrow <5m		Residential, Park, New Field		Open Pasture, Row Crop	
None		Fenced Pasture		Mining or Construction	

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

SINUOSITY (Number of bends per 61m (200ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5ft/100ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2ft/100ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10ft/100ft)
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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

s05

QHEI PERFORMED? Yes No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: _____ Distance from Evaluated Stream _____

CWH Name: _____ Distance from Evaluated Stream _____

EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: _____ Township/City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photographer Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 0

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. And attach results) Lab Number _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream? (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Hedwater Habitat Assessment Manual)

Fish observed? (Y/N) N Voucher(Y/N) N Salamander Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher(Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →