Vinton Solar Energy LLC Case No. 17-774-EL-BGN

Application Part 4 of 5

Part 4 includes:

• Exhibit F TRC Wetlands and other Waters of the U.S. Delineation Report June 2017

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Exhibit F

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WETLANDS AND OTHER WATERS OF THE U.S. DELINEATION REPORT

Vinton Solar Energy Center

Vinton County, Ohio

June 2017

TRC Project No. 274099.0000.0003



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Acronyms

FAC	Facultative
FACU	Facultative upland
FACW	Facultative wetland
FEMA	Federal Emergency Management Agency
GPS	Global Positioning System
HHEI	Headwater Habitat Evaluation Index
HUC	hydrologic unit code
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OBL	Obligate wetland
Ohio EPA	Ohio Environmental Protection Agency
ORAM	Ohio Rapid Assessment Method
PEM	Palustrine emergent
PFO	Palustrine forested
PHWH	Modified Class I Primary Headwater Habitat
POW	Palustrine open-water
Project	Hardin Solar Energy Center Project
PSS	Palustrine Scrub-shrub
QHEI	Ohio EPA Qualitative Habitat Evaluation Index
Report	Wetlands and Other Waters of the U.S. Delineation Report
RPW	Relatively Permanent Water
TNW	Traditional Navigable Water
TRC	TRC Environmental Corporation
UPL	Upland
U.S.	United States
USACE	United States Army Corps of Engineers
USDA-NRCS	United States Department of Agriculture - Natural Resources Conservation Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VSE	Vinton Solar Energy, LLC



1.0 Introduction

On behalf of Vinton Solar Energy, LLC. (VSE), TRC Environmental Corporation (TRC) has prepared this Wetlands and Other Waters of the U.S. Delineation Report (Report) as part of the environmental studies conducted for the Vinton Solar Energy Center Project (Project), located in Vinton County, Ohio. This Report contains the methodology and results of the wetland identification and delineation investigations performed by TRC. Mr. Nathan Renaudin (TRC), an environmental scientist who has been performing wetland delineations for over six years, was the lead field scientist and primary author of this Report.

The primary objective of the survey was to identify and evaluate wetlands and other waters of the U.S. within the Study Area, such that the resources could be considered in the planning, design, permitting, and installation of the proposed Project in accordance with Ohio Administrative Code (OAC) Chapter 4906-4-08 (B)(1)(a)(iv-v)-(b).

The Study Area consists of the potential construction impact area and an approximately 100-foot (30-meter) buffer totaling approximately 1,250 acres (506 hectares) of pastureland, cultivated cropland, emergent herbaceous wetlands, developed land of varying intensities, and mixed and deciduous forest around the edges. Nearly, all of the Study Area had been surface mined for coal and reclaimed to modern standards, i.e. grading to approximate original contour, replacement of topsoil and revegetation with a stable ground cover (USDA 2016) (USGS 1994). Currently, the Study Area is privately-owned land being used primarily to raise cattle (Appendix A, Figure 1).

The Study Area lies within the Unglaciated Plateau section of the Allegheny Plateau physiographic province of Ohio (Wilkin, Nava and Griffith 2011). The Unglaciated Plateau covers southeastern Ohio and contains deep valleys, high hills, and winding streams (ODNR 2017). Sandstone is common in the region and supports a variety of cliffs, gorges, natural bridges and waterfalls. A long belt of high hills stretching from Monroe to Columbiana Counties divides eastward and westward flowing streams (ODNR 2017). Topography in the region consists of steep slopes and high ridges, with elevations ranging from 781 feet (238 meters) above mean sea level, to approximately 961 feet (293 meters) above mean sea level along the ridgetops. The proposed Project is located within the Ohio River drainage basin. The United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) maintains a classification system for identifying watersheds by hydrologic unit code (HUC). The Project is located within the Raccoon-Symmes (8-Digit HUC: 05090101) river basin (USDA-NRCS 2013). The streams and



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tributaries found within the Study Area include unnamed tributaries to Raccoon Creek and Elk Fork. The Study Area is located within Elk Township in Vinton County, Ohio (Appendix A, Figure 1).



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2.0 METHODOLOGY

Pursuant to the USACE wetlands and other waters of the U.S. delineation methodology, potential wetland and other waters of the U.S. located within the Study Area were identified, delineated, and mapped through the combined use of existing available public source information and field investigations.

2.1 DESKTOP REVIEW METHODOLOGY

The sources utilized for the desktop review included: the United States Geological Survey (USGS) Zaleski, Ohio (1985) and McArthur (1961) 7.5 minute series topographical quadrangles (Appendix A, Figure 1), soil datasets acquired from the Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2016) for Vinton County, Ohio (Appendix A, Figure 2), the United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) for Ohio (Appendix A, Figure 3), and the Federal Emergency Management Agency (FEMA) flood hazard risk map (FEMA 2016; Appendix A, Figure 4). Sources were reviewed to identify conditions that may be present at the Study Area. The results of the desktop review were used to aid in the field investigation.

2.2 FIELD METHODOLOGY-WETLANDS

Wetland resources within the Study Area were identified and their boundaries determined in accordance with the United States Army Corps of Engineers *Wetlands Delineation Manual (1987 Manual)* (USACE 1987), utilizing the *Regional Supplement to the U.S. Army Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0) (Regional Supplement)* (USACE 2012). Consistent with the *1987 Manual*, wetland determinations were based on dominant plant species, soil characteristics, and hydrologic characteristics. In addition, wetlands and other waters of the U.S. were evaluated in accordance with the Ohio Environmental Protection Agency (Ohio EPA) as part of the State of Ohio's Water Quality Standards (OAC Chapter 3745-1). Areas that exhibit hydric soils, wetland hydrology, and a dominance of hydrophytic vegetation were considered potentially jurisdictional wetlands. Wetlands or other waters of the U.S. are considered potentially jurisdictional until verified by the USACE (USACE 2008).

Since the majority of Study Area was located in reclaimed coal mined land, most of the wetlands have signs of hydrologic regime change, multiple vegetative influences and soil overturn. These wetlands are identified as "problematic" and specific influences were documented within the Wetland Determination Data Forms-Eastern Mountains and Piedmont Region. A photographic log of field observations is



presented in Appendix B. Completed USACE Wetland Determination Data Forms-Eastern Mountains and Piedmont Region are presented in Appendix C.

Soils were examined by excavating a soil pit with a shovel approximately 12 to 20 inches (30 to 51 centimeters) below the ground surface. The exposed soil profile was examined for characteristics using hydric soil criteria described in the National Technical Committee for Hydric Soils *Field Indicators of Hydric Soils in the United States* (USDA 2010). Hue, value, and chroma of the matrix (e.g., 10YR 6/1) and mottles (e.g., 10YR 5/6) of moist soils are examined, as determined by using the *Munsell Soil Color Chart* (Munsell Color 2009). Mottled soils with a matrix chroma of 2 or less, or unmottled soils with a matrix chroma of 1 or less are considered to exhibit hydric soil characteristics (USDA 2010). Mottled soils with a matrix chroma greater than 2 and unmottled soils with a matrix chroma greater than 1 are considered to exhibit non-hydric characteristics.

The hydrology criterion in the *Regional Supplement* requires that an area exhibit at least one primary or at least two secondary indicators of wetland hydrology. Examples of primary wetland hydrology indicators include standing water or saturated soils, water marks on trees, drift lines, water-stained leaves, and oxidized root zones surrounding living roots. Examples of secondary wetland hydrology indicators include drainage patterns, microtopographic relief, presence of crayfish burrows, and sparsely vegetated concave surfaces. Additional secondary signs of hydrology include visible saturation on aerial photography and a positive facultative (FAC)-neutral test as described below (USACE 2010).

Plants were identified to the lowest taxonomic level possible, using professional texts to differentiate cryptic taxa (E. L. Braun 1967) (E. L. Braun 1969) (Gleason and Cronquist 1991) (Holmgren 1998) (Mohlenbrock 2001) (Mohlenbrock 2001) (Mohlenbrock 2002) (Mohlenbrock 2006) (Mohlenbrock 2011) (Newcomb 1977) (Rhoads and Block 2007, Rothrock 2009) (Stein, Binion and Acciavatti 2003) (Voss and Reznicek 2012) (Weakley, Ludwig and Townsend 2013). Dominant vegetation for each community was determined by estimating dominant species in the tree, sapling, shrub, herbaceous, and woody vine strata. Dominant species was determined by using the 50/20 dominance rule for each stratum, which was accomplished by estimating the percent areal cover for each species. The relative percent areal cover was calculated for each species by dividing each species percent cover by the total percent cover for all species and multiplying by 100. The species were then arranged in descending order of relative percent cover. A running total was kept by adding the relative cover of each species starting with the species with the highest relative cover until the total cover equals 50. All species included in this calculation are regarded as dominant. Species



of equal cover value that contributed to meeting the sum of 50 are also considered dominant. Additionally, other species that solely accounted for 20 percent or more of the relative percent cover were also considered dominant species.

The indicator status of each dominant species was determined. An indicator status of obligate wetland (OBL), facultative wetland (FACW), FAC, facultative upland (FACU) and/or upland (UPL) has been assigned to each plant species in the *U.S. Army Corps of Engineers National Wetlands Plant List* (Lichvar, Banks, et al. 2016). In accordance with the aforementioned guidance, an area was classified with hydrophytic vegetation when, under normal circumstances, more than 50 percent of the composition of the dominant species from all strata has OBL, FACW, and/or FAC species.

A FAC-neutral test was calculated for each data set as a means of determining the presence of wetland hydrology. This test considers all FAC species as neutral for wetland determination and compares the number of dominant species wetter than FAC (e.g. OBL, FACW) against the number of dominant species drier than FAC (e.g. FACU, UPL). A positive FAC-neutral test results when dominant species wetter than FAC are more prevalent than dominant species drier than FAC. A positive FAC-neutral test is a secondary indicator of wetland hydrology.

Plots, and consequently communities, that meet the three criteria of hydric soils, wetland hydrology, and hydrophytic vegetation are considered wetlands. Wetland boundaries were mapped where one or more of these criteria gave way to upland characteristics. Samples were also taken in nearby apparent upland areas to confirm that one or more of the criteria were not met in these locations.

Wetlands within the Study Area were classified according to the USFWS *Classification of Wetlands and Deepwater Habitats for the United States* (Cowardin, et al. 1979). Wetland classifications were based upon hydrophytic vegetation type and dominance found within the delineated wetland, and included the following classification types: palustrine emergent (PEM), palustrine scrub-shrub (PSS), palustrine forested (PFO), palustrine open-water (POW), or a combination of these classifications (Cowardin, et al. 1979).

The wetland boundaries were flagged, and surveyed through the use of a Global Positioning System (GPS) receiver capable of sub-meter accuracy (model R1 handheld, Trimble, Sunnyvale, California). The delineated wetlands were labeled (e.g., *Wetland 1, Wetland 2*, etc.), and correspond to the wetlands



illustrated on the Delineated Resources map provided in Appendix A, as Figure 5A). The wetland boundaries were mapped as polygons and the wetland areal extents were calculated using the shapefile properties utility in ArcMap.

Wetland boundaries that extended beyond the Study Area were collected to the edge of the Study Area and categorized as "Open Ended" within the GPS data to indicate that the wetland continued. Wetlands that were just outside the Study Area had points collected on them and were indicated as "Outside Study Area" within the GPS data.

2.3 Ohio Rapid Assessment Method

In accordance with Ohio requirements, delineated wetlands within the Study Area were categorized using the Ohio Rapid Assessment Method (ORAM Version 5.0) (Mack 2001). The scoring sheets (data forms) for individual wetlands were completed and were the basis for the provisional wetland categorizations. The ORAM is designed to aid in the determination of wetland categories as defined in Ohio's Wetland Antidegradation Rule (OAC Rule 3745-1-54). Wetlands were categorized as low quality (Category 1) to high quality (Category 3). The score from the Quantitative Rating ranges from 0 to 100 and the scoring breakdown for wetland regulatory categories is as follows:

Category 1: 0 – 29.9 (Low Quality) Category 1 or Gray Zone: 30 – 34.9 Category 2: 35 – 59.9 (Moderate Quality) Category 2 or 3: 60 – 64.9 Category 3: 65 - 100 (High Quality)

The ORAMs were performed using detailed field evaluations and supplemented by aerial photographic interpretation to aid in boundary determination estimates located beyond the Study Area. While the score and conclusions of the ORAM are designed such that they correlate well with more detailed measures of the biology of wetland, they are not considered absolutely definite. ORAM scores are considered preliminary until verified by the Ohio EPA. Refer to Appendix D for completed data forms.

The scoring sheets (ORAM Version 5.0 Field Form Quantitative Rating) for individual wetlands were completed and were the basis for the provisional wetland categorizations. The delineated wetlands and preliminary ORAM scores are illustrated in Appendix A, Figure 5B.



2.4 OTHER WATERS OF THE U.S.

The Study Area was screened for the presence of areas that meet the criteria for "other waters of the U.S." specified in the *1987 Manual*. Other waters of the U.S. consist of ephemeral, intermittent, and perennial streams, as well as open water features, such as ponds. Drainage channels that exhibited defined "bed and bank" and an ordinary high water mark in the channel were identified and delineated as jurisdictional streams. Drainage channels that do not exhibit an ordinary high water mark and/or defined bed and bank were regarded as non-jurisdictional drainages. Jurisdictional determinations are made by the USACE; therefore, all determinations are preliminary until verified by the USACE.

Streams identified during delineations were evaluated using the methods outlined in *Biological Criteria for the Protection of Aquatic Life* (OEPA 1986; 2015). These approved assessment methods provide an empirical, quantified evaluation of streams as required by the State of Ohio for permitting and mitigation purposes. These classifications are regularly utilized to determine the level of compensatory mitigation that may be needed for impacts to waters of the U.S. Depending on the size of the stream's drainage area, data collection for all potential streams includes completion of either the Ohio EPA Qualitative Habitat Evaluation Index (QHEI) or the Headwater Habitat Evaluation Index (HHEI) Data Form. Where coverage was available, the, drainage area was calculated using automated basin characteristics from USGS StreamStats v 4.0: Ohio (USGS 2016b).

Following Ohio EPA guidance, any stream with a drainage area of greater than 1.0 square mile (2.6 square kilometers), or which has pools with maximum depths over 15.8 inches (40.0 centimeters), as determined by measuring pool depth within the stream, was evaluated using the QHEI. Data on these streams were collected in the QHEI form provided by the Ohio EPA. The QHEI is composed of six principal metrics: substrate, instream cover, channel morphology, riparian zone and bank erosion, pool/glide and riffle-run quality, and map gradient. Each metric is scored separately and summed to obtain the total QHEI score. Narrative ranges vary slightly in smaller streams (<20 square miles; 52 square kilometers) compared to larger streams. For smaller streams: Excellent >70, Good 55-69, Fair 43-54, Poor 30-42, and Very Poor <30; for larger streams: Excellent >75, Good 60-74, Fair 45-59, Poor 30-44, and Very Poor <30.

The HHEI was utilized to score streams with a drainage area of less than 1.0 square mile (2.6 square kilometers). Data on these streams were collected on the HHEI forms, provided by the Ohio EPA. Observational data regarding the physical nature of the stream corridor including stream flow, riparian zone land use and buffer width, and channel modification were recorded. Measurements included bankfull



width, maximum pool depth and substrate composition. A biological survey was conducted if deemed necessary using best professional judgment.

Using the scoring method associated with these forms, a Class I, II, or III was assigned to each stream (with Class I being the least protected and Class III being the most protected). Streams that exhibited a major change in morphology were scored at multiple representative locations. QHEI and HHEI scores are considered preliminary until verified by the Ohio EPA. Appendix E provides completed Ohio EPA QHEI Field Sheets and HHEI Data Forms. The delineated wetlands and QHEI and HHEI scores are illustrated in Appendix A, Figure 5B.

The Study Area was investigated for other waters of the U.S. that are considered "open water" by the USACE. For this project, open water was considered to be "an area that, during a year with normal patterns of precipitation, has standing or flowing water for sufficient duration to establish an ordinary high water mark, where aquatic vegetation is either non-emergent, sparse, or absent" (USACE no date (n.d.)). The derived open water (pond) boundaries were surveyed through the use of a GPS receiver capable of submeter accuracy (model R1 handheld, Trimble, Sunnyvale, California). The delineated open waters were labeled (e.g., *Delineated Pond 1, Delineated Pond 2*, etc.), and correspond to the resource features illustrated on the Delineated Resource map (Appendix A, Figure 5A). The open water boundaries are mapped as polygons and the areas are calculated using the shapefile properties utility in ArcMap.



3.0 RESULTS

During the investigations identified within this Report, 17 wetlands, 17 streams, and 17 open water resources were identified and delineated within the Study Area (Tables 3.1, 3.2.1, and 3.2.2).

		.		Acreage (Hectares) of Jurisdictional Waters	
Resource ID	Field Survey Date	Location (Latitude, Longitude)	Provisional Determination	in Study Area and Cowardin Classification ¹	Acreage of Jurisdictional Waters Impacted
Wetland 1	4/4/17	39.272410, -82.45133	Water of the U.S., Wetland	1.04 (0.42)/PEM	0.00
Wetland 2	4/4/17	39.276106, -82.449888	Water of the U.S., Wetland	0.20(0.08)/PEM	0.00
Wetland 3	4/4/17	39.276106, -82.449888	Water of the U.S., Wetland	0.21(0.08)/PEM/PSS	0.00
Wetland 4	4/4/17	39.276315, -82.448510	Water of the U.S., Wetland	0.21(0.08)/PEM	0.18
Wetland 5	4/4/17	39.273748, -82.439297	Water of the U.S., Wetland	2.27(0.92)/PEM	0.00
Wetland 6	4/4/17	39.274811, -82.441962	Water of the U.S., Wetland	0.87(0.35)/PEM	0.02
Wetland 7	4/4/17	39.276210, -82.437901	Water of the U.S., Wetland	4.89(1.98)/PEM	1.31
Wetland 8	4/5/17	39.254545, -82.450319	Water of the U.S., Wetland	0.04(0.02)/PEM	0.00
Wetland 9	4/5/17	39.259318, -82.450941	Water of the U.S., Wetland	0.26(0.11)/PEM	0.11
Wetland 10	4/6/17	39.266278, -82.436575	Water of the U.S., Wetland	0.31(0.13)/PEM/PSS	0.00
Wetland 11	4/6/17	39.269150, -82.440516	Water of the U.S., Wetland	2.28(0.92)/PEM	0.32
Wetland 12	4/6/17	39.265649, -82.437574	Water of the U.S., Wetland	0.07(0.03)/PEM	0.07
Wetland 13	4/6/17	39.270208, -82.449238	Water of the U.S., Wetland	0.17(0.07)/PEM	0.17

Table 3.1Potential Wetlands and Other Waters of the U.S. Investigated and Jurisdictional
Determinations within the Study Area



Resource ID	Field Survey Date	Location (Latitude, Longitude)	Provisional Determination	Acreage (Hectares) of Jurisdictional Waters in Study Area and Cowardin Classification ¹	Acreage of Jurisdictional Waters Impacted
Wetland 14	4/6/17	39.26563, -82.448479	Water of the U.S., wetland	0.60(0.24)/PEM	0.00
Wetland 15	4/6/17	39.265109, -82.449004	Water of the U.S., Wetland	0.13(0.05)/PEM	0.00
Wetland 16	4/7/17	39.273639, -82.434730	Water of the U.S., wetland	0.04(0.02)/PEM	0.00
Wetland 17	4/7/17	39.2735823, -82.434111	Water of the U.S., Wetland	0.20(0.08)/PEM	0.00
Stream 1	4/4/17	39.282403, -82.446157	Water of the U.S., Stream	0.04(0.16)/R5	0.00
Stream 2	4/4/17	39.279931, -82.436295	Water of the U.S., Stream	0.03(0.01)/R4	0.00
Stream 3	4/5/17	39.249595, -82.450919	Water of the U.S., Stream	0.01(0.004)/R6	0.00
Stream 4	4/5/17	39.259100, -82.451057	Water of the U.S., Stream	0.03(0.01)/R4	0.02
Stream 5	4/6/17	39.264303, -82.439159	Water of the U.S., Stream	0.01(0.004)/R4	0.00
Stream 6	4/6/17	39.263891, -82.440346	Water of the U.S., Stream	0.06(0.02)/R5	0.00
Stream 7	4/6/17	39.261682, -82.441246	Water of the U.S., Stream	0.01(0.004)/R4	0.00
Stream 8	4/6/17	39.261768, -82.441377	Water of the U.S., Stream	0.01(0.004)/R4	0.00
Stream 9	4/6/17	39.263743, -82.444095	Water of the U.S., Stream	0.01(0.004)/R4	0.00
Stream 10	4/6/17	39.264828, -82.444182	Water of the U.S., Stream	0.01(0.004)/R4	0.00
Stream 11	4/6/17	39.266508, -82.436062	Water of the U.S., Stream	0.11(0.04)/R5	0.00
Stream 12	4/6/17	39.268753, -82.441925	Water of the U.S., Stream	0.06(0.02)/R4	0.00



Resource ID	Field Survey Date	Location (Latitude, Longitude)	Provisional Determination	Acreage (Hectares) of Jurisdictional Waters in Study Area and Cowardin Classification ¹	Acreage of Jurisdictional Waters Impacted
Stream 13	4/6/17	39.268093, -82.448709	Water of the U.S., Stream	0.21(0.08)/R4	0.11
Stream 14	4/6/17	39.265280, -82.448221	Water of the U.S., Stream	0.04(0.02)/R4	0.00
Stream 15	4/6/17	39.271042, -82.442770	Water of the U.S., Stream	0.01(0.004)/R4	0.00
Stream 16	4/7/17	39.271307, -82.438245	Water of the U.S., Stream	0.05(0.02)/R4	0.00
Stream 17	4/7/17	39.272974, -82.434954	Water of the U.S., Stream	0.02(0.01)/R4	0.00
Pond 1	4/4/17	39.276580, -82.447578	Water of the U.S., Open water	0.52(0.10)/PUBG	0.00
Pond 2	4/4/17	39.280488, -82.438724	Water of the U.S., Open water	0.20(0.08)/PUBG	0.03
Pond 3	4/4/17	39.279853, -82.437565	Water of the U.S., Open water	0.28(0.11)/PUBG	0.00
Pond 4	4/4/17	39.281334, -82.444956	Water of the U.S., Open water	0.21(0.08)/PUBG	0.21
Pond 5	4/4/17	39.282633, -82.446987	Water of the U.S., Open water	0.69(0.28)/PUBG	0.00
Pond 6	4/4/17	39.276621, -82.443349	Water of the U.S., Open water	2.87(1.16)/PUBG	0.00
Pond 7	4/4/17	39.276580, -82.447578	Water of the U.S., Open water	0.17(0.07)/PUBG	0.00
Pond 8	4/4/17	39.273311, -82.434416	Water of the U.S., Open water	0.35(0.14)/PUBG	0.00



Resource ID	Field Survey Date	Location (Latitude, Longitude)	Provisional Determination	Acreage (Hectares) of Jurisdictional Waters in Study Area and Cowardin Classification ¹	Acreage of Jurisdictional Waters Impacted
Pond 9	4/5/17	39.251677, -82.455963	Water of the U.S., Open water	0.64(0.26)/PUBG	0.00
Pond 10	4/5/17	39.249763, -82.456215	Water of the U.S., Open water	0.36(0.15)/PUBG	0.17
Pond 11	4/5/17	39.250770, -82.452287	Water of the U.S., Open water	0.89(0.36)/PUBG	0.01
Pond 12	4/5/17	39.254225, -82.454394	Water of the U.S., Open water	4.19(1.70)/PUBG	0.00
Pond 13	4/5/17	39.255923, -82.458291	Water of the U.S., Open water	0.42(0.17)/PUBG	0.00
Pond 14	4/5/17	39.252792, -82.456987	Water of the U.S., Open water	0.74(0.30)/PUBG	0.00
Pond 15	4/5/17	39.269953, -82.454552	Water of the U.S., Open water	0.52(0.21)/PUBG	0.00
Pond 16	4/6/17	39.267323, -82.437478	Water of the U.S., Open water	2.24(0.91)/PUBG	0.00
Pond 17	4/6/17	39.271199, -82.436861	Water of the U.S., Open water	0.70(0.28)/PUBG	0.00

PEM = palustrine emergent

PSS = palustrine scrub/shrub

R4 = intermittent stream

R5 = perennial stream

R6 = ephemeral stream

PUBG = palustrine unconsolidated bottom, intermittently exposed



3.1 Background Resources

3.1.1 USGS Topographic Map

Based on desktop review, the Study Area contains 27 wetland features according to the Zaleski, Ohio (1985) and McArthur (1961) 7.5 minute series topographical quadrangles (Appendix A, Figure 1). The terrain is relatively flat to gently sloping with the higher ground being located nearest to Township Road 14. The elevation ranges from approximately 781 to 961 feet (238 to 293 meters) above mean sea level.

3.1.2 Soils

According to the soil dataset acquired from the NRCS Web Soil Survey for Vinton County, Ohio, the Study Area was underlain by eight different soil types; the eight are mapped as non-hydric (USDA 2017). The Bethesda and Wharton-Latham are soil series formed from surface mining reclamation (Table 3.1.1 and Appendix A, Figure 2).

Soil Code	Soil Name	Percent (%) in Study Area	Hydric Status
BhB	Bethesda Silty Clay Loam	32.20	Non-Hydric
BhC	Bethesda Silty Clay Loam	32.93	Non-Hydric
BhE	Bethesda Silty Clay Loam	2.17	Non-Hydric
GaE	Germano-Gilpin Complex	0.02	Non-Hydric
StF	Steinsburg-Gilpin Association	0.17	Non-Hydric
WhL1C1	Wharton-Latham Silt Loams	8.83	Non-Hydric
WhL1D1	Wharton-Latham Silt Loams	3.36	Non-Hydric
WhL1E1	Wharton-Latham Silt Loams	20.32	Non-Hydric

Table 3.1.1 Soils Mapped within the Study Area

3.1.3 National Wetland Inventory

According to the USFWS NWI (USFWS 2016), 18 freshwater open waters (PUBG), one freshwater forested (PFO)/scrub-shrub (PSS) wetland and two freshwater emergent (PEM) wetlands are mapped within the Study Area (Appendix A, Figure 3).

3.1.4 FEMA Flood Hazard

According to the FEMA Flood Hazard mapping (Community-Panel Numbers 390553 0005 A & 390553 0002 A, January 9, 1981), the Study Area is not located within a FEMA Flood Zone (FEMA 2016) (Appendix A, Figure 4).



3.2 DETAILED DELINEATIONS

TRC performed wetland and other waters of the U.S. identification and delineation on April 4, 2017 through April 7, 2017, at the beginning of the normal growing season in Ohio. Weather conditions were seasonably warm, in the high 40 degrees Fahrenheit (4 to 10 degrees Celsius) with light rain and partially sunny days. Native herbaceous vegetation had begun to sprout and was, at times, difficult to positively identify. The presence of apparent hydrology and hydric soil indicators, as well as identifiable plant species within the wetland area, allowed for positive wetland determinations. The USACE maintains the final authority that determines jurisdiction; therefore, statements about jurisdiction within this Report are preliminary and subject to final determination by the USACE and Ohio EPA.

3.2.1 Wetlands

The Study Area has been historically impacted by strip mining and is now actively grazed by cattle. Soils and hydrology throughout the Study Area have been influenced by these activities (USDA 2016). While some soil samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples.

During the course of this investigation, 17 wetlands were identified and delineated, and are listed in Table 3.2.1 described below and shown in Appendix A on Figures 5A and 5B). The completed USACE Wetland Determination Data Forms-Eastern Mountains and Piedmont Region are presented in Appendix C.

Wetland ID	Vegetation Class ¹	Extends Offsite?	Acres (Hectares) ²	ORAM Score ³	ORAM Category ³	Jurisdictional Status ⁴
1	PEM	Yes	1.04 (0.42)	23	1	Jurisdictional
2	PEM	No	0.20(0.08)	20	1	Jurisdictional
3	PSS/PEM	Yes	0.21(0.08)	27	1	Jurisdictional
4	PEM	No	0.21(0.08)	20	1	Jurisdictional
5	PEM	Yes	2.27(0.92)	30	2	Jurisdictional
6	PEM	Yes	0.87(0.35)	34	2	Jurisdictional
7	PEM	Yes	4.89(1.98)	33	2	Jurisdictional
8	PEM	No	0.04(0.02)	22	1	Jurisdictional
9	PEM	No	0.26(0.11)	25	1	Jurisdictional
10	PSS/PEM	Yes	0.31(0.13)	32	2	Jurisdictional
11	PEM	Yes	2.28(0.92)	31	2	Jurisdictional
12	PEM	No	0.07(0.03)	16	1	Jurisdictional
13	PEM	No	0.17(0.07)	18	1	Jurisdictional
14	PEM	Yes	0.60(0.24)	29	1	Jurisdictional

 Table 3.2.1 Wetlands Delineated within the Study Area



Wetland ID	Vegetation Class ¹	Extends Offsite?	Acres (Hectares) ²	ORAM Score ³	ORAM Category ³	Jurisdictional Status ⁴
15	PEM	Yes	0.13(0.05)	25	1	Jurisdictional
16	PEM	No	0.04(0.02)	14	1	Jurisdictional
17	PEM	No	0.20(0.08)	15	1	Jurisdictional
1 PEM = palustrine emergent						

PSS = palustrine scrub/shrub

2 Represents delineated acreage within Study Area

3 Preliminarily assigned. Not considered final until verified by Ohio EPA

4 Preliminarily assigned. Not considered final until verified by the USACE

All wetlands and streams within the Study Area display a physical connectivity or adjacency to unnamed tributaries of Raccoon Creek and Elk Fork. The Ohio River is considered a Traditional Navigable Waterway (TNW) by the USACE (2007), this gives the USACE jurisdiction over the Ohio River and all connected tributaries. Raccoon Creek, is a relatively permanent water (RPW) with continuous flow and directly connects to the Ohio River as defined by USACE (2007); therefore, Raccoon Creek and all associated tributaries are deemed jurisdictional by the USACE. Consequently, the direct connection to Raccoon Creek makes Elk Fork a jurisdictional water. Any delineated features with a direct connection or significant adjacency to any identified unnamed tributaries to Raccoon Creek or Elk Fork have been determined to be jurisdictional by the USACE for the reasons outlined above.

Wetland 1

Wetland 1 is a 1.04 acre (0.42 hectares) PEM wetland dominated by common rush (*Juncus effuses*) and broadleaf cattail (*Typha latifolia*). Vegetation has been grazed in portions of the wetland. The sample point is located approximately 500 feet (152 meters) north of the intersection of Township Roads 14 and 15. The wetland is preliminarily assigned an ORAM score of 23, corresponding to a Category 1 wetland (low quality). The determination of a Category 1 wetland was based on size, intensity of surrounding land use, disturbance regime, and lack of natural buffers.

Wetland 1 abuts an open water that is located outside the Study Area. Based on review of the Zaleski, Ohio USGS topographic quadrangle, the open water outside the Study Area drains to an unnamed tributary to Elk Fork. The unnamed tributary to Elk Fork flows west and confluences with Elk Fork approximately 4,607 feet (1,404 meters) from the Study Area (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Elk Fork, Wetland 1 is considered preliminarily jurisdictional.

Wetland 2



Wetland 2 is a 0.20 acre (0.08 hectares) PEM wetland dominated by common rush, fox sedge (*Carex vulpinoidea*) and red clover (*Trifolium pretense*). Vegetation has been grazed in portions of the wetland. The sample point is located approximately 2,400 feet (732 meters) north of the intersection of Township Roads 14 and 15. The wetland is preliminarily assigned an ORAM score of 20 (low quality), corresponding to a Category 1 wetland primarily due to size, intensity of surrounding land use and lack of natural buffers.

Wetland 2 can be found at the southern edge of delineated Pond 1. Based on review of the Zaleski, Ohio USGS topographic quadrangle, Wetland 2 and Pond 1 are adjacent to other wetlands located outside the Study Area (Appendix A, Figure 1) (USGS 1994). These wetland features, including Wetland 2, are located adjacent to an unnamed tributary to Elk Fork and an unnamed tributary to Raccoon Creek. Based on the location, proximity and connectivity to both unnamed tributaries, Wetland 2 is considered preliminarily jurisdictional.

Wetland 3

Wetland 3 is a 0.21 acre (0.08 hectares) PSS/PEM wetland extending outside the Study Area dominated by American sycamore (*Plantanus occidentalis*), autumn olive (*Elaegnus umbellataa*) and multiflora rose (*Rosa multiflora*) in the shrub stratum, and common rush and fox sedge in the herbaceous stratum. Habitat development is fair, with small amounts of hummock/tussock habitat. This wetland can be found alongside Township Road 15. The sample point is located approximately 2,200 feet (671 meters) north of the intersection of Township Roads 14 and 15. This wetland was preliminarily assigned an ORAM score of 27, corresponding to a Category 1 wetland (low quality). The determination of a Category 1 wetland was based on the lack of natural buffers, intensity of surrounding land use, and low microtopography.

Wetland 3 extends beyond the study area and has a downstream hydrologic connection to an off-site drainage. Based on review of the Zaleski, Ohio USGS topographic quadrangle, the off-site drainage flows southwest to an unnamed tributary to Elk Fork before entering Elk Fork (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Elk Fork, Wetland 3 is considered preliminarily jurisdictional.

Wetland 4

Wetland 4 is a 0.21 acre (0.08 hectares) PEM wetland dominated by common rush, fox sedge and orchard grass (*Dactylis glomerata*) with hydrology coming from precipitation. The sample point is located approximately 5,400 feet (1,646 meters) northeast of the intersection of Township Roads 14 and 15. Lack of natural buffers, small size, and intensity of surrounding land use contributed to Wetland 4 being preliminarily assigned an ORAM score of 20, corresponding to a Category 1 wetland (low quality).



Wetland 4 drains into delineated Stream 1, an unnamed tributary to Raccoon Creek. Based on review of the Zaleski, Ohio USGS topographic quadrangle, Stream 1 flows southeast away from the Study Area and confluences with another unnamed tributary to Raccoon Creek (Appendix A, Figure 1) (USGS 1994). This second unnamed tributary to Raccoon Creek flows east and confluences with Raccoon Creek approximately 600 feet (184 meters) north of Powder Plant Road. Based on the location, proximity and connectivity to Raccoon Creek, Wetland 4 is considered preliminarily jurisdictional.

Wetland 5

Wetland 5 is a 2.27 acre (0.92 hectares) PEM wetland extending outside the Study Area. Dominate plant species include broadleaf cattail and fox sedge. Vegetation has been grazed on the edges of the wetland, making species identification difficult. This wetland can be found on the western edge of a tree line that crosses Township Road 14. The sample point is located approximately 4,100 feet (1,250 meters) east of the intersection of Township Roads 14 and 15. Wetland 5 is preliminarily assigned an ORAM score of 30, corresponding to the ORAM "Grey Zone" and, therefore, assigned as a Category 2 wetland (moderate quality) primarily due to size, intensity of surrounding land use, lack of habitat development, and low microtopography.

Wetland 5 is located adjacent to an unnamed tributary to Raccoon Creek. Based on review of the Zaleski, Ohio USGS topographic quadrangle, the unnamed tributary to Raccoon Creek flows southeast away from the Study Area and drains to a roadway drainage ditch before entering Raccoon Creek (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Raccoon Creek, Wetland 5 is considered preliminarily jurisdictional.

Wetland 6

Wetland 6 is a 0.87 acre (0.35 hectares) PEM wetland dominated by multiflora rose and autumn olive in the shrub stratum and common rush and fox sedge in the herbaceous stratum. Vegetation has been grazed on the edges of the wetland, making species identification difficult. This wetland can be found on the western edge of a tree line that crosses Township Road 14. The sample point is located approximately 3,600 feet (1,097 meters) northeast of the intersection of Township Roads 14 and 15. Wetland 6 is preliminarily assigned an ORAM score of 34, corresponding to a Category 2 wetland (moderate quality) primarily due to size, disturbance regime, and lack of natural buffers. In addition, acid mine drainage can be found throughout the wetland.

Wetland 6 abuts an adjacent open water, where both are located adjacent to an unnamed tributary to Raccoon Creek. Based on review of the Zaleski, Ohio USGS topographic quadrangle, the unnamed



tributary to Raccoon Creek flows southeast away from the Study Area and drains to a roadway drainage ditch before entering Raccoon Creek (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Raccoon Creek, Wetland 6 is considered preliminarily jurisdictional.

Wetland 7

Wetland 7 is a 4.89 acre (1.98 hectares) PEM wetland dominated by broadleaf cattail, common rush and fox sedge. Vegetation has been grazed on the edges of the wetland, making species identification difficult. This particular wetland can be found on the eastern edge of a tree line that crosses Township Road 14. The NWI map shows this area as being a large freshwater PEM wetland (Appendix A, Figure 1). The sample point is located approximately 4,800 feet (1,463 meters) northeast of the intersection of Township Roads 14 and 15. Wetland 7 is preliminarily assigned an ORAM score of 33, corresponding to a Category 2 wetland (moderate quality) primarily due to size, intensity of surrounding land use, disturbance regime, and lack of natural buffers.

Wetland 7 is located adjacent to an unnamed tributary of Raccoon Creek. Based on review of the Zaleski, Ohio USGS topographic quadrangle, the unnamed tributary to Raccoon Creek flows southeast away from the Study Area and drains to a roadway drainage ditch before entering Raccoon Creek (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Raccoon Creek, Wetland 7 is considered preliminarily jurisdictional.

Wetland 8

Wetland 8 is a 0.04 acre (0.02 hectares) PEM wetland dominated by fox sedge, narrowleaf cattail (*Typha angustifolia*) and American sycamore. Bare ground and rocks can be found throughout the wetland. This slope wetland can be found on the western edge of a tree line on a hillslope. The sample point is located approximately 6,000 feet (1,829 meters) southeast of the intersection of Township Roads 14 and 15. Wetland 8 is preliminarily assigned an ORAM score of 22, corresponding to a Category 1 (low quality) wetland primarily due to size, intensity of surrounding land use, disturbance regime, and lack of natural buffers.

A hydrological connection can be observed outside the Study Area that connects Wetland 8 to another NWI wetland approximately 998 feet (304 meters) northeast of the Study Area (Appendix A, Figure 3). Based on review of the Zaleski, Ohio USGS topographic quadrangle, the NWI wetland is adjacent to an unnamed tributary to Elk Fork that flows southeast away from the Study Area (Appendix A, Figure 1) (USGS 1994). Within the Study Area this unnamed tributary to Elk Fork was delineated as Stream 13. The unnamed tributary to Elk Fork (Stream 13) confluences with Elk Fork near the intersection of U.S. Route 50 and



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Stone Quarry Road. Based on the location, proximity and connectivity to Elk Fork, Wetland 8 is considered preliminarily jurisdictional.

Wetland 9

Wetland 9 is a 0.26 acre (0.11 hectares) PEM wetland dominated by common rush and narrowleaf cattail. Bare ground can be found throughout the wetland. Hydrology appears to be mostly as a result of both precipitation and stream overflow. This slope wetland is situated on the western edge of a tree line. The sample point is located approximately 4,300 feet (1,311 meters) southeast of the intersection of Township Roads 14 and 15. Wetland 9 is preliminarily assigned an ORAM score of 25, corresponding to a Category 1 (low quality) wetland primarily due to size, intensity of surrounding land use disturbance regime, and lack of natural buffers.

Within the Study Area, Wetland 9 drains to delineated Stream 4. Based on review of the Zaleski, Ohio USGS topographic quadrangle, the Stream 4 flows southeast and then east away from the Study Area and confluences with an unnamed tributary to Elk Fork (Stream 13) (Appendix A, Figure 1) (USGS 1994). The unnamed tributary to Elk Fork (Stream 13) confluences with Elk Fork near the intersection of U.S. Route 50 and Stone Quarry Road. Based on the location, proximity and connectivity to Elk Fork, Wetland 9 is considered preliminarily jurisdictional.

Wetland 10

Wetland 10 is a 0.31 acre (0.13 hectares) PEM/PSS wetland dominated by narrowleaf cattail. The sample point is located in the PEM portion of this wetland approximately 4,900 feet (1,494 meters) southeast of the intersection of Township Roads 14 and 15. Wetland 10 is preliminarily assigned an ORAM score of 32, corresponding to the ORAM "Grey Zone" and, therefore, assigned as a Category 2 wetland (moderate quality) primarily due to size, intensity of surrounding land use, lack of natural buffers, and coverage of some invasive species.

Upstream, within the Study Area, hydrology for this wetland is traced to additional wetlands (Wetland 11), delineated streams (Stream 11), and an open water (Pond 16). Based on review of the Zaleski, Ohio USGS topographic quadrangle, Wetland 10 is located adjacent to an unnamed tributary Raccoon Creek and delineated Stream 11. The unnamed tributary to Raccoon Creek flows southeast away from the Study Area before entering Raccoon Creek (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Raccoon Creek, Wetland 10 is considered preliminarily jurisdictional.

Wetland 11



Wetland 11 is a 2.28 acre (0.92 hectares) PEM wetland dominated by common rush, narrowleaf cattail, and fox sedge. Wetland vegetation has some areas where mowing, grazing and other impacts have made identification difficult. This wetland can be found on the northwestern edge of delineated Pond 16. The sample point is located approximately 4,000 feet (1,219 meters) southeast of the intersection of Township Roads 14 and 15. Wetland 11 is preliminarily assigned an ORAM score of 31, corresponding to a Category 2 wetland (moderate quality) primarily due to size, intensity of surrounding land use, lack of natural buffers, and coverage of invasive species.

Upstream, within the Study Area, hydrology is traced to a delineated intermittent stream (Stream 15). Based on review of the Zaleski, Ohio USGS topographic quadrangle, Wetland 11 is located adjacent to an unnamed tributary Raccoon Creek that flows southeast away from the Study Area before entering Raccoon Creek (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Raccoon Creek, Wetland 11 is considered preliminarily jurisdictional.

Wetland 12

Wetland 12 is a 0.07 acre (0.03 hectares) PEM wetland dominated by common rush and reed canary grass (*Phalaris arundinacea*); a common invasive species in wetlands. Vegetation has been grazed in portions of the wetland, making species identification difficult. This wetland is extremely small and dominated by common rush. The sample point is located approximately 4,000 feet (1,219 meters) southeast of the intersection of Township Roads 14 and 15. Wetland 12 is preliminarily assigned an ORAM score of 16, corresponding to a Category 1 wetland (low quality) primarily due to size, intensity of surrounding land use, lack of natural buffers, and coverage of invasive species.

Within the Study Area, Wetland 12 is located adjacent, approximately 200 feet (61 meters), to delineated Wetland 10 and Stream 11. Based on review of the Zaleski, Ohio USGS topographic quadrangle, delineated Wetland 10 and Stream 11 drain to an unnamed tributary to Raccoon Creek that flows southeast away from the Study Area before entering Raccoon Creek. (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Raccoon Creek, Wetland 12 is considered preliminarily jurisdictional.

Wetland 13

Wetland 13 is a 0.17 acre (0.07 hectares) PEM wetland dominated by common rush, red clover and fox sedge. Vegetation has been grazed in portions of the wetland, making species identification difficult. The sample point is located approximately 1,300 feet (396 meters) southeast of the intersection of Township Roads 14 and 15. Wetland 13 is preliminarily assigned an ORAM score of 18, corresponding to a Category



1 wetland (low quality) primarily due to size, intensity of surrounding land use, lack of natural buffers, and low quality of wetland plants.

Downstream and within the Study Area, Wetland 13 exhibits connectivity to delineated Stream 13. Based on review of the Zaleski, Ohio USGS topographic quadrangle, delineated Stream 13 is an unnamed tributary to Elk Fork. The unnamed tributary flows southeast away from the Study Area and confluences with Elk Fork near the intersection of U.S. Route 50 and Stone Quarry Road (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Elk Fork, Wetland 13 is considered preliminarily jurisdictional.

Wetland 14

Wetland 14 is a 0.60 acre (0.24 hectares) PEM wetland dominated by common rush, fox sedge and broadleaf cattail. Vegetation has been grazed in many portions of the wetland, making species identification difficult. This can be found on a hillslope on the western edge of a tree line. The sample point is located approximately 2,400 feet (732 meters) southeast of the intersection of Township Roads 14 and 15. Wetland 14 is preliminarily assigned an ORAM score of 29, corresponding to a Category 1 (low quality) wetland primarily due to size and lack of natural buffers.

Wetland 14 is located adjacent to an unnamed tributary to Elk Fork. Based on review of the Zaleski, Ohio USGS topographic quadrangle, the unnamed tributary to Elk Fork flows southeast away from the Study Area and confluences with Elk Fork near the intersection of U.S. Route 50 and Stone Quarry Road (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Elk Fork, Wetland 14 is considered preliminarily jurisdictional.

Wetland 15

Wetland 15 is a 0.13 acre (0.05 hectares) PEM wetland dominated by autumn olive in the shrub stratum and common rush, broadleaf cattail and fox sedge in the herbaceous stratum. Vegetation has been grazed in portions of the wetland, making species identification difficult. This slope wetland can be found on the western edge of a tree line. The sample point is located approximately 2,400 feet (732 meters) southeast of the intersection of Township Roads 14 and 15. Wetland 15 is preliminarily assigned an ORAM score of 25, corresponding to a Category 1 (low quality) wetland primarily due to size, intensity of surrounding land use, lack of buffers, and coverage of invasive species.

Wetland 15 is located adjacent to a non-jurisdictional drainage and intermittent stream that connects to an unnamed tributary to Elk Fork outside the Study Area. Based on review of the Zaleski, Ohio USGS



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topographic quadrangle, the unnamed tributary to Elk Fork flows southeast away from the Study Area and confluences with Elk Fork near the intersection of U.S. Route 50 and Stone Quarry Road (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Elk Fork, Wetland 15 is considered preliminarily jurisdictional.

Wetland 16

Wetland 16 is a 0.04 acre (0.02 hectares) PEM wetland dominated by common rush. Vegetation has been grazed in portions of the wetland, making species identification difficult. The sample point is located approximately 5,400 feet (1,646 meters) east of the intersection of Township Roads 14 and 15, north of Infirmary Road. Wetland 16 is preliminarily assigned an ORAM score of 14, corresponding to a Category 1 wetland (low quality) primarily due to size, intensity of surrounding land use and lack of buffers.

Wetland 16 is located approximately 100 feet (30 meters) from delineated Pond 8, which drains to delineated Stream 17. Based on review of the Zaleski, Ohio USGS topographic quadrangle, delineated Stream 17 drains to an unnamed tributary to Raccoon Creek that flows southeast away from the Study Area before entering another unnamed tributary of Raccoon Creek. Raccoon Creek is located approximately 2,812 feet (857 meters) from the confluence (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Raccoon Creek, Wetland 16 is considered preliminarily jurisdictional.

Wetland 17

Wetland 17 is a 0.20 acre (0.08 hectares) PEM wetland dominated by common rush. Vegetation has been grazed in many portions of the wetland, making species identification difficult. The sample point is located approximately 5,400 feet (1,646 meters) east of the intersection of Township Roads 14 and 15, north of Infirmary Road. Wetland 17 is preliminarily assigned an ORAM score of 15, corresponding to a Category 1 wetland (low quality) primarily due to size, intensity of surrounding land use and lack of buffers.

Wetland 17 is located approximately 100 feet (30 meters) from delineated Pond 8, which drains to delineated Stream 17. Based on review of the Zaleski, Ohio USGS topographic quadrangle, delineated Stream 17 drains to an unnamed tributary to Raccoon Creek that flows southeast away from the Study Area before entering another unnamed tributary of Raccoon Creek. Raccoon Creek is located approximately 2,812 feet (857 meters) from the confluence (Appendix A, Figure 1) (USGS 1994). Based on the location, proximity and connectivity to Raccoon Creek, Wetland 17 is considered preliminarily jurisdictional.



3.2.2 Other Waters of the U.S. A. Streams

Seventeen (17) streams with defined bed and bank and ordinary high water mark were identified within the Study Area. The streams are listed in Table 3.2.2, described below and shown in Appendix A on Figures 5A and 5B. The delineated streams within the Study Area are within the Headwaters Elk Fork (HUC code 050901010302) and Town of Zaleski-Raccoon Creek (HUC code 050901010205) drainage basins. The streams within the Study Area have been influenced by historic mining (some streams exhibit visible acid mine drainage) and current cattle practices. Therefore, streams within the Study Area are designated as "Modified" Channels. Table 3.2.2 below, provides flow regime, length in the study area, drainage area, preliminary HHEI scores, and class and QHEI ratings for streams identified in the Study Area. Completed Ohio EPA stream assessment forms are provided in Appendix E. All jurisdiction determinations are preliminary because the USACE makes the final determination.

			Drainage Area		
Stream ID	Flow Regime	Length ¹ (ft; m)	(sq mi; sq km)²	HHEI Score ³	HHEI Class/ QHEI Rating
1	Perennial	632(193)	0.01(<0.001)	51	Modified Class II
2	Perennial	454(138)	0.01(<0.001)	50	Modified Class II
3	Ephemeral	57(17)	0.01(<0.001)	37	Modified Class II
4	Intermittent	261(80)	0.01(<0.001)	37	Modified Class II
5	Intermittent	200(61)	0.01(<0.001)	37	Modified Class II
6	Perennial	516(157)	0.01(<0.001)	52	Modified Class II
7	Intermittent	96(29)	0.01(<0.001)	40	Modified Class II
8	Intermittent	146(45)	0.01(<0.001)	34	Modified Class II
9	Intermittent	143(44)	0.01(<0.001)	38	Modified Class II
10	Intermittent	108(33)	0.01(<0.001)	28	Modified Class I
11	Perennial	461(141)	0.01(<0.001)	69	Modified Class II
12	Perennial	423(129)	0.01(<0.001)	41	Modified Class II
13	Intermittent	1,538(469)	0.01(<0.001)	36	Modified Class II
14	Intermittent	263(80)	0.01(<0.001)	43	Modified Class II
15	Intermittent	94(29)	0.01(<0.001)	28	Modified Class I
16	Intermittent	547(167)	0.01(<0.001)	37	Modified Class II
17	Intermittent	177(54)	0.01(<0.001)	27	Modified Class I

Table 3.2.2	Other	Waters	of the	U.S I	Delineated	within	the St	udy	Area
								•/	

1 Represents delineated length, in feet, and meters within Study Area

2 Where within coverage, drainage area was calculated using automated basin characteristics from USGS StreamStats v 4.0: Ohio (USGS 2016b).

3 Primary Headwater Habitat Evaluation Index, for streams with drainage areas of less than 1.0 square miles and a max pool depth of less than 40 centimeters.



<u>Stream 1</u>

Stream 1 is a modified perennial stream originating within the Study Area with a drainage area of approximately 0.01 square miles (<0.001 square kilometers), flowing west through the Study Area for approximately 632 feet (193 meters). Based on the HHEI assessment methods, the dominate substrates are composed of cobble and silt, maximum pool depths is 2.4 inches (6.0 centimeters) and bank full width is 3.94 feet (1.20 meters). Consequently, this stream has been preliminarily assigned an HHEI score of 51 and is therefore categorized as a Modified Class II Primary Headwater Habitat (PHWH). Stream 1 connects to an unnamed tributary to Raccoon Creek, and, as such, is preliminarily determined to be a jurisdictional water of the U.S. No macroinvertebrates were observed during the time of delineation.

Stream 2

Stream 2 is a modified perennial stream originating within the Study Area with a drainage area of approximately 0.01 square miles (<0.001 square kilometers), flowing northwest for approximately 454 feet (138 meters) within the Study Area. Stream 2 connects to an unnamed tributary to Raccoon Creek and, as such, it is preliminarily determined to be jurisdictional. Based on the HHEI assessment methods, the dominate substrates are comprised of cobble and silt, maximum pool depths is 2.4 inches (6.0 centimeters) and bank full width is 3.9 feet (1.2 meters). Consequently, this stream has been preliminarily assigned an HHEI score of 50 and is therefore categorized as a Modified Class II PHWH.

<u>Stream 3</u>

Stream 3 is a modified ephemeral stream originating within the Study Area with a drainage area of less than 0.01 square miles (<0.001 square kilometers), flowing southwest for approximately 57 feet (17 meters) through the Study Area. Stream 3 is an ephemeral stream that connects to an unnamed tributary to Elk Fork, which drains into Raccoon Creek, outside the Study Area and is therefore determined to be preliminary jurisdictional. Based on the HHEI assessment methods, the dominate substrates are comprised of gravel and silt, maximum pool depths is 1.6 inches (4.0 centimeters) and a bank full width is 3.6 feet (1.1 meters). This stream has been preliminarily assigned an HHEI score of 37 and is therefore categorized as a Modified Class II PHWH.

<u>Stream 4</u>

Stream 4 is a modified intermittent stream originating inside the Study Area with a drainage area of 0.01 square miles (<0.001 square kilometers), flowing southeast for approximately 261 feet (80 meters) through the Study Area. Stream 4 connects to an unnamed tributary to Elk Fork, which drains into Raccoon Creek,



outside the study area and is therefore determined to be preliminary jurisdictional. Based on the HHEI assessment methods, the dominate substrates are gravel and silt, maximum pool depth is 1.6 inches (4.0 centimeters) and bank full width is 4.9 feet (1.5 meters). This stream has been preliminarily assigned an HHEI score of 37 and is therefore categorized as a Modified Class II PHWH.

<u>Stream 5</u>

Stream 5 originates inside the Study Area with intermittent flow regimes, and a drainage area of approximately 0.01 square miles (<0.001 square kilometers) flowing south for approximately 200 feet (61 meters) through the Study Area. Stream 5 connects to an unnamed tributary to Elk Fork, which drains into Raccoon Creek, outside the Study Area and is therefore determined to be preliminary jurisdictional. Based on the HHEI assessment methods, the dominate substrates are hardpan and silt, maximum pool depth is 2.8 inches (7.0 centimeters) and bank full width is 4.9 feet (1.5 meters). This streams have been preliminary assigned an HHEI score of 37 and is therefore categorized as a Modified Class II PHWH.

Stream 6

Stream 6 is a modified perennial stream originating within the Study Area. This stream has a drainage area of approximately 0.01 square miles (<0.001 square kilometers) and flows southeast approximately 516 feet (157 meters) though the Study Area. Stream 6 connects to an unnamed tributary to Elk Fork, which drains into Raccoon Creek, outside the study area and is therefore determined to be preliminary jurisdictional. Based on the HHEI assessment methods, the dominate substrates are cobble and hardpan, maximum pool depth is 2.8 inches (7.0 centimeters) and bank full width is 5.3 feet (1.6 meters). This stream has been preliminarily assigned an HHEI score of 52 and is therefore categorized as a Modified Class II PHWH.

Stream 7

Stream 7 is a modified intermittent stream originating within the Study Area. With a drainage area of approximately 0.01 square miles(<0.001 square kilometers), the stream flows southeast approximately 96 feet (29 meters) though the Study Area and confluences with Stream 8. Stream 7 connects to an unnamed tributary to Elk Fork, which drains into Raccoon Creek, outside the study area and is therefore determined to be preliminary jurisdictional. Based on the HHEI assessment methods, the dominate substrates are cobble and silt, maximum pool depth is 1.2 inches (3.0 centimeters) and bank full width is 4.3 feet (1.3 meters). This stream has been preliminarily assigned an HHEI score of 40 and is therefore categorized as a Modified Class II PHWH.

Stream 8



Stream 8 is a modified intermittent stream originating within the Study Area. This stream has a drainage area of 0.01 square miles (<0.001 square kilometers). The Stream flows south approximately 146 feet (45 meters) through Study Area and then confluences with Stream 7. Stream 8 connects to an unnamed tributary to Elk Fork, which drains into Raccoon Creek, outside the study area and is therefore determined to be preliminary jurisdictional. Based on the HHEI assessment methods, the dominate substrates are gravel and hardpan, maximum pool depth is 1.2 inches (3.0 centimeters) and bank full width 4.3 feet (1.3 meters). This stream has been preliminarily assigned an HHEI score of 34 and is therefore categorized as a Modified Class II PHWH.

Stream 9

Stream 9 is a modified intermittent stream originating within the Study Area. This stream has a drainage area of 0.01 square miles (<0.001 square kilometers), and flows southwest approximately 143 feet (44 meters) through Study Area. Stream 9 connects to an unnamed tributary to Elk Fork, which drains into Raccoon Creek, outside the study area and is therefore determined to be preliminary jurisdictional. Based on the HHEI assessment methods, the dominate substrates are gravel and silt, maximum pool depth is 1.2 inches (3.0 centimeters) and bank full width is 4.3 feet (1.3 meters). This stream has been preliminarily assigned an HHEI score of 38 and is therefore categorized as a Modified Class II PHWH.

Stream 10

Stream 10 is a modified intermittent stream originating within the Study Area. This stream has a drainage area of 0.01 square miles (<0.001 square kilometers), and flows southwest approximately 108 feet (33 meters) through Study Area. Stream 10 connects to an unnamed tributary to Elk Fork, which drains into Raccoon Creek, outside the Study Area and is therefore determined to be preliminary jurisdictional. Based on the HHEI assessment methods, the dominate substrates are hardpan and silt, maximum pool depth is 1.2 inches (3.0 centimeters) and bank full width is 4.3 feet (1.3 meters). This stream has been preliminarily assigned an HHEI score of 28 and is therefore categorized as a Modified Class I PHWH.

Stream 11

Stream 11 is a modified perennial stream originating within the Study Area draining Delineated Pond 16. This stream has a drainage area of 0.01 square miles (<0.001 square kilometers), and flows south approximately 461 feet (141 meters) through Study Area. Stream 11 connects downstream to an unnamed tributary to Raccoon Creek and, as such, it is preliminarily determined to be jurisdictional. Based on the HHEI assessment methods, the dominate substrates are boulder and silt, maximum pool depth is 3.5 inches



(9.0 centimeters) and bank full width is 4.3 feet (1.3 meters). This stream has been preliminarily assigned an HHEI score of 69 and is therefore categorized as a Modified Class II PHWH.

Stream 12

Stream 12 is a modified perennial stream, originating within the Study Area, which drains into Delineated Wetland 11. This stream has a drainage area of 0.01 square miles (<0.001 square kilometers), and flows east approximately 423 feet (129 meters) to Delineated Wetland 11. Stream 12 connects to an unnamed tributary to Raccoon Creek downstream and, as such, it is preliminarily determined to be jurisdictional. Based on the HHEI assessment methods, the dominate substrates are gravel and silt, maximum pool depth is 1.2 inches (3.0 centimeters) and bank full width is 5.6 feet (1.7 meters). This stream has been preliminarily assigned an HHEI score of 41 and is therefore categorized as a Modified Class II PHWH.

Stream 13

Stream 13 is a modified intermittent stream originating from Delineated Wetland 13 within the Study Area. This stream has a drainage area of 0.01 square miles (<0.001 square kilometers) and flows south approximately 1,538 feet (469 meters) through Study Area. Stream 13 connects to an unnamed tributary to Elk Fork, which drains into Raccoon Creek, downstream and, as such, it is preliminarily determined to be jurisdictional. Based on the HHEI assessment methods, the dominate substrates are gravel and silt, maximum pool depth is 1.2 inches (3.0 centimeters) and bank full width is 3.6 feet (1.1 meters). This stream has been preliminarily assigned an HHEI score of 36 and is therefore categorized as a Modified Class II PHWH.

Stream 14

Stream 14 is a modified intermittent stream originating within the Study Area. This stream has a drainage area of 0.01 square miles (<0.001 square kilometers), and flows south approximately 263 feet (80 meters) through the Study Area to Delineated Wetland 14 outside of the Study Area. Stream 14 connects to an unnamed tributary to Elk Fork, which drains into Raccoon Creek, downstream and, as such, it is preliminarily determined to be jurisdictional. Based on the HHEI assessment methods, the dominate substrates are cobble and clay/hardpan, maximum pool depth is 1.6 inches (4.0 centimeters) and bank full width is 5.3 feet (1.6 meters). This stream has been preliminarily assigned an HHEI score of 43 and is therefore categorized as a Modified Class II PHWH.

Stream 15



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Stream 15 is a modified intermittent stream originating within the Study Area. This stream has a drainage area of 0.01 square miles (<0.001 square kilometers), and flows southeast approximately 94 feet (29 meters) through Study Area. Stream 15 connects to an unnamed tributary to Raccoon Creek downstream and, as such, it is preliminarily determined to be jurisdictional. Based on the HHEI assessment methods, the dominate substrates are hardpan and silt, maximum pool depth is 1.6 inches (4.0 centimeters) and bank full width is 4.9 feet (1.5 meters). This stream has been preliminarily assigned an HHEI score of 28 and is therefore categorized as a Modified Class I PHWH.

Stream 16

Stream 16 is a modified intermittent stream originating within the Study Area. This stream has a drainage area of 0.01 square miles (<0.001 square kilometers), and flows southeast approximately 547 feet (167 meters) through Study Area and drains in to Pond 17. Stream 16 connects to an unnamed tributary to Raccoon Creek downstream and, as such, it is preliminarily determined to be jurisdictional. Based on the HHEI assessment methods, the dominate substrates are gravel and silt, maximum pool depth is 1.6 inches (4.0 centimeters) and bank full width is 4.6 feet (1.40 meters). This stream has been preliminarily assigned an HHEI score of 37 and is therefore categorized as a Modified Class II PHWH.

Stream 17

Stream 17 is a modified intermittent stream originating from delineated Pond 8 within the Study Area. This stream has a drainage area of 0.01 square miles (<0.001 square kilometers) and flows south approximately 177 feet (54 meters) through Study Area. Stream 17 connects to an unnamed tributary of Raccoon Creek downstream and, as such, it is preliminarily determined to be jurisdictional. Based on the HHEI assessment methods, the dominate substrates are gravel and silt, maximum pool depth is 0.8 inches (2.0 centimeters) and bank full width is 3.0 feet (0.9 meters). This stream has been preliminarily assigned an HHEI score of 27 and is therefore categorized as a Modified Class I PHWH.



B. Open Water (Pond)

The Study Area was investigated for areas that are considered "open water" by the USACE. The field investigation identified 17 potentially jurisdictional open water resources (ponds) within the Study Area (Table 3.2.3) (Appendix A, Figures 5A and 5B). These are all freshwater farm open waters that have been determined to be jurisdictional based on connectivity to streams and wetlands within the Project.

Dond ID	Vegetation Class ¹	Extends Offsite?	A amos (Haatamos) ²	Invisdiational Status ³
Pond ID	Ciuso	01151001	Acres(Hectares)	Jurisaictional Status
1	PUBG	No	0.52(0.21)	Jurisdictional
2	PUBG	Yes	0.20(0.08)	Jurisdictional
3	PUBG	No	0.28(0.11)	Jurisdictional
4	PUBG	No	0.21(0.08)	Jurisdictional
5	PUBG	Yes	0.69(.28)	Jurisdictional
6	PUBG	No	2.87(1.16)	Jurisdictional
7	PUBG	No	0.17(0.17)	Jurisdictional
8	PUBG	No	0.35(0.14)	Jurisdictional
9	PUBG	No	0.64(0.26)	Jurisdictional
10	PUBG	No	0.36(0.15)	Jurisdictional
11	PUBG	Yes	0.89(0.36)	Jurisdictional
12	PUBG	Yes	4.19(1.70)	Jurisdictional
13	PUBG	Yes	0.42(0.17)	Jurisdictional
14	PUBG	No	0.74(0.30)	Jurisdictional
15	PUBG	Yes	0.52(0.21)	Jurisdictional
16	PUBG	Yes	2.24(0.91)	Jurisdictional
17	PUBG	Yes	0.70(0.28)	Jurisdictional

Table 3.2.3 Other Waters of the U.S Delineated within the Study Area ("Open Water")

1 PUBG = palustrine unconsolidated bottom, intermittently exposed

2 Represents delineated acreage within Study Area

3 Preliminarily assigned. Not considered final until verified by the USACE



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Appendix A

Figures





Coordinate System: NdD 1983 COR596 StatePlane Ohio South FIPS 3402 FLUS (Fool US) Map Rotation: 0



Coordinate System: NaD 1983 CORS96 StatePlane Ohio South FIPS 3402 FLUS (Foot US) Map Rotation: 0



Coordinate System: NaD 1983 CORS96 StatePlane Ohio South FIPS 3402 FLUS (FooLUS) Map Rotation: 0

SI9 - OHL



Coordinate System: NaD 1983 CORS96 StatePlane Ohio South FIPS 3402 FLUS (Foot US) Map Rotation: 0



<u>IBC - C</u>

Coordinate System: NAD 1983 COR596 StatePlane Ohio South FIPS 3402 Ft US (Foot US)



D - JEL - C

Coordinate System: NAD 1983 CORS96 StatePlane Ohio South FIPS 3402 Ft US (Foot US) Map Rotation: _____0

Plot Date: 6/15/2017, TSA: AM by NRENAUDIN -- LAVOUT: BNA: RNSI B(17%*CF) (2000) -- Construction CF) (





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Map Rotation: 0

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Coordinate System: NAD 1983 CORS96 StatePlane Ohio South FIPS 3402 Ft US (Foot US)



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Coordinate System: MAD 1983 CORS96 StatePlane Ohio South FIPS 3402 Ft US (Foot US)
Map Rotation: 0

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 Path:
 C:/Users/inrenaudin EMPLOYES/Desklop/Vinlon County Project/Figure 6 Vinlon.mxd

Appendix B

Photographic Log

Wetland Resource Photographs

Invenergy LLC		State: Ohio	County: Vinton
Project Name: Vinton Se	olar Energy Center Proje	ct	
Photo ID: Photo #1		201	
Date: 04-04-2017			so ral same and
Feature: Wetland 1			
Comments: Photo of Wetland 1 facing Southwest.			
Photo ID: Photo #2			
Date: 04-04-2017			
Feature: Wetland 2			
Comments: Photo of Wetland 2 facing West.			



Photo ID: Photo #3	
Date: 04-04-2017	
Feature: Wetland 3	
Comments: Photo of Wetland 3 facing North.	
Photo ID: Photo #4	
Date: 04-04-2017	
Feature:	
Wetland 4	and the second



Photo ID: Photo #5	and the second second second	
Date: 04-04-2017		1000 1000 1000 1000 1000 1000 1000 100
Feature: Wetland 5	- Charles and the second of the	A Constant
Comments: Photo of Wetland 5 facing East.		
Photo ID: Photo #6		
Date: 04-04-2017	In the second second second second	2
Feature: Wetland 6		
Comments: Photo of Wetland 6 facing East.		



Photo ID: Photo #7	
Date: 04-04-2017	
Feature: Wetland 7	
Comments: Photo of Wetland 7 facing South.	
Photo ID: Photo #8	
Date: 04-04-2017	
Feature: Wetland 7	
Comments: Photo of soil for Wetland 7. Coal fragments can be easily found in the sample.	



Photo ID: Photo #9	
Date: 04-05-2017	
Feature: Wetland 8	
Comments: Photo of Wetland 8 facing East.	
Photo ID: Photo #10	
Date: 04-05-2017	
Feature: Wetland 9	
Comments: Photo of Wetland 9 facing South.	



Photo ID: Photo #11	
Date: 04-06-2017	
Feature: Wetland 10	
Comments: Photo of Wetland 10 facing Southeast.	
Photo ID: Photo #12	
Date: 04-06-2017	
Feature: Wetland 11	
Comments: Photo of Wetland 11 facing West.	



Photo ID: Photo #13	and the second
Date: 04-06-2017	NU - MARINE MARINE AND
Feature: Wetland 12	
Comments: Photo of Wetland 12 facing East.	
Photo ID: Photo #14	
Date: 04-06-2017	
Feature: Wetland 13	
Comments: Photo of Wetland 13 facing West.	



	and a second
Photo ID: Photo #15	
Date: 04-06-2017	And the stand of the second of
Feature: Wetland 14	
Comments: Photo of Wetland 14 facing East.	
Photo ID7 Photo #16 Date: 04-06-2017	
Feature: Wetland 15	
Comments: Photo of Wetland 15 facing East.	







Other Waters of the U.S. Resource Photographs

Invenergy LLC		State: Ohio	County: Vinton
Project Name: Vinton Sc	olar Energy Center Proje	ct	
Photo ID: Photo #19	N/Z		
Date: 04-04-2017			
Feature: Stream 1			
Comments: Photo of Stream 1 facing upstream West.			
Photo ID: Photo #20			
Date: 04-04-2017			THE AND
Feature: Stream 2			NAM
Comments: Photo of Stream 2 facing downstream West.			



Photo ID: Photo #21	
Date: 04-05-2017	
Feature: Stream 3	
Comments: Photo of Stream 3 facing upstream North.	
Photo ID: Photo #22	
Date: 04-05-2017	
Feature: Stream 4	
Comments: Photo of Stream 4 facing downstream East.	



Photo ID: Photo #23	
Date: 04-06-2017	
Feature: Stream 5	
Comments: Photo of Stream 5 facing downstream South.	
Photo ID: Photo #24	
Date: 04-06-2017	
Feature: Stream 6	
Comments: Photo of Stream 6 facing downstream South.	







Photo ID: Photo #27	
Date: 04-06-2017	
Feature: Stream 9	
Comments: Photo of Stream 9 facing downstream West.	
Photo ID: Photo #28	
Date: 04-06-2017	
Feature: Stream 10	
Comments: Photo of Stream 10 facing downstream West.	



Photo ID: Photo #29	
Date: 04-06-2017	
Feature: Stream 11	
Comments: Photo of Stream 11 facing downstream South.	
Photo ID: Photo #30	
Date: 04-06-2017	
Feature: Stream 12	
Comments: Photo of Stream 12 facing upstream West.	










Photo ID: Photo #35	
Date: 04-07-2017	
Feature: Stream 17	
Comments: Photo of Stream 17 facing downstream West.	
Photo ID: Photo #36	
Date: 04-04-2017	
Feature: Pond 1	AND THE AND THE AND THE AND
Comments: Photo of Pond 1 facing Northeast.	







Photo ID: Photo #39	
Date: 04-04-2017	
Feature: Pond 4	
Comments: Photo of Pond 4 facing East.	
Photo ID: Photo #40	
Date: 04-04-2017	A CARLE AND A CARLE
Feature: Pond 5	
Comments: Photo of Pond 5 facing North.	







Photo ID: Photo #43	
Date: 04-04-2017	
Feature: Pond 8	
Comments: Photo of Pond 8 facing West.	
Photo ID: Photo #44	
Date: 04-05-2017	
Feature: Pond 9	The second se
Comments: Photo of Pond 9 facing Northwest.	



















Appendix C

USACE Wetland Data Forms

Project/Site: Vinton Solar Energy Center Project City/County: M	IcArthur/Vinton Sampling Date: 4/4/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Wetland 1
Investigator(s): Nathan Renaudin & Lindsey Moss Section, Town	ship, Range:
Landform (hillslope, terrace, etc.): Hillslope Local relief (conca	ave, convex, none): Concave Slope (%): 3
Subregion (LRR or MLRA): MLRA126 Lat: 39.272417	Long: <u>-82.451333</u> Datum: <u>WGS84</u>
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes	No 🖌 (If no, explain in Remarks.)
Are Vegetation Soil , or Hydrology significantly disturbed?	Are "Normal Circumstances" present? Yes No 🗸
Are Vegetation, Soil, or Hydrology 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 Volume No	
Hydric Soil Present? Yes V No within a	a Wetland? Yes Ves
Wetland Hydrology Present? Yes 🖌 No	
Remarks:	
The majority of the study area is in a field that has been historically	impacted by strip mining but is now actively grazed
by cattle. This particular wetland can be found on the edge of a pon-	d outside the study area. The sample point is located
approximately 500 feet north of the intersection of township roads 1-	4 and 15.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Surrace Soli Clacks (56)
Image: Subject water (A1) Image: Subject water (A1) Image: Subject water (A1) Image: Subject water (A1) Image: Subject water (A1) Image: Subject water (A1)	Drainage Patterns (B10)
Saturation (A3) \checkmark Oxidized Rhizospheres on Liv	ing Roots (C3) \square Moss Trim Lines (B16)
Water Marks (B1)	4) Drv-Season Water Table (C2)
Sediment Deposits (B2)	d Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in Remarks)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes Ves Depth (inches): 1	
Water Table Present? Yes ✓ No Depth (inches): -9	
Saturation Present? Yes ✓ No Depth (inches): 0	Wetland Hydrology Present? Yes Ves No
(includes capillary fringe)	
Describe recorded Data (stream gauge, moritoring weil, actial protos, previous ins	
Domorko:	
Within this data form pagative numbers in the water table represent	t inches holew surface and 0, within the acturation
column represents surface saturation. During the past few days the	ere has been several inches of rain that has made
many areas much wetter than most of the year	

Sampling Point: Wetland 1

2014	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 30ft)	% Cover	Species?	Status	Number of Dominant Species	
1				That Are OBL, FACW, or FAC: 2 ((A)
2				Total Number of Dominant	
3				Species Across All Strata: 2	(B)
4				Percent of Dominant Species	
5				That Are OBL, FACW, or FAC: 100 ((A/B)
6		- Total Cov		Prevalence Index worksheet:	
			ei	Total % Cover of: Multiply by:	
50% of total cover:	20% of	total cover:		OBL species x 1 =	_
Sapling Stratum (Plot size: 1511)				FACW species x 2 =	
1				FAC species x 3 =	
2				FACU species x 4 =	_
3				UPL species $x 5 =$	-
4				Column Totals: (A)	(B)
5					(2)
6				Prevalence Index = B/A =	_
	:	= Total Cov	er	Hydrophytic Vegetation Indicators:	
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation	
Shrub Stratum (Plot size: 15ft)				✓ 2 - Dominance Test is >50%	
1				□ 3 - Prevalence Index is $\leq 3.0^{1}$	
2				4 - Morphological Adaptations ¹ (Provide suppo	orting
3				data in Remarks or on a separate sheet)	0
3				Problematic Hydrophytic Vegetation ¹ (Explain))
4					
5				¹ Indicators of hydric soil and wetland hydrology mu	ust
b				be present, unless disturbed or problematic.	
		= Total Cov	er	Definitions of Five Vegetation Strata:	
50% of total cover:	20% of	total cover:		Tree – Woody plants, excluding woody vines	
Herb Stratum (Plot size: 5ft)				approximately 20 ft (6 m) or more in height and 3 in	n.
1. Juncus effusus (Common Rush)	30	Y	FACW	(7.6 cm) or larger in diameter at breast height (DBI	H).
2. Typha latifolia (Broadleaf Cattail)	20	Y	OBL	Sapling – Woody plants, excluding woody vines,	
3. Carex vulpinoidea (Fox Sedge)	15	Ν	OBL	approximately 20 ft (6 m) or more in height and les	SS
4. Trifolium pratense (Red Clover)	10	Ν	FACU	than 3 in. (7.6 cm) DBH.	
5. Trifolium repens (White Clover)	10	Ν	FACU	Shrub – Woody plants, excluding woody vines,	
6. Dactylis glomerata (Orchard Grass)	10	Ν	FACU	approximately 3 to 20 ft (1 to 6 m) in height.	
7				Herb – All herbaceous (non-woody) plants, includi	ing
8				herbaceous vines, regardless of size, and woody	
9				ft (1 m) in height.	ely 3
10.					
11.				Woody vine – All woody vines, regardless of height	ht.
	95	= Total Cov	er		
50% of total array 47.5	000/ -f		19		
	20% of	total cover:	10		
Woody Vine Stratum (Plot size:)					
1					
2					
3					
4					
5				Hydrophytic	
		= Total Cov	er	Vegetation	
50% of total cover:	20% of	total cover:		Present? Yes <u>✓</u> No	
Remarks: (Include photo numbers here or on a separate s	sheet.)				

Profile Desc	ription: (Describe	e to the dep	oth needed to docur	nent the	indicator	or confirm	the absence	of indicators.)
Depth	Matrix		Redo	x Feature	es1	. 2	-	
(inches)	Color (moist)	%	Color (moist)	%	l ype			<u>Remarks</u>
0-1	2.51 2/1	100				·	Loam	
1-6	2.5Y 4/1	90	10 YR 5/6	10	D	M	Silt Loam	Some coal fragments
6-12	2.5Y 5/1	90	10 YR 5/6	10	D	Μ	Silt Loam	Some coal fragments
								·
¹ Type: C=C	oncentration, D=De	pletion, RM	=Reduced Matrix, MS	S=Maske	d Sand Gr	ains.	² Location: Pl	_=Pore Lining, M=Matrix.
Hydric Soil	Indicators:						Indica	tors for Problematic Hydric Soils ³ :
Histosol	(A1)		Dark Surface	e (S7)			2	cm Muck (A10) (MLRA 147)
Histic Ep	pipedon (A2)		Polyvalue Be	low Surfa	ace (S8) (I	/LRA 147,	148) 🗌 C	oast Prairie Redox (A16)
Black Hi	stic (A3)			Inface (S9)) (MLRA 1 (E2)	147, 148)		(MLRA 147, 148)
	1 Javers (A5)			trix (F3)	(Г2)			(MI RA 136 147)
2 cm Mu	ick (A10) (LRR N)		Redox Dark	Surface (I	F6)			ery Shallow Dark Surface (TF12)
Depleted	d Below Dark Surfa	ce (A11)	Depleted Dar	rk Surface	é (F7)		0	ther (Explain in Remarks)
D Thick Da	ark Surface (A12)		Redox Depre	essions (F	-8)			
Sandy M	lucky Mineral (S1)	(LRR N,	Iron-Mangan	ese Mass	ses (F12) (LRR N,		
	A 147, 148)		MLRA 13	6)		0. 400)	31.0 -1	
Sandy G	Beyed Matrix (54)			ice (F13) odplain 9	(NILKA 1. Soile (F19)	30, 122) (ΜΙ RΔ 14	.8) wa	tland hydrology must be present
Stripped	Matrix (S6)		Red Parent N	/aterial (F	F21) (MLR	A 127, 147	') unl	ess disturbed or problematic.
Restrictive	Layer (if observed):			/ (,	/	
Туре:								
Depth (in	ches):						Hydric Soil	Present? Yes 🖌 No 🛄
Remarks:								
S	olis nave been	greatly inf	luenced by the h	istoric r	nining tr	rougnou	t the study a	area. While some samples
al Si	nis meet F3 inc	licator for	bydric soils	soli ove	num an	u cuai ira	igments the	bughout many of the samples.
			nyano sons.					

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date: 4/4/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 1
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope	Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR or MLRA): MLRA126 Lat: 39.2723	7 Long: <u>-82.45126</u> Datum: <u>WGS84</u>
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: UPL
Are climatic / h <u>ydrologi</u> c conditions on the site typic <u>al for th</u> is time o	of year? Yes No 🖌 (If no, explain in Remarks.)
Are Vegetation 🖌 Soil √, or Hydrology √ significa	antly disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology naturall	y problematic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map show	ring sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area within a Wetland? Yes No ✓
Wetland Hydrology Present?	
The majority of the study area is in a field that has be	oon historically impacted by strip mining but is now actively grazed
by cattle. This I pland point can be found on the edge	e of a pond that is outside the study area. The sample point is
located approximately 500 feet north of the intersect	ion of township roads 14 and 15. This upland sample point is
located directly alongside the boundary of Wetland 1	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that ap	ply) Surface Soil Cracks (B6)
Surface Water (A1)	tic Plants (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	Sulfide Odor (C1)
Saturation (A3)	bizospheres on Living Roots (C3) \square Moss Trim Lines (B16)
Water Marks (B1)	of Reduced Iron (C4)
	= D by Season watch radio (S2)
	Surface (C7)
Algal Mat or Crust (B4)	lain in Remarks)
Inundation Visible on Aerial Imagery (B7)	
Water-Stained Leaves (B9)	$\prod_{i=1}^{n} \text{Original With a regulation (D0)}$
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No ✓ Depth (inc	thes).
Water Table Present? Ves No 🗸 Depth (inc	shes):
Saturation Present? Ves No Z Depth (inc	whos): Wetland Hydrology Present? Yes No
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial p	hotos, previous inspections), if available:
Remarks:	
During the past few days, there has been several inc	ches of rain that has made many areas much wetter than most of the
year.	

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species	
1				That Are OBL, FACW, or FAC: 0	(A)
2				Total Number of Dominant	
3				Species Across All Strata: 3	(B)
4.					()
5.				Percent of Dominant Species	(
6					(A/B)
		= Total Cov	er	Prevalence Index worksheet:	
		- 10101 001	01	Total % Cover of: Multiply by:	
50% of total cover:	20% of	total cover:		OBL species x 1 =	_
Sapling Stratum (Plot size: 1511)				FACW species x 2 =	_
1				FAC species x 3 =	
2				FACU species x 4 =	-
3					-
4					(P)
5					(D)
6	·			Prevalence Index = B/A =	_
	:	= Total Cov	er	Hydrophytic Vegetation Indicators:	
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation	
Shruh Strotum (Dist size: 15ft	20 % 01	lotal cover.	·	2 - Dominance Test is >50%	
				$3 - \text{Prevalence Index is } \le 30^1$	
1	·			\square 4 Morphological Adaptations ¹ (Provide suppl	orting
2	·			data in Remarks or on a separate sheet)	oning
3	·			Problematic Hydrophytic Vegetation ¹ (Explain)
4					/
5				¹ Indicators of hydric soil and wetland hydrology m	uet
6				be present, unless disturbed or problematic.	usi
		- Total Cov	or		
	· · · · · · · · · · · · · · · · · · ·	- 10101 000	CI	Definitions of Five Vegetation Strata:	
50% of total cover:	20% of	total cover:		Definitions of Five Vegetation Strata:	
50% of total cover:	20% of	total cover:		Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in bright and 2 i	
50% of total cover:	20% of 25	total cover:	FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB	n. H).
50% of total cover:	20% of 25 20	total cover:	FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB	n. H).
50% of total cover: <u>Herb Stratum</u> (Plot size: <u>5ft</u>) <u>1. Dactylis glomerata (Orchard Grass)</u> <u>2. Trifolium repens (White Clover)</u> <u>2. Trifolium pratense (Bed Clover)</u>	20% of 25 20 20	total cover: $\frac{Y}{\frac{Y}{Y}}$	FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less	n. H).
50% of total cover:	20% of 25 20 20 15	total cover: Y Y Y N	FACU FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	n. H).
50% of total cover: <u>Herb Stratum</u> (Plot size: <u>5ft</u>) 1. Dactylis glomerata (Orchard Grass) 2. Trifolium repens (White Clover) 3. Trifolium pratense (Red Clover) 4. Taraxacum officinale (Common Dandelion) - Pop pratopsis (Kentucky bluegrass)	20% of 25 20 20 15	total cover: Y Y Y N N	FACU FACU FACU UPL FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	n. H). ss
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50% of total cover:	20% of 25 20 20 15 15	total cover: Y Y N N	FACU FACU FACU UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. 	n. H). SS
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50% of total cover:	20% of 25 20 20 15 15	Y Y Y Y N	FACU FACU FACU UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. 	in. H). ss ing ely 3
50% of total cover:	20% of 25 20 20 15 15 	Y Y Y Y N	FACU FACU FACU UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. 	in. H). ss ing ely 3
50% of total cover:	20% of 25 20 20 15 15 	Y Y Y Y N	FACU FACU FACU UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of height. 	in. H). ss ing ely 3 ht.
50% of total cover:	20% of 25 20 20 15 15 	Y Y Y Y N	FACU FACU FACU FACU FACU FACU FACU OPL OPL OPL FACU OPL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of heig 	in. H). ss ely 3 ht.
50% of total cover:	20% of 25 20 20 15 15 95 20% of	Y Y Y N N = Total Cover:	FACU FACU FACU UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of height 	in. H). ss ing ely 3 ht.
50% of total cover:	20% of 25 20 20 15 15 95 20% of	Y Y Y Y N Image: state	FACU FACU FACU UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of height. 	n. H). ss ing ely 3 ht.
50% of total cover:	20% of 25 20 20 15 15 95 20% of	Y Y Y N N = Total Cov	FACU FACU FACU UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includin herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of height 	in. H). ss ing ely 3 ht.
50% of total cover:	20% of 20 20 20 15 15 95 20% of	Y Y Y N N = Total Cov	FACU FACU FACU UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of heig 	in. H). ss ing ely 3 ht.
50% of total cover:	20% of 25 20 20 15 15 	Y Y Y N N = Total Cov	FACU FACU FACU UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of heig 	in. H). ss ely 3 ht.
50% of total cover:	20% of 25 20 20 15 15 95 20% of	Y Y Y N N = Total Cov	FACU FACU FACU FACU FACU FACU Image: Facu I	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of height 	in. H). ss ing ely 3 ht.
50% of total cover:	20% of 20 20 15 15 	Y Y Y Y N	FACU FACU FACU UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of height. 	n. H). ss ing ely 3 ht.
50% of total cover:	20% of 25 20 20 15 15 95 20% of 	Y Y Y N N = Total Cov total cover:	FACU FACU FACU UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of heig Hydrophytic 	n. H). ss ing ely 3 ht.
50% of total cover:	20% of 25 20 20 15 15 95 20% of 20% of	Total Cover:	FACU FACU FACU UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of heig Hydrophytic Vegetation 	in. H). ss ing ely 3 ht.
50% of total cover:	20% of 20 20 20 15 15 95 20% of 20% of 	Y Y Y N N = Total Cov total cover: = Total Cov total cover:	FACU FACU FACU FACU FACU FACU Image: Facu I	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of heig Hydrophytic Vegetation Present? Yes No	in. H). ss ely 3 ht.
50% of total cover:	20% of 25 20 20 15 15 95 20% of 20% of 	Y Y Y N N = Total Cov total cover: = Total Cov total cover:	FACU FACU FACU FACU FACU FACU Image: Provide the second s	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 i (7.6 cm) or larger in diameter at breast height (DB Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and lest than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximate ft (1 m) in height. Woody vine – All woody vines, regardless of heig Hydrophytic Vegetation Present? Yes No Yes	in. H). ss ing ely 3 ht.

|--|

Profile Desc	cription: (Describe	to the dept	h needed to docun	nent the i	indicator	or confirm	the absence	of indicators.)
Depth	Matrix		Redo	x Feature	S			
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-1	2.5Y 2/1	100					Loam	Muck layer
2-16	2.5Y 4/3	95	10 YR 5/8	5	D	Μ	Silt Loam	Some coal fragments
		·						
¹ Type: C=C	oncentration, D=Dep	letion, RM=	Reduced Matrix, MS	S=Masked	d Sand Gra	ains.	² Location: Pl	L=Pore Lining, M=Matrix.
Hydric Soil Histosol Histic Er Black Hi Hydroge Stratified 2 cm Mu Depleter Thick Da Sandy M Sandy G Sandy F Stripped	Indicators: (A1) pipedon (A2) istic (A3) en Sulfide (A4) d Layers (A5) uck (A10) (LRR N) d Below Dark Surface ark Surface (A12) Aucky Mineral (S1) (I A 147, 148) Bleyed Matrix (S4) Redox (S5) I Matrix (S6)	e (A11) .RR N,	Dark Surface Polyvalue Be Thin Dark Su Loamy Gleye Depleted Mat Redox Dark S Depleted Dar Redox Depre Iron-Mangane MLRA 136 Dedemont Flo Red Parent M	(S7) low Surfa rface (S9) d Matrix (arix (F3) Surface (F k Surface ssions (F ese Mass 6) ce (F13) (odplain S faterial (F	ce (S8) (N F2) (MLRA 1 F2) (F7) 8) es (F7) 8) es (F12) ((MLRA 13 oils (F19) (21) (MLR	ILRA 147, 47, 148) LRR N, 6, 122) (MLRA 14 A 127, 147	Indica	ators for Problematic Hydric Soils ³ : cm Muck (A10) (MLRA 147) oast Prairie Redox (A16) (MLRA 147, 148) iedmont Floodplain Soils (F19) (MLRA 136, 147) ery Shallow Dark Surface (TF12) ther (Explain in Remarks) icators of hydrophytic vegetation and tland hydrology must be present, less disturbed or problematic.
Restrictive	Layer (if observed):							
Depth (in	ches):						Hydric Soil	Present? Yes No 🔽
Remarks: So ar	oils have been g opear to be unafi	reatly influence	uenced by the hi ere are hints of s	istoric n soil over	nining th turn and	roughou I coal fra	t the study a agments thro	area. While some samples bughout many of the samples.

City/County: MCArthur/Vinton Sampling Date: 4/4/17
State: OH Sampling Point: Wetland 2
Section, Township, Range:
Local relief (concave, convex, none): <u>Concave</u> Slope (%): <u>1</u> S315 Long: <u>-82.448510</u> Datum: <u>WGS84</u> NWI classification: <u>PEM</u>
e of year? Yes No Image: No
Is the Sampled Area within a Wetland? Yes ✓ No
been historically impacted by strip mining but is now actively grazed he southern edge of delineated Pond 1. The sample point is located of township roads 14 and 15.
Secondary Indicators (minimum of two required) apply) Surface Soil Cracks (B6) Iatic Plants (B14) Sparsely Vegetated Concave Surface (B8) n Sulfide Odor (C1) Image Patterns (B10) Rhizospheres on Living Roots (C3) Moss Trim Lines (B16) e of Reduced Iron (C4) Dry-Season Water Table (C2) ron Reduction in Tilled Soils (C6) Crayfish Burrows (C8) ck Surface (C7) Saturation Visible on Aerial Imagery (C9) xplain in Remarks) Stunted or Stressed Plants (D1) Image Patterns (B10) Image Patterns (B10) inches): Microtopographic Relief (D4) inches): Metland Hydrology Present? Yes No I photos, previous inspections), if available: No
er table represent inches below surface and 0, within the saturation past few days, there has been several inches of rain that has made

Sampling Point: Wetland 2

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 2 (A)
2				Total Number of Deminent
3.				Species Across All Strata: 3 (B)
4				
т. <u></u>				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: <u>67</u> (A/B)
6				Prevalence Index worksheet:
		= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		
Sapling Stratum (Plot size: 15ft)				
1.				FACW species x 2 =
2				FAC species x 3 =
2				FACU species x 4 =
3		·		UPL species x 5 =
4		·		Column Totals: (A) (B)
5	. . 			
6	<u> </u>			Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover	20%	total cover		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Diat size: 15ft	20 /0 01			2 - Dominance Test is >50%
Shrub Stratum (Plot size: <u></u>)				\square 2 Brownlands Index is $< 2.0^{1}$
1		·		\square 3 - Prevalence index is ≤ 3.0
2				4 - Morphological Adaptations (Provide supporting
3				
4				
5.				
6				Indicators of hydric soil and wetland hydrology must
		- Total Cov	or	be present, unless disturbed of problematic.
		- 10101000	CI	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		Tree – Woody plants, excluding woody vines.
Herb Stratum (Plot size: 5ft)				approximately 20 ft (6 m) or more in height and 3 in.
1. Juncus effusus (Common Rush)	40	Y	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
2. Carex vulpinoidea (Fox Sedge)	15	Y	OBL	Sanling – Woody plants, excluding woody vines
3. Trifolium pratense (Red Clover)	15	Y	FACU	approximately 20 ft (6 m) or more in height and less
A Trifolium repens (White Clover)	10	N	FACU	than 3 in. (7.6 cm) DBH.
Dactylis glomerata (Orchard Grass)	10	N	FACU	Shruh Weady planta avaluding weady vince
		·	17100	approximately 3 to 20 ft (1 to 6 m) in height.
6		·		
7		·		Herb – All herbaceous (non-woody) plants, including
8				nerbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 2
9				ft (1 m) in height.
10				
11.				Woody vine – All woody vines, regardless of height.
	90	- Total Cov	or	
45		- 10(a) 000	40	
50% of total cover: 45	20% of	total cover:	18	
Woody Vine Stratum (Plot size:)				
1				
2				
3.				
4	·	·		
5	·	·		
0				Hydrophytic
		= I otal Cov	er	Vegetation
50% of total cover:	20% of	total cover:		
Remarks: (Include photo numbers here or on a separate	sheet.)			1

Vegetation has been grazed in many portions of the wetland, making species identification difficult. 10% bare ground.

Profile Desc	ription: (Descrit				·		i the absence	or indicators.
Depth (inches)	Color (moist)	%	Color (moist)	<u>x Feature</u> %	s Type ¹	Loc ²	Texture	Remarks
0-1	2.5Y 2/1	100					Loam	Muck layer
1-5	2.5Y 4/1	95	10 YR 5/6	5	D	М	Silt Loam	Some coal fragments
5-12	2 5Y 5/1	97	10 YR 5/6	3	D	M	Silt Loam	Some coal fragments
0.12	2.01 0/1		10 11(0/0	0	<u> </u>	101	Ont Loann	
$\frac{1}{1}$		enlation PM		S-Mookov			² Location: DI	-Doro Lipipa M-Motrix
Hvdric Soil	Indicators:			S=IVIASKE	a Sanu Gi	all 15.		tors for Problematic Hydric Soils ³ :
Histosol	(A1)		Dark Surface	e (S7)			2	cm Muck (A10) (MLRA 147)
Histic Ep	pipedon (A2)		D Polyvalue Be	elow Surfa	ice (S8) (I	WLRA 147,	148) 🔲 C	oast Prairie Redox (A16)
🔲 Black Hi	stic (A3)		Thin Dark Su	urface (S9) (MLRA	147, 148)	_	(MLRA 147, 148)
Hydroge	n Sulfide (A4)		Loamy Gleye	ed Matrix	(F2)		L P	iedmont Floodplain Soils (F19)
	d Layers (A5) lick (A10) (I PP N)		□ Depleted Ma	itrix (F3) Surfaco (I	=6)			(MLRA 136, 147)
	d Below Dark Surf	ace (A11)	Depleted Da	rk Surface (i	e (F7)			ther (Explain in Remarks)
Thick Da	ark Surface (A12)	()	Redox Depre	essions (F	8)			, , , , , , , , , , , , , , , , , , ,
Sandy N	lucky Mineral (S1)) (LRR N,	Iron-Mangar	ese Mass	es (F12)	(LRR N,		
	A 147, 148)		MLRA 13	6)			3	
Sandy G	Bleyed Matrix (S4)			ace (F13) Sodeloin S		36, 122)	°Indi Na	icators of hydrophytic vegetation and
	Matrix (S6)			Material (F	50115 (F 19) F21) (MLR	A 127. 147	10) we 7) uni	ess disturbed or problematic.
Restrictive I	_ayer (if observe	d):		(,	/	
Type:								
Depth (ind	ches):						Hydric Soil	Present? Yes 🔽 No 🛄
Remarks:		and a the last						
50	olis nave been	greatly in	luenced by the r	istoric n	nining tr rturn an	irougnou d.coal.fra	t the study a	area. While some samples
ar Sc	ble an to be una	dicator for	hydric soils	SUILOVE	nun an	u cuai ira	igments the	bughout many of the samples.

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date: 4/4/17					
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 2					
Investigator(s): Nathan Renaudin & Lindsey Moss	_ Section, Township, Range:					
Landform (hillslope, terrace, etc.): Hillslope	_ Local relief (concave, convex, none): Slope (%): 1					
Subregion (LRR or MLRA): MLRA126 Lat: 39.2762	28 Long: -82.44850 Datum: WGS84					
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: UPL					
Are climatic / h <u>ydrologi</u> c conditions on the site typic <u>al for th</u> is time o	of year? Yes No 🖌 (If no, explain in Remarks.)					
Are Vegetation 🖌 Soil √, or Hydrology √ significa	antly disturbed? Are "Normal Circumstances" present? Yes No					
Are Vegetation, Soil, or Hydrology naturally	y problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF EINDINGS Attach site man show	ing compling point locations, transacts, important factures, ato					
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area					
Hydric Soil Present? Yes No	✓ within a Wetland? Yes No					
Wetland Hydrology Present? Yes No 🗸						
Remarks:						
The majority of the study area is in a field that has be	een historically impacted by strip mining but is now actively grazed					
by cattle. This upland point can be found on the sout	thern edge of delineated Pond 1. The sample point is located					
approximately 4300 feet north of the intersection of the	ownship roads 14 and 15. This upland sample point is located					
directly alongside the boundary of Wetland 2.						
HYDROLOGY						
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)					
Primary Indicators (minimum of one is required; check all that app	ply) Surface Soil Cracks (B6)					
Surface Water (A1)	tic Plants (B14) Sparsely Vegetated Concave Surface (B8)					
High Water Table (A2)	Sulfide Odor (C1) Drainage Patterns (B10)					
Saturation (A3)	Rhizospheres on Living Roots (C3)					
Water Marks (B1)	of Reduced Iron (C4)					
Sediment Deposits (B2)	n Reduction in Tilled Soils (C6)					
Drift Deposits (B3)	Surface (C7) Saturation Visible on Aerial Imagery (C9)					
Algal Mat or Crust (B4) Other (Exp	plain in Remarks) Stunted or Stressed Plants (D1)					
Iron Deposits (B5)	Geomorphic Position (D2)					
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)					
Water-Stained Leaves (B9)	Microtopographic Relief (D4)					
Aquatic Fauna (B13)	FAC-Neutral Test (D5)					
Field Observations:						
Surface Water Present? Yes No Ves Depth (inc	ches):					
Water Table Present? Yes No Yes Depth (inc	ches):					
Saturation Present? Yes No 🖌 Depth (inc	ches): Wetland Hydrology Present? Yes No					
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial p	photos, previous inspections), if available:					
Remarks:						
During the past few days, there has been several inc	ches of rain that has made many areas much wetter than most of the					
year.						

Tree Stratum (Plot size: 301L) % Covert. Status 1 Covert. Status Number of Dominant Species (A) 2 Covert. Total Number of Dominant Species (A) 3 Covert. Status (B) 4 Covert. Status (B) 5 Covert. Status (Covert. (A) 50% of total cover. 20% of total cover. Providence Index vortaleet: (M) 2 Status (N) (A) (B) 4 Covert. Providence Index vortaleet: (A) (B) 50% of total cover. 20% of total cover. FAC upeales X =		Absolute	Dominant Indicator	Dominance Test worksheet:
1	Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species? Status	Number of Dominant Species
2	1		·	That Are OBL, FACW, of FAC: (A)
	3		· ·	Total Number of Dominant
5	4	-	·	
6.	5		·	Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)
Soly of total cover:	6			Prevalence Index worksheet:
Softe of total cover: 20% of total cover: DBL species x 1 =			= Total Cover	Total % Cover of: Multiply by:
Sapling Stratum (Plot size: 15tt	50% of total cover:	20% of	total cover:	OBL species x 1 =
1	Sapling Stratum (Plot size: 15ft)			FACW species x 2 =
2	1		·	FAC species x 3 =
3.	2		·	FACU species x 4 =
4	3			UPL species x 5 =
5	4			Column Totals: (A) (B)
6.	5			
	6			Prevalence Index = B/A =
50% of total cover: 20% of total cover: Prevalence Index is 3.0 ° Problemate Variations (Provide supporting data in Remarks or on a separate sheet) Problemate Variations (Provide supporting data in Remarks or on a separate sheet) Problemate Variations (Provide supporting data in Remarks or on a separate sheet) Problemate Variations (Provide supporting data in Remarks or on a separate sheet) Problemate Variations (Provide supporting data in Remarks or on a separate sheet) Problemate Variations (Provide supporting data in Remarks or on a separate sheet) Problemate Variations of Five Vegetation Strate: Tree - Woody plants, excluding woody vines, approximately 20 fit (6 m) or more in height and 3 in. (7.6 m) DBH; 1. Dactylis glomerata (Orchard Grass) 25 Y Saping - Woody plants, excluding woody vines, approximately 20 fit (16 m) or more in height and less than 3 in. (7.6 m) DBH. 5. Taraxacum officinale (Common Dandelion) 10 N 8			= Total Cover	Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15ft	50% of total cover:	20% of	total cover:	1 - Rapid Test for Hydrophytic Vegetation
1	Shrub Stratum (Plot size: 15ft)			2 - Dominance Test is >50%
2	1			$_$ 3 - Prevalence Index is ≤3.0 ¹
3.	2			4 - Morphological Adaptations ¹ (Provide supporting
4.	3		· ·	Problematic Hydrophytic Vegetation ¹ (Explain)
5.	4		· ·	
6.	5		· ·	¹ Indicators of hydric soil and wetland hydrology must
	6		· ·	be present, unless disturbed or problematic.
50% of total cover: 20% of total cover: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). 2. Trifolium repens (White Clover) 25 Y approximately 20 ft (6 m) or more in height and 1 sin. (7.6 cm) or larger in diameter at breast height (DBH). 3. Trifolium pratense (Red Clover) 25 Y approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. 5. Taraxacum officinale (Common Dandelion) 10 N Shrub – Woody plants, excluding woody vines, approximately 20 ft (1 to 6 m) in height. 8.			= Total Cover	Definitions of Five Vegetation Strata:
Herb Stratum (Plot size: 5ft) 1. Dactylis glomerata (Orchard Grass) 25 Y 2. Trifolium repens (White Clover) 25 Y 3. Trifolium pratense (Red Clover) 25 Y 4. Poa pratensis (Kentucky bluegrass) 15 N 5. Taraxacum officinale (Common Dandelion) 10 N 8	50% of total cover:	20% of	total cover:	Tree Weedy planta excluding weedy vince
1. Dactylis glomerata (Orchard Grass) 25 Y 2. Trifolium repens (White Clover) 25 Y 3. Trifolium pratense (Red Clover) 25 Y 3. Trifolium pratense (Red Clover) 25 Y 4. Poa pratensis (Kentucky bluegrass) 15 N 5. Taraxacum officinale (Common Dandelion) 10 N 6.	Herb Stratum (Plot size: 5ft)			approximately 20 ft (6 m) or more in height and 3 in.
2. Trifolium repens (White Clover) 25 Y	1. Dactylis glomerata (Orchard Grass)	25	Υ	(7.6 cm) or larger in diameter at breast height (DBH).
3. Trifolium pratense (Red Clover) 25 Y	2. Trifolium repens (White Clover)	25	Y	Sapling – Woody plants, excluding woody vines
4. Poa pratensis (Kentucky bluegrass) 15 N	3. Trifolium pratense (Red Clover)	25	Y	approximately 20 ft (6 m) or more in height and less
5. Taraxacum officinale (Common Dandelion) 10 N	4. Poa pratensis (Kentucky bluegrass)	15	N	than 3 in. (7.6 cm) DBH.
6	5. Taraxacum officinale (Common Dandelion)	10	N	Shrub – Woody plants, excluding woody vines,
7.	6		·	approximately 3 to 20 ft (1 to 6 m) in height.
8	7			Herb – All herbaceous (non-woody) plants, including
9	8			herbaceous vines, regardless of size, and woody
10	9			ft (1 m) in height.
11. 100 = Total Cover 50% of total cover: 50% of total cover: 20% of total cover: 20 20% of total cover: 20 Moody Vine Stratum (Plot size:) 1. 2.	10			
100 = Total Cover 50% of total cover: 20% of total cover: 20% of total cover: 20% 1	11			Woody vine – All woody vines, regardless of height.
50% of total cover: 50 20% of total cover: 20 1		100	= Total Cover	
Woody Vine Stratum (Plot size:) 1	50% of total cover: 50	20% of	total cover: 20	
<tbody (i="" 1="" 2<="" ditadim="" fot="" size:)="" td="" vine=""><td>Woody Vine Stratum (Plot size:</td><td> 2078 01</td><td></td><td></td></tbody>	Woody Vine Stratum (Plot size:	2078 01		
2	1			
2	2		·	
4	2		·	
4	3		·	
b.	4		· ·	
= Total Cover Vegetation 50% of total cover: 20% of total cover: Present? Yes Remarks: (Include photo numbers here or on a separate sheet.) Vegetation has been grazed in many portions of the area, making species identification difficult	5			Hydrophytic
50% of total cover: 20% of total cover: Image: Testing te			= 1 otal Cover	Vegetation Present? Ves No V
Remarks: (Include photo numbers here or on a separate sheet.)	50% of total cover:	20% of	total cover:	
	Remarks: (Include photo numbers here or on a separate	sheet.)	making species	identification difficult

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	Color (maint)	0/	Rede	ox Feature	S Turca ¹		Toyturo	Domorko
1	2 5Y 2/1	<u>%</u>		%	<u>i ype</u>			Muck laver
16	2.51 2/1	05	10 VD 5/9	5			Silt Loom	Somo cool frogmonto
10	2.51 4/3	95	10 YR 5/8	0	<u> </u>		Silt Loam	Some coal tragments
					. <u> </u>			
					·			
					. <u>.</u>			
be: C=Co Iric Soil I	ncentration, D=D	epletion, RM	I=Reduced Matrix, M	S=Maske	d Sand G	rains.	² Location: Pl	_=Pore Lining, M=Matrix.
Histosol	(A1)		Dark Surfac	e (S7)			2	cm Muck (A10) (MLRA 147)
Histic Ep	ipedon (A2)		Polyvalue B	elow Surfa	ace (S8) (MLRA 147,	148) 🗌 C	oast Prairie Redox (A16)
Black His	stic (A3)		Thin Dark S	urface (S9) (MLRA	147, 148)		(MLRA 147, 148)
Hydroger	n Sulfide (A4)		Loamy Gley Depleted Ma	ed Matrix	(F2)			(MI PA 136 147)
2 cm Mur	ck (A10) (LRR N)		Redox Dark	Surface (F6)			erv Shallow Dark Surface (TF12)
Depleted	Below Dark Surf	ace (A11)	Depleted Da	rk Surface	∋ (F7)			ther (Explain in Remarks)
Thick Da	rk Surface (A12)		Redox Depr	essions (F	8)			
Sandy M	ucky Mineral (S1)) (LRR N,	Iron-Mangar	ese Mass	es (F12)	(LRR N,		
MLRA	147, 148)		MLRA 13	6)			2	
Sandy GI	leyed Matrix (S4)			ace (F13)	(MLRA 1	36, 122)	³ Ind	cators of hydrophytic vegetation and
Sandy Re	edox (S5)		Piedmont Fl	oodplain S	Soils (F19) (MLRA 14	18) we	tland hydrology must be present,
Casiline in a st	Matrix (Sh)		Red Parent	viateriai (i	-21) (IVIL	KA 127, 14	r) uni	ess disturbed of problematic.
Stripped	aver (if observer	d).						
Stripped trictive L	ayer (if observe	d):						
Stripped trictive L ype: epth (inc	ayer (if observed	d):					Hydric Soil	Present? Yes No 🗸
Stripped trictive L Type: Depth (inc harks: So	ayer (if observed)	d): greatly in	fluenced by the h	nistoric r	nining t	hroughou	Hydric Soil	Present? Yes No V
Stripped trictive L Type: Depth (inc harks: So ap	thank (60) ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the hhere are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples
Stripped trictive L ype: Depth (inc arks: So ap	hindrix (00) ayer (if observed hes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples
Stripped trictive L -ype: Depth (inc narks: So ap	ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples
Stripped trictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples
Stripped trictive L Type: Depth (inc narks: So ap	thes):	d): greatly in affected, t	fluenced by the h here are hints of	iistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No . ✓ area. While some samples bughout many of the samples
Stripped trictive L Type: Depth (inc narks: So ap	hans (60) (hes): hils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ✓ area. While some samples bughout many of the samples
Stripped trictive L Type: Depth (inc narks: So ap	hindina (60) ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No while some samples bughout many of the samples
Stripped trictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Area. While some samples bughout many of the samples
Stripped trictive L Type: Depth (inc marks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No . ✓
Stripped trictive L Type: Depth (inc narks: So ap	hank (60) ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Varea. While some samples bughout many of the samples
Stripped trictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Varea. While some samples bughout many of the samples
Stripped trictive L Type: Depth (inc narks: So ap	hains (60)	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No while some samples bughout many of the samples
Stripped trictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑
Stripped strictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑ area. While some samples bughout many of the samples
Stripped strictive L Type: Depth (inc narks: So ap	ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑ area. While some samples bughout many of the samples
Stripped strictive L Type: Depth (inc narks: So ap	ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑ area. While some samples bughout many of the samples
Stripped trictive L Type: Depth (inc narks: So ap	ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑
Stripped trictive L Type: Depth (inc harks: So ap	hank (60) ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Vo
Stripped trictive L Type: Depth (inc narks: So ap	indita (60)	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date: 4/4/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Wetland 3
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope	cal relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR or MLRA): MLRA126 Lat: 39.276106	Long: -82.449888 Datum: WGS84
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: PSS
Are climatic / hydrologic conditions on the site typical for this time of ye	ear? Yes No 🖌 (If no, explain in Remarks.)
Are Vegetation 🗹 Soil √, or Hydrology ✔ significantly	/ disturbed? Are "Normal Circumstances" present? Yes No ☑
Are Vegetation, Soil, or Hydrology, aturally pr	oblematic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing	y sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes V No	Is the Sampled Area
Hydric Soll Present? Yes V No	
Permetrice:	·
The majority of the study area is in a field that has been	biotorically impacted by atrip mining. Township road 15 rups
right through this particular wetland. The sample point is	a historically impacted by strip mining. Township road 15 runs
township roads 14 and 15	s located approximately 2,200 reet north of the intersection of
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
✓ Surface Water (A1)	Plants (B14) Sparsely Vegetated Concave Surface (B8)
✓ High Water Table (A2) ☐ Hydrogen Sulf	ide Odor (C1) Image Patterns (B10)
✓ Saturation (A3) ✓ Oxidized Rhize	ospheres on Living Roots (C3) Description Descripti Description Description Description De
Water Marks (B1)	educed Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)	eduction in Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3)	face (C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain	in Remarks) Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes Vo Depth (inches	$(j): \frac{Z}{Z}$
Water Table Present? Yes Ves No Depth (inches	s): -/
Saturation Present? Yes <u>Ves</u> No Depth (inches (includes capillary fringe)	(j): 0 Wetland Hydrology Present? Yes ✓ No ✓
Describe Recorded Data (stream gauge, monitoring well, aerial phot	os, previous inspections), if available:
Remarks:	
Within this data form, negative numbers in the water tal	ple represent inches below surface and 0, within the saturation
column, represents surface saturation. During the past	few days, there has been several inches of rain that has made
many areas much wetter than most of the year.	

Sampling Point: Wetland 3

00%	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species	
1				That Are OBL, FACW, or FAC: 4 (A	(A)
2				Total Number of Dominant	
3	·			Species Across All Strata: <u>6</u> (1	(B)
4				Deveent of Deminent Creation	
5	·	·		That Are OBL, FACW, or FAC: <u>67</u> (A	(A/B)
6	·			Prevalence Index worksheet:	
		= I otal Cov	er	Total % Cover of: Multiply by:	
50% of total cover:	20% of	total cover:		OBL species x 1 =	
Sapling Stratum (Plot size: 15ft)					-
1. Platanus occidentalis (Sycamore)	10	Y	FACW	FAC species x 3 -	-
2	. <u> </u>	·			-
3				FACO species x 4 =	-
4.				UPL species X 5 =	-
5				Column Totals: (A)	(B)
6	·	·		Prevalence Index - B/A -	
··	10	- Total Cov	or	Hydrophytic Vogetation Indicators:	-
F		- 10(a) 000	0	1 Denid Test for Lludrophytic Vegetation	
50% of total cover: 5	20% of	total cover:	2		
Shrub Stratum (Plot size: 15ft)				2 - Dominance Test is >50%	
1. Platanus occidentalis (Sycamore)	10	Y	FACW	3 - Prevalence Index is ≤3.0	
2. Elaeagnus umbellata (Autumn Olive)	8	Y	NA	4 - Morphological Adaptations' (Provide suppo	orting
3. Rosa multiflora (Multiflora Rose)	5	Y	FACU	Drablemetic Lludrenby tic Vegetation ¹ (Evaluation	
4)
5				1	
6.				'Indicators of hydric soil and wetland hydrology mu	ıst
	23	= Total Cov	er	Definitions of Eive Vegetation Strates	
50% of total cover: 11.5	20% of	total aquar	46	Deminions of Five vegetation Strata.	
50% of total cover. 11.0	20% 0	iolai cover.		Tree – Woody plants, excluding woody vines,	
Herb Stratum (Plot size: One)	40	V		approximately 20 ft (6 m) or more in height and 3 in (7.6 cm) or larger in diameter at breast height (DB)	n. H)
<u>1. Suncus endsus (Common Rush)</u>	20			(7.5 cm) of larger in diameter at breast height (DD)	1).
Z. Calex Vulpinoidea (Fox Sedge)	10	- <u>I</u>		Sapling – Woody plants, excluding woody vines,	
3. Thiolium prateinse (Red Clover)	<u> </u>		FACU	than 3 in. (7.6 cm) DBH.	iS
4. Thiolium repens (white Clover)	<u> </u>		FACU		
5. Dactylis glomerata (Orchard Grass)	5	N	FACU	Shrub – Woody plants, excluding woody vines,	
6				approximately 3 to 20 it (1 to 6 m) in height.	
7	·			Herb - All herbaceous (non-woody) plants, includir	ng
8	. <u> </u>	·		herbaceous vines, regardless of size, and woody	W 2
9				ft (1 m) in height.	iy S
10	. <u> </u>	·			
11				Woody vine – All woody vines, regardless of heigh	ht.
	80	= Total Cov	er		
E0% of total cover: 40	200/ 01	total aquar	16		
Weeder Vire Chet size	20 % 01	lotal cover.			
(Plot size)					
1	·	·			
2		·			
3	·				
4					
5	·			Hydrophytic	
		= Total Cov	er	Vegetation	
50% of total cover:	20% of	total cover:		Present? Yes Ves No	
Remarks: (Include photo numbers here or on a separate s	sheet.)			1	

SUL

Profile Desc	cription: (Describ	e to the dep	oth needed to docur	ment the	indicator	or confirm	the absence	of indicators.)
Depth	Matrix		Redo	x Feature	es1	2	-	
(inches)	Color (moist)	%	Color (moist)	%	l ype'	LOC		<u>Remarks</u>
0-1	2.51 2/1	100				·	Loam	
1-5	2.5Y 6/1	70	2.5Y 6/1	20	D	M	Silt Loam	Some coal fragments
			2.5Y 6/8	10	D	Μ	Silt Loam	
5-12	2.5Y 6/1	75	2.5Y 5/2	15	D	Μ	Silt Loam	Some coal fragments
			2.5Y 6/8	10	D	Μ	Silt Loam	
						·		
					. <u> </u>	·		
			·		·	·		
					<u> </u>			
¹ Type: C=C	oncentration, D=De	pletion, RM	=Reduced Matrix, M	S=Maske	d Sand Gr	ains.	² Location: Pl	L=Pore Lining, M=Matrix.
Hydric Soil	Indicators:		, , , , , , , , , , , , , , , , , , , ,				Indica	ators for Problematic Hydric Soils ³ :
Histosol	(A1)		Dark Surface	e (S7)			2	cm Muck (A10) (MLRA 147)
Histic Ep	pipedon (A2)		Polyvalue Be	elow Surfa	ace (S8) (N	/ILRA 147,	148) 🗌 C	oast Prairie Redox (A16)
Black Hi	istic (A3)		🔲 Thin Dark Su	urface (S9) (MLRA '	147, 148)	_	(MLRA 147, 148)
Hydroge	en Sulfide (A4)		Loamy Gleye	ed Matrix	(F2)		L P	iedmont Floodplain Soils (F19)
Stratified	d Layers (A5)		✓ Depleted Ma	trix (F3)				(MLRA 136, 147)
2 cm Mu	uck (A10) (LRR N)	(0.4.4)	Redox Dark	Surface (I	F6)			ery Shallow Dark Surface (TF12)
	a Below Dark Suna	ice (ATT)		rk Surrace	e (F7)			ther (Explain in Remarks)
	Ark Surface (ATZ)				·0) ·0c (F12) (
	4 147, 148)		MI RA 13	6)				
Sandy G	Gleved Matrix (S4)			oce (F13)	(MLRA 13	6, 122)	³ Indi	icators of hydrophytic vegetation and
Sandy F	Redox (S5)		Piedmont Flo	odplain S	Soils (F19)	(MLRA 14	18) we	tland hydrology must be present.
Stripped	Matrix (S6)		Red Parent N	Material (F	=21) (MLR	A 127, 147	7) unl	less disturbed or problematic.
Restrictive	Layer (if observed	l):			, ,			·
Type:								
Depth (in	ches):						Hydric Soil	Present? Yes 🖌 No 🦾
Remarks:	oils have been	areatly inf	luenced by the h	istoric r	ninina th	rouahou	t the study a	area. While some samples
a	opear to be una	ffected. th	here are hints of	soil ove	rturn and	d coal fra	aments thro	bughout many of the samples.
S	oils meet F3 inc	licator for	hydric soils.				.g	
			,					

Project/Site: Vinton Solar Energy (Center Project	City/County: M	cArthur/Vinton	Sampling Date: <u>4/4/17</u>			
Applicant/Owner: Invenergy LLC			State: OH Sampling Point: Upland 3				
Investigator(s): <u>Nathan Renaudin 8</u>	Lindsey Moss	Section, Townsl	nip, Range:				
Landform (hillslope, terrace, etc.): <u>Hills</u> Subregion (LRR or MLRA): <u>MLRA126</u>	lope <u>Lat:</u> 39.2760 clay loam	_ Local relief (concav 01	/e, convex, none): <u>Concave</u> Long: <u>-82.449528</u>	Slope (%): <u>1</u> Datum: <u>WGS84</u>			
Soil Map Unit Name: Detriesda Sitty							
Are climatic / hydrologic conditions on th	e site typical for this time	of year? Yes	No <u>V</u> (If no, explain in	Remarks.)			
		cantly disturbed?	Are "Normal Circumstances				
Are vegetation, Soli, or r		ily problematic?	(in needed, explain any ansi	vers in Remarks.)			
SUMMARY OF FINDINGS - At	tach site map show	wing sampling p	oint locations, transec	ts, important features, etc.			
Hydrophytic Vegetation Present?	Yes No	Is the Sa	ampled Area				
Hydric Soil Present?	Yes No Yes	within a	Wetland? Yes	No			
Wetland Hydrology Present?	Yes No						
Remarks:							
The majority of the study area is by cattle. This upland point can feet north of the intersection of boundary of Wetland 3.	s in a field that has b be found alongside township roads 14 a	been historically in township road 15 nd 15. This uplan	npacted by strip mining I . The sample point is loc d sample point is located	but is now actively grazed ated approximately 2,200 d directly alongside the			
HYDROLOGY							
Wetland Hydrology Indicators:			Secondary Indi	cators (minimum of two required)			
Primary Indicators (minimum of one is	required; check all that a	pply)	Surface So	bil Cracks (B6)			
Surface Water (A1)	True Aqua	atic Plants (B14)	Sparsely V	egetated Concave Surface (B8)			
High Water Table (A2)	Hydrogen	Sulfide Odor (C1)	Drainage F	Patterns (B10)			
Saturation (A3)	Oxidized	Rhizospheres on Livin	ig Roots (C3) Moss Trim	Lines (B16)			
Water Marks (B1)	Presence	of Reduced Iron (C4)	Dry-Seaso	n Water Table (C2)			
Sediment Deposits (B2)	Recent Irc	on Reduction in Tilled	Soils (C6) Crayfish B	urrows (C8)			
Drift Deposits (B3)	Thin Mucl	k Surface (C7)	Saturation	Visible on Aerial Imagery (C9)			
Algal Mat or Crust (B4)	Other (Ex	plain in Remarks)	Stunted or	Stressed Plants (D1)			
Iron Deposits (B5)			Geomorph	ic Position (D2)			
Inundation Visible on Aerial Image	ry (B7)		Shallow Ad	quitard (D3)			
Water-Stained Leaves (B9)			Microtopog	graphic Relief (D4)			
Aquatic Fauna (B13)			FAC-Neutr	al Test (D5)			
Field Observations:							
Surface Water Present? Yes	No <u></u> Depth (in	iches):					
Water Table Present? Yes	No <u></u> Depth (in	iches):					
Saturation Present? Yes	No <u></u> Depth (in	iches):	Wetland Hydrology Pres	ent? Yes No			
Describe Recorded Data (stream gaug	e, monitoring well, aerial	photos, previous insp	ections), if available:				
Remarks:							
During the past few days, there	has been several in	ches of rain that I	has made many areas m	such wetter than most of the			
year.			,				

0.00	Absolute	Dominan	t Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 3011)	<u>% Cover</u>	<u>Species</u>	<u>Status</u>	Number of Dominant Species
1. Acer rubrum (Red Maple)	10	<u>Y</u>	FAC	That Are OBL, FACW, or FAC: 2 (A)
2. Quercus rubra (Red Oak)	10	Y	FACU	Total Number of Dominant
3				Species Across All Strata: (B)
4				
5				That Are OBL FACW or FAC: 29 (A/B)
6.				
	20	= Total Co	ver	Prevalence Index worksheet:
50% of total answer 10	000/ 04			Total % Cover of: Multiply by:
50% of total cover: <u>10</u>	20% 01	r total cove	r: <u> </u>	OBL species x 1 =
Sapling Stratum (Plot size: 1511				FACW species x 2 =
1	·	·		FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4	. <u> </u>			Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Co	ver	Hydrophytic Vegetation Indicators:
E0% of total cover:	20% at	f total agua		1 - Rapid Test for Hydrophytic Vegetation
Store Christian (Distriction 15ft	20% 0	i lolai cove	I	\square 2 - Dominance Test is >50%
Shrub Stratum (Plot Size: 1000)	10	v	FAC	\square 3 - Prevalence Index is <3 0 ¹
	10		170	4 Morphological Adaptations ¹ (Provide supporting
2	·	·		data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation ¹ (Explain)
4	. <u> </u>			
5				¹ Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
	10	T () O		
		= Total Co	over	Definitions of Five Vegetation Strata:
50% of total cover: 5	20% of	= Total Co f total cove	_{r:} 2	Definitions of Five Vegetation Strata:
50% of total cover: <u>5</u>	20% of	= Total Co f total cove	r: <u>2</u>	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in bailet and 3 in
50% of total cover: <u>5</u> <u>Herb Stratum</u> (Plot size: <u>5ft</u>) 1 Trifolium repens (White Clover)	20% of	= Total Co f total cove Y	r: <u>2</u> FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
50% of total cover: <u>5</u> <u>Herb Stratum</u> (Plot size: <u>5ft</u>) 1. Trifolium repens (White Clover) 2 Dactylis glomerata (Orchard Grass)	20% of 20	= Total Co f total cove <u>Y</u>	r:2 <u>FACU</u> FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
50% of total cover: <u>5</u> <u>Herb Stratum</u> (Plot size: <u>5ft</u>) <u>1. Trifolium repens (White Clover)</u> <u>2. Dactylis glomerata (Orchard Grass)</u> <u>3. Trifolium pratense (Red Clover)</u>	$\frac{20}{20}$	$= 1 \text{ otal Co}$ f total cove $= \frac{Y}{\frac{Y}{Y}}$	FACU FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
50% of total cover: <u>5</u> <u>Herb Stratum</u> (Plot size: <u>5ft</u>) <u>1. Trifolium repens (White Clover)</u> <u>2. Dactylis glomerata (Orchard Grass)</u> <u>3. Trifolium pratense (Red Clover)</u> <u>4. Poa pratensis (Kentucky bluegrass)</u>		$= 1 \text{ otal Co}$ f total cove $\frac{Y}{Y}$ $\frac{Y}{Y}$	FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
50% of total cover: <u>5</u> <u>Herb Stratum</u> (Plot size: <u>5ft</u>) <u>1.</u> Trifolium repens (White Clover) <u>2.</u> Dactylis glomerata (Orchard Grass) <u>3.</u> Trifolium pratense (Red Clover) <u>4.</u> Poa pratensis (Kentucky bluegrass) <u>5.</u> Taraxacum officipale (Common Dandelion)		$= 1 \text{ otal Cove}$ $\frac{\frac{Y}{Y}}{\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}{Y$	FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
50% of total cover: <u>5</u> <u>Herb Stratum</u> (Plot size: <u>5ft</u>) 1. <u>Trifolium repens (White Clover)</u> 2. <u>Dactylis glomerata (Orchard Grass)</u> 3. <u>Trifolium pratense (Red Clover)</u> 4. <u>Poa pratensis (Kentucky bluegrass)</u> 5. <u>Taraxacum officinale (Common Dandelion)</u>	20% of 20 20 20 20 20 15	$= 1 \text{ otal Cove}$ $= \frac{Y}{Y}$ $= \frac{Y}{Y}$ $= \frac{Y}{N}$	FACU FACU FACU FACU FACU UPL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height
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image: c-cConcentration, D-Depletion, RM-Reduced Matrix, MS-Masked Sand Grains. ¹ Location: PL-Pore Lining, M-Matrix. in: Solii Indicators for Problematic Hydric Solis Histic Epipedin (A2) Dark Surface (S7) Histic Soli Indicators for Problematic Hydric Solis Hydrogen Sulfide (A4) Dark Surface (S7) Hydrogen Sulfide (A4) Dark Surface (S7) Hydrogen Sulfide (A4) Dark Surface (S8) (MLRA 147, 149) Dark Surface (A11) Depleted Dark Surface (F6) Depleted Dark Surface (F7) (MLRA 136, 147) Depleted Dark Surface (F1) Depleted Dark Surface (F1) Sandy Micky Mineral (S1) (LRR N, MLRA 136, 122) Numeral (S1) (LRR N, MLRA 136) Sandy Kedy Kety Meral (S4) Durbur Surface (F13) (MLRA 136, 122) Sandy Kedy Kety Meral (S6) Depleted Dark Surface (F13) (MLRA 136, 122) Sandy Kety Kety Hydrogen Terosensons (F8) Sandy Kety (G boserved): Peleformet Fice/Aplain Solis (F19) (MLRA 136, 122) YPerit (index Larger (if observed): Peleformet Fice/Aplain Solis (F13) (MLRA 136, 122) Yperit (index Larger (if observed): Peleformet Fice/Aplain Solis (F13) (MLRA 147, 149) Sandy Kedy K (55) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. Yperit (in	10	2.51 4/4	97	10 1K 5/8	3	D		Silt Loam	Some coal tragments
xe: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. *Location: PL=Pore Lining, M=Matrix. ric Soil Indicators:									
be: C-Concentration, D-Depletion, RM-Reduced Matrix, MS-Masked Sand Grains. *Location: PL-Pore Lining, M-Matrix. Indicators: Indicators: Indicators: Indicators: Histic Epipedon (A2) Dark Surface (S7) Indicators: Indicators: Histic Epipedon (A2) Dark Surface (S9) (MLRA 147, 148) Coast Praine Redox (A16) (MLRA 147, 148) Hydrogen Stilled (A4) Dark Surface (S9) (MLRA 147, 148) (MLRA 147, 148) (MLRA 147, 148) Stratified Layers (A5) Depleted Matrix (F3) (MLRA 136, 147) (MLRA 136, 147) Depleted Below Dark Surface (A11) Depleted Dark Surface (F12) (MLRA 136, 147) (MLRA 136, 147) Sandy Mlexy Matrix (S4) Unbris Surface (F13) (MLRA 143, 147) (MLRA 147, 148) (MLRA 147, 148) Sandy Redy Matrix (S6) Hubris Surface (F13) (MLRA 148, 147) (MLRA 147, 148) (MLRA 147, 148) Sandy Redy Matrix (S6) Hubris Surface (F13) (MLRA 148, 147) (MLRA 147, 148) (MLRA 147, 148) Sandy Redy Matrix (S6) Hubris Surface (F13) (MLRA 136, 122) "Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Redy Matrix (S6) Hubris Surface (F13) (MLRA 147, 148) Hubris Surface (·					
be: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. *Location: PL=Pore Lining, M=Matrix. Iris Soil Indicators: Histo: Epipedon (A2) Dark Surface (S7) Histo: C(A1) Histo: Epipedon (A2) Deplyalue Below Surface (S9) (MLRA 147, 148) Hydrogen Suffide (A4) Strattled Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) 2 cm Muck (A10) (URR N) Depleted Matrix (F3) Depleted Matrix (F3) Coast Partice (A12) Depleted Matrix (F3) Coast Surface (A11) Depleted Matrix (F3) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Muck (A10) (URR N) Sandy Redox (S5) Depleted Matrix (F3) Sandy Redox (S5) Depleted Matrix (S4) Depleted Matrix (S6) Piedmont Floodplain Solis (F19) (MLRA 135, 147) Singed Matrix (S6) Depleted Matrix (S4) Depleted Matrix (S4) Depleted Matrix (S6) Piedmont Floodplain Solis (F19) (MLRA 136, 142) wetant hydrology must be present, unless disturbed or problematic.				·					
Indicators: Indicators: Indicators: Histosol (A1) Dark Surface (S7) Image: Construct (A10) Histosol (A2) Polyvalue Below Surface (S8) (MLRA 147, 148) Image: Construct (A16) Black Histic (A3) Image: Construct (A16) Image: Construct (A16) Stratified Layers (A5) Depleted Matrix (F3) Image: Construct (A17) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Image: Construct (A17) Depleted Below Dark Surface (A12) Redox Dark Surface (F13) Image: Construct (A17) Sandy Mucky Mineral (S1) (LRR N, Image: Construct (A17) Image: Construct (A17) Sandy Gleyed Matrix (S4) Image: Construct (F13) Image: Construct (A17) Sandy Redy Matrix (S4) Image: Construct (F13) Image: Construct (F13) Surface (A12) Red Parent Material (F21) (MLRA 127, 147) Image: Construct (F13) Sandy Redox (S5) Red Parent Material (F21) (MLRA 127, 147) Image: Construct (F13) Stripted Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Image: Construct (F13) 'ipedmont Floodplain Solis (F19) Image: Construct (F13) Image: Construct (F13) 'ipedmont Floodplain Solis (F19) Image: Construct (F13) Image: Construct (be: C=Co	ncentration, D=D	epletion, RN	I=Reduced Matrix, M	S=Maske	d Sand G	rains.	² Location: Pl	_=Pore Lining, M=Matrix.
Indextor(r) Image: Construction (r) Image: Constend (r) Image: Construction (r) Ima	Histosol (ndicators:		Dark Surfac	e (S7)				cm Muck (A10) (MI RA 147)
Black Histic (A3) Hydrogen Sulfide (A4) Strattifed Layers (A5) 2 cm Muck (A10) (LRR N) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A11) Bedox Depressions (F8) MLRA 136, 147 Hold Matrix (S6) Sandy Gleyed Matrix (S6) Sandy Gleyed Matrix (S6) Sandy Redox (S5) Singend Matrix (S6) Depleted Dark Matria (C11) Hedmont Floodplain Soils (F12) (LRR N, MLRA 136, 122) Hedmont Floodplain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Trictive Layer (if observed): ''pe: ''pe: ''pe: ''pet inches): ''pet inches): ''pearly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	Histic Epi	ipedon (A2)		Polyvalue B	elow Surfa	ice (S8) (MLRA 147,	. 148)	oast Prairie Redox (A16)
Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) (LRR N) Depleted Matrix (F3) Card Muck (A10) (LRR N) Depleted Balow Dark Surface (A11) Depleted Dark Surface (F1) Thick Dark Surface (A12) Sandy Gleyed Matrix (S4) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Stripped Matrix (S6) Criterive Layer (if observed): 'pe: Depleted Dark Surface (F13) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 148) Learner Material (F21) (MLRA 147, 148) Stripped Matrix (S6) Stripped Stripped Stri	Black His	stic (A3)		Thin Dark S	urface (S9) (MLRA	147, 148)	_	(MLRA 147, 148)
Stratured Layers (r.5)	Hydroger	n Sulfide (A4)			ed Matrix	(F2)		Ц Р	iedmont Floodplain Soils (F19)
Lon-mada, (H3, (LRR N,	2 cm Mur	Layers (A5)			atrix (F3) Surface (I	-6)		Пу	(WILKA 130, 14/) erv Shallow Dark Surface (TE12)
Thick Dark Surface (A12) Redox Depressions (F8) ALRA 147, 148) Redox Depressions (F8) ALRA 147, 148) MLRA 147, 148 MLRA 136 ALRA 137 ALRA 138 ALRA 136 ALRA 136 ALRA 137 ALRA 138 ALRA	Depleted	Below Dark Surfa	ace (A11)		irk Surface	e (F7)			ther (Explain in Remarks)
Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Gleyed Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 148) Piedmont Floodplain Soils (F19) (MLRA 147, 147) wetland hydrology must be present, unless disturbed or problematic. trictive Layer (if observed): 'ype: 	Thick Da	rk Surface (A12)		Redox Depr	essions (F	8)		·	, j /
MLRA 147, 148) MLRA 136) Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) ^a Indicators of hydrophytic vegetation any wetland hydrology must be present, unless disturbed or problematic. Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. trictive Layer (if observed): 'ype:	Sandy M	ucky Mineral (S1)	(LRR N,	Iron-Mangar	nese Mass	es (F12)	(LRR N,		
Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) ³ Undicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. trictive Layer (if observed): Ype: Hydric Soil Present? Yes No ype: Hydric Soil have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	MLRA	147, 148)		MLRA 1	36)			2	
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present, Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. Trictive Layer (if observed): 'ype: 	Sandy GI	leyed Matrix (S4)			ace (F13)	(MLRA 1	36, 122)	³ Ind	cators of hydrophytic vegetation and
Shipped Matrix (S6) Red Parent Material (P21) (MLRA 127, 147) unless disturbed of problematic. trictive Layer (if observed): //pe:	Sandy Re	edox (S5)		Piedmont Fl	oodplain S	Soils (F19) (MLRA 14	18) we	tland hydrology must be present,
Type:	Stripped	Matrix (S6)	d).	Red Parent	Material (I	•21) (ML	RA 127, 14	() uni	ess disturbed or problematic.
Upper intromation Hydric Soil Present? Yes No Yes Parks: Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples		ayer (il observer	u).						
Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples								Hydric Soil	Present? Yes 📃 No 🗸
appear to be unanected, there are nints of son overtuin and coal nagments throughout many of the samples	ype:	hes):							
	Type: Depth (incl Darks: So	hes):	greatly in	fluenced by the h	nistoric r	nining t	nroughou	t the study a	area. While some samples
	Depth (incl narks: So	^{hes):} ils have been pear to be una	greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	nroughou Id coal fra	t the study a agments thro	area. While some samples bughout many of the samples
	ype:)epth (incl ^{larks:} So ap	^{hes):} ils have been pear to be una	greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	nroughou Id coal fra	t the study a agments thro	area. While some samples bughout many of the samples
	Depth (inc Darks: So ap	^{hes):} ils have been pear to be una	greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	nroughou Id coal fra	t the study a agments thro	area. While some samples bughout many of the samples
	Depth (inc narks: ap	hes): ils have been pear to be una	greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	nroughou Id coal fra	t the study agments thro	area. While some samples bughout many of the samples
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	Depth (inc narks: So ap	hes): ils have been pear to be una	greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t	nroughou d coal fra	t the study agments thro	area. While some samples bughout many of the samples
	Depth (inc narks: So ap	hes): pear to be una	greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	nroughou d coal fra	t the study a agments thro	area. While some samples bughout many of the samples
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	Pype: Depth (inc narks: So ap	hes): pear to be una	greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t	nroughou d coal fra	t the study agments thro	area. While some samples bughout many of the samples
	Depth (inc Depth (inc narks: So ap	hes): pear to be una	greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t	nroughou d coal fra	t the study a agments thro	area. While some samples bughout many of the samples

Applicant/Owner: Invenergy LLC State: OH Sampling Point: Wetland 4 Investigator(s): Nathan Renaudin & Lindsey Moss Section, Township, Range:
Investigator(s): Nathan Renaudin & Lindsey Moss Section, Township, Range: Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 1 Subregion (LRR or MLRA): MLRA126 Lat: 39.281122 Long: -82.439165 Datum: WGS84 Soil Map Unit Name: Bethesda silty clay loam NWI classification: PEM Are climatic / hydrologic conditions on the site typical for this time of year? Yes No ✓ (If no, explain in Remarks.) Are Vegetation ✓ Soil ✓ , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)
Landform (hillslope, terrace, etc.): <u>Hillslope</u> Local relief (concave, convex, none): <u>Concave</u> Slope (%): <u>1</u> Subregion (LRR or MLRA): <u>MLRA126</u> Lat: <u>39.281122</u> Long: <u>-82.439165</u> Datum: <u>WGS84</u> Soil Map Unit Name: <u>Bethesda silty clay loam</u> NWI classification: <u>PEM</u> Are climatic / hydrologic conditions on the site typical for this time of year? Yes No 🗸 (If no, explain in Remarks.) Are Vegetation 🖌 Soil 🗸, or Hydrology 🖌 significantly disturbed? Are Vegetation , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)
Subregion (LRR or MLRA): MLRA126 Lat: 39.281122 Long: -82.439165 Datum: WGS84 Soil Map Unit Name: Bethesda silty clay loam NWI classification: PEM Are climatic / hydrologic conditions on the site typical for this time of year? Yes No ✓ (If no, explain in Remarks.) Are Vegetation ✓ Soil ✓ , or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes No ✓ Are Vegetation ✓ Soil ✓ , or Hydrology maturally problematic? (If needed, explain any answers in Remarks.)
Soil Map Unit Name: Bethesda silty clay loam NWI classification: PEM Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation Soil, or Hydrology significantly disturbed? Are Vegetation, soil, or Hydrology naturally problematic? SUMMARY OF FINDINGS Attach site map showing sameling point locations, transports, important factures, etc.
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Are Vegetation Soil, or Hydrology isignificantly disturbed? Are Vegetation, Soil, or Hydrology naturally problematic? SUMMARY OF FINDINGS. Attach site map showing sameling point locations, transports, important features, etc.
Are Vegetation \checkmark Soil \checkmark , or Hydrology \checkmark significantly disturbed? Are "Normal Circumstances" present? Yes \checkmark No \checkmark (If needed, explain any answers in Remarks.)
Are Vegetation, Soil, or Hydrology, naturally problematic? (If needed, explain any answers in Remarks.)
SUMMARY OF EINDINGS Attach site man showing campling point locations, transacts, important factures, etc.
Sommart or rindings - Attach site map showing sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Yes V Yes V Yes V No No No No No No No No No No
The majority of the study area is in a field that has been historically impacted by strip mining but is now actively grazed by cattle. This particular wetland can be found on the northern edge of delineated pond 2. The sample point is located approximately 5,400 feet northeast of the intersection of township roads 14 and 15.
HYDROLOGY
Wetland Hydrology Indicators: Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1)
High Water Table (A2) Hydrogen Sulfide Odor (C1) I Drainage Patterns (B10)
Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1) Presence of Reduced Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)
Drift Deposits (B3) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in Remarks) Stunted or Stressed Plants (D1)
□ Iron Deposits (B5)
Inundation Visible on Aerial Imagery (B7)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Field Observations:
Surface Water Present? Yes ✓ No / Depth (inches): ∠
Water Table Present? Yes V No Depth (inches): -4
Saturation Present? Yes <u>V</u> No Depth (inches): <u>V</u> Wetland Hydrology Present? Yes <u>V</u> No <u>V</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:
Within this data form, negative numbers in the water table represent inches below surface and 0, within the saturation
column, represents surface saturation. During the past few days, there has been several inches of rain that has made
many areas much wetter than most of the year.

Sampling Point: Wetland 4

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species
1		. <u> </u>		That Are OBL, FACW, or FAC: 2 (A)
2		·		Total Number of Dominant
3				Species Across All Strata: 3 (B)
4				
5		·		Percent of Dominant Species
<u>.</u>		·		That Are OBL, FACW, or FAC: 07 (A/B)
0		Total Cav		Prevalence Index worksheet:
			er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: 15ft)				
1		·		
2.				FAC species x 3 =
3.				FACU species x 4 =
4		·		UPL species x 5 =
4		·		Column Totals: (A) (B)
5		·		
6		·		Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: ^{15ft})				✓ 2 - Dominance Test is >50%
1				\square 3 - Prevalence Index is ≤3.0 ¹
		·		4 - Morphological Adaptations ¹ (Provide supporting
2		·		data in Remarks or on a separate sheet)
3		·		Problematic Hydrophytic Vegetation ¹ (Explain)
4				
5		·		¹ Indiactors of hydric soil and watland hydrology must
6				be present, unless disturbed or problematic.
		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total covor		Definitions of the Vegetation of ata.
Userte Otractioner (Discourse of 5ft	20 /0 01			Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <u>Shr</u>)	40	V		approximately 20 ft (6 m) or more in height and 3 in.
1. Calex vulpinoidea (Fox Sedge)	40			
2. Juncus enusus (Common Rush)	30	<u> </u>	FACW	Sapling – Woody plants, excluding woody vines,
3. Dactylis glomerata (Orchard Grass)	20	Y	FACU	approximately 20 ft (6 m) or more in height and less
4. Trifolium repens (White Clover)	5	N	FACU	than 3 ln. (7.6 cm) DBH.
5. Trifolium pratense (Red Clover)	5	Ν	FACU	Shrub – Woody plants, excluding woody vines,
6.				approximately 3 to 20 ft (1 to 6 m) in height.
7				Harb All borbaccous (non woody) plants, including
0		·		herbaceous vines, regardless of size, and woody
0		·		plants, except woody vines, less than approximately 3
9		·		ft (1 m) in height.
10		·		Woody vine – All woody vines, regardless of height.
11		·		······································
	100	= Total Cov	er	
50% of total cover: 50	20% of	total cover:	20	
Woody Vine Stratum (Plot size:				
1				
1		·		
		·		
3				
4		·		
5				Hydrophytic
		= Total Cov	er	
50% of total cover	200/ 04	total cover		Present? Yes 🖌 No
Dementer (Include photo constructions)	20% 0I	iotal covel.		
Remarks: (Include photo numbers here or on a separate :	sneet.)			

Vegetation has been grazed in many portions of the wetland, making species identification difficult.

(CDC)	Color (maint)	0/	Color (maint)	ox Features	Tuna ¹		Toyturo	Domorko
<u>-1</u>	2.5Y 2/1	<u>%</u> 100		%	rype	LOC	Loam	Muck laver
.12	2.5V 5/1		10 VR 5/6	15		N/	Silt Loam	Some coal fragments
12	2.51 5/1	00	10 11 3/0	15	0			Some coal magnients
/pe: C=Co	ncentration D=D	epletion RM	=Reduced Matrix M	S=Masked	Sand Gr	ains	² Location: Pl	=Pore Lining M=Matrix
dric Soil Ir	ndicators:			<u>e-maoneu</u>			Indica	ators for Problematic Hydric Soils ³
Histosol ((A1)		Dark Surfac	e (S7)			<u> </u>	cm Muck (A10) (MLRA 147)
Histic Epi	ipedon (A2)		Polyvalue B	elow Surfac	e (S8) (N	/ILRA 147,	148) 🔲 C	oast Prairie Redox (A16)
Black His	stic (A3)		Thin Dark S	urface (S9)	(MLRA [·]	147, 148)	_	(MLRA 147, 148)
Hydroger	n Sulfide (A4)		Loamy Gley	ed Matrix (F	-2)		<u> </u> Р	iedmont Floodplain Soils (F19)
Stratified	Layers (A5)		Depleted Ma	atrix (F3) Ourfood (EC	~			(MLRA 136, 147)
Doplotod	CK (A10) (LKK N) Rolow Dark Surf	000 (111)		Surface (Ft) (E7)			ery Shallow Dark Surface (TF12)
Depieteu	rk Surface (A12)	ace (ATT)		essions (F8)	(<i>Г1)</i>)			(Lexplain in Remarks)
Sandy M	ucky Mineral (S1)	(LRR N.		nese Masse	, s (F12) (LRR N.		
MLRA	147, 148)	(,	MLRA 13	36)	e (/ (,		
Sandy GI	leyed Matrix (S4)		Umbric Surfa	, ace (F13) (N	ILRA 13	86, 122)	³ Ind	icators of hydrophytic vegetation and
Condy D	edox (S5)		Piedmont Fl	oodplain So	ils (F19)	(MLRA 14	18) we	tland hydrology must be present,
					1) /MI D	A 107 14	7)	and disturbed as weak laws at a
Stripped	Matrix (S6)		Red Parent	Material (F2		A 127, 14	r) un	less disturbed or problematic.
Stripped strictive L	Matrix (S6) ayer (if observed	d):	Red Parent	Material (F2		A 127, 14		ess disturbed of problematic.
Stripped strictive L Type:	Matrix (S6) ayer (if observed	d):	Red Parent	Material (F2		A 127, 14		
Stripped strictive L Type: Depth (incl	Matrix (S6) ayer (if observed	d):	. Red Parent	Material (F2		A 127, 14	Hydric Soil	Present? Yes No
Stripped strictive L Type: Depth (incl marks: So	Matrix (S6) ayer (if observed hes):	d): greatly in	Red Parent	nistoric mi	ining th	iroughou	Hydric Soil	Present? Yes <u>No</u> No
Stripped strictive L Type: Depth (incl marks: So ap	Matrix (S6) ayer (if observed hes): ils have been pear to be una	d): greatly in affected, tl	Red Parent	nistoric mi soil overt	ining th	roughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No No
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, the dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the samples.
Stripped strictive L Type: Depth (incl marks: So apj So	Matrix (S6) ayer (if observed hes): ills have been pear to be una ills meet F3 ind	d): greatly in affected, the dicator for	Iluenced by the hore are hints of hydric soils.	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil Hydric Soil the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the samples.
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, the dicator for	Iluenced by the h here are hints of hydric soils.	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil It the study a agments thro	Present? Yes No have a samples oughout many of the samples.
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ills have been pear to be una ills meet F3 ind	d): greatly in affected, ti dicator for	Iluenced by the h fluenced by the h here are hints of hydric soils.	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil Hydric Soil agments thro	Present? Yes No no non- area. While some samples bughout many of the samples.
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, ti dicator for	Iluenced by the h Phere are hints of hydric soils.	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No No
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ills have been pear to be una ills meet F3 ind	d): greatly in affected, tl dicator for	I Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the samples
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, ti dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes . No .
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, th dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil It the study a agments thro	Present? Yes . No .
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, ti dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil It the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the samples
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ills have been pear to be una ills meet F3 ind	d): greatly in affected, ti dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil	Present? Yes <u>No</u> No area. While some samples bughout many of the samples
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ills have been pear to be una ills meet F3 ind	d): greatly in affected, ti dicator for	Red Parent	historic mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the samples
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, tl dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil t the study a agments thro	Present? Yes . No .
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, ti dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil Hydric Soil the study a agments thro	Present? Yes . No .
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, th dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil It the study a agments thro	Present? Yes No No area. While some samples bughout many of the samples
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, ti dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil It the study a agments thro	Present? Yes No No area. While some samples bughout many of the samples
Stripped strictive L Type: Depth (incl marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, ti dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil It the study a agments thro	Present? Yes No No area. While some samples bughout many of the samples
Stripped strictive L Type: Depth (inc. marks: So ap So	Matrix (S6) ayer (if observed hes): ills have been pear to be una ills meet F3 ind	d): greatly in affected, ti dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil It the study a agments thro	Present? Yes No host of problematic.
Stripped strictive L Type: Depth (inc. marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, ti dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil Hydric Soil the study a agments thro	Present? Yes No host N
Stripped strictive L Type: Depth (inc marks: So ap So	Matrix (S6) ayer (if observed hes): ils have been pear to be una ils meet F3 ind	d): greatly in affected, ti dicator for	Red Parent	nistoric mi soil overt	ining th urn and	roughou d coal fra	Hydric Soil t the study a agments thro	Present? Yes No host of problematic.

Project/Site: Vinton Solar Energy Center Project City/County: McArthur/Vinton Sampling Date: 4/4/17	
Applicant/Owner: Invenergy LLC State: OH Sampling Point: Uplan	d 4
Investigator(s): Nathan Renaudin & Lindsey Moss Section, Township, Range:	
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%):	1
Subregion (LRR or MLRA): MLRA126 Lat: 39.28121 Long: -82.43915 Datum: WG	384
Soil Map Unit Name: Bethesda silty clay loam NWI classification: UPL	
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)	
Are Vegetation Soil , or Hydrology isignificantly disturbed? Are "Normal Circumstances" present? Yes Are "Normal Circumstances" present?	\checkmark
Are Vegetation, Soil, or Hydrology anaturally problematic? (If needed, explain any answers in Remarks.)	
SLIMMARY OF FINDINGS – Attach site man showing sampling point locations, transacts, important feature	etc
	, cto.
Hydrophytic Vegetation Present? Yes No Is the Sampled Area	
Hydric Soil Present? Yes No ↓ within a Wetland? Yes No ↓	
Wetland Hydrology Present? Yes No	
Remarks:	
I he majority of the study area is in a field that has been historically impacted by strip mining but is now actively grain by earther adde of delineated Dand 2. The complement is leasted	ed
approximately 5 500 feet portheast of the intersection of township roads 14 and 15. This upland sample point is located	ated
directly alongside the boundary of Wetland 4.	lieu
HYDROLOGY	
Wetland Hydrology Indicators: Secondary Indicators (minimum of two reg	ired)
Primary Indicators (minimum of one is required: check all that apply)	
Surface Water (A1) True Aquatic Plants (B14) Sparsely Vegetated Concave Surface	B8)
High Water Table (A2) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10)	- /
Saturation (A3)	
Water Marks (B1) Presence of Reduced Iron (C4) Dry-Season Water Table (C2)	
Sediment Deposits (B2)	
Drift Deposits (B3) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C	9)
Algal Mat or Crust (B4) Other (Explain in Remarks) Stunted or Stressed Plants (D1)	
Iron Deposits (B5)	
Inundation Visible on Aerial Imagery (B7)	
Water-Stained Leaves (B9)	
Aquatic Fauna (B13)	
Field Observations:	
Surface Water Present? Yes No Depth (inches):	
Water Table Present? Yes No Depth (inches):	
Saturation Present? Yes No Ver Depth (inches): Wetland Hydrology Present? Yes No Ver N	✓
(Includes capillary tringe) Describe Recorded Data (stream dauge monitoring well aerial photos, previous inspections), if available:	
Remarks:	
During the past few days, there has been several inches of rain that has made many areas much wetter than most	of the
vear.	n uic

20#	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 3000) 1)	<u>% Cover</u>	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 0	(A)
2 3.				Total Number of Dominant	(B)
4.			·		(D)
5			·	Percent of Dominant Species That Are OBL, FACW, or FAC: 0	(A/B)
6		Tatal Oa		Prevalence Index worksheet:	
		= Total Cov	/er	Total % Cover of:Multiply by:	
50% of total cover:	20% of	total cover	·	OBL species x 1 =	_
Sapling Stratum (Plot size: 1511)				FACW species x 2 =	_
1				FAC species x 3 =	_
2			·	FACU species x 4 =	_
3				UPL species x 5 =	_
4			<u> </u>	Column Totals: (A)	(B)
5				Drovolonce Index - P/A -	
0		- Total Cov		Hydrophytic Vegetation Indicators:	-
				1 - Rapid Test for Hydrophytic Vegetation	
50% of total cover:	20% of	total cover	:	2 - Dominance Test is >50%	
Shrub Stratum (Plot size:)				3 - Prevalence Index is $\leq 3.0^{1}$	
1				4 - Morphological Adaptations ¹ (Provide suppl	ortina
2			·	data in Remarks or on a separate sheet)	orang
3				Problematic Hydrophytic Vegetation ¹ (Explain	ı)
4			·		
6			·	¹ Indicators of hydric soil and wetland hydrology mu	ust
··		= Total Cov	/er	be present, unless disturbed or problematic.	
E0% of total covor:	20% of			Definitions of Five vegetation Strata:	
Horh Strotum (Blot eize: 5ft	20% 01		•	Tree – Woody plants, excluding woody vines,	
1 Trifolium repens (White Clover)	20	Y	FACU	(7.6 cm) or larger in diameter at breast height (DB	in. H).
2 Dactylis glomerata (Orchard Grass)	18	Y	FACU		,
3 Trifolium pratense (Red Clover)	18	Y	FACU	approximately 20 ft (6 m) or more in height and les	ss
⁴ Poa pratensis (Kentucky bluegrass)	12	Y	FACU	than 3 in. (7.6 cm) DBH.	
5 Taraxacum officinale (Common Dandelion)	12	Y	UPL	Shrub – Woody plants, excluding woody vines.	
6. Juncus effusus (Common Rush)	10	Ν	FACW	approximately 3 to 20 ft (1 to 6 m) in height.	
7. Carex vulpinoidea (Fox Sedge)	10	Ν	OBL	Herb – All herbaceous (non-woody) plants, includi	ina
8				herbaceous vines, regardless of size, and woody	
9				plants, except woody vines, less than approximate ft (1 m) in height.	ely 3
10	<u> </u>		<u> </u>		
11				Woody vine – All woody vines, regardless of heig	jht.
	100	= Total Cov	ver		
50% of total cover: 50	20% of	total cover	20		
Woody Vine Stratum (Plot size:)					
1					
2					
3					
4					
5				Hydrophytic	
	:	= Total Cov	/er	Vegetation	
50% of total cover:	20% of	total cover	:	Present? Yes <mark>│ No √</mark>	
Remarks: (Include photo numbers here or on a separate	sheet.)			1	

0.01	Absolute	Dominant	Indicator	Dominance Test worksheet:						
<u>Tree Stratum</u> (Plot size: <u>30ft</u>) 1)	<u>% Cover</u>	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: (A)						
2										
3				Species Across All Strata: (B)						
4				Percent of Dominant Species						
5	<u> </u>			That Are OBL, FACW, or FAC: (A/B)						
o	·	- Total Cau		Prevalence Index worksheet:						
			ei	Total % Cover of:Multiply by:						
50% of total cover:	20% of	total cover:		OBL species x 1 =						
Sapling Stratum (Plot size: 1511)				FACW species x 2 =						
1			·	FAC species x 3 =						
2			·	FACU species x 4 =						
3		·	·	UPL species x 5 =						
4		·	·	Column Totals: (A) (B)						
5		·								
6			·	Prevalence Index = B/A =						
		= Total Cov	er	Hydrophytic Vegetation Indicators:						
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation						
Shrub Stratum (Plot size: 15ft)				2 - Dominance Test is >50%						
1				3 - Prevalence Index is ≤3.0 ¹						
2			·	4 - Morphological Adaptations' (Provide supporting						
3			·	Problematic Hydrophytic Vegetation ¹ (Explain)						
4			·							
5			·	¹ Indicators of hydric soil and wetland hydrology must						
6			·	be present, unless disturbed or problematic.						
		- Total Cov	or							
		- 10101 001	CI	Definitions of Five Vegetation Strata:						
50% of total cover:	20% of	total cover:		Definitions of Five Vegetation Strata:						
50% of total cover: Herb Stratum (Plot size: <u>5ft</u>)	20% of	total cover		Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.						
50% of total cover: Herb Stratum (Plot size: 5ft) 1. Trifolium repens (White Clover)	20% of	total cover:	FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).						
50% of total cover:	20% of 20 18	total cover:	FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines,						
50% of total cover:	20% of 20 18 18	total cover:	FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less 						
50% of total cover:	20% of 20 18 18 12	$\frac{Y}{Y}$	FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. 						
50% of total cover:	20% of 20 18 18 12 12 12	$\frac{\frac{Y}{Y}}{\frac{Y}{Y}}$	FACU FACU FACU FACU UPL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, 						
50% of total cover: Herb Stratum (Plot size: 5ft) 1. Trifolium repens (White Clover) 2. Dactylis glomerata (Orchard Grass) 3. Trifolium pratense (Red Clover) 4. Poa pratensis (Kentucky bluegrass) 5. Taraxacum officinale (Common Dandelion) 6. Juncus effusus (Common Rush)	20% of 20 18 18 12 12 12 10	$\frac{\frac{Y}{Y}}{\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}{Y$	FACU FACU FACU FACU FACU UPL FACW	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. 						
50% of total cover: Herb Stratum (Plot size: 5ft) 1. Trifolium repens (White Clover) 2. Dactylis glomerata (Orchard Grass) 3. Trifolium pratense (Red Clover) 4. Poa pratensis (Kentucky bluegrass) 5. Taraxacum officinale (Common Dandelion) 6. Juncus effusus (Common Rush) 7. Carex vulpinoidea (Fox Sedge)	20% of 20 18 18 12 12 12 10 10	$\frac{Y}{Y}$ $\frac{Y}{Y}$ $\frac{Y}{N}$ $\frac{Y}{N}$	FACU FACU FACU FACU UPL FACW OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including 						
50% of total cover:	20% of 20 18 18 12 12 10 10	Y Y Y Y Y Y N	FACU FACU FACU FACU FACU UPL FACW OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody 						
50% of total cover:	20% of 20 18 18 12 12 10 10 10	Y Y Y Y Y Y Y N	FACU FACU FACU FACU UPL FACW OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. 						
50% of total cover: Herb Stratum (Plot size: 5ft) 1. Trifolium repens (White Clover) 2. Dactylis glomerata (Orchard Grass) 3. Trifolium pratense (Red Clover) 4. Poa pratensis (Kentucky bluegrass) 5. Taraxacum officinale (Common Dandelion) 6. Juncus effusus (Common Rush) 7. Carex vulpinoidea (Fox Sedge) 8 9 10	20% of 20 18 18 12 12 10 10 	Y Y Y Y Y Y N	FACU FACU FACU FACU UPL FACW OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. 						
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50% of total cover:	20% of 20 18 18 12 12 10 10 10 100	Y Y Y Y Y Y Y N = Total cover	FACU FACU FACU FACU UPL FACW OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 						
50% of total cover:	20% of 20 18 18 12 12 10 10 10 100 20% of	Y Y Y Y Y Y Y Y Y Total Cover	FACU FACU FACU FACU UPL FACW OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 						
50% of total cover:	20% of 20 18 18 12 12 10 10 10 20% of	Y Y Y Y Y Y N N = Total Cover total cover	FACU FACU FACU FACU UPL FACW OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 						
50% of total cover:	20% of 20 18 18 12 12 10 10 10 20% of	Y Y Y Y Y Y Y Y N = Total cover itotal cover	FACU FACU FACU FACU UPL FACW OBL OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 						
50% of total cover:	20% of 20 18 18 12 12 10 10 10 20% of	Y Y Y Y Y Y Y Y Y Y Total cover	FACU FACU FACU FACU UPL FACW OBL OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 						
50% of total cover:	20% of 20 18 18 12 12 10 10 10 20% of	Y Y Y Y Y Y Y Y Total Cover	FACU FACU FACU FACU UPL FACW OBL OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 						
50% of total cover:	20% of 20 18 18 12 12 10 10 10 20% of	Y Y Y Y Y Y N = Total Cover	FACU FACU FACU FACU UPL FACW OBL OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 						
50% of total cover:	20% of 20 18 18 12 12 10 10 10 20% of	Y Y <t< td=""><td>FACU FACU FACU FACU UPL FACW OBL</td><td> Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. </td></t<>	FACU FACU FACU FACU UPL FACW OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 						
50% of total cover:	20% of 20 18 18 12 12 10 10 10 20% of	Y Y <t< td=""><td>FACU FACU FACU FACU UPL FACW OBL</td><td> Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. </td></t<>	FACU FACU FACU FACU UPL FACW OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 						
50% of total cover:	20% of 20 18 18 12 12 10 10 20% of 20% of 20% of	Y Y <t< td=""><td>FACU FACU FACU FACU UPL FACW OBL</td><td>Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No</td></t<>	FACU FACU FACU FACU UPL FACW OBL	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No						
50% of total cover:	20% of 20 18 18 12 12 10 10 20% of 20% of 20% of sheet.)	Y Y <t< td=""><td>FACU FACU FACU FACU UPL FACW OBL OBL</td><td>Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No</td></t<>	FACU FACU FACU FACU UPL FACW OBL OBL	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No						
2	nches) Color (moist) %		$\frac{\text{Redox Features}}{\text{Color (moist)}} \frac{96}{7} \frac{\text{Type}^{1}}{1} \frac{1}{2} \cos^{2}}$					Taytura Remarks		
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	2.5Y 4/3	100		/0	Type	LUC	Silt Loam	I TEIIIdINS		
6	2.5Y 4/3	95	10 YR 5/8	5	D	М	Silt Loam	Some coal fragments		
<u> </u>	2.01 1/0		10 11(0,0	<u> </u>	<u> </u>			<u>eenne eeu nugmente</u>		
			· · · · · · · · · · · · · · · · · · ·	·						
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	ncentration, D=D	epletion, RN	I=Reduced Matrix, N	S=Masked	Sand Gr	ains.	² Location: Pl	L=Pore Lining, M=Matrix.		
Histosol	(A1)		Dark Surfac	e (S7)				cm Muck (A10) (MI RA 147)		
Histic Ep	ipedon (A2)		Polyvalue B	elow Surfac	e (S8) (N	ILRA 147,	148) 🔲 C	oast Prairie Redox (A16)		
Jlack His	stic (A3)		Thin Dark S	urface (S9)	(MLRA 1	47, 148)		(MLRA 147, 148)		
Hydroger	n Sulfide (A4)		Loamy Gley	ed Matrix (F	2)		Ц Р	iedmont Floodplain Soils (F19)		
Stratified	Layers (A5)		Depleted Ma	atrix (F3)				(MLRA 136, 147)		
2 cm Mu	ck (A10) (LRR N) L Bolow Dork Surf	200 (111)	Redox Dark	Surface (F6	5) (EZ)			ery Shallow Dark Surface (TF12)		
Depleted Thick Da	rk Surface (A12)	ace (ATT)		essions (F8	(F7))			ther (Explain in Remarks)		
Sandy M	ucky Mineral (S1)	(LRR N,	Iron-Mangar	nese Masse	, s (F12) (LRR N,				
MLRA	147, 148)	`	MLRA 1	36)	. , ,	,				
Sandy G	leyed Matrix (S4)		Umbric Surf	ace (F13) (N	ILRA 13	6, 122)	³ Ind	icators of hydrophytic vegetation an		
Sandy R	edox (S5)		Piedmont Fl	oodplain So	ils (F19)	(MLRA 14	•8) we	tland hydrology must be present,		
Stripped	Matrix (S6)	N	Red Parent	Material (F2	21) (MLR	A 127, 147	') un	ess disturbed or problematic.		
	ayer (if observe).	d):								
opth (inc	thes).						Hydric Soil	Present? Ves No V		
eptii (iiic							Tryune Son			
orke:		greatly in	fluenced by the I	nistoric mi	ining th	roughou	t the study a	area. While some samples		
arks: Sc	oils have been	0 ,	have are hinte of	soil overt	urn and	d coal fra	igments thro	bughout many of the samples		
a ^{rks:} Sc ap	oils have been pear to be una	affected, t	nere are nints of					5 7 1		
^{arks:} Sc ap	oils have been pear to be una	affected, t	nere are nints of					5 , 1		
^{arks:} Sc ap	oils have been pear to be una	affected, t	nere are nints or							
^{arks:} Sc ap	ils have been pear to be una	affected, t	nere are nints or							
^{larks:} Sc ap	ils have been pear to be una	affected, t	nere are nints or							
^{arks:} Sc ap	ils have been pear to be una	affected, t	nere are nints of							
^{jarks:} Sc ap	bils have been pear to be una	affected, t	nere are nints of							
l ^{iarks:} Sc ap	bils have been pear to be una	affected, t	nere are nints of							
arks: Sc ap	ils have been pear to be una	affected, t	nere are nints of							
arks: Sc ap	ils have been pear to be una	affected, t	nere are nints of							
^{arks:} Sc ap	bils have been	affected, t	nere are nints of							
arks: Sc ap	bils have been	affected, t	nere are nints of							
larks: Sc ap	ils have been pear to be una	affected, t	nere are nints of							
^{harks:} Sc ap	oils have been pear to be una	affected, t	nere are nints of							
larks: Sc ap	bils have been	affected, t	nere are nints of							
^{harks:} Sc ap	bils have been	affected, t	nere are nints of							
larks: Sc ap	bils have been	affected, t	nere are nints of							
arks: Sc ap	pils have been pear to be una	affected, t	nere are nints of							

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton	Sampling Date: <u>4/4/17</u>
Applicant/Owner: Invenergy LLC	St	ate: OH Sampling Point: Wetland 5
Investigator(s): Nathan Renaudin & Lindsey Moss	_ Section, Township, Range:	
Landform (hillslope, terrace, etc.): Hillslope	ocal relief (concave, convex, none):	Concave Slope (%): 1
Subregion (LRR or MLRA): MLRA126 Lat: 39.273748	3 Long: <u>-82.43</u>	0297 Datum: WGS84
Soil Map Unit Name: Bethesda silty clay loam		NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of y	year? Yes No 🖌 (If no	, explain in Remarks.)
Are Vegetation 🖌 Soil √, or Hydrology 🖌 significant	ly disturbed? Are "Normal Circ	umstances" present? Yes No
Are Vegetation, Soil, or Hydrology naturally p	problematic? (If needed, expla	in any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showin	ig sampling point locations,	transects, important features, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks: Yes Yes	Is the Sampled Area within a Wetland?	Yes 🗸 No
The majority of the study area is in a field that has bee by cattle. This particular wetland can be found on the v sample point is located approximately 4,100 feet east	n historically impacted by strip vestern edge of a tree line tha of the intersection of township	o mining but is now actively grazed t crosses township road 14. The roads 14 and 15.
HYDROLOGY		
Wetland Hydrology Indicators:	Sec	ondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply Surface Water (A1) True Aquatic High Water Table (A2) Hydrogen Su Saturation (A3) Oxidized Rhiz Water Marks (B1) Presence of F Sediment Deposits (B2) Recent Iron F Drift Deposits (B3) Thin Muck Su Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Aquatic Fauna (B13))	Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
Field Observations:	. 3	
Water Table Present? Yes V No Depth (inche	s): <u>-6</u>	
Saturation Present? Yes \checkmark No Depth (inche	As): 0 Wetland Hydro	plogy Present? Yes 🗸 No
(includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial pho	otos, previous inspections), if available	2:
Remarks:		
Within this data form, negative numbers in the water ta	able represent inches below si	urface and 0, within the saturation
many areas much wetter than most of the year	. Tew days, there has been sev	
many areas much weater than most of the year.		

Sampling Point: Wetland 5

00%	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30ft)	% Cover	Species?	Status	Number of Dominant Species
1	· ·	·		That Are OBL, FACW, or FAC: 2 (A)
2		·		Total Number of Dominant
3				Species Across All Strata: 2 (B)
4		·		Percent of Dominant Species
5	<u> </u>	·		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
6		- Total Cav		Prevalence Index worksheet:
		= 101al COV	ei	Total % Cover of:Multiply by:
50% of total cover:	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: 1511)				FACW species x 2 =
1				FAC species x 3 =
2		·		FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)				✓ 2 - Dominance Test is >50%
1				□ 3 - Prevalence Index is $\leq 3.0^{1}$
1		·		4 - Morphological Adaptations ¹ (Provide supporting
2		·		data in Remarks or on a separate sheet)
3		·		Problematic Hydrophytic Vegetation ¹ (Explain)
4		·		
5		·		¹ Indicators of hydric soil and wetland hydrology must
6		·		be present, unless disturbed or problematic.
		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		Tree Weedy plants, excluding weedy vines
Herb Stratum (Plot size: 5ft)				approximately 20 ft (6 m) or more in height and 3 in.
 Typha latifolia (Broadleaf Cattail) 	45	Υ	OBL	(7.6 cm) or larger in diameter at breast height (DBH).
2. Carex vulpinoidea (Fox Sedge)	30	Υ	OBL	Sapling – Woody plants, excluding woody vines
3. Scirpus cyperinus (Woolgrass)	10	Ν	FACW	approximately 20 ft (6 m) or more in height and less
4. Juncus effusus (Common Rush)	5	Ν	FACW	than 3 in. (7.6 cm) DBH.
5 Trifolium pratense (Red Clover)	5	Ν	FACU	Shrub – Woody plants, excluding woody vines,
6. Cyperus esculentus (Yellow Nutsedge)	5	Ν	FACW	approximately 3 to 20 ft (1 to 6 m) in height.
7.				Herb – All berbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
9				plants, except woody vines, less than approximately 3
10				n (1 m) in height.
10		·		Woody vine – All woody vines, regardless of height.
· · · · ·	100	Total Cau		
50		= 101a1 000		
50% of total cover: <u>50</u>	20% of	total cover:	20	
Woody Vine Stratum (Plot size:)				
1		·		
2				
3				
4		·		
5				Hydrophytic
		= Total Cov	er	Vegetation
50% of total cover	20% of	total cover		Present? Yes 🖌 No
Remarks: (Include photo numbers here or on a separate	2070 01			
I remaine. (include proto numbers here of on a separate	511 0 01.)			

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth Matrix			Redo	x Feature	es					
(inches)	inches) Color (moist) %		Color (moist)	%	Type ¹	Loc ²	Texture	Remarks		
0-1	2.5Y 2/1	100					Loam	Muck layer		
1-12	2.5Y 6/1	85	2.5Y 5/6	10	D	Μ	Silt Loam	Some coal fragments		
			2 5Y 7/8	5	PI	M				
			2.01 7/0	0	<u> </u>					
					- <u> </u>	·				
						·				
						·				
					. <u> </u>	·				
¹ Type: C=Co	oncentration, D=Dep	letion, RM=	=Reduced Matrix, MS	S=Maske	d Sand Gr	ains.	² Location: Pl	_=Pore Lining, M=Matrix.		
Hydric Soil	Indicators:						Indica	tors for Problematic Hydric Soils ³ :		
Histosol	(A1)		Dark Surface	e (S7)			<u> </u>	cm Muck (A10) (MLRA 147)		
Histic Ep	pipedon (A2)		Polyvalue Be	low Surfa	ace (S8) (N	/LRA 147,	148) 🗌 C	oast Prairie Redox (A16)		
Black Hi	stic (A3)		Thin Dark Su	rface (S9) (MLRA	147, 148)		(MLRA 147, 148)		
Hydroge	en Sulfide (A4)		Loamy Gleye	d Matrix	(F2)		🔲 Р	iedmont Floodplain Soils (F19)		
D Stratified	d Layers (A5)		Depleted Mat	trix (F3)				(MLRA 136, 147)		
🔲 2 cm Mu	ıck (A10) (LRR N)		Redox Dark	Surface (I	F6)			ery Shallow Dark Surface (TF12)		
Depleted	d Below Dark Surfac	e (A11)	Depleted Dar	rk Surface	e (F7)		<u> </u>	ther (Explain in Remarks)		
Thick Date	ark Surface (A12)		Redox Depre	essions (F	8)					
🔲 Sandy M	1ucky Mineral (S1) (I	LRR N,	Iron-Mangan	ese Mass	ses (F12) (LRR N,				
MLRA	A 147, 148)		MLRA 13	6)						
Sandy G	Bleyed Matrix (S4)		Umbric Surface (F13) (MLRA 136, 122) ³ Indicators of hydrophytic vegetation a							
D Sandy R	ledox (S5)		Piedmont Flo	nont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present,						
Stripped	Matrix (S6)		Red Parent N	Naterial (F	=21) (MLR	A 127, 147	7) unl	ess disturbed or problematic.		
Restrictive I	Layer (if observed)	:								
Туре:										
Depth (ind	ches):						Hydric Soil	Present? Yes / No		
Remarks:										
S	oils have been g	reatly infl	uenced by the h	istoric n	nining th	roughou	t the study a	area. While some samples		
ap	opear to be unaf	fected, th	ere are hints of s	soil ove	rturn and	d coal fra	agments thro	oughout many of the samples.		
S	oils meet F3 indi	cator for	hydric soils.							

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date: 4/4/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 5
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope	Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR or MLRA): MLRA126 Lat: 39.2736	89 Long: <u>-82.439323</u> Datum: <u>WGS84</u>
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of	of year? Yes No 🖌 (If no, explain in Remarks.)
Are Vegetation 🖌 Soil / , or Hydrology 📝 significa	Intly disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology naturall	/ problematic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map show	ing sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes <u>↓</u> No	Is the Sampled Area
Hydric Soil Present? Yes No _ ✔	within a Wetland? Yes <u>Ves</u> No <u>V</u>
Wetland Hydrology Present? Yes No	
Remarks:	
The majority of the study area is in a field that has be	een historically impacted by strip mining but is now actively grazed
by cattle. This upland point can be found on the wes	tern edge of a tree line that crosses township road 14. The sample
is located directly alongside the boundary of Wetland	Intersection of township roads 14 and 15. This upland sample point
	15.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that ap	bly) Surface Soil Cracks (B6)
Surface Water (A1)	ic Plants (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	Sulfide Odor (C1) Drainage Patterns (B10)
Saturation (A3) Oxidized R	hizospheres on Living Roots (C3) 🔲 Moss Trim Lines (B16)
Water Marks (B1)	f Reduced Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)	n Reduction in Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3)	Surface (C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Exp	lain in Remarks) Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No Ver Depth (inc	hes):
Water Table Present? Yes No Depth (inc	hes):
Saturation Present? Yes No 🖌 Depth (inc	hes): Wetland Hydrology Present? Yes No _
(Includes capillary fringe) Describe Recorded Data (stream gauge monitoring well, aerial r	hotos previous inspections) if available:
Describe Recorded Data (stream gauge, monitoring weil, achai p	
Remarks:	
During the past few days, there has been several inc	thes of rain that has made many areas much wetter than most of the
year.	

Sampling Point: Upland 5

2011	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 2 (A)
2	·			Total Number of Dominant
3				Species Across All Strata: <u>6</u> (B)
4				
5				That Are OBL FACW or FAC: 33 (A/B)
6.				
		= Total Cov	er	Prevalence Index worksheet:
	000/ -4			Total % Cover of: Multiply by:
50% of total cover:	20% 01	total cover		OBL species <u>15</u> x 1 = <u>15</u>
Sapling Stratum (Plot size: 1011)				FACW species <u>15</u> x 2 = <u>30</u>
1	·	·		FAC species $0 x 3 = 0$
2		·		FACU species 45 $x_{4} = 180$
3				UPL species $5_{x,5} = 25$
4				Column Totals: 90 (A) 250 (B)
5				
6				Prevalence Index = $B/A = 2.77$
		= Total Cov	er	Hydrophytic Vegetation Indicators:
E0% of total cover:	20% of	total anyor		1 - Rapid Test for Hydrophytic Vegetation
Structure (Plat size: 15ft	20% 01			\square 2 - Dominance Test is >50%
Shrub Stratum (Plot size: <u>1917</u>)				\checkmark 2 Dominiance reaction solutions \checkmark 3 Providence Index is <2.0 ¹
1	·	·		\square 3 - Prevalence index is \geq 5.0
2	·	·		data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation ¹ (Explain)
4		·		
5		·		
6				be present unless disturbed or problematic
		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover		Deminitions of the vegetation Strata.
50% of total cover.	20% 01			Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <u>Str</u>)	20	V	EACU	approximately 20 ft (6 m) or more in height and 3 in.
1. Thiolidin repens (White Clover)	15			
2. Dactylis glomerata (Orchard Grass)	15	<u> </u>	FACU	Sapling – Woody plants, excluding woody vines,
3. Juncus effusus (Common Rush)	15	<u>Y</u>	FACW	approximately 20 ft (6 m) or more in height and less
4. Carex vulpinoidea (Fox Sedge)	15	Y	OBL	
5. Poa pratensis (Kentucky bluegrass)	10	Y	UPL	Shrub – Woody plants, excluding woody vines,
6. Taraxacum officinale (Common Dandelion)	10	Y	FACU	approximately 3 to 20 ft (1 to 6 m) in height.
7. Andropogon virginicus (Broomsedge Bluestem)	5	Ν	FACU	Herb – All herbaceous (non-woody) plants, including
8.				herbaceous vines, regardless of size, and woody
9				plants, except woody vines, less than approximately 3
10		·		n (1 m) in height.
10	·	·		Woody vine – All woody vines, regardless of height.
	90			
	30	= Total Cov	er	
50% of total cover: <u>45</u>	20% of	total cover	18	
Woody Vine Stratum (Plot size:)				
1		. <u></u>		
2				
3.				
4.				
5		·		
	·	- Total Car	or	Hydrophytic
			ei	Present? Yes V
50% of total cover:	20% of	total cover		
Remarks: (Include photo numbers here or on a separate s	sheet.)			•

Vegetation has been grazed in many portions of the area, making species identification difficult. This area passes the prevalence index for hydrophytic vegetation due to the mix of species.

|--|

	Matrix		Matrix Redox Features					Domorko	
1	2 5Y 2/1	<u>%</u>		%	<u>i ype</u>			Muck laver	
16	2.51 2/1	05	10 VD 5/9	5			Silt Loom	Somo cool frogmonto	
10	2.51 4/3	95	10 YR 5/8	0	<u> </u>		Silt Loam	Some coal tragments	
					. <u> </u>				
					·				
					. <u>.</u>				
be: C=Co Iric Soil I	ncentration, D=D	epletion, RM	I=Reduced Matrix, M	S=Maske	d Sand G	rains.	² Location: Pl	_=Pore Lining, M=Matrix.	
Histosol	(A1)		Dark Surfac	e (S7)			2	cm Muck (A10) (MLRA 147)	
Histic Ep	ipedon (A2)		Polyvalue B	elow Surfa	ace (S8) (MLRA 147,	148) 🗌 C	oast Prairie Redox (A16)	
Black His	stic (A3)		Thin Dark S	urface (S9) (MLRA	147, 148)		(MLRA 147, 148)	
Hydroger	n Sulfide (A4)		Loamy Gley Depleted Ma	ed Matrix	(F2)			(MI PA 136 147)	
2 cm Mur	ck (A10) (LRR N)		Redox Dark	Surface (F6)			erv Shallow Dark Surface (TF12)	
Depleted	Below Dark Surf	ace (A11)	Depleted Da	rk Surface	∋ (F7)			ther (Explain in Remarks)	
Thick Da	rk Surface (A12)		Redox Depr	essions (F	8)				
Sandy M	ucky Mineral (S1)) (LRR N,	Iron-Mangar	ese Mass	es (F12)	(LRR N,			
MLRA	147, 148)		MLRA 13	6)			2		
Sandy GI	leyed Matrix (S4)			ace (F13)	(MLRA 1	36, 122)	³ Ind	cators of hydrophytic vegetation and	
Sandy Re	edox (S5)		Piedmont Fl	oodplain S	Soils (F19) (MLRA 14	18) we	tland hydrology must be present,	
Casiline in a st	Matrix (Sh)		Red Parent	viateriai (i	-21) (IVIL	KA 127, 14	() uni	ess disturbed of problematic.	
Stripped	aver (if observer	d).							
Stripped trictive L	ayer (if observe	d):							
Stripped trictive L ype: epth (inc	ayer (if observed	d):					Hydric Soil	Present? Yes No 🗸	
Stripped trictive L Type: Depth (inc harks: So	ayer (if observed)	d): greatly in	fluenced by the h	nistoric r	nining t	hroughou	Hydric Soil	Present? Yes No V	
Stripped trictive L Type: Depth (inc harks: So ap	thank (60) ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the hhere are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples	
Stripped trictive L ype: Depth (inc arks: So ap	hindrix (00) ayer (if observed hes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples	
Stripped trictive L -ype: Depth (inc narks: So ap	ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples	
Stripped trictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples	
Stripped trictive L Type: Depth (inc narks: So ap	thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	iistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No . ✓ area. While some samples bughout many of the samples	
Stripped trictive L Type: Depth (inc narks: So ap	hans (60) (hes): hils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ✓ area. While some samples bughout many of the samples	
Stripped trictive L Type: Depth (inc narks: So ap	hindina (60) ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No while some samples bughout many of the samples	
Stripped trictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑ area. While some samples bughout many of the samples	
Stripped trictive L Type: Depth (inc marks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No . ✓	
Stripped trictive L Type: Depth (inc narks: So ap	hank (60) ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Varea. While some samples bughout many of the samples	
Stripped trictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Varea. While some samples bughout many of the samples	
Stripped trictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No while some samples bughout many of the samples	
Stripped trictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑	
Stripped strictive L Type: Depth (inc narks: So ap	have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑ area. While some samples bughout many of the samples	
Stripped strictive L Type: Depth (inc narks: So ap	ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑ area. While some samples bughout many of the samples	
Stripped strictive L Type: Depth (inc narks: So ap	ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑ area. While some samples bughout many of the samples	
Stripped trictive L Type: Depth (inc narks: So ap	ayer (if observed thes): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	istoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑	
Stripped trictive L Type: Depth (inc harks: So ap	hank (60)	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Vo	
Stripped trictive L Type: Depth (inc narks: So ap	indita (60)	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No ☑	

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton	Sampling Date: <u>4/4/17</u>
Applicant/Owner: Invenergy LLC	State: OH	Sampling Point: Wetland 6
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:	
Landform (hillslope, terrace, etc.): <u>Hillslope</u>	Local relief (concave, convex, none): <u>Concav</u>	e Slope (%): <u>5</u>
Subregion (LRR or MLRA): MLRA126 Lat: 39.27	'4811 Long: -82.441962	Datum: WGS84
Soil Map Unit Name: Bethesda silty clay loam	NWI clas	sification: PEM
Are climatic / h <u>ydrologi</u> c conditions on the site typic <u>al for th</u> is tir	ne of year? Yes No 🗹 (If no, explain)	in Remarks.)
Are Vegetation 🗹 Soil 🗹, or Hydrology 🗹 sign	ificantly disturbed? Are "Normal Circumstance	es" present? Yes No 🗹
Are Vegetation, Soil, or Hydrology natu	Irally problematic? (If needed, explain any and	swers in Remarks.)
SUMMARY OF FINDINGS – Attach site map sh	owing sampling point locations, transe	cts, important features, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No	Is the Sampled Area within a Wetland? Yes	✓ No
Remarks:		
The majority of the study area is in a field that has by cattle. This particular wetland can be found on sample point is located approximately 3,600 feet r	been historically impacted by strip mining the western edge of a tree line that crosse northeast of the intersection of township ro) but is now actively grazed s township road 14. The ads 14 and 15.
HYDROLOGY		
Wetland Hydrology Indicators:	Secondary In	dicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that	apply)	Soil Cracks (B6)
✓ Surface Water (A1) True Ac	quatic Plants (B14)	Vegetated Concave Surface (B8)
✓ High Water Table (A2)	en Sulfide Odor (C1) 🗹 Drainage	Patterns (B10)
Saturation (A3)	d Rhizospheres on Living Roots (C3)	m Lines (B16)
Water Marks (B1)	ce of Reduced Iron (C4) Dry-Seas	son Water Table (C2)
Sediment Deposits (B2)	Iron Reduction in Tilled Soils (C6)	Burrows (C8)
Drift Deposits (B3)	uck Surface (C7)	n Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Explain in Remarks) Stunted of	or Stressed Plants (D1)
Iron Deposits (B5)	Geomorr Geomorr	ohic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow /	Aquitard (D3)
Water-Stained Leaves (B9)		ographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neu	ıtral Test (D5)
Field Observations:	2	
Surface Water Present? Yes Ver No Depth	(inches): <u>3</u>	
Water Table Present? Yes Ves No Depth	(inches): -b	
Saturation Present? Yes ✓ No Depth	(inches): 0 Wetland Hydrology Pre	esent? Yes <mark>✓</mark> No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aeri	al photos, previous inspections), if available:	
Remarks:		
Within this data form negative numbers in the wa	ter table represent inches below surface a	and 0 within the saturation
column, represents surface saturation. During the	past few days, there has been several inc	thes of rain that has made
many areas much wetter than most of the year.		
,		

Sampling Point: Wetland 6

204	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 30П 1)	<u>% Cover</u>	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)	
2 3				Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
4 5				Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B	3)
6	· .				
		= Total Cov	ver	Tetal % Cover of Multiply by	
50% of total cover:	20% of	total cover		1000000000000000000000000000000000000	
Sapling Stratum (Plot size: 15ft)				EACW species 50 $x_2 = 100$	
1				EAC species 0 $x_3 = 0$	
2	. <u> </u>		. <u> </u>	EACLI species 15 $x_4 = 60$	
3	. <u> </u>		. <u> </u>	$\frac{1}{112} \text{ species } 0 \qquad x_5 = 0$	
4	·			Column Totals: 105 (A) 200 (B))
5	·				,
6	·			Prevalence Index = $B/A = 1.90$	
		= Total Cov	ver	Hydrophytic Vegetation Indicators:	
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation	
Shrub Stratum (Plot size: <u>15ft</u>)				2 - Dominance Test is >50%	
1. Elaeagnus umbellata	10	Y	NA	3 - Prevalence Index is ≤3.0 ¹	
2. Rosa multiflora	5	Υ	FACU	4 - Morphological Adaptations ¹ (Provide supportin	١g
3				data in Remarks or on a separate sneet)	
4					
5					
6				be present, unless disturbed or problematic.	
	15	= Total Cov	rer	Definitions of Five Vegetation Strata:	
50% of total cover: 7.5	20% of	total cover	3		
Herb Stratum (Plot size: 5ft)				I ree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.	
1. Juncus effusus (Common Rush)	35	Y	FACW	(7.6 cm) or larger in diameter at breast height (DBH).	
2. Carex vulpinoidea (Fox Sedge)	30	Y	OBL	Sapling – Woody plants, excluding woody vines	
3. Scirpus cyperinus (Woolgrass)	10	Ν	FACW	approximately 20 ft (6 m) or more in height and less	
4. Typha latifolia (Broadleaf Cattail)	10	Ν	OBL	than 3 in. (7.6 cm) DBH.	
5. Trifolium pratense (Red Clover)	10	Ν	FACU	Shrub – Woody plants, excluding woody vines,	
6. Dactylis glomerata (Orchard Grass)	5	Ν	FACU	approximately 3 to 20 ft (1 to 6 m) in height.	
7	<u> </u>			Herb – All herbaceous (non-woody) plants, including	
8	<u> </u>			herbaceous vines, regardless of size, and woody	
9				ft (1 m) in height.	,
10	<u> </u>				
11	<u> </u>			Woody vine – All woody vines, regardless of height.	
	100	= Total Cov	ver		
50% of total cover: 50	20% of	total cover	20		
Woody Vine Stratum (Plot size:					
1.					
2.					
3					
4					
5				Understadie	
		= Total Cov	ver	Vegetation	
50% of total cover:	20% of	total cover		Present? Yes 🖌 No	
Remarks: (Include photo numbers here or on a separate s	sheet.)			1	
	/				

Vegetation has been grazed in on the edges of the wetland, making species identification difficult.

Profile Desc	ription: (Describe	to the dep	oth needed to docum	nent the	indicator	or confirn	n the absence	of indicators.)
Depth	Matrix		Redo	x Feature	s			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-1	2.5Y 2/1	100					Loam	Muck layer
1-12	2.5Y 6/1	85	2.5Y 5/6	10	D	М	Silt Loam	Some coal fragments
·			2.5Y 7/8	5	PL	М		
					· <u></u>			
·								
·			·		· . <u> </u>			
1 T			Deduced Metric MC				² l anotions D	Dava Linia a M. Matrix
Type: C=Co	oncentration, D=Dep	pletion, RM	=Reduced Matrix, MS	S=Masked	d Sand Gr	ains.	Location: Pl	_=Pore Lining, M=Matrix.
				(07)				
	(A1)			(S7) Jour Curto				CM MUCK (A10) (MLRA 147)
	stic $(A2)$		Thin Dark Su	urfaco (SO	(SO) (I) (MI DA	VILKA 147, 177 179)	146) <u> </u>	
	SIIC (AS) (AA)			Matrix		147, 140)		(MILKA 147, 146)
	$d \downarrow avore (A5)$			triv (E2)	(ГZ)			
	ick (A10) (I RR N)		Redox Dark 9	unz (13) Surface (F	-6)			erv Shallow Dark Surface (TE12)
	d Below Dark Surfac	← (A11)		sunace (i k Surface) (F7)			ther (Explain in Remarks)
	ark Surface (A12)			essions (F	(8)			
Sandy M	lucky Mineral (S1) (LRR N.	Iron-Mangan	ese Mass	es (F12) (LRR N.		
MLRA	A 147. 148)	,	MLRA 13	6)		,		
Sandy G	Bleved Matrix (S4)		Umbric Surfa	ce (F13)	(MLRA 1	36, 122)	³ Ind	cators of hydrophytic vegetation and
Sandy R	Redox (S5)		Piedmont Flo	odplain S	Soils (F19)	(MLRA 14	18) we	tland hydrology must be present,
Stripped	Matrix (S6)		Red Parent N	Aaterial (F		A 127, 147	7) uni	ess disturbed or problematic.
Restrictive I	Layer (if observed)	:		,	, (,	Í	•
Type:	,							
Depth (in	chas).						Hydric Soil	Present? Yes V No
Deptri (int							Tryane bon	
Semarks:	oils have been a	reatlv inf	luenced by the hi	istoric n	ninina th	rouahou	t the study a	area. While some samples
ap	opear to be unaf	fected, th	nere are hints of s	soil ove	rturn an	d coal fra	agments thro	bughout many of the samples.
S	oils meet F3 indi	cator for	hydric soils. Acid	d mine c	Irainage	can be	found throug	hout the wetland.
			,		0			,

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date: 4/4/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 6
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope	Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR or MLRA): MLRA126 Lat: 39.2748	07 Long: <u>-82.442025</u> Datum: <u>WGS84</u>
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: UPL
Are climatic / h <u>ydrologi</u> c conditions on the site typic <u>al for th</u> is time o	of year? Yes No 🖌 (If no, explain in Remarks.)
Are Vegetation 🖌 Soil √, or Hydrology √ significa	Intly disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology naturall	y problematic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map show	ing sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area
Wetland Hydrology Present?	
The majority of the study area is in a field that has he	has biotorically impacted by atrip mining but is now activaly grazed
The majority of the study area is in a neid that has be by cattle. This upland point can be found on the wes	tern edge of a tree line that crosses township road 14. The sample
point is located approximately 3 600 feet northeast o	f the intersection of township roads 14 and 15. This unland sample
point is located directly alongside the boundary of W	etland 6
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that ap	Dly) Surface Soil Cracks (B6)
Surface Water (A1)	ic Plants (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	Sulfide Odor (C1)
Saturation (A3)	hizospheres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1)	of Reduced Iron (C4)
	$\square Di y Couson Walch (C2)$
	Surface (C7)
Algal Mat or Crust (B4)	lain in Remarks)
Inundation Visible on Aerial Imagery (B7)	
Water-Stained Leaves (B9)	
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No ✓ Depth (inc	hes):
Water Table Present? Ves No 🖌 Depth (inc	hes):
Seturation Procent? Yes No Vo	
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial p	hotos, previous inspections), if available:
Remarks:	
During the past few days, there has been several inc	hes of rain that has made many areas much wetter than most of the
year.	

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>) 1	<u>% Cover</u>	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: (A)
23.	·		·	Total Number of Dominant Species Across All Strata: 4 (B)
4	·		·	
5			·	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)
b	·	Tatal Oa	·	Prevalence Index worksheet:
		= 1 otal Cov	/er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover	:	$\frac{1}{OBL \text{ species}} 10 \qquad \frac{1}{x = 10}$
Sapling Stratum (Plot size: 15ft)				FACW species 16 x 2 = 32
1				EAC species $0 \times 3 = 0$
2		·		EACLI species 59 x 4 - 236
3				$\frac{1}{10} \times 5 = 50$
4				$\frac{1}{2} \frac{1}{2} \frac{1}$
5.				Column Lotais: $\underline{33}$ (A) $\underline{320}$ (B)
6			·	Prevalence Index = $B/A = 3.45$
		= Total Cov	ver	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover	:	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)				2 - Dominance Test is >50%
1		·		3 - Prevalence Index is ≤3.0 ¹
2			·	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
3			·	Problematic Hydrophytic Vegetation ¹ (Explain)
4	·		·	
5			·	¹ Indicators of hydric soil and wetland hydrology must
6		·	·	be present, unless disturbed or problematic.
		= Total Cov	/er	
			0.	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover	:	Definitions of Five Vegetation Strata:
50% of total cover: Herb Stratum (Plot size: 5ft)	20% of	total cover	:	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
50% of total cover: Herb Stratum (Plot size: 5ft) 1. Trifolium repens (White Clover)	20% of	total cover	FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
50% of total cover:	20% of 20 20	total cover $\frac{Y}{Y}$	FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines.
50% of total cover:	20% of 20 20 16	total cover $\frac{Y}{Y}$	FACU FACU FACW	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
50% of total cover:	20% of 20 20 16 14	$\frac{\frac{Y}{Y}}{\frac{Y}{Y}}$	FACU FACU FACW FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
50% of total cover: <u>Herb Stratum</u> (Plot size: <u>5ft</u>) 1. Trifolium repens (White Clover) 2. Dactylis glomerata (Orchard Grass) 3. Juncus effusus (Common Rush) 4. Poa pratensis (Kentucky bluegrass) 5. Carex vulpinoidea (Fox Sedge)	20% of 20 20 16 14 10	$\frac{\frac{Y}{Y}}{\frac{Y}{Y}}$	FACU FACU FACW FACU OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines,
50% of total cover:	20% of 20 16 14 10 10	$\frac{\frac{Y}{Y}}{\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}{Y$	FACU FACU FACW FACU OBL UPL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
50% of total cover:	20% of 20 16 14 10 5	$\frac{\frac{Y}{Y}}{\frac{Y}{\frac{Y}{\frac{N}{\frac{N}{\frac{N}{\frac{N}$	FACU FACU FACU FACU OBL UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All berbaceous (non-woody) plants, including
50% of total cover:	20% of 20 16 14 10 5	total cover Y Y Y N N N	FACU FACU FACW FACU OBL UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
50% of total cover:	20% of 20 16 14 10 5	Y Y Y Y Y N N	FACU FACU FACW FACU OBL UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 to 20 ft (1 to 6 m) in height.
50% of total cover:	20% of 20 16 14 10 5	total cover	FACU FACU FACU FACU OBL UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.
50% of total cover:	20% of 20 16 14 10 5 	total cover Y Y Y N N N	FACU FACU FACU FACU OBL UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 20 20 16 14 10 5 95	total cover Y Y Y N N N Total Cover	FACU FACU FACU FACU OBL UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 20 20 16 14 10 5 95	total cover Y Y Y N N = Total Cov	FACU FACU FACU FACU OBL UPL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 20 20 16 14 10 5 95 20% of	total cover Y Y Y N N = Total Cov	FACU FACU FACU FACU OBL UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 20 16 14 10 5 95 20% of	Y Y Y Y N N = Total Cover	FACU FACU FACU OBL UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
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50% of total cover:	20% of 20 20 16 14 10 5 95 20% of 20% of	total cover Y Y Y N N = Total Cover total cover	FACU FACU FACU FACU OBL UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
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50% of total cover:	20% of 20 16 14 10 5 95 20% of	total cover $ \frac{Y}{Y} \\ \frac{Y}{Y} \\ \frac{N}{N} \\ \frac{N}{N} \\ = Total Cov $ total cover	FACU FACU FACU OBL UPL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 20 20 16 14 10 5 95 20% of 	total cover Y Y Y N N = Total Cover = Total Cover	FACU FACU FACU OBL UPL FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 20 16 14 10 5 95 20% of 20% of 20% of	total cover Y Y Y N N Total Cover Total Cover Total Cover Total Cover Total Cover	FACU FACU FACU OBL UPL FACU FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No
50% of total cover:	20% of 20 16 14 10 5 95 20% of 20% of 20% of 20% of	total cover Y Y Y N N = Total Cover = Total Cover total cover	FACU FACU FACU OBL UPL FACU OBL UPL FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No Vegetation No

import Conductives 2.5Y 2/1 100 Import Loam Muck layer 16 2.5Y 4/3 95 10 YR 5/8 5 D M Silt Loam Some coal fragments Import Import Import Import Import Some coal fragments Import Import Import Import Import Import Import Import<	11621		0/	Rede	ox Feature	S Turc ¹		Toyturo	Domorko
Id: C = 1 100 minute 100 minute <th>2</th> <th>2 5Y 2/1</th> <th>100</th> <th></th> <th>70</th> <th>Type</th> <th></th> <th></th> <th>Muck laver</th>	2	2 5Y 2/1	100		70	Type			Muck laver
0 2.51 + 1/3 35 10 + 1/4 + 30 3 0 10 + 1/4 + 30 0 2.51 + 1/3 35 10 + 1/4 + 30 0<	 16	2.57 2/1	05	10 VP 5/8	5			Silt Loam	Some coal fragments
ac: C-CConcentration. D-Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ¹ Location: PL=Pore Lining, M=Matrix trice Soil Indicators: Indicators for Problematic Hydric Soils Indicators for Problematic Hydric Soils Histoal (A) Dark Surface (S7) Image: Soil C (C) Image: Soil C (C) Black Histic (A3) Dark Surface (S9) (MLRA 147, 148) Image: Soil C (C) Image: Soil C (C) Stratified Layers (A5) Depleted Matrix (F2) Image: Soil C (C) Image: Soil C (C) Image: Soil C (C) Stratified Layers (A6) Depleted Dark Surface (F1) Image: Soil C (C) Image: Soil C (C) Image: Soil C (C) Image: Soil C (C) Sondy Redox (S5) Image: Soil C (C) Image: Soil C	10	2.51 4/5	95	10 11 5/6	5	<u> </u>		Silt Luam	Some coal nagments
image: CaConcentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ¹ Location: PL=Pore Lining, M=Matrix, Image: CaConcentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ¹ Location: PL=Pore Lining, M=Matrix, Image: CaConcentration, D=Depletion, RM=Reduced Matrix, ISO (MLRA 147, 148) Histosol (A1) Image: Dark Surface (S7) Image: Dark Surface (S3) Image: Dark Surface (S3) Hydrogen Suffice (A4) Image: Dark Surface (S3) Image: Dark Surface (S3) Image: Dark Surface (S3) Startified Layers (A5) Image: Dark Surface (S3) Image: Dark Surface (F1) Image: Dark Surface (F1) Depleted Dark Surface (F1) Image: Dark Surface (F1) Image: Dark Surface (F1) Image: Dark Surface (F1) Sandy Mick (A10) (LRR N) Image: Dark Surface (F1) Image: Dark Surface (F1) Image: Dark Surface (F1) Sandy Mick (S5) Image: Dark Cace (F1) Image: Dark Surface (F1) Image: Dark Surface (F1) Sandy Mick (S5) Image: Dark Cace (F1) Image: Dark Surface (F1) Image: Dark Surface (F1) Sandy Mick (S6) Image: Dark Cace (F1) Image: Dark Surface (F1) Image: Dark Surface (F1) Sandy Mick (S5) Image: Dark Cace (F1) Image: Dark Surface (F1) Image: Dark Surface (F1) Sandy Mick (S6) Image: Dark Surface (F1) Image: Dark Surface				·	· · ·	·			
are: C-Concentration, D=Depletion, RM-Reduced Matrix, MS-Masked Sand Grains. *Location: PL=Pore Lining, M=Matrix. intic Soll Indicators: Implementation of the standard stress of the standard stres									
be: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ¹ Location: PL=Pore Lining, M=Matrix. Initiation of the state of th				· · · · · · · · · · · · · · · · · · ·				·	
as: C-Concentration, D-Dopletion, RM-Reduced Matrix, MS-Masked Sand Grains. ¹ Location: PL-Pore Lining, M-Matrix. Filssobil Indicators: Implementation of the surface (S7) Implementation of the surface (S3) Implementation of the surface (S4) Histos Epipedon (A2) Dark Surface (S7) Implementation of the surface (S8) Implementation of the surface (S4) Startlifed Layers (A3) Dark Surface (S6) Implementation of the surface (F6) Implementation of the surface (T71) Dark Latic (A12) Depleted Dark Surface (F7) Implementation of the surface (T71) Implementation of the surface (T71) Dark Dark Surface (A1) Depleted Dark Surface (F12) (MR A 148) Implementation of the surface (T71) Implementation of the surface (T71) Sandy Medox (S15) Depleted Dark Surface (F13) (MR A 148, 142) Implementation of the surface o				· . <u></u>					
be: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. *Location: PL=Pore Lining, M=Matrix. Inficators: Inficators: Inficators: Inficators: Inficators: Histics (A1) Dark Surface (S7) Coast Prainie Redox (A16) Coast Prainie Redox (A16) Black Histic (A3) Depleted Matrix (F3) Coast Prainie Redox (A16) MLRA 147, 148) Stratified Layers (A5) Depleted Matrix (F3) MLRA 136, 147) MLRA 136, 147) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) MLRA 136, 147) MLRA 136, 147) Sandy Micky Matrix (S4) Depleted Dark Surface (F12) Other (Explain in Remarks) Mineral (S1) (LRR N, MLRA 136, 122) *Indicators of hydrophytic vegetation an wetland hydrology must be present, unless disturbed or problematic. Sandy Redy Matrix (S4) Depleted Matrix (F21) (MLRA 136, 122) *Indicators of hydrophytic vegetation an wetland hydrology must be present, unless disturbed or problematic. Stripted Matrix (S6) Piedmont Floodplain Solis (F19) (MLRA 142, 147) Indicators of hydrophytic vegetation an wetland hydrology must be present, unless disturbed or problematic. Stripted Matrix (S6) Hydric Soil Present? Yes									
2e: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ¹ Location: PL=Pore Lining, M=Matrix. Iric Soil Indicators: Image: Dark Surface (S7) Image: Dark Surface (S9) (MLRA 147, 148) Image: Dark Surface (S9) (MLRA 147, 1									
be: C-Concentration, D-Depeletion, RM=Reduced Matrix, MS=Masked Sand Grains. ¹ Location: PL=Pore Lining, M=Matrix. Iric Soil Indicators: Indicators for Problematic Hydric Solis Histic Epipedon (A2) Dark Surface (S7) Back Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Suffide (A4) Depieted Matrix (F2) Strattled Layers (A5) Depieted Matrix (F2) Depieted Matrix (F3) Depieted Matrix (F2) Com Muck (A10) (LRR N) Depieted Matrix (F2) Depieted Below Dark Surface (A11) Depieted Matrix (F3) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Muck (A5) Umbric Surface (F13) (MLRA 136, 122) Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) Sandy Redox (S5) Piedmont Floodplain Solis (F19) (MLRA 148) Umbric Surface (F12) Indicators of hydrophytic vegetation an wetland hydrology must be present, unless disturbed or problematic. trictive Layer (if observed): ''pre									
bit C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ¹ Location: PL-Pore Lining, M-Matrix. Iristosol (A1) Dark Surface (S7) Dark Surface (S3) Dark Surface (S1) Dark Surface (S									
Indicators: Indicators: Indicators: Histosol (A1) Dark Surface (S7) Coast Prairie Redox (A16) Histos (A3) Donard Surface (S8) (MLRA 147, 148) MulcRA 147, 148) Stratified Layers (A5) Doepleted Matrix (F3) (MLRA 147, 148) Depleted Matrix (F3) Depleted Matrix (F3) (MLRA 147, 148) Sandy Mucky (Mineral (S1) (LRR N, MLRA 147, 148) Depleted Dark Surface (F7) (MLRA 136, 147) Sandy Gleyed Matrix (S4) Durbnic Surface (F12) (MLRA 136, 122) Other (Explain in Remarks) Sandy Gleyed Matrix (S4) Durbnic Surface (F12) (MLRA 136, 122) Indicators of hydrophytic vegetation an wetland hydrology must be present, unless disturbed or problematic. Trictive Layer (if observed): Ype: Hydric Soil Present? Yes No 🗹 Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	be: C=Co	oncentration, D=D	epletion, RM	I=Reduced Matrix, M	S=Maske	d Sand G	rains.	² Location: Pl	_=Pore Lining, M=Matrix.
Histo Epipedon (A2) Dark Surface (S7) Coast Prairie Redox (A16) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Coast Prairie Redox (A16) Widrogen Suffide (A4) Depleted Matrix (F2) Piedmont Floodplain Solis (F19) Stratified Layers (A5) Depleted Matrix (F3) Widra 147, 148) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Very Shallow Dark Surface (TF12) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) Very Shallow Dark Surface (TF12) Sandy Mucky Mineral (S1) (LRR N, Iron-Manganese Masses (F12) (LRR N, MLRA 147, 148) Sandy Redox (S5) Piedmont Floodplain Solis (F19) (MLRA 147, 148) Very Shallow Dark Surface (TF12) Sandy Redox (S5) Piedmont Floodplain Solis (F19) (MLRA 148) Very Shallow Dark Surface (TF12) Umbric Surface (F13) (MLRA 146, 122) *Indicators of hydrophytic vegetation an Wetland hydrology must be present. unless disturbed or problematic. trictive Layer (if observed): Piedmont Floodplain Solis (F19) (MLRA 127, 147) Upeth (inches): Hydric Soil Present? Yes No Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	Iric Soil I	ndicators:			(07)				tors for Problematic Hydric Soils
Induc pupped (A) Image: Construct (C) Ima	Histosol ((A1) hinedon (A2)		Dark Surfac	e (S7) elow Surfa	ACA (58)	MI RA 147	148) \Box C	cm Muck (A10) (MLRA 147) oast Prairie Redox (A16)
Hydrogen Sulfide (A4) Strattifed Layers (A5) 2 cm Muck (A10) (LRR N) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Gleyed Matrix (S6) Stripped Matrix (S6) Tricticu Layer (If observed): 'ype: 	Black His	stic (A3)		Thin Dark S	urface (S9) (MLRA	147, 148)		(MLRA 147, 148)
Stratified Layers (A5) 2 cm Muck (A10) (LRR N) Depleted Bork Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Simped Matrix (S6) Piedmont Floodplain Solis (F19) (MLRA 127, 147) With Call (S6) Trictive Layer (if observed): 'ype: Peth (inches): Hydric Soil Present? Yes No No No	Hydroger	n Sulfide (A4)		Loamy Gley	ed Matrix	(F2)	, ,	<u></u> Р	iedmont Floodplain Soils (F19)
2 cm Muck (A10) (LRR N) Acdox Dark Surface (F6) Very Shallow Dark Surface (TF12) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Other (Explain in Remarks) MLRA 147, 148) Redox Depressions (F8) ALRA 147, 148) MLRA 136 Umbric Surface (F13) (MLRA 136, 122) Information Floodplain Soils (F19) (MLRA 147, 148) Red Parent Material (F21) (MLRA 148) Vertand hydrology must be present, unless disturbed or problematic. Trictive Layer (If observed): Very Shallow Dark Surface (F12) (MLRA 147, 147) Vertand Soils (F19) (MLRA 148) Vertand hydrology must be present, unless disturbed or problematic. Trictive Layer (If observed): Very Shallow Dark Surface (F12) (MLRA 127, 147) Vertand Nydrology must be present, unless disturbed or problematic. Trictive Layer (If observed): Very Shallow Dark Surface (F12) (MLRA 127, 147) Vertand Nydrology must be present, unless disturbed or problematic. Trictive Layer (If observed): Very Shallow Dark Surface (F12) (MLRA 127, 147) Vertand Nydrology must be present, unless disturbed or problematic. Trictive Layer (If observed): Very Shallow Dark Surface (F12) (MLRA 148) Vertand Nydrology must be present, unless disturbed or problematic. Trictive Layer (If observed): Very Shallow Dark Surface (F12) (MLRA 127, 147) Very Shallow Dark Surface (F12) (MLRA 148) Very Shallow D	Stratified	I Layers (A5)		Depleted Ma	atrix (F3)			_	(MLRA 136, 147)
Depleted Below Dark Surface (A1)	2 cm Mu	ck (A10) (LRR N)		Redox Dark	Surface (F6)			ery Shallow Dark Surface (TF12)
Intex bark Sundae (A12)	Depleted	Below Dark Surf	ace (A11)	Depleted Da	ark Surface	∋ (F7)		0 [0	ther (Explain in Remarks)
Control modely model	Sandy M	irk Sufface (A12) lucky Mineral (S1)		Redox Depr	essions (F	0) (F12)	(IRR N		
Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) ^a Indicators of hydrophytic vegetation an wetland hydrology must be present, unless disturbed or problematic. Trictive Layer (if observed): ype:	MLRA	147. 148)	(L IXIX N ,	MLRA 1:	1636 Mass 36)	65 (1 12)			
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present, unless disturbed or problematic. Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. Trictive Layer (If observed): /// // Vpe:	Sandy G	leved Matrix (S4)		Umbric Surf	ace (F13)	(MLRA 1	36, 122)	³ Ind	cators of hydrophytic vegetation and
Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. trictive Layer (If observed): Hydric Soil Present? Yes No Depth (inches): Hydric Soil Present? Yes No Image: Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	Sandy R	edox (S5)		Piedmont Fl	oodplain S	、 Soils (F19) (MLRA 14	18) we	tland hydrology must be present,
trictive Layer (if observed): Type: Type:	Stripped	Matrix (S6)		Red Parent	Material (F	21) (ML	RA 127, 147	7) unl	ess disturbed or problematic.
Type:	ounppou	()							
Depth (inches): Yes ⊥ No ⊻ narks: Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples appear to be unaffected.	strictive L	ayer (if observe	d):						
^{harks:} Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	trictive L	ayer (if observe	d):						
appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	Trictive L Type: Depth (inc	ayer (if observed	d):					Hydric Soil	Present? Yes No 🔽
	Trictive L Type: Depth (inc	ayer (if observe	d):	fluenced by the h	nistoric r	ninina t	hroughou	Hydric Soil	Present? Yes No V
	Type: Depth (inc narks: So	ayer (if observed ches): bils have been	d): greatly in	fluenced by the h	nistoric r	nining t rturn ar	hroughou	Hydric Soil t the study a	Present? Yes No
	Trictive L Type: Depth (inc narks: So ap	ches): ches): pils have been opear to be una	d): greatly in affected, t	fluenced by the here are hints of	nistoric r soil ove	nining t rturn ar	hroughou nd coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples
	itrictive L ype: Depth (inc harks: So ap	bils have been	d): greatly in affected, t	fluenced by the here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples
	htrictive L Type: Depth (inc narks: So ap	ches): bils have been ppear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Varea. While some samples bughout many of the samples
	berrictive L Type: Depth (inc narks: Sc ap	ches): bils have been pear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou nd coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples
	berrictive L Type: Depth (inc narks: Sc ap	ches): bils have been opear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples
	trictive L Type: Depth (inc narks: Sc ap	ches): bils have been opear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Varea. While some samples bughout many of the samples
	trictive L ype: Depth (inc narks: Sc ap	bils have been opear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Varea. While some samples bughout many of the samples
	trictive L ype: Depth (inc harks: Sc ap	bils have been	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou nd coal fra	Hydric Soil t the study a agments thro	Present? Yes No 🗹
	trictive L Jype: Depth (inc narks: Sc ap	ches): bils have been opear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou nd coal fra	Hydric Soil t the study a agments thro	Present? Yes No Varea. While some samples bughout many of the samples
	trictive L Joepth (inc Darks: Sc ap	Layer (if observed shes): bils have been opear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Area. While some samples bughout many of the samples
	trictive L Sype: Depth (inc narks: Sc ap	Layer (if observed othes): bils have been opear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou Id coal fra	Hydric Soil t the study a agments thro	Present? Yes No
	barrictive L Type: Depth (inc narks: Sc ap	bils have been	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou nd coal fra	Hydric Soil t the study a agments thro	Present? Yes No V
	barrictive L Type: Depth (inc narks: Sc ap	Layer (if observed ches): bils have been opear to be una	d): greatly in affected, t	fluenced by the h here are hints of	nistoric r soil ove	nining t rturn ar	hroughou nd coal fra	Hydric Soil t the study a agments thro	Present? Yes No Varea. While some samples bughout many of the samples
	barrictive L Type: Depth (inc narks: Sc ap	Layer (if observed ches): bils have been opear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Yes Dughout many of the samples
	berrictive L Type: Depth (inc narks: Sc ap	Layer (if observed ches): bils have been opear to be und	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou id coal fra	Hydric Soil t the study a agments thro	Present? Yes No Varea. While some samples bughout many of the samples
	trictive L Type: Depth (inc narks: Sc ap	Layer (if observed ches): bils have been opear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou id coal fra	Hydric Soil t the study a agments thro	Present? Yes No
	trictive L Spe: Depth (inc harks: Sc ap	Layer (if observed ches): bils have been opear to be una	d): greatly in affected, t	fluenced by the h here are hints of	historic r soil ove	nining t rturn ar	hroughou nd coal fra	Hydric Soil t the study a agments thro	Present? Yes No Yes No Yes No Yes Present? Yes No Yes No Yes Present with the samples oughout many of the samples

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date: 4/4/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Wetland 7
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope	Local relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR or MLRA): MLRA126 Lat: 39.2762	14 Long: <u>-82.437901</u> Datum: <u>WGS84</u>
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: PEM
Are climatic / h <u>ydrologi</u> c conditions on the site typic <u>al for th</u> is time o	of year? Yes No 🖌 (If no, explain in Remarks.)
Are Vegetation 🖌 Soil √, or Hydrology √ significa	antly disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology naturall	y problematic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map show	ing sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes V	
Hydric Soil Present? Yes \checkmark No	within a Wetland? Yes V
Wetland Hydrology Present? Yes 🗸 No	
Remarks:	
The majority of the study area is in a field that has be	en historically impacted by strip mining but is now actively grazed
by cattle. This particular wetland can be found on the	eastern edge of a tree line that crosses township road 14. The
National Wetlands Inventory (NWI) shows this area a	as being a large freshwater PEM wetland. The sample point is
located approximately 4,800 feet northeast of the inte	ersection of township roads 14 and 15.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that ap	oly) Surface Soil Cracks (B6)
Surface Water (A1)	ic Plants (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	Sulfide Odor (C1) Image Patterns (B10)
✓ Saturation (A3) ✓ Oxidized R	hizospheres on Living Roots (C3) 🔲 Moss Trim Lines (B16)
Water Marks (B1)	of Reduced Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)	ו Reduction in Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3)	Surface (C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Exp	lain in Remarks) Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
LIIII Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	✓ Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	sheely 3
Water Table Present? Ves V No Depth (inc	hes): -6
Seturation Present? Yes Ves Ves Depth (inc	
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial p	hotos, previous inspections), if available:
Pomorko:	
Within this data form pagative numbers in the water	table represent inches below surface and 0 within the acturation
column represents surface saturation. During the pa	table represent inches below surface and 0, within the saturation
many areas much wetter than most of the year	ist few days, there has been several mones of fair that has made

Sampling Point: Wetland 7

204	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30π</u>)	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: <u>3</u> (A)
2		·		Total Number of Dominant
3	. . 			Species Across All Strata: <u>3</u> (B)
4		·		Percent of Dominant Species
5		·		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
6		- Total Cov		Prevalence Index worksheet:
		= 101al COV	ei	Total % Cover of:Multiply by:
50% of total cover:	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: 1511)				FACW species x 2 =
1	• •			FAC species x 3 =
2	- <u> </u>	·		FACU species x 4 =
3		·		UPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)	2070 01			2 - Dominance Test is >50%
				\square 3 - Prevalence Index is <3 0 ¹
		·		4 - Morphological Adaptations ¹ (Provide supporting
2		·		data in Remarks or on a separate sheet)
3		·		Problematic Hydrophytic Vegetation ¹ (Explain)
4		·		
5		·		¹ Indicators of hydric soil and wetland hydrology must
6		·		be present, unless disturbed or problematic.
		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		Tree March alerte evolution weeksing
Herb Stratum (Plot size: 5ft)				approximately 20 ft (6 m) or more in height and 3 in.
1. Typha latifolia (Broadleaf Cattail)	26	Υ	OBL	(7.6 cm) or larger in diameter at breast height (DBH).
2. Carex vulpinoidea (Fox Sedge)	24	Υ	OBL	Sanling - Woody plants, excluding woody vines
3. Juncus effusus (Common Rush)	20	Y	FACW	approximately 20 ft (6 m) or more in height and less
4 Scirpus cyperinus (Woolgrass)	15	N	FACW	than 3 in. (7.6 cm) DBH.
5 Trifolium pratense (Red Clover)	5	N	FACU	Shrub - Woody plants, excluding woody vines
6 Dactylis glomerata (Orchard Grass)	5	N	FACU	approximately 3 to 20 ft (1 to 6 m) in height.
7 Cyperus esculentus (Yellow Nutsedge)	5	N	FACW	
	<u> </u>	<u> </u>		herbaceous vines, regardless of size, and woody
8		·		plants, except woody vines, less than approximately 3
9		·		ft (1 m) in height.
10	· ·	·		Woody vine – All woody vines, regardless of height.
11	100	·		
	100	= Total Cov	er	
50% of total cover: <u>50</u>	20% of	total cover:	20	
Woody Vine Stratum (Plot size:)				
1				
2.				
3				
4.				
5		·		
		- Total Cov	er	Hydrophytic
			01	Present? Yes V No
50% of total cover:	20% of	total cover:		
Remarks: (Include photo numbers here or on a separate	sheet.)			

Depth	Matrix	0/	Rede	ox Feature	S	1 c = 2	Taxture	Domestic
(<u>incnes)</u> 0-1	2 5Y 2/1	<u>%</u> 100	Color (moist)	%	<u>i ype</u>	LOC	Loam	Remarks Muck laver
12	2.51 2/1			20			Silt Loom	
-12	2.51 4/2		101R 5/6	20	<u>D</u>	IVI	Slit Loam	10% Coal Fragments
,							·	
					·			
<u> </u>								
vpe: C=Co	oncentration. D=De	epletion. RM	=Reduced Matrix. M	S=Masked	d Sand G	rains.	² Location: Pl	Pore Lining, M=Matrix,
/dric Soil I	indicators:		needdood matnix, m				Indica	ators for Problematic Hydric Soils ³ :
Histosol	(A1)		Dark Surfac	e (S7)			<u> </u>	cm Muck (A10) (MLRA 147)
Histic Ep	oipedon (A2)		Polyvalue B	elow Surfa	ice (S8) (MLRA 147,	148) 🔟 C	oast Prairie Redox (A16)
	n Sulfide (A4)			ed Matrix ((IVILKA	147, 140)	Пр	(MERA 147, 146) iedmont Floodplain Soils (F19)
Stratified	Lavers (A5)		Depleted Ma	atrix (F3)	(• _)			(MLRA 136, 147)
2 cm Mu	ick (A10) (LRR N)		Redox Dark	Surface (F	=6)			ery Shallow Dark Surface (TF12)
Depleted	d Below Dark Surfa	ace (A11)	Depleted Da	irk Surface	e (F7)		<u> </u>	ther (Explain in Remarks)
Thick Da	ark Surface (A12)		C Redox Depr	essions (F	8)			
Sandy M	lucky Mineral (S1)	(LRR N,	Iron-Mangar	nese Mass	es (F12)	(LRR N,		
	A 147, 148)			36)		26 422)	³ lad	instance of hydrophytic vegetation and
Sandy G Sandy B	edox (S5)			ace (F13) oodolain S	(IVILKA 1 Soile (E19	30, 122)) (MI DA 1/	18) we	tland bydrology must be present
Stripped	Matrix (S6)			Material (F	50115 (F1 8 521) (MI 1	RA 127. 14	•0) we 7) un	less disturbed or problematic
estrictive L	_ayer (if observed	d):		inatoriai (i				
Туре:	-							
Depth (inc	ches):						Hydric Soil	Present? Yes 🔽 No 🗌
^{emarks:} Sc ap Sc	oils have been opear to be una oils meet F3 ind	greatly inf affected, th dicator for	luenced by the h here are hints of hydric soils.	nistoric n soil over	nining t rturn ar	hroughou Id coal fra	t the study a agments thro	area. While some samples bughout many of the samples.

Project/Site: Vinton Solar Energy Center Project City	County: McArthur/Vinton Sampling Date: 4/4/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 7
Investigator(s): Nathan Renaudin & Lindsey Moss Sec	xtion, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope Local r	elief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR or MLRA): MLRA126 Lat: 39.272672	Long: -82.437855 Datum: WGS84
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes No 🖌 (If no, explain in Remarks.)
Are Vegetation Soil , or Hydrology significantly dist	urbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology naturally problem	matic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sa	mpling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	In the Demoled Area
Hydric Soil Present? Yes No 🗸	within a Wetland? Yes No
Wetland Hydrology Present? Yes No Ves	
Remarks:	
The majority of the study area is in a field that has been his	torically impacted by strip mining but is now actively grazed
by cattle. This upland point can be found on the eastern ed	ge of a tree line that crosses township road 14. The sample
point is located approximately 4,800 feet northeast of the in	itersection of township roads 14 and 15.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	
Surface Water (A1)	Suitace Suit Clacks (B0)
High Water Table (A2))dor (C1)
Saturation (A3)	eres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1)	ed Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)	tion in Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3)	(C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in R	emarks) Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	
Field Observations:	
Surface Water Present? Yes No _ Depth (inches):	
Water Lable Present? Yes No ✓ Depth (inches):	
Saturation Present? Yes No Ves Depth (Inches):	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, p	revious inspections), if available:
Remarks:	
During the past few days, there has been several inches of	rain that has made many areas much wetter than most of the
year.	

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 0 (A)
2				Total Number of Dominant
3				Species Across All Strata: <u>3</u> (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 0 (A/B)
6				Prevalence Index worksheet:
		= I otal Co	ver	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cove	r:	OBL species x 1 =
Sapling Stratum (Plot size: 15ft)				FACW species x 2 =
1		·		FAC species x 3 =
2		·		FACU species x 4 =
3		·		UPL species x 5 =
4		·		Column Totals: (A) (B)
5		·		
6		·		Prevalence Index = B/A =
		= Total Co	ver	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cove	r:	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)				2 - Dominance Test is >50%
1				3 - Prevalence Index is $≤3.0^1$
2				4 - Morphological Adaptations ¹ (Provide supporting
3				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation (Explain)
5				
6				be present, unless disturbed or problematic.
		= Total Co	ver	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	= Total Co total cove	ver r:	Definitions of Five Vegetation Strata:
50% of total cover: Herb Stratum (Plot size: 5ft)	20% of	= Total Co total cove	ver r:	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in
50% of total cover: Herb Stratum (Plot size: 5ft) 1. Trifolium repens (White Clover)	20% of 25	= Total Co [:] total cove Y	r: FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
50% of total cover:	20% of 25 25	= Total Co total cove <u>Y</u> Y	r: FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines
50% of total cover:	20% of 25 25 20	$= Total Co$ total cove $\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}{\frac{Y}$	FACU FACU FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
50% of total cover:	20% of 25 25 20 15	$\frac{\frac{Y}{Y}}{\frac{Y}{N}}$	FACU FACU FACU FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
50% of total cover:	20% of 25 25 20 15 10	$= \text{Total Cove}$ $\frac{\frac{Y}{Y}}{\frac{Y}{N}}$	FACU FACU FACU FACU FACU FACU FACW	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines,
50% of total cover:	20% of 25 25 20 15 10 5	$= \text{Total Cove}$ $\frac{Y}{Y}$ $\frac{Y}{Y}$ $\frac{N}{N}$ N	FACU FACU FACU FACU FACU FACU FACW UPL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
50% of total cover:	20% of 25 25 20 15 10 5	Total Cove total cove Y Y Y N N N	FACU FACU FACU FACU FACU FACW UPL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including
50% of total cover:	20% of 25 25 20 15 10 5	Total Cove	r: <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACW</u> <u>UPL</u>	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
50% of total cover:	20% of 25 25 20 15 10 5	= Total Cove total cove Y Y N N N	r: <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACW</u> <u>UPL</u>	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height
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50% of total cover:	20% of 25 25 20 15 10 5	Total Cove	FACU FACU FACU FACU FACU FACU FACU FACU FACU OUPL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 25 25 20 15 10 5 	= Total Cove total cove Y Y N N N = Total Co	ver <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACW</u> <u>UPL</u> <u>UPL</u> <u>UPL</u> <u>Ver</u>	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
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50% of total cover:	20% of 25 25 20 15 10 5 100 20% of 20% of 	= Total Co total cove Y Y Y N N = Total Co total cove = Total Co	ver <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>UPL</u> <u>UPL</u> <u>UPL</u> <u>UPL</u> <u>C</u> <u>C</u> <u>C</u> <u>C</u> <u>C</u> <u>C</u> <u>C</u> <u>C</u>	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth Matrix		Redo	x Features	S				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-2	2.5Y 2/1	100					Loam	Muck layer
2-16	2.5Y 4/3	95	10 YR 5/8	5	D	Μ	Silt Loam	Some coal fragments
						·		
						·		
¹ Type: C=Co	oncentration, D=Dep	bletion, RM	=Reduced Matrix, MS	S=Masked	I Sand Gr	ains.	² Location: Pl	_=Pore Lining, M=Matrix.
Hydric Soil	Indicators:		, ,				Indica	tors for Problematic Hydric Soils ³ :
Histosol Histosol Histic Ep Black Hi Hydroge Stratified 2 cm Mu Depleted Thick Da Sandy M MLRA Sandy G	(A1) bipedon (A2) stic (A3) In Sulfide (A4) Layers (A5) Ick (A10) (LRR N) Below Dark Surface ark Surface (A12) Nucky Mineral (S1) (A 147, 148) Bieyed Matrix (S4)	ce (A11) L RR N,	Dark Surface Polyvalue Be Thin Dark Su Loamy Gleye Depleted Mai Redox Dark S Depleted Dar Redox Depre Iron-Mangan MLRA 13 Umbric Surfa	e (S7) elow Surfac inface (S9) ed Matrix (trix (F3) Surface (F rk Surface essions (F ese Masse 6) ace (F13) (ce (S8) (N (MLRA 1 F2) (F7) 8) es (F12) (MLRA 13	ILRA 147, 147, 148) LRR N, 66, 122)	148)	cm Muck (A10) (MLRA 147) oast Prairie Redox (A16) (MLRA 147, 148) iedmont Floodplain Soils (F19) (MLRA 136, 147) ery Shallow Dark Surface (TF12) ther (Explain in Remarks)
Sandy C	edox (S5)		Piedmont Flo	odplain S	oils (F19)	(MLRA 14	8) we	tland hydrology must be present,
Stripped	Matrix (S6)		Red Parent N	Aaterial (F	21) (MLR	A 127, 147	7) unl	ess disturbed or problematic.
Restrictive I	_ayer (if observed)	:					-	
Туре:								
Depth (ind	ches):						Hydric Soil	Present? Yes No 🖌
ar	bils have been g opear to be unaf	reatly inf fected, th	uenced by the h ere are hints of s	istoric m soil over	nining th turn and	roughou d coal fra	t the study a gments thro	area. While some samples bughout many of the samples.

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date: 4/5/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Wetland 8
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope	cal relief (concave, convex, none): Concave Slope (%): 6
Subregion (LRR or MLRA): MLRA126 Lat: 39.254545	Long: -82.450319 Datum: WGS84
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes No 🗸 (If no. explain in Remarks.)
Are Vegetation Soil , or Hydrology significantly	disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology, naturally pro	blematic? (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>Ves</u> No	Is the Sampled Area
Wetland Hydrology Present?	
The majority of the study area is in a field that has been	historically impacted by strip mining but is now actively grazed
by cattle. This particular wetland is small and can be fou	nd on the western edge of a tree line on a rocky hillslope. The
sample point is located approximately 6,000 feet south of	of the intersection of township roads 14 and 15.
	·
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	ants (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	de Odor (C1) ↓ Drainage Patterns (B10)
Saturation (A3)	spheres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1)	duced Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)	duction in Tilled Soils (C6)
Drift Deposits (B3)	ace (C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	n Remarks)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes V No Depth (inches)	. 2
Water Table Present? Yes V No Depth (inches)	-8
Saturation Present? Yes V No Depth (inches)	0 Wetland Hydrology Present? Yes 🗸 No
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photo	s, previous inspections), if available:
Remarks:	
Within this data form, negative numbers in the water tab	le represent inches below surface and 0, within the saturation
column, represents surface saturation. During the past f	ew days, there has been several inches of rain that has made
many areas much weller than most of the year.	

Sampling Point: Wetland 8

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species		
1	·			That Are OBL, FACW, or FAC: 4 (A)		
2				Total Number of Deminent		
3.				Species Across All Strata: 5 (B)		
4						
	·			Percent of Dominant Species		
5	·			That Are OBL, FACW, or FAC: <u>00</u> (A/B)		
b	·			Prevalence Index worksheet:		
		= Total Cov	er	Total % Cover of: Multiply by:		
50% of total cover:	20% of	total cover:				
Sapling Stratum (Plot size: 15ft)						
1. Platanus occidentalis (Sycamore)	15	Y	FACW	FACW species x 2 =		
2				FAC species x 3 =		
2	·			FACU species x 4 =		
3	·			UPL species x 5 =		
4	·	·		Column Totals: (A) (B)		
5						
6				Prevalence Index = B/A =		
	15	= Total Cov	er	Hvdrophytic Vegetation Indicators:		
			3	1 - Rapid Test for Hydrophytic Vegetation		
50% of total cover: <u>7.5</u>	20% of	total cover:	3			
Shrub Stratum (Plot size: 15π)						
1				3 - Prevalence Index is ≤3.0		
2.				4 - Morphological Adaptations ¹ (Provide supporting		
3				data in Remarks or on a separate sheet)		
4	·			Problematic Hydrophytic Vegetation ¹ (Explain)		
4	·	·				
5	·	·		¹ Indicators of hydric soil and wetland hydrology must		
6	·			be present, unless disturbed or problematic.		
		= Total Cov	er	Definitions of Five Vegetation Strata:		
50% of total cover:	20% of	total cover.				
Userb Strature (Distained 5ft	2070 01			Tree – Woody plants, excluding woody vines,		
<u>Herb Stratum</u> (Plot size: <u>on</u>)	20	V		approximately 20 ft (6 m) or more in height and 3 in.		
1. Calex vulpinoidea (Fox Sedge)	20					
2. Typna angustifolia (Narrowleat Cattall)	10	Y	OBL	Sapling – Woody plants, excluding woody vines,		
3. Juncus effusus (Common Rush)	13	Y	FACW	approximately 20 ft (6 m) or more in height and less		
4. Dactylis glomerata (Orchard Grass)	12	Y	FACU	than 3 in. (7.6 cm) DBH.		
5 Trifolium pratense (Red Clover)	5	N	FACU	Shrub – Woody plants, excluding woody vines		
	·			approximately 3 to 20 ft (1 to 6 m) in height.		
0	·					
/	·	·		Herb – All herbaceous (non-woody) plants, including		
8	·			plants, except woody vines, less than approximately 3		
9				ft (1 m) in height.		
10						
11.				Woody vine – All woody vines, regardless of height.		
	60	- Total Cov	or			
		- 10181 000				
50% of total cover: <u>30</u>	20% of	total cover:	12			
Woody Vine Stratum (Plot size:)						
1.						
2						
3	·					
	·	·				
4	·	·	. <u> </u>			
5				Hydrophytic		
		= Total Cov	er	Vegetation		
50% of total cover	20% of total covor:			Present? Yes Ves No		
	20% 0I		<u> </u>			
Remarks: (Include photo numbers here or on a separate s	noot \					
	sileet.)					

Profile Desc	ription: (Describe	e to the dep	oth needed to docum	nent the	indicator	or confirm	the absence	of indicators.)			
Depth <u>Matrix</u>		Color (moist)	x Feature			Toxturo	Pemarka				
<u>(incries)</u> 0-1	2 5Y 2/1	100		70	туре	LUC		Muck laver			
4 4 2	2.51 2/1			10		N/	Silt Loom				
1-12	2.31 4/2	50		10	D	IVI	SIILLOam				
			2.5 Y 4/3	15							
			2.5Y 5/1	20				5% Coal Fragments			
						- <u></u>					
						- <u> </u>					
¹ Type: C=Co	oncentration, D=De	pletion, RM	=Reduced Matrix, MS	S=Maske	d Sand Gr	ains.	² Location: Pl	_=Pore Lining, M=Matrix.			
Hydric Soil I	ndicators:						Indica	tors for Problematic Hydric Soils ³ :			
Histosol	(A1)		Dark Surface	e (S7)			2	cm Muck (A10) (MLRA 147)			
Histic Ep	pipedon (A2)		Polyvalue Be	low Surfa	ace (S8) (I	MLRA 147,	148) 🗌 C	oast Prairie Redox (A16)			
	stic (A3)		Thin Dark Su	Inface (SS) (MLRA)	147, 148)		(MLRA 147, 148)			
	1 Javers (A5)			trix (F3)	(Г2)			(MI PA 136, 147)			
\square 2 cm Mu	ick (A10) (LRR N)		Redox Dark S	Surface (F6)			ery Shallow Dark Surface (TF12)			
Depleted	Below Dark Surfa	ce (A11)	Depleted Dark Surface (F7)								
D Thick Da	ark Surface (A12)		Redox Depressions (F8)								
Sandy M	lucky Mineral (S1)	(LRR N,	Iron-Manganese Masses (F12) (LRR N,								
	A 147, 148)		MLRA 136)								
Sandy G	edox (S5)			ice (F13) odplain 9	(MLRA 1) Soile (E19)	(MI PA 1/	 and cators of hydrophytic vegetation and wetland hydrology must be present 				
	Matrix (S6)		Red Parent M	/aterial (I	F21) (MLR	A 127. 147	7) uni	ess disturbed or problematic.			
Restrictive I	ayer (if observed):			/ (,					
Туре:											
Depth (ind	ches):						Hydric Soil Present? Yes 🗹 No 🧾				
Remarks:								<u></u>			
Sc	oils have been o	greatly inf	luenced by the h	istoric r	nining th	roughou	t the study a	area. While some samples			
ap	pear to be una	ffected, th	here are nints of s	soll ove	rturn an	d coal fra	igments thro	bughout many of the samples.			
30			nyunc sons.								

Project/Site: Vinton Solar Energy Center Project C	ity/County: McArthur/Vinton Sampling Date: 4/5/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 8
Investigator(s): Nathan Renaudin & Lindsey Moss S	ection, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope Loca	Il relief (concave, convex, none): Concave Slope (%): 6
Subregion (LRR or MLRA): MLRA126 Lat: 39.254572	Long: -82.450322 Datum: WGS84
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year	? Yes No 🖌 (If no, explain in Remarks.)
Are Vegetation Soil , or Hydrology significantly di	isturbed? Are "Normal Circumstances" present? Yes No 🗸
Are Vegetation, Soil, or Hydrology naturally prob	lematic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing s	sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	In the Completion
Hydric Soil Present? Yes No 🗸	within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Remarks:	
The majority of the study area is in a field that has been h	istorically impacted by strip mining but is now actively grazed
by cattle. This upland point can be found on the western e	edge of a tree line on a hillslope. The sample point is located
approximately 6,000 feet northeast of the intersection of the	ownship roads 14 and 15. Sample point collected in the upland
area next to delineated Wetland 9.	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	nts (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Hydrogen Sulfide	Odor (C1) Drainage Patterns (B10)
Saturation (A3) Oxidized Rhizosp	heres on Living Roots (C3) Department Moss Trim Lines (B16)
Water Marks (B1)	uced Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)	uction in Tilled Soils (C6)
Drift Deposits (B3)	ce (C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Remarks) Stunted or Stressed Plants (D1)
	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Aquatic Fauna (B12)	$\square \text{ Microtopographic Relier (D4)}$
Field Observations:	
Weter Table Present? Yes No Depth (inches):	
Valer Table Present? Yes No Depth (inches):	
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos,	, previous inspections), if available:
Remarks:	
During the past few days, there has been several inches	of rain that has made many areas much wetter than most of the
year.	

204	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: <u>3011</u>)	<u>% Cover</u>	Species?	Status	Number of Dominant Species	0	(•)
1			·	That Are OBL, FACW, or FAC:	0	(A)
2			·	Total Number of Dominant	1	
S			·	Species Across All Strata:		(B)
4 5			·	Percent of Dominant Species	0	
			·	That Are OBL, FACW, or FAC:	0	(A/B)
··		= Total Cov	er	Prevalence Index worksheet:		
E0% of total cover:	20% of	total anyor		Total % Cover of:	Multiply by:	
Sapling Stratum (Plot size: 15ft)	20 % 01	iolai cover.	·	OBL species x	1 =	
				FACW species x	2 =	
2				FAC species x	3 =	
3.			·	FACU species x	4 =	
4.			·	UPL species x	5 =	_
5.			·	Column Totals: (A)	(B)
6.				Prevalence Index = B/A =		
		= Total Cov	rer	Hydrophytic Vegetation Indica	tors:	
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophy	tic Vegetation	
Shruh Stratum (Plot size: 15ft)	2070 01			2 - Dominance Test is >50%	5	
1				3 - Prevalence Index is ≤3.0	1	
2				4 - Morphological Adaptation	ns ¹ (Provide sup	porting
3.			·	data in Remarks or on a	separate sheet)	
4.				Problematic Hydrophytic Ve	getation ¹ (Expla	in)
5.						
6.				Indicators of hydric soil and wet	land hydrology r	must
		= Total Cov	ver	Definitions of Five Vegetation	Strata:	
50% of total cover:	20% of	total cover:	:		onatai	
Herb Stratum (Plot size: 5ft)				Tree – Woody plants, excluding	woody vines, e in height and ?	3 in
1. Trifolium repens (White Clover)	25	Υ	FACU	(7.6 cm) or larger in diameter at	breast height (D	9BH).
2. Trifolium pratense (Red Clover)	25	Υ	FACU	Sanling – Woody plants, exclud	ing woody vines	
3. Dactylis glomerata (Orchard Grass)	25	Υ	FACU	approximately 20 ft (6 m) or more	e in height and l	, ess
4. Taraxacum officinale (Common Dandelion)	25	Y	UPL	than 3 in. (7.6 cm) DBH.		
5				Shrub – Woody plants, excludin	g woody vines,	
6				approximately 3 to 20 ft (1 to 6 n	n) in height.	
7			. <u> </u>	Herb - All herbaceous (non-woo	dy) plants, inclu	Iding
8				herbaceous vines, regardless of	size, and woody	y atoly 3
9				ft (1 m) in height.		
10				Woody vine All woody vines	coordloss of bo	ight
11			·	Woody vine – All woody vines, i	egardiess of fie	igni.
	100	= Total Cov	rer			
50% of total cover: <u>50</u>	20% of	total cover:	20			
Woody Vine Stratum (Plot size:)						
1						
2						
3						
4						
5				Hydrophytic		
				nyuropnyuc		
1	:	= Total Cov	rer	Vegetation		
50% of total cover:	20% of	= Total Cov	er	Vegetation Present? Yes	No	

pth	Matrix Color (moist) %		Color (moist)	ox Feature	S Type ¹	loc^2	Toyturo	Remarks
2	2.5Y 3/4	100		/0	<u>iype</u>	200	Silt Loam	
	2.57 4/3	95	10 VR 5/8	5			Silt Loam	Some coal fragments
0	2.01 4/3	90	10 TK 5/0		<u> </u>			Some coal magnients
					. <u> </u>			
					·			
: C=C	concentration, D=D	epletion, RN	I=Reduced Matrix, N	IS=Maske	d Sand G	rains.	² Location: P	L=Pore Lining, M=Matrix.
IC SOII	Indicators:			o (07)				ators for Problematic Hydric Soli
listic F	pipedon (A2)			e (37) elow Surfa	nce (S8) (MLRA 147.	.148) □ C	coast Prairie Redox (A16)
lack H	listic (A3)		Thin Dark S	urface (S9) (MLRA	147, 148)		(MLRA 147, 148)
lydroge	en Sulfide (A4)		Loamy Gley	ed Matrix	(F2)		🔲 Р	iedmont Floodplain Soils (F19)
Stratifie	d Layers (A5)		Depleted Ma	atrix (F3)	. ,			(MLRA 136, 147)
cm M	uck (A10) (LRR N)		Redox Dark	Surface (I	F6)		<u> </u>	ery Shallow Dark Surface (TF12)
Deplete	d Below Dark Surfa	ace (A11)	Depleted Da	ark Surface	e (F7)		<u> </u>	ther (Explain in Remarks)
hick D	ark Surface (A12)		Redox Depr	essions (F	8)			
Sandy N	Mucky Mineral (S1)	(LRR N,	Iron-Manga	nese Mass	ses (F12)	(LRR N,		
MLR	A 147, 148)		MLRA 1	36)			0	
Sandy (Gleyed Matrix (S4)		Umbric Surf	ace (F13)	(MLRA 1	36, 122)	³Ind	icators of hydrophytic vegetation a
Sandy F	Redox (S5)		Piedmont Fl	tland hydrology must be present,				
Stripped	d Matrix (S6)	.0	Red Parent	Material (F	-21) (ML	RA 127, 14	7) un	less disturbed or problematic.
rictive	Layer (If observed	a):						
/pe:								
epth (in	iches):						Hydric Soil	Present? Yes No
S	oils have been ppear to be una	greatly in affected, t	fluenced by the I here are hints of	nistoric n soil ove	nining t rturn ar	hroughou Id coal fra	it the study a agments thro	area. While some samples bughout many of the sample

Project/Site: Vinton Solar Energy Center Project City/County: McArthur/Vinton Sam	pling Date: 4/5/17
Applicant/Owner: Invenergy LLC State: OH Sa	ampling Point: Wetland 9
Investigator(s): Nathan Renaudin & Lindsey Moss Section, Township, Range:	1 0
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave	Slope (%): 6
Subregion (LRR or MLRA): MLRA126 Lat: 39.259318 Long: -82.450941	Datum: WGS84
Soil Map Unit Name: Bethesda silty clay loam & Wharton-Latham silt loam NWI classification:	PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remark	(s.)
Are Vegetation Soil , or Hydrology significantly disturbed?	it? Yes No 🖌
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in F	<pre>emarks.)</pre>
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, imp	portant features, etc.
Hydrophytic Vegetation Present? Yes V No	
Hydric Soil Present? Yes V No Vetland? Yes V	10
Wetland Hydrology Present? Yes Ves	
Remarks:	
The majority of the study area is in a field that has been historically impacted by strip mining but is r	now actively grazed
by cattle. This particular wetland can be found alongside delineated stream 4. The sample point is lo	ocated approximately
4,300 feet south of the intersection of township roads 14 and 15.	
Wetland Hydrology Indicators: Secondary Indicators	minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	rs (B6)
Surface Water (A1) True Aquatic Plants (B14) Sparsely Vegetate	d Concave Surface (B8)
✓ High Water Table (A2) ✓ Hydrogen Sulfide Odor (C1) ✓ Drainage Patterns	(B10)
✓ Saturation (A3) ✓ Oxidized Rhizospheres on Living Roots (C3) ☐ Moss Trim Lines (E	316)
Water Marks (B1) Presence of Reduced Iron (C4) Dry-Season Water	Table (C2)
Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3)	on Aerial Imagery (C9)
Algal Mat or Crust (B4)	d Plants (D1)
☐ Iron Deposits (B5) ✓ Geomorphic Positi	on (D2)
Inundation Visible on Aerial Imagery (B7)	D3) Dollof (D4)
Water-Stained Leaves (B9) If Aquatic Fauna (B13) FAC-Neutral Test (
	.00)
Surface Water Present? Ves V No Denth (inches): 2	
Water Table Present? Ves V No Depth (inches): -8	
Saturation Present? Yes V No Depth (inches): 0 Wetland Hydrology Present?	
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	
Within this data form, negative numbers in the water table represent inches below surface and 0, within this data form, negative numbers in the water table represent inches below surface and 0, within this data form.	thin the saturation
column, represents surface saturation. During the past few days, there has been several inches of r	ain that has made

Sampling Point: Wetland 9

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30ft)	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 2 (A)
2				Total Number of Dominant
3.				Species Across All Strata: 2 (B)
4				
5				Percent of Dominant Species
<u> </u>				That Are OBL, FACW, or FAC: 100 (A/B)
b				Prevalence Index worksheet:
		= Total Cove	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		
Sapling Stratum (Plot size: 15ft)				
1				FACW species x 2 =
2		·		FAC species x 3 =
2		·		FACU species x 4 =
3		·		UPL species x 5 =
4		·		Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cove	er	Hydrophytic Vegetation Indicators:
		1.1.1	-	1 - Rapid Test for Hydrophytic Vegetation
50% of total cover:	20% of	total cover:		
Shrub Stratum (Plot size: ^{15π})				
1				3 - Prevalence Index is ≤3.0
2				4 - Morphological Adaptations ¹ (Provide supporting
3.				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation' (Explain)
5				
<u> </u>				¹ Indicators of hydric soil and wetland hydrology must
6		·		be present, unless disturbed or problematic.
		= Total Cove	ər	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		_
Herb Stratum (Plot size: 5ft)		-		Iree – Woody plants, excluding woody vines,
Juncus effusus (Common Rush)	25	Y	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
	15	V	OBL	
2. Typha angustiona (Narrowical Cattair)	10			Sapling – Woody plants, excluding woody vines,
3. Carex vulpinoidea (Fox Sedge)	10			approximately 20 ft (6 m) or more in height and less
4. Dactylis glomerata (Orchard Grass)	5	N	FACU	
5. Trifolium pratense (Red Clover)	5	Ν	FACU	Shrub – Woody plants, excluding woody vines,
6. Poa pratensis (Kentucky bluegrass)	5	Ν	FACU	approximately 3 to 20 ft (1 to 6 m) in height.
7				Harb All borbaccous (non woody) plants, including
·		·		herbaceous vines, regardless of size, and woody
0				plants, except woody vines, less than approximately 3
9		·		ft (1 m) in height.
10				Woody vine - All woody vince, recordlose of height
11				woody vine – All woody vines, regardless of height.
	65	= Total Cove	er	
50% (1.1.) 32.5			13	
50% of total cover: 52.3	20% of	total cover:	15	
Woody Vine Stratum (Plot size:)				
1				
2				
3.				
4		·		
		·		
D		· <u> </u>		Hydrophytic
		= Total Cove	er	Vegetation
50% of total cover:	20% of	total cover:		Present? Yes Ves Ves
Remarks: (Include photo numbers here or on a congrate s	theet)			
Pere ground can be found through out the	meet.)			
bare ground can be round throughout the Wetla	na.			

Lease	Interliest 2.5Y 2/1 100	
2 2.5 Y 5/1 75 2.5 Y 6/3 5 D M Silt Loam 2 2.5 Y 6/8 20 Coal Fragments Coal Fragments 2 2.5 Y 6/8 20 Coal Fragments Coal Fragments 2 2.5 Y 6/8 20 Coal Fragments Coal Fragments 2 2.5 Y 6/8 20 Coal Fragments Coal Fragments 2 2.5 Y 6/8 20 Coal Fragments Coal Fragments 2 2.5 Y 6/8 20 Coal Fragments Coal Fragments 2 2.5 Y 6/8 20 Coal Fragments Coal Fragments 2 2.5 Y 6/8 20 Coal Fragments Coal Fragments 2 2.5 Y 6/8 20 Coal Fragments Coal Fragments 2 2.5 Y 6/8 2.0 Y fragments Coal Fragments Coal Fragments 2 2.5 Y 6/8 2.0 Y fragments For Coal Y fragments For Coal Y fragments 2 2.5 Y 6/8 2.5 Y fragments For Coal Y fragments For Coal Y fragments 2 2.5 Y fragments 2.5 Y fragments Y fragments <t< th=""><th>-12 2.5Y 5/1 75 2.5 Y 6/3 5 D M Silt Loam -12 2.5Y 6/8 20 Coal Fragments 2.5Y 6/8 Depleted Matrix, MS=Masked Sand Grains. PLocation: PL=Pore Lining, M=Matrix. Histic Epipedon (A2) Dark Surface (S7) Indicators for Problematic Hy 1 Histic Epipedon (A2) Depleted Matrix (F3) Coast Prairie Redox (A16) 2 cm Muck (A10) (LRR N) Depleted Matrix (F3) MuRA 147, 148)</th><th></th></t<>	-12 2.5Y 5/1 75 2.5 Y 6/3 5 D M Silt Loam -12 2.5Y 6/8 20 Coal Fragments 2.5Y 6/8 Depleted Matrix, MS=Masked Sand Grains. PLocation: PL=Pore Lining, M=Matrix. Histic Epipedon (A2) Dark Surface (S7) Indicators for Problematic Hy 1 Histic Epipedon (A2) Depleted Matrix (F3) Coast Prairie Redox (A16) 2 cm Muck (A10) (LRR N) Depleted Matrix (F3) MuRA 147, 148)	
2 2.51 0/1 10 2.57 0/8 20 0 Coal Fragments 2 2.57 6/8 20 0 Coal Fragments Coal Fragments 2 2.57 6/8 20 0 Coal Fragments Coal Fragments 2 0 0 0 0 Coal Fragments 2 0 0 0 0 0 0 2 0 0 0 0 0 0 2 0 0 0 0 0 0 2 0 0 0 0 0 0 0 2 0	Init Init Init Sint Loam Init 2.5Y 6/8 20 Coal Fragments Init Init Init Coal Fragments Init Init Init Init Init <td></td>	
2.51 0/8 20 Coal Fragments 2.51 0/8 20 20 Coal Fragments 2.51 0/8 20 20 Coal Fragments 2.51 0/8 20 20 20 20 2.51 0/8 20 20 20 20 2.51 0/8 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 </td <td>2.5 Y 6/8 20 Coal Fragments 2.5 Y 6/8 20 Indicators for Problematic Hight 115 Y 6/8 10 Coant Kattace (S9) (ML</td> <td></td>	2.5 Y 6/8 20 Coal Fragments 2.5 Y 6/8 20 Indicators for Problematic Hight 115 Y 6/8 10 Coant Kattace (S9) (ML	
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Depleted Below Dark Surface (A11)	Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Other (Explain in Remarks Thick Dark Surface (A12) Redox Depressions (F8) Other (Explain in Remarks Sandy Mucky Mineral (S1) (LRR N, Iron-Manganese Masses (F12) (LRR N, Iron-Manganese Masses (F12) (LRR N, MLRA 147, 148) MLRA 136) Iron-Manganese Masses (F12) (MLRA 136, 122) 3 Indicators of hydrophytic veg Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) 3 Indicators of hydrophytic veg wetland hydrology must be Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) unless disturbed or problem Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problem Trictive Layer (if observed): Yes Image: Second Scole Present? Yes Image: Second Scole Present? Yes Spect Image: Second Scole Present Scole Present? Yes Image: Second Scole Present? Yes	∋ (TF12)
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MLRA 130; MLRA 130; Sandy Gleyed Matrix (S4) Imbrits Surface (F13) (MLRA 136, 122) Indicators of hydrophytic vegetation an wetland hydrology must be present, unless disturbed or problematic. Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Indicators of hydrophytic vegetation an wetland hydrology must be present, unless disturbed or problematic. trictive Layer (if observed):	MLRA 147, 148) MLRA 136) Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) Indicators of hydrophytic veg Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problem trictive Layer (if observed): 'ype: Hydric Soil Present? Yes 'present's Hydric Soil Present's Yes 'Yes	
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Scripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. trictive Layer (if observed): 'ype:	Stripped Matrix (S6) Image: Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problem trictive Layer (if observed): Fype:	present
trictive Layer (if observed):	trictive Layer (if observed):	atic.
Type:	Type:	
bepth (inches):	Depth (inches): Hydric Soil Present? Yes 🔽	_
^{harks:} Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the sample: Soils meet F3 indicator for hydric soils.	narks:	<u>No </u>
Solis have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples Soils meet F3 indicator for hydric soils.		
Soils meet F3 indicator for hydric soils.	Solis have been greatly influenced by the historic mining throughout the study area. While some sa	mpies
	Soils meet E3 indicator for bydric soils	sample
	Solis meet i s indicator for hydric solis.	

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton	Sampling Date: <u>4/5/17</u>
Applicant/Owner: Invenergy LLC	State	: OH Sampling Point: Upland 9
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:	
Landform (hillslope, terrace, etc.): <u>Hillslope</u>	_ Local relief (concave, convex, none): <u>Co</u>	Slope (%): <u>6</u>
Subregion (LRR or MLRA): MLRA126 Lat: 39.2593	380 Long: -82.4508	50 Datum: WGS84
Soil Map Unit Name: Bethesda silty clay loam	N\	NI classification: UPL
Are climatic / h <u>ydrologi</u> c con <u>ditions o</u> n the site typic <u>al for th</u> is time	of year? Yes No 🖌 (If no, e	xplain in Remarks.)
Are Vegetation 🗾 Soil 📝 , or Hydrology 🗾 signific	antly disturbed? Are "Normal Circum	nstances" present? Yes No
Are Vegetation, Soil, or Hydrology natura	ly problematic? (If needed, explain a	any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map show	ving sampling point locations, tr	ansects, important features, etc.
Hydric Soil Present?	Is the Sampled Area	
Wetland Hydrology Present? Yes No		
Remarks:	<u></u>	
The majority of the study area is in a field that has h	een historically impacted by strip n	nining but is now actively grazed
by cattle. This upland point can be found on the west	stern edge of a tree line on a hillslo	pe. The sample point is located
approximately 4.300 feet northeast of the intersection	on of township roads 14 and 15. Sa	mple point collected in the upland
area next to delineated Wetland 9.		
HYDROLOGY		
Wetland Hydrology Indicators:	Secon	dary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that a	oply) 📃 Su	urface Soil Cracks (B6)
Surface Water (A1)	atic Plants (B14)	parsely Vegetated Concave Surface (B8)
High Water Table (A2)	Sulfide Odor (C1)	ainage Patterns (B10)
Saturation (A3)	Rhizospheres on Living Roots (C3)	oss Trim Lines (B16)
Water Marks (B1)	of Reduced Iron (C4)	y-Season Water Table (C2)
Sediment Deposits (B2)	on Reduction in Tilled Soils (C6)	avfish Burrows (C8)
Drift Deposits (B3)	Surface (C7)	aturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	plain in Remarks)	unted or Stressed Plants (D1)
Iron Deposits (B5)	Ý 🗌 Ge	eomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	🗖 sr	nallow Aguitard (D3)
Water-Stained Leaves (B9)	Mi	crotopographic Relief (D4)
Aquatic Fauna (B13)	FA	AC-Neutral Test (D5)
Field Observations:		, , , , , , , , , , , , , , , , , , ,
Surface Water Present? Yes No 🗸 Depth (in	ches):	
Water Table Present? Yes No 🗸 Depth (in	ches):	
Saturation Present? Yes No 🗸 Depth (in	ches): Wetland Hydrolo	av Present? Yes No
(includes capillary fringe)		,
Describe Recorded Data (stream gauge, monitoring well, aerial	photos, previous inspections), if available:	
Remarks:		
During the past few days, there has been several in	ches of rain that has made many a	reas much wetter than most of the
year.		

00%	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 30ft)	% Cover	Species?	Status	Number of Dominant Species	
1				That Are OBL, FACW, or FAC: 0 (A	A)
2				Total Number of Dominant	
3				Species Across All Strata: <u>3</u> (B	3)
4					
5				That Are OBL, FACW, or FAC: 0 (A	√B)
6				Prevalence Index worksheet:	
		= Total Cov	er	Total % Cover of: Multiply by:	
50% of total cover:	20% of	total cover:		OBL species $x = 1 = 1$	
Sapling Stratum (Plot size: 15ft)				EACW species x 2 =	
1				FAC species x 3 =	
2					
3				FACO species x 4 = UDL engesies x 5	
4				OPL species x 5 = Opherer Tatala (A)	
5.				Column Totals: (A) ((B)
6.				Prevalence Index = $B/A =$	
		= Total Cov	er	Hydrophytic Vegetation Indicators:	
	·		~1	1 - Rapid Test for Hydrophytic Vegetation	
50% of total cover:	20% of	total cover:			
Shrub Stratum (Plot size: 1511)					
1				\square 3 - Prevalence index is ≤ 3.0	
2				4 - Morphological Adaptations' (Provide suppor	ting
3				Problematic Hydrophytic Vegetation ¹ (Explain)	
4					
5					
6				be present, unless disturbed or problematic.	st
	:	= Total Cov	er	Definitions of Five Vegetation Strata	
50% of total cover:	20% of	total cover:			
Horb Stratum (Plot size: 5ft	2070 01			Tree – Woody plants, excluding woody vines,	
Trifolium repens (White Clover)	25	Y	FACU	(7.6 cm) or larger in diameter at breast height (DBH)).
2 Trifolium pratense (Red Clover)	20	Y	FACU	(/-
2. Dactylis glomerata (Orchard Grass)	20	v	FACU	Sapling – Woody plants, excluding woody vines,	
A Tarayacum officinale (Common Dandelion)	15	N		than 3 in. (7.6 cm) DBH.	•
	10				
5 6.				Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.	
7.				Herb – All berbaceous (non-woody) plants, including	a
8				herbaceous vines, regardless of size, and woody	9
9				plants, except woody vines, less than approximately	/ 3
10				it (1 m) in height.	
11				Woody vine - All woody vines, regardless of height	t.
	80	Tatal Cau			
10	00				
50% of total cover: <u>40</u>			16		
Mandy Vine Stratum (Plat aizer	20% of	total cover:	10		
	20% of	total cover:	10		
1)	20% of	total cover:			
woody vine stratum (Plot size) 1) 2)	20% of	total cover:			
1	20% of	total cover:			
1	20% of	total cover:			
1	20% of	total cover:			
1	20% of	Total Cover:		Hydrophytic Vegetation	
1	20% of	Total cover:		Hydrophytic Vegetation Present? Yes No	
1	20% of	Total cover:	er	Hydrophytic Vegetation Present? Yes No	

coord litteday -6 Upper Lobo Lobulation International constraints 6 2.5Y 4/3 95 10 YR 5/8 5 D M Silt Loam Some coal fragments 6 2.5Y 4/3 95 10 YR 5/8 5 D M Silt Loam Some coal fragments 6 2.5Y 4/3 95 10 YR 5/8 5 D M Silt Loam Some coal fragments 6 2.5Y 4/3 95 10 YR 5/8 5 D M Silt Loam Some coal fragments 6 0.000 10 YR 5/8 5 D M Silt Loam Some coal fragments 6 0.000 10 YR 5/8	epth	Matrix	0/	Color (moint)	ox Feature		1.002	Toyturo	Pomorko
Iob 100	·2	2 5Y 4/3	100		70	Type	LUC	Silt Loam	Remarks
0 2.51 #/3 35 10 TK 3/0 5 0 M Stitt Colain Stit	16	2.51 4/2	05	10 VD 5/9	5			Silt Loom	Somo cool frogmonto
e. CConcentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. *Location: PL=Pore Lining, M=Matrix. Indicators: Indicators: Histosci (A1)	0	2.51 4/3	95	10 YR 5/8	5	<u> </u>		Silt Loam	Some coal fragments
e: C-Concentration, D=Depletion, RM-Reduced Matrix, MS-Masked Sand Grains. ¹ Location: PL=Pore Lining, M=Matrix. fc Soil Indicators: Implementation of the strates (S7) Implementation of the strates (S3) Histisca (A1) Implementation of the strates (S3) Implementation of the strates (S3) Histisca (A3) Implementation of the strates (S3) Implementation of the strates (S3) Histisca (A3) Implementation of the strates (S3) Implementation of the strates (S3) Stratified Layers (A5) Implementation of the strates (F1) Implementation of the strates (F1) Depleted Below Dark Surface (S1) Implementation of the strates (F1) Implementation of the strates (F12) Depleted Below Dark Surface (F13) Implementation of the strates (F12) Implementation of the strates (F12) Depleted Below Dark Surface (F13) Implementation of the strates (F12) Implementation of the strates (F12) Sandy Redox (S5) Implement Material (F21) (MLRA 136, 122) Implementation of the strates (F13) (MLRA 136, 122) Implementation of the strates (F12) Whick Soil Present? Implement Material (F21) (MLRA 147, 148) Implementation of the strates (F13) (MLRA 147, 148) Sandy Redox (S5) Implement Material (F21) (MLRA 147, 147) Implementation of the strates of soil overtures and soil strates (S3)									
a: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. *Location: PL=Pore Lining, M=Matrix. its Gol Indicators: Imposed in the standard standar						.			
e. C-Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ¹ Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Solis Histosal (A1) Histic Epipedon (A2) Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Dark Surface (S9) (MLRA 147, 149) Dark Surface (S9) (MLRA 147, 149) Depleted Dark Surface (F1) Coast Prairie Redox (A16) Depleted Below Dark Surface (F12) CMLRA 136, 147) Depleted Below Dark Surface (F12) CMLRA 147, 148) Depleted Below Dark Surface (F12) CMLRA 147, 148) Depleted Below Compressions (F12) Depleted Below Dark Surface (F12) CMLRA 147, 148) Depleted Below Compressions (F12) CMLRA 147, 148) Depleted Below Compressions (F12) CMLRA 147, 148) MLRA 136, 147 Depleted Below Compressions (F12) CMLRA 147, 148) MLRA 136, 147 Depleted Below Compressions (F12) CMLRA 147, 148) MLRA 147, 148 MLRA 136, 147 Depleted Below Compressions (F12) CMLRA 147, 148 MLRA 136, 147 Depleted Below Compressions (F12) CMLRA 147, 148 MLRA 136, 147 MLRA 147, 148 MLRA 147, 148									
E: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ¹ Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Solis Indicators Ind									
eic C-Concentration, D-Depletion, RM-Reduced Matrix, MS-Masked Sand Grains. 'Location: PLeyre Lining, M-Matrix. It is Soll Indicators is (A1) Dark Surface (S7) Indicators is (Problematic Hydric Solls Histic Explexion (A2) Dark Surface (S8) (MLRA 147, 148) Decase Praine Redox (A16) Black Histic (A3) Din Dark Surface (S9) (MLRA 147, 148) Decase Praine Redox (A16) Stratified Layers (A5) Depleted Matrix (F3) Piedmont Floodplain Soils (F19) Stratified Below Dark Surface (A11) Depleted Dark Surface (F7) Very Shallow Dark Surface (T12) Thick Dark Surface (A12) Depleted Dark Surface (F12) (LRR N, MLRA 136, 147) Piedmont Floodplain Soils (F19) Sandy Mucky Mineral (S1) (LRR N, MLRA 136, 122) andicators of hydrophytic vegetation an wetand hydrology must be present, unless disturbed or problematic. andicators of hydrophytic vegetation an wetand hydrology must be present, unless disturbed or problematic. Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 142, 148) andicators of hydrophytic vegetation an wetand hydrology must be present, unless disturbed or problematic. Yprice Yeir (fobserved): Yeir (fobserved): Hydric Soil Present? Yes (2	
In Unit Multicators. Image: Constraint of your constraint of y	e: C=Co	oncentration, D=D	epletion, RN	I=Reduced Matrix, M	S=Maske	d Sand G	rains.	² Location: P	L=Pore Lining, M=Matrix.
Inductor (n1) Image Bolow Image Bolow Surface (S8) (MLRA 147, 148) Image Bolow Image Bolow <t< td=""><td>Histosol</td><td>(A1)</td><td></td><td></td><td>o (S7)</td><td></td><td></td><td></td><td>cm Muck (A10) (MI PA 147)</td></t<>	Histosol	(A1)			o (S7)				cm Muck (A10) (MI PA 147)
Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) (MLRA 147, 148) Hydrogen Sulfide (A4) Depleted Matrix (F2) Piedmont Floodplain Solis (F19) Startlifed Layers (A5) Depleted Matrix (F2) (MLRA 147, 148) Depleted Matrix (F2) Depleted Matrix (F2) (MLRA 147, 148) Depleted Matrix (F3) Depleted Dark Surface (F6) (Very Shallow Dark Surface (TF12)) Sandy Mucky Mineral (S1) (LRR N, Iron-Manganese Masses (F12) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) ³ Indicators of hydrophytic vegetation and wetand hydrology must be present. Sandy Redox (S5) Pedmont Floodplain Solis (F19) (MLRA 127, 147) unless disturbed or problematic. Itrictive Layer (if observed): ype: ype: ype: Hydric Soil Present? Yes No 🗹 iarks: Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	Histic Er	pipedon (A2)		Polyvalue B	elow Surfa	ace (S8) (MLRA 147	. 148) 🔲 C	coast Prairie Redox (A16)
Hydrogen Sulfide (A4) Strattifed Layers (A5) 2 om Muck (A10) (LRR N) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A12) Sandy Mucky Minerial (S1) (LRR N, MLRA 147, 148) Sandy Soley (S5) Sindy Poleky (S5) Sindy Poleky (S5) Briedmont Floodplain Solis (F19) (MLRA 136, 122) Piedmont Floodplain Solis (F19) (MLRA 148) Piedmont Floodplain Solis (F19) (MLRA 147, 148) MLRA 136, 122) Piedmont Floodplain Solis (F19) (MLRA 147, 148) Sindy Redx (S5) Sindy Redx (S5) Sindy Poleky (S5) Sindy Redx (S5) Sindy Redx (S5) Sindy Redx (S5) Sindy Redx (S5) Sindy Redx (S5) Muck 147, 148) Piedmont Floodplain Solis (F19) (MLRA 148, 147) Piedmont Floodplain Solis (F19) (MLRA 148) Piedmont Floodplain Solis (F19) (MLRA 147, 148) Muck 147, 148) Muck 147, 149) Muck 147, 149 No Arks: Solis have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	Black Hi	stic (A3)		Thin Dark S	urface (SS) (MLRA	147. 148)	,,	(MLRA 147, 148)
Stratified Layers (A5) Depleted Matrix (F3) (MLRA 136, 147) 2 cm Muck (A10) (LR N) Redox Dark Surface (F7) Usery Shallow Dark Surface (TF12) Depleted Bolts Surface (A12) Redox Dark Surface (F7) Other (Explain in Remarks) Sandy Mucky Mineral (S1) (LRR N, MLRA 136) Umbric Surface (F13) (MLRA 136, 122) Inon-Manganese Masses (F12) (LRR N, MLRA 136) Sandy Gleyed Matrix (S6) Umbric Surface (F13) (MLRA 136, 122) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Strictive Layer (if observed): Yee: Hydric Soil Present? Yes No Ype:	Hydroge	n Sulfide (A4)		Loamy Gley	ed Matrix	(F2)	····, ··· · ,	🗆 Р	iedmont Floodplain Soils (F19)
2 cm Muck (Å10) (LRR N) Redox Dark Surface (F6) Using Very Shallow Dark Surface (TF12) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Other (Explain in Remarks) Sandy Mucky Mineral (S1) (LRR N, MLRA 136, 122) Iron-Manganese Masses (F12) (LRR N, Iron-Manganese Masses (F13) (MLRA 136, 122) Indicators of hydrophytic vegetation an Sandy Gleved Matrix (S6) Umbric Surface (F13) (MLRA 127, 147) Indicators of hydrophytic vegetation an Sandy Redox (S5) Red Parent Material (F21) (MLRA 127, 147) Indicators of hydrophytic vegetation an Ype:	Stratified	Lavers (A5)		Depleted Ma	atrix (F3)	()			(MLRA 136, 147)
Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Other (Explain in Remarks) Thick Dark Surface (A12) Redox Depressions (F8) Other (Explain in Remarks) Sandy Mucky Mineral (S1) (LRR N, MLRA 136, 122) Iron-Manganese Masses (F12) (LRR N, MLRA 136, 122) ³ Indicators of hydrophytic vegetation an Piedmont Floodplain Solis (F19) (MLRA 148, 147, 148) Sandy Gleyed Matrix (S6) Bed Parent Material (F21) (MLRA 136, 122) ³ Indicators of hydrophytic vegetation an Piedmont Floodplain Solis (F19) (MLRA 147, 147) Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. trictive Layer (If observed): ype: ype: ype: upeth (inches): Hydric Soil Present? Yes No arrks: Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	2 cm Mu	ick (A10) (LRR N)	1	Redox Dark	Surface (F6)			ery Shallow Dark Surface (TF12)
Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 136, Sandy Gleyed Matrix (S4) Sandy Redox (S5) Sandy Redox (S5) Simpled Matrix (S6) Red Parent Material (F2) (MLRA 136, 122) Red Parent Material (F2) (MLRA 149) Hydric Soil Present? Yes No 🗹 No 🗹 No 🗹 No Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	Depleted	Below Dark Surf	ace (A11)	Depleted Da	rk Surfac	, e (F7)			other (Explain in Remarks)
Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Iron-Manganese Masses (F12) (LRR N, MLRA 136) Sandy Gleyed Matrix (S4) Image: Distribution of the start of th	Thick Da	ark Surface (A12)	· · · ·	Redox Depr	essions (F	-8)			
MLRA 147, 148) MLRA 136) Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) ³ Indicators of hydrophytic vegetation anwetland hydrology must be present, unless disturbed or problematic. Sandy Redox (S5) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. trictive Layer (if observed): ype: Hydric Soil Present? Yes No ype: Hydric Soil Present? Yes No Image: No arrks: Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	Sandy M	lucky Mineral (S1)) (LRR N,	Iron-Mangar	nese Mass	, ses (F12)	(LRR N,		
Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) ³ Indicators of hydrophytic vegetation an wetland hydrology must be present, unless disturbed or problematic. Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. Ype:	MLRA	A 147, 148)		MLRA 13	36)	()			
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present, unless disturbed or problematic. Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. trictive Layer (if observed): ype: Hydric Soil Present? Yes ype: Hydric Soil Present? Yes No Image: No tarks: Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	Sandy G	Bleyed Matrix (S4)		Umbric Surfa	, ace (F13)	(MLRA 1	36, 122)	³ Ind	icators of hydrophytic vegetation and
Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic. trictive Layer (If observed):	Sandy R	edox (S5)		Piedmont FI	oodplain §	、 Soils (F19) (MLRA 14	48) we	tland hydrology must be present,
trictive Layer (if observed): 'ype:	Stripped	Matrix (S6)		Red Parent	Material (I	F21) (ML	RA 127. 14	7) un	less disturbed or problematic.
ype:	trictive I	_aver (if observe	d):			/ (,	,	
Depth (inches): Hydric Soil Present? Yes No Intrivious Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	vne:	2	,						
^{harks:} Soils have been greatly influenced by the historic mining throughout the study area. While some samples appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	Depth (ind	ches):						Hydric Soil	Present? Yes No V
appear to be unaffected, there are hints of soil overturn and coal fragments throughout many of the samples	arks: So	oils have been	greatly in	fluenced by the h	nistoric r	nining t	hroughou	it the study a	area. While some samples
	ap	opear to be una	affected, t	here are hints of	soil ove	rturn ar	nd coal fra	agments thro	oughout many of the samples

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date	<u>+ 4/6/17</u>
Applicant/Owner: Invenergy LLC	State: OH Sampling Po	oint: Wetland 10
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:	
Landform (hillslope, terrace, etc.): Hillslope	cal relief (concave, convex, none): Concave S	lope (%): <u>6</u>
Subregion (LRR or MLRA): MLRA126 Lat: 39.266278	Long: <u>-82.436575</u> Dat	um: WGS84
Soil Map Unit Name: Wharton-Latham silt loam	NWI classification: PEM/P	SS
Are climatic / h <u>ydrologi</u> c conditions on the site typic <u>al for th</u> is time of ye	ear? Yes No 🖌 (If no, explain in Remarks.)	
Are Vegetation 🖌 Soil √, or Hydrology 🗹 significantly	disturbed? Are "Normal Circumstances" present? Yes	No 🔽
Are Vegetation, Soil, or Hydrology naturally pro	oblematic? (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 ✓ No Hydric Soil Present? Yes ✓ No Wetland Hydrology Present? Yes ✓ No Remarks:	Is the Sampled Area within a Wetland? Yes ✓ No]
The majority of the study area is in a field that has been by cattle. This particular wetland can be found on the we (NWI) Wetland. The sample point is located in the PEM intersection of township roads 14 and 15.	historically impacted by strip mining but is now actiestern edge of a tree line and a National Wetlands I portion of this wetland approximately 4,900 feet sourcester the sector of the	vely grazed nventory utheast of the
HYDROLOGY		
Wetland Hydrology Indicators:	Secondary Indicators (minimum	of two required)
Primary Indicators (minimum of one is required; check all that apply) Image: Surface Water (A1) Image: True Aquatic P Image: High Water Table (A2) Image: Hydrogen Sulfit Image: Staturation (A3) Image: Oxidized Rhizo Image: Water Marks (B1) Image: Oxidized Rhizo Image: Oxidized Rhizo Image: Oxidized Rhizo Image: Oxidized Rhizo <td>Image: Surface Soil Cracks (B6) Itants (B14) Sparsely Vegetated Concave de Odor (C1) Image Patterns (B10) ospheres on Living Roots (C3) Moss Trim Lines (B16) educed Iron (C4) Dry-Season Water Table (C2) eduction in Tilled Soils (C6) Crayfish Burrows (C8) face (C7) Saturation Visible on Aerial I in Remarks) Stunted or Stressed Plants (C2) Image: Shallow Aquitard (D3) Image: Shallow Aquitard (D3) Image: Shallow Aquitard Test (D5) Image: Shallow Active Test (D5)</td> <td>e Surface (B8) 2) magery (C9) D1))</td>	Image: Surface Soil Cracks (B6) Itants (B14) Sparsely Vegetated Concave de Odor (C1) Image Patterns (B10) ospheres on Living Roots (C3) Moss Trim Lines (B16) educed Iron (C4) Dry-Season Water Table (C2) eduction in Tilled Soils (C6) Crayfish Burrows (C8) face (C7) Saturation Visible on Aerial I in Remarks) Stunted or Stressed Plants (C2) Image: Shallow Aquitard (D3) Image: Shallow Aquitard (D3) Image: Shallow Aquitard Test (D5) Image: Shallow Active Test (D5)	e Surface (B8) 2) magery (C9) D1))
Field Observations: Surface Water Present? Yes ✓ No □ Depth (inches Water Table Present? Yes ✓ No □ Depth (inches Saturation Present? Yes ✓ No □ Depth (inches): <u>2</u>): <u>-4</u>): <u>0</u> Wetland Hydrology Present? Yes <u>√</u>] No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photo	os, previous inspections), if available:	
Remarks:		
Within this data form, negative numbers in the water tak column, represents surface saturation. During the past f many areas much wetter than most of the year.	ble represent inches below surface and 0, within the few days, there has been several inches of rain that	saturation has made

Sampling Point: Wetland 10

00%	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30Tt</u>)	% Cover	Species?	Status	Number of Dominant Species
1		·	. <u> </u>	That Are OBL, FACW, or FAC: 2 (A)
2	<u></u>	·		Total Number of Dominant
3	• •			Species Across All Strata: <u>2</u> (B)
4	<u></u>	·		Percent of Dominant Species
5		·		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
0	·	– Total Cov	or	Prevalence Index worksheet:
500/ // /			CI	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: 1011)				FACW species x 2 =
1		·		FAC species x 3 =
2		·		FACU species x 4 =
3		·		UPL species x 5 =
4		·		Column Totals: (A) (B)
	- <u> </u>	·		Provalence Index - B/A -
0		– Total Cov	or	Hydrophytic Vegetation Indicators:
			CI	1 - Papid Test for Hydrophytic Vegetation
50% of total cover:	20% of	total cover:		\checkmark 2 - Dominance Test is $>50\%$
Shrub Stratum (Plot size:)				\square 3 - Prevalence Index is $\leq 3.0^{1}$
1		·		\square 4 - Morphological Adaptations ¹ (Provide supporting
2		·	. <u> </u>	data in Remarks or on a separate sheet)
3	<u></u>	·		Problematic Hydrophytic Vegetation ¹ (Explain)
4	<u></u>	·		
5		·		¹ Indicators of hydric soil and wetland hydrology must
0		– Total Cov	or	be present, unless disturbed or problematic.
500/ // /			CI	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <u>517</u>)	40	V	OBI	approximately 20 ft (6 m) or more in height and 3 in.
2 Carex vulpinoidea (Fox Sedge)	20	Y		
2. Juncus effusus (Common Rush)	15	<u> </u>	FACW	Sapling – Woody plants, excluding woody vines,
A Dactylis glomerata (Orchard Grass)	10	N	FACU	than 3 in. (7.6 cm) DBH.
<u> Phalaris arundinacea (Reed Canarygrass) </u>	10	N	FACW	Shrub Weedy plants, evoluting weedy vines
e Poa pratensis (Kentucky Bluegrass)	5	N	FACU	approximately 3 to 20 ft (1 to 6 m) in height.
7				Hark All borbossous (non-woods) plants including
8				herbaceous vines, regardless of size, and woody
9				plants, except woody vines, less than approximately 3
10				n (1 m) in neight.
11		·		Woody vine – All woody vines, regardless of height.
	100	= Total Cov	er	
50% of total covery 50	200/ of		20	
Weedy Vine Stretum (Plet size)	20% 01	total cover.	20	
1		·		
3		·		
3				
5		·		
о. <u></u>		- Total Cov	er	Hydrophytic
				Present? Yes Ves
50% of total cover:	20% of	total cover:		
Kemarks: (Include photo numbers here or on a separate :	sneet.)			

Bare ground can be found throughout the wetland. This sample point has been collected in the PEM portion.

SUL

Interest Color (moist) % Lor 0-2 2.5Y 2/1 100 0 M 10-16 2.5Y 4/2 90 10YR 5/8 10 D M 10-16 2.5Y 5/1 90 10YR 5/8 10 D M	Loc Lexture Kemarks Loam Muck layer 1 Silt Loam Silt Loam Some Coal Fragments Silt Loam Some Coal Fragments Some Coal Fragments Some Coal
1-10 2.5Y 4/2 90 10YR 5/8 10 D M 10-16 2.5Y 5/1 90 10YR 5/8 10 D M 10-16 2.5Y 5/1 90 10YR 5/8 10 D M 10-16 2.5Y 5/1 90 10YR 5/8 10 D M 10 0 0 0 0 M 0 0 M 10 0 0 0 0 0 0 M M 10 0 0 0 0 0 0 M M 10 0 0 0 0 0 0 0 M 10 0	A Silt Loam A Silt Loam Silt Loam Silt Loam Some Coal Fragments Some Coal Fragments Som
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0-16 2.5Y 5/1 90 10YR 5/8 10 D M Image: Second stress of the second strese second stress of the second stress of the second str	A Silt Loam Some Coal Fragments Some Coal Fragments Some Coal Frage
ype: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. /dric Soil Indicators: Histosol (A1) Black Histic (A3) Black Histic (A3) Stratified Layers (A5) 2 cm Muck (A10) (LRR N) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5)	A 147, 148) (MLRA 136, 147) (MLRA 136, 147)
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I Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) Image: Depleted Matrix (F3) I Stratified Layers (A5) Image: Depleted Matrix (F3) I Communication of the strates of t	Piedmont Floodplain Soils (F19) (MLRA 136, 147)
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Depicted Dark Surface (A12) Depicted Dark Surface (T7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Iron-Manganese Masses (F12) (LRR I Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 12) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 136, 12)	$\square \text{ Other (Explain in Remarks)}$
Index Dark Connect (112) Index Depressions (10) Sandy Mucky Mineral (S1) (LRR N, Iron-Manganese Masses (F12) (LRR I MLRA 147, 148) MLRA 136) Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 12) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 136, 12)	
MLRA 147, 148) MLRA 136) Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 12) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLR	R N.
Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 12) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLR	
Sandy Redox (S5)	³ Indicators of hydrophytic vegetation and
	LRA 148) wetland hydrology must be present,
Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127	27, 147) unless disturbed or problematic.
estrictive Layer (if observed):	
Туре:	
Depth (inches):	Hydric Soil Present? Yes <u>V</u> No
Soils have been greatly influenced by the historic mining throug appear to be unaffected, there are hints of soil overturn and coa Soils meet F3 indicator for hydric soils.	Ignout the study area. While some samples oal fragments throughout many of the samples

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date: 4/6/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 10
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope Loo	cal relief (concave, convex, none): <u>Concave</u> Slope (%): <u>6</u>
Subregion (LRR or MLRA): MLRA126 Lat: 39.266303	Long: -82.436602 Datum: WGS84
Soil Map Unit Name: Wharton-Latham silt loam	NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes No 🖌 (If no, explain in Remarks.)
Are Vegetation Soil , or Hydrology significantly	disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology naturally pro	blematic? (If needed, explain any answers in Remarks.)
CLIMMARY OF FINDINGS Attack site man abouing	and the second locations transacts important factures at
SUMMART OF FINDINGS – Attach site map showing	sampling point locations, transects, important leatures, etc.
Hydrophytic Vegetation Present? Yes No Ves	Is the Sampled Area
Hydric Soil Present? Yes No	within a Wetland? Yes No
Wetland Hydrology Present? Yes No 🖌	
Remarks:	
The majority of the study area is in a field that has been	historically impacted by strip mining but is now actively grazed
by cattle. This upland point can be found on the western	edge of a tree line and National Wetlands Inventory (NWI)
Wetland. The sample point is located outside the PEM p	ortion of this wetland approximately 4,900 feet southeast of the
Intersection of township roads 14 and 15.	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	ants (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	de Odor (C1)
Saturation (A3)	spheres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1)	duced Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)	duction in Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3)	ace (C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain	in Remarks) Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No Ver Depth (inches)	:
Water Table Present? Yes No V Depth (inches)	
Saturation Present? Yes No Depth (inches)	Wetland Hydrology Present? Yes No
Describe Recorded Data (stream gauge, monitoring well, aerial photo	is, previous inspections), if available:
Remarks:	
During the past few days, there has been several inches	s of rain that has made many areas much wetter than most of the
year.	

	Absolute	Dominant	Indicator	Dominance Test worksheet:				
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species				
1				That Are OBL, FACW, or FAC:	0	(A)		
2				Total Number of Dominant				
3				Species Across All Strata:	2	(B)		
4.						(-)		
5				Percent of Dominant Species	0			
6				That Are OBL, FACW, of FAC.	<u> </u>	(A/D)		
0		- Total Cov	or	Prevalence Index worksheet:				
		- 10181000	CI	Total % Cover of:	Multiply by:			
50% of total cover:	20% of	total cover:		OBL species x	1 =			
Sapling Stratum (Plot size: 15ft)				FACW species x	2 =	_		
1				EAC species	3 -	_		
2					4 –	_		
3				FACO species X	4 = <u> </u>	_		
4.				UPL species X	5 =	_		
5				Column Totals: (A	.)	_ (B)		
6				Brovalance Index - B/A -				
0		Total Cav		Hudrophytic Verstation India	10101	_		
			C I					
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophy	tic Vegetation			
Shrub Stratum (Plot size: 15ft)				2 - Dominance Test is >50%	D			
1				3 - Prevalence Index is ≤3.0	1			
2				4 - Morphological Adaptation	ns ¹ (Provide supp	orting		
3.				data in Remarks or on a	separate sheet)			
4.				Problematic Hydrophytic Ve	getation' (Explair	ר)		
5								
6				¹ Indicators of hydric soil and wet	land hydrology m	lust		
0		Total Cau		be present, unless disturbed or p	problematic.			
			er	Definitions of Five Vegetation	Strata:			
50% of total cover:	20% of	total cover:		Tree – Woody plants, excluding	woodv vines.			
50% of total cover: Herb Stratum (Plot size: 5ft)	20% of	total cover:		Tree – Woody plants, excluding approximately 20 ft (6 m) or more	woody vines, e in height and 3	in.		
<u>Herb Stratum</u> (Plot size: <u>50% of total cover:</u>) 1. Trifolium repens (White Clover)	20% of	total cover:	FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or more (7.6 cm) or larger in diameter at	woody vines, e in height and 3 breast height (DE	in. 3H).		
<u>Herb Stratum</u> (Plot size: <u>5ft</u>) <u>1.</u> Trifolium repens (White Clover) <u>2.</u> Dactylis glomerata (Orchard Grass)	20% of <u>40</u>	total cover:	FACU FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at Sabling – Woody plants, exclud	woody vines, e in height and 3 breast height (DE	in. 3H).		
50% of total cover: 50% of total cover: Herb Stratum (Plot size: 5ft) 1. Trifolium repens (White Clover) 2. Dactylis glomerata (Orchard Grass) 3.	20% of <u>40</u>	total cover: Y Y	FACU FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at Sapling – Woody plants, exclud approximately 20 ft (6 m) or mor	woody vines, e in height and 3 breast height (DE ing woody vines, e in height and le	in. 3H). ss		
50% of total cover: <u>Herb Stratum</u> (Plot size: <u>5ft</u>) 1. <u>Trifolium repens (White Clover)</u> 2. <u>Dactylis glomerata (Orchard Grass)</u> 3 4.	20% of <u>40</u>	total cover:	FACU FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at Sapling – Woody plants, exclud approximately 20 ft (6 m) or mor than 3 in. (7.6 cm) DBH.	woody vines, e in height and 3 breast height (DE ing woody vines, e in height and le	in. 3H). ss		
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50% of total cover:	20% of <u>40</u>	Y Y Y	FACU FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or more (7.6 cm) or larger in diameter at Sapling – Woody plants, excludi approximately 20 ft (6 m) or more than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excludin approximately 3 to 20 ft (1 to 6 m	woody vines, e in height and 3 breast height (DE ing woody vines, e in height and le g woody vines, n) in height.	in. 3H). •ss		
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50% of total cover: Herb Stratum (Plot size: 1. Trifolium repens (White Clover) 2. Dactylis glomerata (Orchard Grass) 3. 4. 5. 6. 7. 8. 9. 10. 11. 50% of total cover: Woody Vine Stratum (Plot size:) 1. 2. 3. 4. 50% of total cover: 0 1. 50% of total cover: 50% of total cover: 50% of total cover:	20% of 40 	Y Y Y	FACU FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or more (7.6 cm) or larger in diameter at Sapling – Woody plants, exclud approximately 20 ft (6 m) or more than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excludin approximately 3 to 20 ft (1 to 6 m Herb – All herbaceous (non-wood herbaceous vines, regardless of plants, except woody vines, less ft (1 m) in height. Woody vine – All woody vines, the Hydrophytic Vegetation Present? Yes	woody vines, e in height and 3 breast height (DE ing woody vines, e in height and le g woody vines, n) in height. hy) plants, includ size, and woody than approximat regardless of heig	in. 3H). ss ling ely 3 ght.		
Depth	Matrix	0/	Rede	x Feature	S Turn 1	12	Tautum	Derrodo
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(inches)	2 5Y 2/1	<u>%</u>	Color (moist)	%	<u>iype</u>	LOC		Kemarks Muck laver
0-1	2.51 2/1							
2-16	2.5Y 4/3	95	10 YR 5/8	5	<u>D</u>		Silt Loam	Some coal fragments
					·			
ype: C=Co	oncentration, D=De	epletion, RN	I=Reduced Matrix, M	S=Maske	d Sand G	rains.	² Location: Pl	_=Pore Lining, M=Matrix.
Histosol Histic Ep Black His Hydroged Stratified Central Depleted Thick Da Sandy M MLRA Sandy G Sandy R Sandy R	ndicators: (A1) ipedon (A2) stic (A3) n Sulfide (A4) Layers (A5) ck (A10) (LRR N) I Below Dark Surfa rk Surface (A12) ucky Mineral (S1) a 147, 148) leyed Matrix (S4) edox (S5) Matrix (S6)	ace (A11) (LRR N,	Dark Surfact Polyvalue Bi Thin Dark S Loamy Gley Depleted Ma Redox Dark Depleted Da Redox Depr Iron-Mangar MLRA 13 Umbric Surfa Piedmont FI	e (S7) elow Surfa urface (S9 ed Matrix (F3) Surface (F rk Surface essions (F esse Mass 66) ace (F13) podplain S Material (F	ace (S8) () (MLRA (F2) F6) e (F7) F8) ses (F12) (MLRA 1 Soils (F19 F21) (ML	MLRA 147 147, 148) (LRR N, 36, 122)) (MLRA 1 RA 127, 14	Indica	itors for Problematic Hydric Soils": cm Muck (A10) (MLRA 147) oast Prairie Redox (A16) (MLRA 147, 148) iedmont Floodplain Soils (F19) (MLRA 136, 147) ery Shallow Dark Surface (TF12) ther (Explain in Remarks) icators of hydrophytic vegetation and tland hydrology must be present, ess disturbed or problematic.
estrictive L	ayer (if observed	d):		material (I	21)(11)			
Type: Depth (inc	:hes):	,					Hydric Soil	Present? Yes No 🗸
^{emarks:} Sc ap	oils have been pear to be una	greatly in affected, t	fluenced by the h here are hints of	nistoric n soil ove	nining t rturn ar	hroughou Id coal fra	it the study a agments thro	area. While some samples bughout many of the samples.

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date: 4/6/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Wetland 11
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope	cal relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR or MLRA): MLRA126 Lat: 39.269150	Long: -82.440516 Datum: WGS84
Soil Map Unit Name: Wharton-Latham silt loam	NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes No 🗸 (If no, explain in Remarks.)
Are Vegetation 🗹 Soil 🗸, or Hydrology 🗹 significantly	disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology, naturally pro	blematic? (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>Ves</u> No	Is the Sampled Area
Wetland Hydrology Present?	
The majority of the study area is in a field that has been	historically impacted by strip mining but is now actively grazed
by cattle. This particular wetland can be found on the we	estern edge of delineated pond 16. The sample point is located
approximately 4,000 feet southeast of the intersection of	f township roads 14 and 15.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	ants (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	de Odor (C1)
✓ Saturation (A3)	spheres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1)	duced Iron (C4)
Sediment Deposits (B2)	duction in Tilled Soils (C6)
Drift Deposits (B3)	ace (C7) Saturation Visible on Aerial Imagery (C9)
	In Remarks)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes Ves No Depth (inches)	_c 1
Water Table Present? Yes Vo Depth (inches)	-4
Saturation Present? Yes 🗸 No Depth (inches)	© Wetland Hydrology Present? Yes ✓ No
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photo	s, previous inspections), if available:
Devide	
Remarks:	
Within this data form, negative numbers in the water tab	le represent inches below surface and 0, within the saturation
column, represents surface saturation. During the past i	ew days, there has been several inches of rain that has made
many aleas much weller than most of the year.	

Sampling Point: Wetland 11

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species
1	<u>.</u>			That Are OBL, FACW, or FAC: <u>3</u> (A)
2				Total Number of Deminent
3.				Species Across All Strata: 3 (B)
4				
5		·		Percent of Dominant Species
	·	·		I hat Are OBL, FACW, or FAC: 100 (A/B)
0		Total Cau		Prevalence Index worksheet:
			er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover		OBL species x 1 =
Sapling Stratum (Plot size: 15ft)				FACW species x 2 =
1				
2				
3.				FACU species X 4 =
4				UPL species x 5 =
5		·		Column Totals: (A) (B)
<u> </u>		·		Drevela era hallan D/A
ő				Prevalence index = B/A =
		= I otal Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)				2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0 ¹
2.				4 - Morphological Adaptations ¹ (Provide supporting
3				data in Remarks or on a separate sheet)
4		·		Problematic Hydrophytic Vegetation ¹ (Explain)
T		·		
5		·		¹ Indicators of hydric soil and wetland hydrology must
o				be present, unless disturbed or problematic.
		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover		Tree - Woody plants, excluding woody vines
Herb Stratum (Plot size: 5ft)				approximately 20 ft (6 m) or more in height and 3 in.
1. Typha angustifolia (Narrowleaf Cattail)	25	Y	OBL	(7.6 cm) or larger in diameter at breast height (DBH).
2 Carex vulpinoidea (Fox Sedge)	23	Y	OBL	Capling Weady planta avaluating weady vince
3 Juncus effusus (Common Rush)	22	Y	FACW	approximately 20 ft (6 m) or more in height and less
A Phalaris arundinacea (Reed Canarygrass)	15	Y	FACW	than 3 in. (7.6 cm) DBH.
- Dactylis domerata (Orchard Grass)	10	N	FACU	
5. Dactylis glomerata (Orchard Orass)	2			Snrub – woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height
6. Foa prateinsis (Reintucky Bidegrass)	<u> </u>		FACU	
7. Tritolium pratense (Red Clover)	2	IN	FACU	Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
9				ft (1 m) in height.
10				
11.				Woody vine – All woody vines, regardless of height.
	100	= Total Cov	er	
50			20	
50% of total cover: 50	20% of	total cover	20	
Woody Vine Stratum (Plot size:)				
1				
2				
3		·		
4				
5.				
		= Total Cov	er	Hydrophytic
		- 10101000	01	Present? Yes V No
50% of total cover:	20% of	total cover		
Remarks: (Include photo numbers here or on a separate	sheet.)			

Wetland vegetation has some areas where mowing, grazing and other impacts have made identification difficult.

Depth	Matrix	0/	Redo	x Features	T	1 2	Tandorea	Demedia
<u>(incnes)</u> 0-2	2 5Y 2/1		Color (moist)	%	Type	LOC	<u>l exture</u>	Muck laver
2-16	2.5Y 5/2	85	10YR 5/8	15	D	M	Silt Loam	Some Coal Fragments
						- <u> </u>		
¹ Type: C=Co	oncentration, D=De	epletion, RM	=Reduced Matrix, M	S=Masked	Sand G	rains.	² Location: Pl	L=Pore Lining, M=Matrix.
Histosol Histosol Black Hi Hydroge Stratified 2 cm Mu Depleted Thick Da Sandy M MLRA	(A1) pipedon (A2) stic (A3) en Sulfide (A4) d Layers (A5) uck (A10) (LRR N) d Below Dark Surfa ark Surface (A12) Mucky Mineral (S1) A 147, 148)	ace (A11) (LRR N,	Dark Surface Polyvalue Be Thin Dark Su Loamy Gleye Depleted Ma Redox Dark Depleted Da Redox Depre Iron-Mangar MLRA 13	e (S7) elow Surface urface (S9) ed Matrix (I atrix (F3) Surface (F rk Surface essions (F8 esse Masse 66)	ce (S8) ((MLRA 72) 6) (F7) 3) es (F12)	MLRA 147, 147, 148) (LRR N,	, 148) □ C □ P □ V □ O	cm Muck (A10) (MLRA 147) oast Prairie Redox (A16) (MLRA 147, 148) iedmont Floodplain Soils (F19) (MLRA 136, 147) ery Shallow Dark Surface (TF12) ther (Explain in Remarks)
Sandy G	Bleyed Matrix (S4) Redox (S5) Matrix (S6)		Umbric Surfa	ace (F13) (oodplain So Material (F2	MLRA 1 bils (F19) 21) (MLF	36, 122)) (MLRA 14 RA 127, 14	³ Ind 18) we 7) unl	icators of hydrophytic vegetation and tland hydrology must be present, less disturbed or problematic.
Type:	Layer (if observed	1):					Hydric Soil	Present? Yes 🗸 No
Remarks: So ap So	bils have been opear to be una bils meet F3 inc	greatly inf ffected, th dicator for	iluenced by the h here are hints of hydric soils.	nistoric m soil over	ining th turn an	nroughou d coal fra	It the study a agments thro	area. While some samples bughout many of the samples.

Project/Site: Vinton Solar Energy Center Project City/C	ounty: McArthur/Vinton Sampling Date: 4/6/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 11
Investigator(s): Nathan Renaudin & Lindsey Moss Section	on, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope	ef (concave, convex, none): Slope (%): 2
Subregion (LRR or MLRA): MLRA126 Lat: 39.269051	Long: -82.441071 Datum: WGS84
Soil Map Unit Name: Wharton-Latham silt loam	NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Y	es No 🗸 (If no, explain in Remarks.)
Are Vegetation \checkmark Soil \checkmark or Hydrology \checkmark significantly disturb	bed? Are "Normal Circumstances" present? Yes No 🗸
Are Vegetation Soil or Hydrology paturally problems	atic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sam	pling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	In the Commission Area
Hydric Soil Present? Yes V No	within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Remarks:	
The majority of the study area is in a field that has been histo	prically impacted by strip mining but is now actively grazed
by cattle. This upland point can be found on the western edge	e of delineated pond 16. The sample point is located
approximately 4,000 feet southeast of the intersection of town	nship roads 14 and 15.
	•
Reference and the second	
Primary indicators (minimum of one is required; check all that apply)	
Surface Water (A1) True Aquatic Plants (I Use Nuclear Table (A0)	B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Hydrogen Sullide Odd	Drainage Patterns (B10)
Saturation (AS) Oxidized Rhizosphere	A Iron (C4)
Sediment Deposite (B2)	in Tilled Soils (C6) \Box Cravitish Burrows (C8)
Drift Deposits (B3)	$\sum_{i=1}^{n} Citylish Duriows (CO)$
Algal Mat or Crust (B4)	narks)
	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aguitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No 🗸 Depth (inches):	
Water Table Present? Yes No V Depth (inches):	
Saturation Present? Yes No V Depth (inches):	Wetland Hydrology Present? Yes No
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre-	vious inspections), if available:
Remarks:	
During the past few days, there has been several inches of ra	ain that has made many areas much wetter than most of the
year.	

Sampling Point: Upland 11

201	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 0 (A)
2				Total Number of Dominant
3				Species Across All Strata: <u>2</u> (B)
4	<u></u>			Percent of Dominant Spacios
5				That Are OBL, FACW, or FAC: 0 (A/B)
6				Prevalence Index worksheet:
		= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: 15ft)				FACW species x 2 =
1				FAC species x 3 =
2				FACIL species x 4 -
3				
4	<u></u>			Column Totale: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)	2070 01			2 - Dominance Test is >50%
				$3 - Prevalence Index is \leq 3.0^{1}$
				4 - Morphological Adaptations ¹ (Provide supporting
2				data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation ¹ (Explain)
4				
5				¹ Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		Tree Weedy plants, evoluting weedy vince
Herb Stratum (Plot size: 5ft)				approximately 20 ft (6 m) or more in height and 3 in.
1. Trifolium repens (White Clover)	30	Υ	FACU	(7.6 cm) or larger in diameter at breast height (DBH).
2. Dactylis glomerata (Orchard Grass)	20	Y	FACU	Sapling Woody plants, excluding woody vines
3. Juncus effusus (Common Rush)	10	Ν	FACW	approximately 20 ft (6 m) or more in height and less
4.				than 3 in. (7.6 cm) DBH.
5				Shrub – Woody plants, excluding woody vines.
6.				approximately 3 to 20 ft (1 to 6 m) in height.
7				Harb All borbaccous (non woody) plants, including
0				herbaceous vines, regardless of size, and woody
0				plants, except woody vines, less than approximately 3
5				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11	60			
	00	= I otal Cov	er	
50% of total cover: <u>30</u>	20% of	total cover:	12	
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4.				
5.				
		- Total Cov	er	Hydrophytic
		- 10101000		Present? Yes No
50% of total cover:	20% of	total cover:		
Remarks: (Include photo numbers here or on a separate	sheet.)			

Profile Desc	ription: (Describe	to the dep	th needed to docun	nent the i	indicator	or confirm	the absence	of indicators.)
Depth	Matrix		Redo	x Feature	S			
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-1	2.5Y 2/1	100					Loam	Muck layer
2-16	2.5Y 5/1	90	10 YR 5/8	10	D	Μ	Silt Loam	Some coal fragments
						·		
						·		
		·				·		
·							·	
		·				·		
						·		
¹ Type: C=Co	oncentration, D=Dep	letion, RM	=Reduced Matrix, MS	S=Masked	d Sand Gr	ains.	² Location: PL	_=Pore Lining, M=Matrix.
Hydric Soil	Indicators:						Indica	tors for Problematic Hydric Soils ³ :
Histosol	(A1)		Dark Surface	(S7)			2	cm Muck (A10) (MLRA 147)
Histic Ep	pipedon (A2)		Polyvalue Be	low Surfa	ce (S8) (N	/ILRA 147,	148) 🗌 C	oast Prairie Redox (A16)
🔲 Black Hi	stic (A3)		Thin Dark Su	rface (S9) (MLRA [•]	147, 148)	_	(MLRA 147, 148)
Hydroge	en Sulfide (A4)		Loamy Gleye	d Matrix ((F2)		L Pi	edmont Floodplain Soils (F19)
Stratified	d Layers (A5)		Depleted Mat	trix (F3)			_	(MLRA 136, 147)
2 cm Mu	ıck (A10) (LRR N)		Redox Dark S	Surface (F	-6)			ery Shallow Dark Surface (TF12)
Depleted	d Below Dark Surfac	e (A11)	Depleted Dar	k Surface	e (F7)		0 🗋	ther (Explain in Remarks)
L Thick Da	ark Surface (A12)		Redox Depre	ssions (F	8)			
Sandy M	lucky Mineral (S1) (I	_RR N,	Iron-Mangane	ese Mass	es (F12) (LRR N,		
MLRA	A 147, 148)		MLRA 13	6)			3	
Sandy G	Bleyed Matrix (S4)		Umbric Surfa	ce (F13)	(MLRA 13	86, 122)	°Indi	cators of hydrophytic vegetation and
Sandy R	tedox (S5)		Piedmont Flo	odplain S	Soils (F19)	(MLRA 14	(8) we	tland hydrology must be present,
Stripped	Matrix (S6)		Red Parent M	Aaterial (F	21) (MLR	A 127, 147	7) unl	ess disturbed or problematic.
Restrictive I	Layer (if observed):							
Туре:								
Depth (inc	ches):						Hydric Soil	Present? Yes No 🔽
Remarks:	oils have been d	reatly inf	luenced by the hi	istoric n	ninina th	rouahou	t the study a	area. While some samples
ar	opear to be unaf	ected. th	ere are hints of s	soil over	rturn an	d coal fra	aments thro	oughout many of the samples.
S	ample meets F3	indicator	for hydric soils.				.g	

Project/Site: Vinton Solar Energy Center Project C	ity/County: McArthur/Vinton Sampling Date: 4/6/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Wetland 12
Investigator(s): Nathan Renaudin & Lindsey Moss	ection, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope	I relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR or MLRA): MLRA126 Lat: 39.265649	Long: -82.437574 Datum: WGS84
Soil Map Unit Name: Wharton-Latham silt loam	NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year	? Yes No 🗸 (If no, explain in Remarks.)
Are Vegetation Soil , or Hydrology significantly di	isturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology naturally prob	lematic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing s	ampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes V	In the Completion
Hydric Soil Present? Yes ✓ No	within a Wetland? Yes Ves No
Wetland Hydrology Present? Yes Ves	
Remarks:	
The majority of the study area is in a field that has been h	istorically impacted by strip mining but is now actively grazed
by cattle. This particular wetland is extremely small and d	ominated mostly by rush. The sample point is located
approximately 4,800 feet southeast of the intersection of t	ownship roads 14 and 15.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	nts (B14) Sparsely Vegetated Concave Surface (B8)
✓ High Water Table (A2)	e Odor (C1)
Saturation (A3)	bheres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1)	uced Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)	uction in Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3)	ce (C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in	Remarks) Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes Ves No Depth (inches):	1
Water Table Present? Yes Ves No Depth (inches):	-5
Saturation Present? Yes ✓ No Depth (inches):	0 Wetland Hydrology Present? Yes <u>✓</u> No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos.	previous inspections), if available:
Remarks:	
Within this data form, negative numbers in the water table	e represent inches below surface and 0, within the saturation
column, represents surface saturation. During the past fe	w days, there has been several inches of rain that has made
many areas much wetter than most of the year.	

0.01	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30ft)	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: \angle (A)
2				Total Number of Dominant
S				Species Across All Strata: 2 (B)
4 5				Percent of Dominant Species
				That Are OBL, FACW, or FAC: (A/B)
··		= Total Cov	er	Prevalence Index worksheet:
50% of total covor:	20% of	total covor		Total % Cover of:Multiply by:
Sopling Stratum (Plot size: 15ft	20% 01	IOIAI COVEI	·	OBL species x 1 =
				FACW species x 2 =
2				FAC species x 3 =
3				FACU species x 4 =
4.				UPL species x 5 =
5.				Column Totals: (A) (B)
6.				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)	2070 01		·	2 - Dominance Test is >50%
1.				3 - Prevalence Index is ≤3.0 ¹
2.				4 - Morphological Adaptations ¹ (Provide supporting
3.				data in Remarks or on a separate sheet)
4.				Problematic Hydrophytic Vegetation' (Explain)
5				1
6				Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
		- Total Cay	~	
		= 101a1 000	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover	er	Definitions of Five Vegetation Strata:
50% of total cover: Herb Stratum (Plot size: 5ft)	20% of	total cover		Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in beight and 3 in
50% of total cover: Herb Stratum (Plot size: <u>5ft</u>) 1. Juncus effusus (Common Rush)	20% of 30	total cover	FACW	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
50% of total cover:	20% of 30 20	total cover $\frac{Y}{Y}$	FACW FACW	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines
50% of total cover:	20% of 30 20 15	total cover $\frac{Y}{N}$	FACW FACW OBL	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
50% of total cover:	20% of 30 20 15 10	total cover Y Y N N	FACW FACW OBL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
50% of total cover:	20% of <u>30</u> <u>20</u> <u>15</u> <u>10</u> <u>10</u>	total cover Y Y N N	FACW FACW OBL FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines,
50% of total cover:	20% of 30 20 15 10 10 5	total cover Y Y N N N	FACW FACW OBL FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
50% of total cover:	20% of 30 20 15 10 10 5	Y Y N N N	FACW FACW OBL FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including
50% of total cover:	20% of 30 20 15 10 10 5 	Y Y N N N	FACW FACW OBL FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants are stored woody vines.
50% of total cover:	20% of 30 20 15 10 10 5 	total cover Y Y N N N N	FACW FACW OBL FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.
50% of total cover:	20% of 30 20 15 10 10 5 	Y Y Y N N N	FACW FACW OBL FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.
50% of total cover:	20% of 30 20 15 10 10 5 	total cover Y Y N N	FACW FACW OBL FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 30 20 15 10 10 5 90	Y Y N N N =	FACW FACW OBL FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 30 20 15 10 10 5 90 20% of	Y Y N N N = Total Cover	FACW FACW OBL FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 30 20 15 10 10 5 90 20% of	Y Y N N N	FACW FACW OBL FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 30 20 15 10 5 90 20% of	Y Y N N N = Total Cover	FACW FACW OBL FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 30 20 15 10 10 5 90 20% of	Y Y Y N N N = Total Cover	FACW FACW OBL FACU FACU <	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 30 20 15 10 5 90 20% of	Y Y N N N = Total Cover	FACW FACW OBL FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 30 20 15 10 5 90 20% of	Y Y N N N = Total Cover	FACW FACW OBL FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 30 20 15 10 10 5 90 20% of	Y Y Y N N N N Total Cover	FACW FACW OBL FACU FACU <	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 30 20 15 10 5 90 20% of 90	Total Cover	FACW FACW OBL FACU FACU FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 30 20 15 10 5 90 20% of 20% of 20% of	Y Y N N N = Total Cover	FACW FACW OBL FACU Image: Facu	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No
50% of total cover:	20% of 30 20 15 10 5 90 20% of 20% of sheet.)	Y Y Y N N N = Total Cover	FACW FACW OBL FACU FACU <	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No

Profile Desc	cription: (Describe	to the dep	th needed to docur	nent the	indicator	or confirm	the absence	of indicators.)
Depth	Matrix		Redo	x Feature	s			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-2	2.5Y 2/1	100					Loam	Muck layer
2-16	25V 1/2	90	10VR 5/6	10	П	M	Silt Loam	Some Coal Fragments
2-10	2.31 4/2	90	10111 3/0	10	D			Some Coarr ragments
·					· · · · · · · · · · · · · · · · · · ·			
					·		·	
				·	·		·	
¹ Type: C=C	oncentration, D=Dep	oletion, RM=	=Reduced Matrix, MS	S=Maske	d Sand Gr	ains.	² Location: PI	_=Pore Lining, M=Matrix.
Hydric Soil	Indicators:		, ,				Indica	ntors for Problematic Hydric Soils ³ :
Histosol	(Δ1)			(97)			\Box_2	cm Muck (A10) (MI RA 147)
	(A2)			low Surfa	(88)		148)	oast Prairie Redox (A16)
				urfaco (S0		147 140		(MI DA 147 148)
	Subtraction (A3)			Matrix		147, 140)		indmont Floodplain Soils (F10)
				triv (E2)	(ГZ)			
				IIIX (F3) Surface /I				(WILKA 130, 147)
	ICK (ATU) (LKK N) d Dolow Dork Surfor	o (A11)			-0) > (EZ)			ther (Evaluin in Demorke)
		e (ATT)			; (F7)			ther (Explain in Remarks)
	ark Surrace (A12)			essions (F	8)			
	lucky Mineral (S1) (LRR N,		ese Mass	es (F12) ((LRR N,		
	A 147, 148)			6)			3	
Sandy G	Bleyed Matrix (S4)			ace (F13)	(MLRA 1	36, 122)	°Indi	cators of hydrophytic vegetation and
Sandy R	Redox (S5)		Piedmont Flo	podplain S	Soils (F19)	(MLRA 14	8) we	tland hydrology must be present,
Stripped	Matrix (S6)		Red Parent N	Material (F	-21) (MLF	RA 127, 147	') unl	ess disturbed or problematic.
Restrictive	Layer (if observed)	:						
Type:								
Depth (in	ches):						Hydric Soil	Present? Yes 🗹 No 🛄
Remarks:								
50	olis nave been g	reatly infl	uenced by the h	Istoric n	nining tr	irougnou	t the study a	area. while some samples
ap	opear to be unaf	fected, th	ere are hints of	soil ove	rturn an	d coal fra	igments thro	bughout many of the samples.
S	oils meet F3 indi	icator for	hydric soils.					

Project/Site: Vinton Solar Energy Center Project City/County: McArthur/Vinton Sampling Date: 4/6/17
Applicant/Owner: Invenergy LLC State: OH Sampling Point: Upland 12
Investigator(s): Nathan Renaudin & Lindsey Moss Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR or MLRA): MLRA126 Lat: 39.265605 Long: -82.437574 Datum: WGS84
Soil Map Unit Name: Wharton-Latham silt loam NWI classification: UPL
Are climatic / bydrologic conditions on the site typical for this time of year? Yes $\sqrt{10}$ (If no explain in Remarks)
Are Vegetation 🖌 Soil 🗸 or Hydrology 🖌 significantly disturbed? Are "Normal Circumstances" present? Yes 🗌 No
Are Vegetation, Soil, or Hydrology 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 No Is the Sampled Area within a Wetland? Yes No Hydric Soil Present? Yes No No Is the Sampled Area within a Wetland? Yes No Is the Sampled Area within a Wetland? Yes No Is the Sampled Area within a Wetland? Yes No Is the Sampled Area within a Wetland? Yes No Is the Sampled Area within a Wetland? Yes No Is the Sampled Area within a Wetland? Yes No Is the Sampled Area within a Wetland? Yes Is the Sampled Area within a Wetland? </td
Remarks:
The majority of the study area is in a field that has been historically impacted by strip mining but is now actively grazed by cattle. The upland point is located approximately 4,800 feet southeast of the intersection of township roads 14 and 15.
HYDROLOGY
Wetland Hydrology Indicators: <u>Secondary Indicators (minimum of two required)</u>
Primary Indicators (minimum of one is required; check all that apply)
Surface Water (A1) True Aquatic Plants (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)
Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1) Presence of Reduced Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)
Drift Deposits (B3) Inin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9)
Initial Deposits (B5) Geomorphic Position (D2) Shallow Aquitard (D3)
Field Observations:
Surface water Present? Yes No Depth (inches):
Saturation Present? Yes No V Depth (inches): Wetland Hydrology Present? Yes No V (includes capillary fringe)
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

During the past few days, there has been several inches of rain that has made many areas much wetter than most of the year.

Sampling Point: Upland 12

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 0 (A)
2				Total Number of Dominant
3				Species Across All Strata: <u>2</u> (B)
4				Percent of Dominant Species
5	·			That Are OBL, FACW, or FAC: 0 (A/B)
6		·	<u> </u>	Prevalence Index worksheet:
	. <u> </u>	= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		OBL species x1-
Sapling Stratum (Plot size: 15ft)				
1				
2	<u></u>			
3				FACO species x 4 = UDL energies x 5
4				
5				Column Totals: (A) (B)
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total covor:	20% of	total covor:		1 - Rapid Test for Hydrophytic Vegetation
Shruh Strotum (Plot size: 15ft)	20 % 01	iolai cover.		\square 2 - Dominance Test is >50%
				3 - Prevalence Index is $\leq 3.0^{1}$
		·		4 - Morphological Adaptations ¹ (Provide supporting
2				data in Remarks or on a separate sheet)
3		·		Problematic Hydrophytic Vegetation ¹ (Explain)
4		·		
5		·		¹ Indicators of hydric soil and wetland hydrology must
0				be present, unless disturbed or problematic.
		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		Tree – Woody plants, excluding woody vines.
Herb Stratum (Plot size: 5ft)				approximately 20 ft (6 m) or more in height and 3 in.
1. Trifolium repens (White Clover)	30	Y	FACU	(7.6 cm) or larger in diameter at breast height (DBH).
2. Dactylis glomerata (Orchard Grass)	20	Y	FACU	Sapling – Woody plants, excluding woody vines,
3. Juncus effusus (Common Rush)	10	N	FACW	approximately 20 ft (6 m) or more in height and less
4				than 3 lh. (7.6 cm) DBH.
5				Shrub – Woody plants, excluding woody vines,
6				approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
9				ft (1 m) in height.
10				
11				Woody vine – All woody vines, regardless of height.
	60	= Total Cov	er	
50% of total cover: 30	20% of	total cover:	12	
Woody Vine Stratum (Plot size:				
1				
2		·		
3	·			
0		·		
۲ ۶	- · ·			
0	- · ·	- Total O-		Hydrophytic
			ei	Present? Yes No
50% of total cover:	20% of	total cover:		
Remarks: (Include photo numbers here or on a separate	sheet.)			

Vegetation has been grazed in many portions of the area. The majority of the sample contains bare ground throughout.

Depth	oth <u>Matrix</u>		Redo	ox Feature	S1	. 2	- .	,	
(inches)	<u>Color (moist)</u> 2 5Y 2/1	<u>%</u>	Color (moist)	%	l ype'		Loam	Remarks Muck laver	
0-1	2.51 2/1			10			Silt Loom		
2-10	2.51 5/1	90	10 FR 5/8	10	D	IVI	Silt Loam	Some coal tragments	
							. <u> </u>		
Type: C-C	oncentration D-De	enletion RM	-Reduced Matrix M	S-Masker	I Sand G	rains	² Location: Pl	-Pore Lining M-Matrix	
lydric Soil	Indicators:			0=mashee		ramo.	Indica	ators for Problematic Hydric Soils ³ :	
Histosol	(A1)		Dark Surface	e (S7)			<u> </u>	cm Muck (A10) (MLRA 147)	
Histic Ep	pipedon (A2)		Polyvalue Be	elow Surfa	ce (S8) (MLRA 147,	148) 🗌 C	oast Prairie Redox (A16)	
Black Hi	stic (A3)		Thin Dark Su	urface (S9)) (MLRA	147, 148)		(MLRA 147, 148)	
Hydroge	en Sulfide (A4)		Loamy Gleye	ed Matrix (striv (E3)	(F2)			(MI PA 136 147)	
2 cm Mu	uck (A10) (LRR N)		Redox Dark	Surface (F	-6)			erv Shallow Dark Surface (TF12)	
Depleted	d Below Dark Surfa	ace (A11)	Depleted Da	rk Surface	e (F7)		0 🛄	ther (Explain in Remarks)	
Thick Da	ark Surface (A12)		Redox Depre	essions (F	8)				
Sandy M	Aucky Mineral (S1)	(LRR N,	Iron-Mangar	iese Mass	es (F12)	(LRR N,			
	A 147, 148)		MLRA 13	6) 200 (E13) (36 122)	³ Ind	icators of hydrophytic vegetation and	
Sandy B	Redox (S5)		Piedmont Fl	odplain S	oils (F19) (MLRA 14	18) we	tland hydrology must be present.	
Stripped	Matrix (S6)		Red Parent I	Material (F	² 21) (ML	RA 127, 147	7) uni	less disturbed or problematic.	
Restrictive	Layer (if observed	d):							
Туре:									
Depth (in	ches):						Hydric Soil	Present? Yes 🖌 No 🦾	
Remarks:	oils have been	areatly in	fluenced by the h	nistorio m	ninina t	broughou	t the study a	area. While some samples	
ar	onear to be una	affected t	here are hints of	soil over	turn ar	noughou id coal fra	aments thro	bughout many of the samples	
Si	ample meets F	3 indicato	r for hydric soils.		turr a		sginonto tine	sugned many of the campios.	
	·		,						

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton Sampling Date: 4/6/17
Applicant/Owner: Invenergy LLC	State: PA Sampling Point: Wetland 13
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope	cal relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR or MLRA): MLRA126 Lat: 39.270208	Long: -82.449238 Datum: WGS84
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes No 🗸 (If no, explain in Remarks.)
Are Vegetation 🗹 Soil 🗸, or Hydrology 🗹 significantly	disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology, naturally pro	blematic? (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 No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No	Is the Sampled Area within a Wetland? Yes ✓ No
Remarks:	
The majority of the study area is in a field that has been by cattle. This linear wetland originates in an open field point is located approximately 1,300 feet southeast of th	historically impacted by strip mining but is now actively grazed and eventually drains into delineated stream 13. The sample in intersection of township roads 14 and 15.
HYDROLOGY	
Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) ✓ Surface Water (A1) True Aquatic PI ✓ High Water Table (A2) Hydrogen Sulfid ✓ Saturation (A3) ✓ Oxidized Rhizo Water Marks (B1) Presence of Re Sediment Deposits (B2) Recent Iron Re Drift Deposits (B3) Thin Muck Surf Algal Mat or Crust (B4) Other (Explain Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water Stained Leaves (B9) Aquatic Fauna (B13) Field Observations: Yes ✓ No Depth (inches) Water Table Present? Yes ✓ No Depth (inches) Saturation Present? Yes ✓ No Depth (inches) Saturation Present? Yes ✓ No Depth (inches) Sective Recorded Data (stream gauge, monitoring well, aerial photor)	Secondary Indicators (minimum of two required) Surface Soil Cracks (B6) Iants (B14) de Odor (C1) spheres on Living Roots (C3) Moss Trim Lines (B16) duction in Tilled Soils (C6) ace (C7) in Remarks) Sturted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5) wetland Hydrology Present? yes, previous inspections), if available:
Remarks:	
Within this data form, negative numbers in the water tab	le represent inches below surface and 0, within the saturation
column, represents surface saturation. During the past f many areas much wetter than most of the year.	ew days, there has been several inches of rain that has made

204	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30ft)	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 2 (A)
2				Total Number of Dominant
3	. <u> </u>			Species Across All Strata: <u>3</u> (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: <u>67</u> (A/B)
6				Prevalence Index worksheet
	:	= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		OBL species x1-
Sapling Stratum (Plot size: 15ft)				
1				
2				
3				I IPL species x 4 = I IPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)				✓ 2 - Dominance Test is >50%
1.				\square 3 - Prevalence Index is ≤3.0 ¹
2				4 - Morphological Adaptations ¹ (Provide supporting
3				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				
6				¹ Indicators of hydric soil and wetland hydrology must
		- Total Cov		be present, unless disturbed or problematic.
				Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <u>517</u>)	30	V		approximately 20 ft (6 m) or more in height and 3 in.
1. Juncus enusus (Common Rush)	20			
2. Calex Vulpinoidea (Fox Sedge)	15			Sapling – Woody plants, excluding woody vines,
3. Though platense (Red Clover)	10	1 N	FACU	than 3 in. (7.6 cm) DBH.
4. Daciyiis giomerata (Orchard Grass)	10		FACU	
5				Shrub – Woody plants, excluding woody vines,
6				
7				Herb – All herbaceous (non-woody) plants, including
8				plants, except woody vines, less than approximately 3
9	. <u> </u>			ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11				
	75	= Total Cov	er	
50% of total cover: <u>37.5</u>	20% of	total cover:	15	
Woody Vine Stratum (Plot size:)				
1				
2				
3.				
4.				
5.				
		= Total Cov	er	Hydrophytic
	000/ /			Present? Yes Ves
50% of total cover:	20% of	iotal cover:		
Remarks: (Include photo numbers here or on a separate s	heet.)		0	11
Bare ground tound throughout the wetland. Vec	etation h	as been i	nfluence	d by cattle.

	K	Reda	ox Features	<u>S</u>	1002	Touture	Domortic
2 5Y 2/1	<u>%</u> 100	Color (moist)	%	i ype	LOC		Muck laver
2.51 2/1	0	10VD 5/9	10		N/	Silt Loom	
2.51 4/2	90	101R 3/0	10				
<u>2</u> <u>2.5Y 5/1</u>	95	10YR 5/8	5	D	M	Silt Loam	Some Coal Fragments
e: C=Concentration, D=D	Depletion, RM	=Reduced Matrix, M	S=Masked	I Sand G	rains.	² Location: P	L=Pore Lining, M=Matrix.
ric Soil Indicators:			(07)				ators for Problematic Hydric Soils
Histosol (A1) Histic Epipodon (A2)		Dark Surface	e (S7) Slow Surfa	co (S8) (cm Muck (A10) (MLRA 147)
Black Histic (A3)		Thin Dark Si	urface (S9)	(MIRA)	VILKA 147, 147 148)		(MI RA 147 148)
Hydrogen Sulfide (A4)			ed Matrix (F2)	147, 140)	ПР	iedmont Floodplain Soils (F19)
Stratified Layers (A5)		Depleted Ma	atrix (F3)	/			(MLRA 136, 147)
2 cm Muck (A10) (LRR N))	Redox Dark	Surface (F	6)			ery Shallow Dark Surface (TF12)
Depleted Below Dark Sur	face (A11)	Depleted Da	rk Surface	(F7)			ther (Explain in Remarks)
Thick Dark Surface (A12)		Redox Depr	essions (F	8)			
Sandy Mucky Mineral (S1) (LRR N,	Iron-Mangar	nese Mass	es (F12)	(LRR N,		
MLRA 147, 148)		MLRA 13	86)			3	
Sandy Gleved Matrix (S4)	Umbric Surface (F13) (MLRA 136, 122) ³ Indicators of hydrophytic vegetation						
				50, 122)			
Sandy Redox (S5)	,		oodplain S	oils (F19	(MLRA 14	18) we	tland hydrology must be present,
Sandy Redox (S5) Stripped Matrix (S6)	, 	Piedmont Fl	oodplain S Material (F	oils (F19) 21) (MLF	(MLRA 14 RA 127, 147	18) we 7) un	tland hydrology must be present, less disturbed or problematic.
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe	ed):	Piedmont Fl	oodplain S Material (F	oils (F19) 21) (MLF) (MLRA 14 RA 127, 147	110 (18) we (7) un	tland hydrology must be present, less disturbed or problematic.
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype:	ed):	Piedmont Fl	oodplain S Material (F	oils (F19) 21) (MLF	(MLRA 14 A 127, 147	Hvdric Soil	Present? Yes No
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: hepth (inches): iarks:	ed):	Piedmont Fl Red Parent	oodplain S Material (F	oils (F19 21) (MLF	(MLRA 14 A 127, 14	H8) we	Present? Yes No
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: pepth (inches): iarks: Soils have been appear to be un Soils meet F3 in	a greatly inf affected, th adicator for	Red Parent	nistoric m soil over	nining th	nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the samples
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: pepth (inches): larks: Soils have been appear to be un Soils meet F3 in	a greatly inf affected, th adicator for	Red Parent	nistoric m	nining th	nroughou d coal fra	Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype:) pepth (inches): iarks: Soils have been appear to be un Soils meet F3 in	affected, the distance of the	luenced by the hore are hints of hydric soils.	historic m	hining the	nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: pepth (inches): parks: Soils have been appear to be un Soils meet F3 in	affected, the distance of the	Piedmont Fl Red Parent	nistoric m	hining th	nroughou d coal fra	Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the samples
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: hepth (inches): harks: Soils have been appear to be un Soils meet F3 in	a greatly inf affected, th adicator for	Piedmont Fl	nistoric m	nining th	hroughou d coal fra	Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: pepth (inches): narks: Soils have been appear to be un Soils meet F3 in	a greatly inf affected, th adicator for	Piedmont Fl	nistoric m	hining the turn an	nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype:	affected, the set of t	luenced by the h here are hints of hydric soils.	historic m	hining the function of the fun	nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype:) pepth (inches): harks: Soils have been appear to be un Soils meet F3 in	affected, the distance of the	luenced by the here are hints of hydric soils.	historic m	hining the	nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: bepth (inches): larks: Soils have been appear to be un Soils meet F3 ir	affected, the	Piedmont Fl	historic m	hining the turn an	nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: Depth (inches): tarks: Soils have been appear to be un Soils meet F3 ir	affected, the distance of the	Piedmont Fl	nistoric m	hining th	nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No hough of the samples bughout many of the samples
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: Depth (inches): harks: Soils have been appear to be un Soils meet F3 ir	a greatly inf affected, th adicator for	Piedmont Fl	nistoric m	hining the turn an	h (MLRA 12 A 127, 147 hroughou d coal fra	Hunder Hydric Soil Hydric Soil t the study a agments through	Present? Yes <u>No</u> No area. While some samples bughout many of the sample
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: pepth (inches): narks: Soils have been appear to be un Soils meet F3 ir	a greatly inf affected, th adicator for	Piedmont Fl	nistoric m soil over	hining the turn an	nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the sample
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype:	greatly inf affected, th adicator for	Piedmont Fl	historic m	hining the	nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No area. While some samples bughout many of the sample:
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype:) pepth (inches): pepth (inches): iarks: Soils have been appear to be un Soils meet F3 ir	affected, the	luenced by the hare are hints of hydric soils.	historic m	hining the turn an	o (MLRA 14 A 127, 14 nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No Carea. While some samples bughout many of the samples
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: bepth (inches): larks: Soils have been appear to be un Soils meet F3 ir	n greatly inf affected, th ndicator for	Piedmont Fl	historic m	hining the turn an	o (MLRA 12 A 127, 14 nroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No Carea. While some samples bughout many of the sample
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: pepth (inches): tarks: Soils have been appear to be un Soils meet F3 ir	affected, the distance of the	Piedmont Fl	nistoric m soil over	hining the turn an	h (MLRA 12 A 127, 147 hroughou d coal fra	Hydric Soil Hydric Soil t the study a agments thro	Present? Yes No Carea. While some samples bughout many of the sample
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype: pepth (inches): narks: Soils have been appear to be un Soils meet F3 ir	a greatly inf affected, th adicator for	Piedmont Fl	nistoric m soil over	hining the turn an	h (MLRA 12 A 127, 147 hroughou d coal fra	Hydric Soil t the study a agments thro	Present? Yes No Carea. While some samples bughout many of the samples
Sandy Redox (S5) Stripped Matrix (S6) trictive Layer (if observe ype:	a greatly inf affected, th adicator for	Piedmont Fl	nistoric m soil over	hining the turn an	h (MLRA 12 A 127, 147 hroughou d coal fra	Hydric Soil t the study a agments thro	Present? Yes No Carea. While some samples bughout many of the sample:

Project/Site: Vinton Solar Energy Center Project City/County: Mc/	Arthur/Vinton Sampling Date: 4/6/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 13
Investigator(s): Nathan Renaudin & Lindsey Moss Section. Townshi	p. Range:
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave	, convex, none): Concave Slope (%): 3
Subregion (LRR or MLRA): MLRA126 Lat: 39.270150	Long: -82.449143 Datum: WGS84
Soil Map Unit Name: Bethesda silty clay loam	NWI classification: UPL
Are climatic / bydrologic conditions on the site typical for this time of year? Yes	No 🗸 (If no, explain in Remarks.)
Are Vegetation Soil Soil Soil Soil Soil Soil Are Vegetation	Are "Normal Circumstances" present? Yes No
Are Vegetation Soil , or Hydrology naturally problematic?	(If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sampling po	int locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No 🗸 Is the Ser	
Hydric Soil Present? Yes No 🗸	/etland? Yes No
Wetland Hydrology Present? Yes No 🗸	
Remarks:	
The majority of the study area is in a field that has been historically imp	pacted by strip mining but is now actively grazed
by cattle. The upland sample point is located approximately 1,300 feet	southeast of the intersection of township roads 14
and 15.	
	Cocondor Indicators (minimum of two required)
wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Uish Water Table (A2)	Sparsely Vegetated Concave Surface (B8) Dreinage Detterne (B10)
High Water Table (A2) Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Saturation (AS) Oxidized Rnizospheres of Educed Iron (C4)	Dry Season Water Table (C2)
Sediment Denosits (B2)	oils (C6) Cravfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Stunted or Stressed Plants (D1)
	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	$\square Shallow Aguitard (D3)$
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No 🗸 Depth (inches):	
Water Table Present? Yes No V Depth (inches):	
Saturation Present? Yes No 🗸 Depth (inches):	Wetland Hydrology Present? Yes No
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec	ctions), if available:
Remarks:	
During the past few days, there has been several inches of rain that ha	as made many areas much wetter than most of the
year.	

Sampling Point: Upland 13

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>) 1)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
2				Total Number of Dominant
4.				Species Across All Strata (B)
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)
o		= Total Cov	er	Prevalence Index worksheet:
E0% of total covers				Total % Cover of:Multiply by:
Solver of total cover:	20% of	total cover		OBL species x 1 =
Saping Stratum (Plot size. 1011)				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5 6			·	Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)				2 - Dominance Test is >50%
1				$$ 3 - Prevalence Index is $\leq 3.0^{1}$
2				4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation ¹ (Explain)
4				
5				¹ Indicators of hydric soil and wetland hydrology must
б		T () O		be present, unless disturbed or problematic.
	;	= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 511)	05	V		approximately 20 ft (6 m) or more in height and 3 in.
1. I rifolium repens (White Clover)	25	Y	FACU	(7.6 cm) of larger in diameter at breast height (DBH).
2. Daciyiis giomerata (Orchard Grass)	20		FACU	Sapling – Woody plants, excluding woody vines,
3. Thiolium pratense (Red Clover)	15		FACU	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
4. Poa pratensis (Kentucky bluegrass)	10			
6	10		FACVV	Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
9				ft (1 m) in height.
10				Weedy vine All weedy vince recordless of height
10 11				Woody vine – All woody vines, regardless of height.
10 11	85	= Total Cov		Woody vine – All woody vines, regardless of height.
10 11 50% of total cover: <u>42.5</u>	85 20% of	= Total Cov	er 17	Woody vine – All woody vines, regardless of height.
10	85 20% of	= Total Cov	er 17	Woody vine – All woody vines, regardless of height.
10	85 20% of	= Total Cov total cover	er 17	Woody vine – All woody vines, regardless of height.
10	85 20% of	= Total Cov total cover	er 17	Woody vine – All woody vines, regardless of height.
10	85 20% of	= Total Cov total cover:	er 17	Woody vine – All woody vines, regardless of height.
10	85 20% of	= Total Cov total cover	er 17	Woody vine – All woody vines, regardless of height.
10	85 20% of	= Total Cov total cover	er 17	Woody vine – All woody vines, regardless of height.
10	85 20% of	= Total Cov total cover:	er 17	Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation
10	85 20% of	= Total Cov total cover: 	er 	Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No Ve

Depth	Matrix	0/	Rede	ox Features			Toyturo	Domorko
(inches) 0-16	2.5Y 4/3	<u>%</u> 97	10 YR 5/8	3	<u> </u>	<u>LOC</u>	Silt Loam	Some coal fragments
0 10	2101 1/0		10 11(0, 0	. <u> </u>	<u> </u>			eomo coa naginonio
				·				
				·				
				·				
				·				
				. <u> </u>				
Туре: С=С	concentration, D=De	epletion, RM	=Reduced Matrix, M	IS=Masked	Sand G	rains.	² Location: P	L=Pore Lining, M=Matrix.
Iydric Soil	Indicators:		_				Indica	ators for Problematic Hydric Soils ³ :
Histoso	l (A1)		Dark Surfac	e (S7)	(00) (cm Muck (A10) (MLRA 147)
Black H	pipedon (A2) listic (A3)		Thin Dark S	elow Surfac urface (S9)	Ce (S8) ((MIRA	WLRA 147, 147 148)	148) <u> </u>	Oast Prairie Redox (A16)
Hydrog	en Sulfide (A4)		Loamy Gley	ed Matrix (F	F2)	147, 140)	🔲 Р	iedmont Floodplain Soils (F19)
Stratifie	d Layers (A5)		Depleted Ma	atrix (F3)	,			(MLRA 136, 147)
2 cm M	uck (A10) (LRR N)	()	Redox Dark	Surface (F	6)			ery Shallow Dark Surface (TF12)
Deplete	d Below Dark Suffa	ace (A11)	Depleted Da Depleted Da	ark Surface	(<i>⊢7</i>) ≀			other (Explain in Remarks)
Sandy I	Mucky Mineral (S1)	(LRR N,	Iron-Mangar	rese Masse	es (F12)	(LRR N,		
MLR	A 147, 148)	、 ,	MLRA 1	36)		· · ·		
Sandy (Gleyed Matrix (S4)		Umbric Surf	ace (F13) (I	MLRA 1	36, 122)	³ Ind	icators of hydrophytic vegetation and
Sandy I	Redox (S5)		Piedmont Fl	oodplain So	oils (F19) (MLRA 14	18) we	Itland hydrology must be present,
Restrictive	Laver (if observed	d):				XA 127, 14		less disturbed of problematic.
Type:	, , , , , , , , , , , , , , , , , , ,	,						
Depth (in	iches):						Hydric Soil	Present? Yes No V
Remarks: S	oils have been	areatly inf	luenced by the h	nistoric m	inina tl	nonapon	t the study a	area. While some samples
a	ppear to be una	affected, th	here are hints of	soil over	turn an	d coal fra	agments thro	bughout many of the samples.
		· · · · · · , ·					5	

Project/Site: Vinton Solar Energy Center Project	//County: McArthur/Vinton Sampling Date: 4/6/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Wetland 14
Investigator(s); Nathan Renaudin & Lindsey Moss Se	ction. Township. Range:
Landform (hillslope, terrace, etc.): Hillslope	relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR or MLRA): MLRA126 Lat: 39.265638	Long: -82.448479 Datum: WGS84
Soil Map Unit Name: Wharton-Latham silt Ioam	NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes No 🖌 (If no, explain in Remarks.)
Are Vegetation 🗹 Soil √, or Hydrology 🗹 significantly dis	turbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology naturally proble	matic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sa	ampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes Vegetation Present?	Is the Sampled Area within a Wetland? Yes 🗸 No
Wetland Hydrology Present? Yes 🖌 No	
Remarks:	-
The majority of the study area is in a field that has been his by cattle. This particular wetland can be found on a hillslop located approximately 2,400 feet southeast of the intersect into this wetland from the north.	storically impacted by strip mining but is now actively grazed e on the western edge of a tree line. The sample point is ion of township roads 14 and 15. Delineated Stream 13 runs
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	s (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	Ddor (C1)
Saturation (A3)	eres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1) Presence of Reduc	tion (C4) Dry-Season Water Table (C2)
	(C7)
Algal Mat or Crust (B4)	Remarks)
	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	✓ Microtopographic Relief (D4)
Aquatic Fauna (B13)	✓ FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes Ves No Depth (inches): 2	
Water Table Present? Yes Ves No Depth (inches): -	
Saturation Present? Yes Ves No Depth (inches): C	Wetland Hydrology Present? Yes Ves No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, p	previous inspections), if available:
Remarks:	
Within this data form, negative numbers in the water table	represent inches below surface and 0, within the saturation
column, represents surface saturation. During the past few	days, there has been several inches of rain that has made
many areas much wetter than most of the year.	

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 30ft)	% Cover	Species?	Status	Number of Dominant Species	
1				That Are OBL, FACW, or FAC: <u>3</u> (A	A)
2.					
3.				I otal Number of Dominant Species Across All Strata: 3 (B	8)
1)
4				Percent of Dominant Species	
5				That Are OBL, FACW, or FAC: 100 (A	√B)
6		·		Prevalence Index worksheet:	
		= Total Cov	er	Total % Cover of: Multiply by:	
50% of total cover:	20% of	total cover			
Sapling Stratum (Plot size: 15ft)				OBL species x 1 =	
1				FACW species x 2 =	
2				FAC species x 3 =	
2				FACU species x 4 =	
3		·		UPL species x 5 =	
4				Column Totals: (A) ((B)
5					. ,
6				Prevalence Index = B/A =	
		= Total Cov	er	Hydrophytic Vegetation Indicators:	
E0% of total anyor:	200/ of	total aquar		1 - Rapid Test for Hydrophytic Vegetation	
Ohende Ofersteinen (Diet einen 15ft	20 % 01	IUIAI COVEI		$\sqrt{2}$ - Dominance Test is >50%	
Shrub Stratum (Plot size:)				\square 2 Browelence Index is <2.0 ¹	
1		·			
2				data in Remarks or on a separate sheet)	ting
3				Problematic Hydrophytic Vegetation ¹ (Explain)	
4	<u> </u>				
5.					
6.				'Indicators of hydric soil and wetland hydrology mus	st
	_	Total Ca		be present, unless disturbed of problematic.	
		- 101211.00			
			er	Definitions of Five Vegetation Strata:	
50% of total cover:	20% of	total cover		Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines,	
50% of total cover:	20% of	total cover	er	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.	
50% of total cover: <u>Herb Stratum</u> (Plot size: <u>5ft</u>) 1. Typha latifolia (Broadleaf cattail)	20% of	total cover		Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH)).
50% of total cover: Herb Stratum (Plot size: 5ft) 1. Typha latifolia (Broadleaf cattail) 2. Juncus effusus (Common Rush)	20% of 30 25	total cover $\frac{Y}{Y}$	OBL FACW	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sabling – Woody plants, excluding woody vines.).
50% of total cover:	20% of 30 25 20	$= 10 \tan Cov$ $= \frac{1}{100} \tan Cov$ $= \frac{1}{100} \tan Cov$	OBL FACW OBL	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less).
50% of total cover:	20% of 30 25 20 10	$= \frac{V}{V}$ total cover $\frac{Y}{V}$ $\frac{Y}{N}$	OBL FACW OBL FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.).
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50% of total cover:	20% of 30 25 20 10 10 5	$\frac{\frac{Y}{Y}}{\frac{Y}{\frac{N}{N}}}$	OBL FACW OBL FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.).
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50% of total cover:	20% of 30 25 20 10 10 5 	Total Cover	OBL FACW OBL FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height. Woody vine – All woody vines, regardless of height). g / 3 t.
50% of total cover:	20% of 30 25 20 10 10 5 	Y Y Y N N = = Total Cover	OBL FACW OBL FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height. Woody vine – All woody vines, regardless of height 	.). ; g / 3 t.
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50% of total cover:	20% of 30 25 20 10 10 5 	Y Y Y Y N N = Total cover	OBL FACW OBL FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height. Woody vine – All woody vines, regardless of height 	.). ; 9 73 t.
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50% of total cover:	20% of 30 25 20 10 10 5 	Y Y Y Y N N = Total cover	OBL FACW OBL FACU FACU FACU FACU FACU 20	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height. Woody vine – All woody vines, regardless of height 	.). ; g / 3 t.
50% of total cover:	20% of 30 25 20 10 10 5 	Y Y Y Y N N = Total cover itotal cover itotal cover itotal cover	OBL FACW OBL FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height. Woody vine – All woody vines, regardless of height 	.). ; g t.
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50% of total cover:	20% of 30 25 20 10 5 5 100 5 20% of 20% of	Y Y Y Y N N = Total Cov total cover = Total Cov total cover = Total Cov total cover	OBL FACW OBL FACU FACU FACU FACU FACU FACU er 20	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height. Woody vine – All woody vines, regardless of height Hydrophytic Vegetation Present? Yes No	.). ; g /3
50% of total cover:	20% of 30 25 20 10 5 5 20% of 20% of 20% of sheet.)	Y Y Y Y N N = Total cover itotal cover itotal cover = Total cover = = Total cover = = Total cover itotal cover itotal cover	OBL FACW OBL FACU Per Facu Facu	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH) Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height. Woody vine – All woody vines, regardless of height Hydrophytic Vegetation Present? Yes Yes No	.). 9 73 t.

Profile Desc	ription: (Describe	e to the dep	oth needed to docur	ment the	indicator	or confirm	the absence	of indicators.)
Depth	Matrix		Redo	x Feature	es	0	_	_
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-2	2.5Y 2/1	100					Loam	Muck layer
2-8	2.5Y 4/1	90	10YR 5/6	10	D	Μ	Silt Loam	
8-16	2.5Y 5/2	90	10YR 6/8	10	D	Μ	Silt Loam	Some Coal Fragments
				·		·		
						- <u> </u>		
			·					
¹ Type: C=C	oncentration, D=De	pletion, RM	=Reduced Matrix, MS	S=Maske	d Sand Gr	ains.	² Location: Pl	_=Pore Lining, M=Matrix.
Hydric Soil	Indicators:		_				Indica	tors for Problematic Hydric Soils':
	(A1)		Dark Surface	e (S7)	(cm Muck (A10) (MLRA 147)
Histic Ep	pipedon (A2)		Polyvalue Be	elow Surfa	ace (S8) (I	/LRA 147,	148) 🗌 C	oast Prairie Redox (A16)
Black Hi	stic (A3)		Thin Dark Su	Irface (S9) (MLRA	147, 148)	— -	(MLRA 147, 148)
Hydroge	en Sulfide (A4)		Loamy Gleye	ed Matrix	(F2)		<u> </u> Р	iedmont Floodplain Soils (F19)
	d Layers (A5)		Depleted Ma	trix (F3)				(MLRA 136, 147)
	uck (A10) (LRR N)		Redox Dark	Surface (F6)			ery Shallow Dark Surface (TF12)
	d Below Dark Surfa	ce (A11)		rk Surface	e(F7) =0)			ther (Explain in Remarks)
	ark Surface (A12)		Redox Depre	essions (F	-8)			
Sandy N	lucky Mineral (S1)	LRR N,	Iron-Mangan	ese Mass	ses (F12) (LRR N,		
	A 147, 148)		MLRA 13	b)		0. 400)	31.0 -1	
	bleyed Matrix (54)			ace (F13)		(MI DA 44		cators of hydrophytic vegetation and
Sandy R	(edox (S5)		Piedmont Flo	bodplain S	501IS (F19)	(MLRA 14	8) we	tland hydrology must be present,
	I Matrix (56)			viateriai (I	-21) (MILR	A 127, 147	') uni	ess disturbed or problematic.
Restrictive	Layer (if observed)):						
Type:								
Depth (in	ches):						Hydric Soil	Present? Yes V No
Remarks:	oils have been o	reatly inf	luenced by the h	istoric r	ninina th	roughou	t the study a	area. While some samples
ar	onear to be unat	ffected th	here are hints of	soil ove	rturn an	d coal fra	aments thro	and while some samples
5	nils meet F3 ind	icator for	hydric soils	3011 0 V C	numan		ignicinis the	sugnout many of the samples.
			nyuno sons.					

Project/Site: Vinton Solar Energy Center Project City/C	ounty: McArthur/Vinton Sampling Date: 4/6/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 14
Investigator(s): Nathan Renaudin & Lindsey Moss Section	on, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope Local reli	ef (concave, convex, none): <u>Concave</u> Slope (%): <u>3</u>
Subregion (LRR or MLRA): MLRA126 Lat: 39.265556	Long: -82.448506 Datum: WGS84
Soil Map Unit Name: Wharton-Latham silt loam	NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Y	es No 🖌 (If no, explain in Remarks.)
Are Vegetation Soil , or Hydrology significantly distur	bed? Are "Normal Circumstances" present? Yes 🖌 No 🖌
Are Vegetation, Soil, or Hydrology naturally problema	tic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sam	ipling point locations, transects, important features, etc.
Hydrophytic Vegetation Present?	h the Osmulad Asse
Hydric Soil Present? Yes No	within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Remarks:	
The majority of the study area is in a field that has been histo	rically impacted by strip mining but is now actively grazed
by cattle. This upland point can be found alongside delineate	d Wetland 14 on a hillslope on the western edge of a tree
line. The sample point is located approximately 2,400 feet so	utheast of the intersection of township roads 14 and 15.
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	
Surface Water (A1)	B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	or (C1) Drainage Patterns (B10)
Saturation (A3)	es on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1)	I Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)	n in Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3)	7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in Ren	narks) Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Imundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Vater-Stained Leaves (B9)	
Field Observations:	
Surface Water Present? Vec No V Dopth (inchec):	
Water Table Present? Ves No V Depth (inches):	—
Saturation Present? Yes No Depth (inches):	
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections), if available:
Remarks:	
During the past few days, there has been several inches of ra	ain that has made many areas much wetter than most of the
year.	

Sampling Point: Upland 14

0.04	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30ft</u>) 1)	<u>% Cover</u>	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
23				Total Number of Dominant
4				
5		·		Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)
б		Tatal Car		Prevalence Index worksheet:
		= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover		OBL species x 1 =
<u>Sapling Stratum</u> (Plot size: 15π)				FACW species x 2 =
1		·		FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)				2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0 ¹
2				4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation ¹ (Explain)
4				
5				¹ Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
		TALA		
		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:	er	Definitions of Five Vegetation Strata:
50% of total cover: Herb Stratum (Plot size: 5ft)	20% of	total cover:	er	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
50% of total cover: <u>Herb Stratum</u> (Plot size: <u>5ft</u>) 1. Trifolium repens (White Clover)	20% of	total cover:	FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
50% of total cover:	20% of 25 20	total cover:	FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines.
50% of total cover:	20% of 25 20 15	total cover:	FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
50% of total cover:	20% of 25 20 15 15	total cover Y Y N N	FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
50% of total cover:	20% of 25 20 15 15 10	total cover Y <u>Y</u> <u>N</u> N	FACU FACU FACU FACU FACU FACW	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
50% of total cover:	20% of 25 20 15 15 10	Total Cover total cover Y N N N	FACU FACU FACU FACU FACU FACW	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
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50% of total cover:	20% of 25 20 15 15 10	total cover Total cover Y N N N	FACU FACU FACU FACU FACU FACW	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 to 20 ft (1 to 6 m) approximately 3
50% of total cover:	20% of 25 20 15 15 10	Total Cover total cover Y N N N	FACU FACU FACU FACU FACW	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.
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50% of total cover:	20% of 25 20 15 15 10 	Y Y N N	FACU FACU FACU FACU FACW	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 25 20 15 15 10 85	Total Cover total cover Y N N N = Total Cov	FACU FACU FACU FACU FACW FACW	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
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50% of total cover:	20% of 25 20 15 15 10 85 20% of 20% of sheet.)	Flotal Cover Y Y N N = = Total Cover total cover total cover = = Total Cover = = Total Cover = = = = Total Cover = = Total Cover total cover	er <u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACW</u> <u>FACW</u> <u>er</u> 17 er	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No Yes

Profile Desc	cription: (Describe Matrix	e to the dep	oth needed to docun Redo	nent the i	indicato	or confirm	the absence	of indicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-16	2.5Y 4/3	95	10 YR 5/8	5	D	Μ	Silt Loam	Some coal fragments
					. <u> </u>			
					. <u> </u>			
1							2	
Type: C=C	oncentration, D=De Indicators:	pletion, RM	=Reduced Matrix, M	S=Masked	d Sand G	rains.	Location: P	L=Pore Lining, M=Matrix. ators for Problematic Hydric Soils ³ :
Histosol	(A1)		Dark Surface	e (S7)				cm Muck (A10) (MLRA 147)
Histic E	pipedon (A2)		Polyvalue Be	low Surfa	ice (S8) (MLRA 147,	148) 🔲 C	Coast Prairie Redox (A16)
Black H	istic (A3)		Thin Dark Su	urface (S9) (MLRA	147, 148)		(MLRA 147, 148)
Hydroge Stratified	en Sulfide (A4)		Loamy Gleye	ed Matrix ((F2)			(MI PA 136 147)
	uck (A10) (LRR N)			Surface (F	-6)			(erv Shallow Dark Surface (TF12)
	d Below Dark Surfa	ce (A11)	Depleted Da	rk Surface	e (F7)			Other (Explain in Remarks)
Thick Da	ark Surface (A12)		Redox Depre	essions (F	8)			
Sandy N	/lucky Mineral (S1)	(LRR N,	Iron-Mangan	ese Mass	es (F12)	(LRR N,		
	A 147, 148)		MLRA 13	6)			3.	
	Gleyed Matrix (S4)			ace (F13) ((MLRA 1	36, 122)	ٽاnd سرا	licators of hydrophytic vegetation and
Stripper	(SS) Matrix (SS)		Pleamont Fig Red Parent I	Joapiain S Material (F	5011S (F19 521) (MI 1) (IVILKA 14 20 127 147	18) WE	etiand nydrology must be present,
Restrictive	Laver (if observed):				\A 121, 141		
Tvpe:		,-						
Depth (in	ches):						Hydric Soil	Present? Yes No 🖌
Remarks:	oils have been o	areatly inf	luenced by the h	istoric n	nining t	hroughou	t the study a	area. While some samples
a	opear to be una	ffected, th	nere are hints of	soil over	rturn ar	id coal fra	agments thro	oughout many of the samples.

Project/Site: Vinton Solar Energy Center Project	City/County: McArthur/Vinton	_ Sampling Date: <u>4/6/17</u>
Applicant/Owner: Invenergy LLC	_{State:} OH	Sampling Point: Wetland 15
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Range:	
Landform (hillslope, terrace, etc.): Hillslope	Local relief (concave, convex, none): Concave	Slope (%): <u>3</u>
Subregion (LRR or MLRA): MLRA126 Lat: 39.26	5109 Long: -82.449004	Datum: WGS84
Soil Map Unit Name: Wharton-Latham silt loam	NWI classif	ication: PEM
Are climatic / hydrologic conditions on the site typical for this tim	ne of year? Yes No 🖌 (If no, explain in I	Remarks.)
Are Vegetation 🗹 Soil 🗹, or Hydrology 🗹 signi	ficantly disturbed? Are "Normal Circumstances"	present? Yes No 🖌
Are Vegetation, Soil, or Hydrology natu	rally problematic? (If needed, explain any answ	ers in Remarks.)
SUMMARY OF FINDINGS – Attach site map sho	owing sampling point locations, transect	s, important features, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No	Is the Sampled Area within a Wetland? Yes ✓	<u> </u>
Remarks:		
The majority of the study area is in a field that has by cattle. This particular wetland can be found on located approximately 2,400 feet southeast of the	been historically impacted by strip mining b a hillslope on the western edge of a tree line intersection of township roads 14 and 15.	out is now actively grazed a. The sample point is
HYDROLOGY		
Wetland Hydrology Indicators:	Secondary Indic	cators (minimum of two required)
Primary Indicators (minimum of one is required; check all that	apply) Surface So	il Cracks (B6)
Surface Water (A1)	uatic Plants (B14)	egetated Concave Surface (B8)
High Water Table (A2)	en Sulfide Odor (C1)	atterns (B10)
Saturation (A3)	d Rhizospheres on Living Roots (C3)	Lines (B16)
Water Marks (B1)	e of Reduced Iron (C4) Dry-Seasor	า Water Table (C2)
Sediment Deposits (B2)	Iron Reduction in Tilled Soils (C6)	ırrows (C8)
Drift Deposits (B3)	ck Surface (C7)	Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Explain in Remarks) Stunted or St	Stressed Plants (D1)
Iron Deposits (B5)	Geomorphi	c Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aq	uitard (D3)
Water-Stained Leaves (B9)	Microtopog	raphic Relief (D4)
Aquatic Fauna (B13)	✓ FAC-Neutra	al Test (D5)
Field Observations:		
Surface Water Present? Yes Ves No Depth (inches): 3	
Water Table Present? Yes Ves No	(inches): <u>-9</u>	
Saturation Present? Yes 🖌 No 🔛 Depth ((inches): 0 Wetland Hydrology Prese	ent? Yes <u>√</u> No
(includes capillary tringe) Describe Recorded Data (stream dauge, monitoring well, aeria	al photos, previous inspections), if available:	
Remarks:		
Within this data form, negative numbers in the wat	er table represent inches below surface and	d 0 within the saturation
column represents surface saturation. During the	past few days, there has been several inch	es of rain that has made
many areas much wetter than most of the year.		

Sampling Point: Wetland 15

0.01	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: _4(A)
2				Total Number of Dominant
3				Species Across All Strata: <u>5</u> (B)
4				Dereent of Dominant Species
5				That Are OBL, FACW, or FAC: <u>80</u> (A/B)
6		·		Provalence Index worksheet:
		= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover		
Sapling Stratum (Plot size: 15ft)				
1.				FACVV species X 2 =
2.				FAC species x 3 =
3				FACU species x 4 =
<u> </u>		·		UPL species x 5 =
4		·		Column Totals: (A) (B)
o		·		
6				Prevalence Index = B/A =
	·	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)				✓ 2 - Dominance Test is >50%
1. Elaeagnus umbellata (Autumn Olive)	10	Y	NA	3 - Prevalence Index is ≤3.0 ¹
2.				4 - Morphological Adaptations ¹ (Provide supporting
3				data in Remarks or on a separate sheet)
4		·		Problematic Hydrophytic Vegetation ¹ (Explain)
5		·		
6.		·		¹ Indicators of hydric soil and wetland hydrology must
0	10	Tatal Car		be present, unless disturbed or problematic.
-		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover: <u>5</u>	20% of	total cover	2	Tree – Woody plants, excluding woody vines.
Herb Stratum (Plot size: 5tt)				approximately 20 ft (6 m) or more in height and 3 in.
1. Juncus effusus (Common Rush)	20	Y	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
2. Typha latifolia (Broadleaf cattail)	20	Y	OBL	Sapling – Woody plants, excluding woody vines,
3. Carex vulpinoidea (Fox Sedge)	16	Y	OBL	approximately 20 ft (6 m) or more in height and less
4. Phalaris arundinacea (Reed Canarygrass)	14	Y	FACW	than 3 in. (7.6 cm) DBH.
5. Trifolium pratense (Red Clover)	13	Ν	FACU	Shrub – Woody plants, excluding woody vines,
6 Dactylis glomerata (Orchard Grass)	12	Ν	FACU	approximately 3 to 20 ft (1 to 6 m) in height.
7 Trifolium repens (White Clover)	5	Ν	FACU	Herb – All berbaceous (non-woody) plants, including
8		·		herbaceous vines, regardless of size, and woody
0		·		plants, except woody vines, less than approximately 3
5		·		ft (1 m) in height.
10		·		Woody vine – All woody vines, regardless of height.
11	100			
	100	= I otal Cov	er	
50% of total cover: <u>50</u>	20% of	total cover	20	
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4.				
5.		·		
		= Total Cov	er	Hydrophytic
		- 10101000	01	Present? Yes V No
50% of total cover:	20% of	total cover		
Remarks: (Include photo numbers here or on a separate	sheet.)			

Autumn Olive is given the indicator status of NA because it has not been assigned a wetland indicator status.

hoc)	Matrix	(Rede	ox Features	<u>S</u> Turn - ¹		Touture	Demoster
<u>ches)</u>	2 5V 2/1	%	Color (moist)	%	Type	Loc		<u>Remarks</u>
<u> </u>	2.51 2/1			10		N 4	Silt Loom	
5	2.51 4/1	90	101R 5/6	10	<u>D</u>		Slit Loam	
16	2.5Y 5/2	90	10YR 6/8	10	D	M	Silt Loam	Some Coal Fragments
e: C=Co	ncentration, D=D	epletion, RM	=Reduced Matrix, M	S=Masked	Sand G	ains.	² Location: P	L=Pore Lining, M=Matrix.
Histocol ((41)			o (97)				cm Muck (A10) (MI DA 147)
Histic Epi	ipedon (A2)		Polyvalue B	elow Surfa	ce (S8) (I	MLRA 147.	148) □ C	oast Prairie Redox (A16)
Black His	stic (A3)		Thin Dark S	urface (S9)	(MLRA	147, 148)		(MLRA 147, 148)
Hydroger	n Sulfide (A4)		Loamy Gley	ed Matrix (, F2)		🔲 Р	iedmont Floodplain Soils (F19)
Stratified	Layers (A5)		✓ Depleted Ma	atrix (F3)				(MLRA 136, 147)
2 cm Muo	ck (A10) (LRR N))	Redox Dark	Surface (F	6)		<u> </u>	ery Shallow Dark Surface (TF12)
Depleted	Below Dark Surf	face (A11)	Depleted Da	rk Surface	(F7)			ther (Explain in Remarks)
Thick Da	rk Surface (A12)		Redox Depr	essions (Fa	3)			
Sandy M	ucky Mineral (S1) (LRR N,	Iron-Mangar	nese Masse	es (F12)	(LRR N,		
MLRA	147, 148)		MLRA 13	86)				
Sandy Gl	leyed Matrix (S4)		Umbric Surfa	ace (F13) (MLRA 1	36, 122)	³ Ind	icators of hydrophytic vegetation a
					- 1- (540)	INIDA 1/	0)	tland hydrology must be present
Sandy Re	edox (S5)		Piedmont Fl	oodplain S	olis (F19)		we we	tianu nyurology must be present,
Sandy Re Stripped	edox (S5) Matrix (S6)	0	Piedmont Fl Red Parent	oodplain S Material (F	olis (F19) 21) (MLF	RA 127, 147	7) un	less disturbed or problematic.
Sandy Re Stripped trictive L	edox (S5) Matrix (S6) .ayer (if observe	d):	Piedmont Fl	oodplain S Material (F	olis (F19) 21) (MLF	A 127, 147	7) un	less disturbed or problematic.
Sandy Re Stripped trictive L ype: epth (inc	edox (S5) Matrix (S6) .ayer (if observe 	d):	Piedmont FI Red Parent	oodplain S Material (F	olis (F19) 21) (MLF	A 127, 147	7) un Hydric Soil	Present? Yes No
Sandy Re Stripped trictive L ype:)epth (inc larks:	edox (S5) Matrix (S6) ayer (if observe	d):	Piedmont FI Red Parent	Material (F	0115 (F19) 21) (MLF	(MERA 12 2A 127, 147	7) un Hydric Soil	Present? Yes No
Sandy Re Stripped trictive L ype: hepth (inc larks: So ap So	edox (S5) Matrix (S6) ayer (if observe hes): hils have been pear to be un pils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl Red Parent	nistoric m	hining the turn an	aroughou d coal fra	Hydric Soil t the study a agments thro	Present? Yes No
Sandy Re Stripped trictive L ype: Depth (inc larks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): bils have been pear to be un bils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl Red Parent Iuenced by the h here are hints of hydric soils.	nistoric m	hining th	nroughou d coal fra	t the study agments thro	Present? Yes <u>No</u> No
Sandy Re Stripped rictive L ype: repth (inc arks: So ap So	edox (S5) Matrix (S6) ayer (if observe hes): hils have been pear to be un bils meet F3 in	d): greatly inf affected, th idicator for	Piedmont FI	nistoric m	nining th	aroughou d coal fra	T) un Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No <u></u> area. While some samples bughout many of the sample
Sandy Re Stripped rictive L ype: epth (inc arks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): oils have been pear to be una pils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl	nistoric m	nining th	nroughou d coal fra	t the study agments thro	Present? Yes <u>No</u> No
Sandy Re Stripped rictive L ype: epth (inc arks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): hes): hils have been pear to be una pear to be una hils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl	nistoric m	hining th	nroughou d coal fra	t the study agments thro	Present? Yes <u>No</u> No
Sandy Re Stripped rictive L ype: epth (inc arks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): tils have been pear to be un tils meet F3 in	d): greatly inf affected, th idicator for	Piedmont FI Red Parent	nistoric m	hining th	nroughou d coal fra	t the study agments thro	Present? Yes <u>No</u> No <u></u> area. While some samples bughout many of the sample
Sandy Re Stripped trictive L Depth (inc narks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): hils have been pear to be un bils meet F3 in	d): greatly inf affected, th idicator for	Piedmont FI	nistoric m	nining th	aroughou d coal fra	T) un Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the sample
Sandy Re Stripped trictive L Depth (inc harks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): oils have been pear to be una ils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl	nistoric m	hining the turn an	nroughou d coal fra	T) un Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the sample
Sandy Re Stripped trictive L Depth (inc harks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): bils have been pear to be una bils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl	nistoric m	hining th	nroughou d coal fra	t the study agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the sample
Sandy Re Stripped trictive L Depth (inc harks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): hes): hils have been pear to be una plas meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl	historic m	hining th	nroughou d coal fra	t the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the sample
Sandy Re Stripped trictive L Depth (inc narks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): tils have been pear to be un tils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl Red Parent	historic m	hining th	nroughou d coal fra	t the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the sample
Sandy Re Stripped trictive L Depth (inc marks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): ils have been pear to be un ils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl	nistoric m	hining th	nroughou d coal fra	T) un Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No area. While some samples bughout many of the sample
Sandy Re Stripped Type: Depth (inc narks: So ap So	edox (S5) Matrix (S6) .ayer (if observe .hes): oils have been pear to be una bils meet F3 in	d): greatly inf affected, th adicator for	Piedmont Fl	nistoric m	nining th	aroughou d coal fra	T) un Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No <u></u> area. While some samples bughout many of the sample
Sandy Re Stripped Type: Depth (inc narks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): oils have been pear to be una pils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl	nistoric m	nining th	aroughou d coal fra	T) un Hydric Soil t the study a agments thro	Present? Yes <u>No</u> No <u></u> area. While some samples bughout many of the sample
Sandy Re Stripped Type: Depth (inc narks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): oils have been pear to be una pils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl	nistoric m	hining the turn an	nroughou d coal fra	T) un Hydric Soil t the study a agments thro	Present? Yes No Carea. While some samples bughout many of the sample
Sandy Re Stripped trictive L Depth (inc narks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): bils have been pear to be una bils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl	historic m	hining th	nroughou d coal fra	T) un Hydric Soil t the study a agments thro	Present? Yes No Carea. While some samples bughout many of the sample
Sandy Re Stripped trictive L Depth (inc harks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): tils have been pear to be una ils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl Red Parent	nistoric m	hining th	nroughou d coal fra	T) un Hydric Soil t the study a agments thro	Present? Yes No have been and hydrology must be present, less disturbed or problematic.
Sandy Re Stripped trictive L Depth (inc harks: So ap So	edox (S5) Matrix (S6) ayer (if observe thes): oils have been pear to be un oils meet F3 in	d): greatly inf affected, th idicator for	Piedmont Fl Red Parent	historic m	hining th	aroughou d coal fra	T) un Hydric Soil t the study a agments thro	Present? Yes No Carea. While some samples bughout many of the sample

Project/Site: Vinton Solar Energy Center Project City/Cou	nty: McArthur/Vinton Sampling Date: 4/6/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Upland 15
Investigator(s): Nathan Renaudin & Lindsey Moss Section,	Township, Range:
Landform (hillslope, terrace, etc.): Hillslope Local relief	(concave, convex, none): Slope (%): <u>3</u>
Subregion (LRR or MLRA): MLRA126 Lat: 39.265145	Long: -82.448962 Datum: WGS84
Soil Map Unit Name: Wharton-Latham silt Ioam	NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes	No (If no, explain in Remarks.)
Are Vegetation Soil , or Hydrology significantly disturbed	d? Are "Normal Circumstances" present? Yes 🗹 No 🗹
Are Vegetation, Soil, or Hydrology naturally problematic	? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing samp	ling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No 🗸	the Osmula I Area
Hydric Soil Present? Yes No 🗸	vithin a Wetland? Yes No
Wetland Hydrology Present? Yes No V	
Remarks:	
The majority of the study area is in a field that has been historic	cally impacted by strip mining but is now actively grazed
by cattle. This upland point can be found on a hillslope alongsid	de delineated Wetland 15 on the western edge of a tree
line. The sample point is located approximately 2,400 feet sout	heast of the intersection of township roads 14 and 15.
HYDROLOGY	
Watland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	
Surface Water (A1)	4) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	(C1) Drainage Patterns (B10)
Saturation (A3)	on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1)	on (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2)	n Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3) Thin Muck Surface (C7)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in Remai	(ks) Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
University of the second secon	Microtopographic Relief (D4)
Field Observations:	
Violater Table Dresent? Yes No Depth (inches):	-
Seturation Present? Yes No Depth (inches):	
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previo	us inspections), if available:
Remarks:	
During the past few days, there has been several inches of rair	that has made many areas much wetter than most of the
year.	

Sampling Point: Upland 15

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30ft</u>)	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 0 (A)
2				Total Number of Deminent
3.				Species Across All Strata: 2 (B)
4				
т. <u></u>				Percent of Dominant Species
5	·			That Are OBL, FACW, or FAC: 0 (A/B)
b	·			Prevalence Index worksheet:
		= I otal Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		
Sapling Stratum (Plot size: 15ft)				
1.				FACW species x z =
2				FAC species x 3 =
3	·			FACU species x 4 =
3	·			UPL species x 5 =
4				Column Totals: (A) (B)
5	·		<u> </u>	
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)				2 - Dominance Test is >50%
				3 - Prevalence Index is $\leq 3.0^{1}$
	·			1 = 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1
2	·			data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation ¹ (Explain)
4				
5				1 - The difference of the other and the other and the dealers are set of the
6				be present unless disturbed or problematic
	:	= Total Cov	er	Definitions of Eive Vegetation Strata:
	000/ -f	total annual		Deminions of Five vegetation Strata.
50% of total cover.	20% 01	total cover.		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <u>Sit</u>)	05	V		approximately 20 ft (6 m) or more in height and 3 in.
1. Thiolium repens (white Clover)	20	<u> </u>	FACU	
2. Dactylis glomerata (Orchard Grass)	20	Y	FACU	Sapling – Woody plants, excluding woody vines,
3. Trifolium pratense (Red Clover)	15	N	FACU	approximately 20 ft (6 m) or more in height and less
4. Poa pratensis (Kentucky bluegrass)	15	N	FACU	than 3 in. (7.6 cm) DBH.
_{5.} Juncus effusus (Common Rush)	10	Ν	FACW	Shrub – Woody plants, excluding woody vines,
6				approximately 3 to 20 ft (1 to 6 m) in height.
7				
/·				herbaceous vines, regardless of size, and woody
0	·			plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine - All woody vines regardless of height
11				All woody vines, regardless of height.
	85	= Total Cov	er	
50% of total cover: 42.5	20% of	total cover	17	
Woody Vine Stratum (Plot size:	2070 01			
	·			
2	·			
3				
4				
5				Hudrophytic
		= Total Cov	er	Vegetation
F00/ - (000/ /	totol areas		Present? Yes No
50% of total cover:	20% of	iotal cover:	,	
Remarks: (Include photo numbers here or on a separate s	sheet.)			

|--|

Depth	Matrix	<u></u>	Redo	x Feature	es1		-	
(inches)	Color (moist)	%	Color (moist)	%	l ype'			<u>Remarks</u>
0-1	2.31 2/1				·		LUam	
2-16	2.5Y 4/3	95	10 YR 5/8	5	D		Silt Loam	Some coal fragments
17				C Maska			² l acetian D	Dans Lining M. Matrix
Type: C=Co	Indicators:	pletion, Riv	I=Reduced Matrix, Ma	5=IVIASKe	a Sana G	rains.	Location: Pl	L=Pore Lining, M=Matrix.
Histosol Histic Ep Black Hi Hydroge Stratified 2 cm Mu Depleted Thick Da Sandy M MLRA Sandy G Sandy G	(A1) pipedon (A2) stic (A3) on Sulfide (A4) d Layers (A5) uck (A10) (LRR N) d Below Dark Surfa ark Surface (A12) fucky Mineral (S1) A 147, 148) Gleyed Matrix (S4) tedox (S5) Matrix (S6)	ce (A11) (LRR N,	Dark Surface	e (S7) elow Surfa urface (S9 ed Matrix trix (F3) Surface (I rk Surface essions (F esse Mass 6) ace (F13) podplain S Material (F	ace (S8) ()) (MLRA (F2) F6) e (F7) F8) ses (F12) (MLRA 1 Soils (F19 F21) (MLI	MLRA 147 147, 148) (LRR N, 36, 122)) (MLRA 14 RA 127, 14	, 148) ☐ C	cm Muck (A10) (MLRA 147) oast Prairie Redox (A16) (MLRA 147, 148) iedmont Floodplain Soils (F19) (MLRA 136, 147) ery Shallow Dark Surface (TF12) ther (Explain in Remarks) icators of hydrophytic vegetation and tland hydrology must be present, less disturbed or problematic.
Restrictive I	_ayer (if observed):						
Type: Depth (ind	ches):						Hydric Soil	Present? Yes No 🔽
Remarks: So ap	bils have been g opear to be una	greatly in ffected, t	fluenced by the h here are hints of :	istoric r soil ove	nining ti rturn ar	nroughou Id coal fra	it the study a agments thro	area. While some samples bughout many of the samples.

Project/Site: Vinton Solar Energy Center Project City/County: Ma	cArthur/Vinton Sampling Date: 4/7/17
Applicant/Owner: Invenergy LLC	State: OH Sampling Point: Wetland 16
Investigator(s): Nathan Renaudin & Lindsey Moss Section, Townsh	nip, Range:
Landform (hillslope, terrace, etc.): Hillslope Local relief (concav	re, convex, none): Concave Slope (%): 1
Subregion (LRR or MLRA): MLRA126 Lat: 39.273639	Long: -82.434730 Datum: WGS84
Soil Map Unit Name: Bethesda Silty Clay Loam	NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes	No (If no, explain in Remarks.)
Are Vegetation Soil Soil significantly disturbed?	Are "Normal Circumstances" present? Yes No
Are Vegetation Soil or Hydrology naturally problematic?	(If needed, explain any answers in Remarks.)
,	(
SUMMARY OF FINDINGS – Attach site map showing sampling po	oint locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes Volume No	
Hydric Soil Present? Yes V No within a	Wetland? Yes V
Wetland Hydrology Present? Yes V	
Remarks:	
The majority of the study area is in a field that has been historically in	npacted by strip mining but is now actively grazed
by cattle. This particular wetland can be found on a hillslope in an ope	en field alongside delineated pond 8. The sample
point is located approximately 5,400 feet east of the intersection of to	wnship roads 14 and 15 just north of infirmary road.
Wetland Hydrology Indicators:	
✓ Surface Water (A1) ☐ True Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)
High Water Lable (A2) Hydrogen Sulfide Odor (C1)	□ Drainage Patterns (B10)
✓ Saturation (A3) ✓ Oxidized Rhizospheres on Livin	g Roots (C3) Moss Tilli Lines (BT0)
Sediment Deposite (P2)	Soils (C6) Crayfish Burrows (C8)
	Solis (Co) Clayinin Bullows (Co)
Algal Mat or Crust (B4)	Stunted or Stressed Plants (D1)
	\square Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Ves V No Depth (inches): 1	
Water Table Bresent? Voc V No Depth (inches): -8	
Seturation Brocent? Yes Vos Vos Depth (inches):	
(includes capillary fringe)	wetland Hydrology Present? Fes <u>v</u> No <u>v</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspe	ections), if available:
Remarks:	
Within this data form, negative numbers in the water table represent i	inches below surface and 0, within the saturation
column, represents surface saturation. During the past few days, ther	re has been several inches of rain that has made
many areas much wetter than most of the year.	

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30ft)	% Cover	Species?	Status	Number of Dominant Species
1	·		·	That Are OBL, FACW, or FAC: 1 (A)
2	·		·	Total Number of Dominant
3			·	Species Across All Strata: 1 (B)
4	·	· - <u></u>	·	Percent of Dominant Species
5	·			That Are OBL, FACW, or FAC: 100 (A/B)
6	·			Prevalence Index worksheet:
		= Total Cov	rer	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover		
Sapling Stratum (Plot size: 15ft)				
1	<u> </u>			FAC species $x_2 =$
2				
3				FACU species X 4 =
4				UPL species x 5 = Only on the species (A)
5.				Column Lotals: (A) (B)
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15ft)				✓ 2 - Dominance Test is >50%
				3 - Prevalence Index is $\leq 3.0^{1}$
2	·			4 - Morphological Adaptations ¹ (Provide supporting
2	·	·	·	data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation ¹ (Explain)
4	·		·	
5	·	·	·	¹ Indicators of hydric soil and wetland hydrology must
6	·	·		be present, unless disturbed or problematic.
		= Total Cov	ver	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover: Herb Stratum (Plot size: <u>5ft</u>)	20% of	= Total Cov	/er	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
50% of total cover: Herb Stratum (Plot size: <u>5ft</u>) 1. Juncus effusus (Common Rush)	20% of	= Total Cov total cover	FACW	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
50% of total cover:	20% of 60 5	= Total Cov total cover	FACW	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines,
50% of total cover:	20% of 60 5 5	= Total Cov total cover Y N N	FACW FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
50% of total cover: <u>Herb Stratum</u> (Plot size: <u>5ft</u>) 1. Juncus effusus (Common Rush) 2. Trifolium repens (White Clover) 3. Dactylis glomerata (Orchard Grass) 4. Trifolium pratense (Red Clover)	20% of 60 5 5 5 5	$= \text{Total Cov}$ total cover $\frac{\frac{Y}{N}}{\frac{N}{N}}$	FACW FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
50% of total cover:	20% of 60 5 5 5 5	= Total Cov total cover <u>Y</u> <u>N</u> <u>N</u>	FACW FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines,
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50% of total cover:	20% of 60 5 5 5	= Total Cover total cover <u>Y</u> <u>N</u> <u>N</u>	FACW FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.
50% of total cover:	20% of 60 5 5 5 5	Total Cover total cover N N N	FACW FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.
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50% of total cover:	20% of 60 5 5 5 - - - - - - - - - - - - -	Total Cover	FACW FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 60 5 5 5 75 20% of	= Total Cover	FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 60 5 5 5 5 75 20% of	= Total Cover	FACW FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 60 5 5 5 - - - - - - - - - - - - -	= Total Cover	rer FACW FACU FACU FACU FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 5 5 5 	= Total Cov total cover Y N N = Total Cov total cover	FACW FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 60 5 5 5 5 75 75 20% of	= Total Cover	FACW FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 60 5 5 5 75 20% of 	= Total Cover	FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 60 5 5 5 5 75 20% of	= Total Cover	rer FACW FACU FACU FACU FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
50% of total cover:	20% of 60 5 5 5 75 20% of 100000000000000000000000000000000	= Total Cover	rer FACW FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation
50% of total cover:	20% of 60 5 5 5 5 75 20% of 20% of	= Total Cov total cover Y N N = Total Cov total cover = Total Cov	FACW FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No
50% of total cover:	20% of 60 5 5 5 75 20% of 20% of 20% of 20% of 20% of	= Total Cov total cover Y N N = Total Cov total cover = Total Cov total cover = Total Cov	rer FACU FACU FACU FACU FACU FACU FACU FACU FACU FACU	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation Present? Yes No

Profile Desc	cription: (Describe	to the dep	th needed to docur	nent the	indicator	or confirm	the absence	of indicators.)
Depth	Matrix		Redo	x Feature	s			
(inches)	Color (moist)	%	Color (moist)	%	Type'	Loc ²	Texture	Remarks
0-2	2.5Y 2/1	100					Loam	Muck layer
2-12	2.5Y 4/1	90	10YR 5/8	10	D	М	Silt Loam	Some Coal Fragments
					·	·		
					·	·		
					·		·	
						·	·	
					·	·		. <u> </u>
					·			
¹ Type: C=C	oncentration, D=Dep	letion, RM=	Reduced Matrix, MS	S=Masked	d Sand Gi	ains.	² Location: Pl	_=Pore Lining, M=Matrix.
Hydric Soil	Indicators:						Indica	tors for Problematic Hydric Soils ³ :
Histosol	(A1)		Dark Surface	(S7)			2	cm Muck (A10) (MLRA 147)
Histic Er	pipedon (A2)		Polyvalue Be	low Surfa	ace (S8) (I	MLRA 147.	148) C	oast Prairie Redox (A16)
Black Hi	stic (A3)		Thin Dark Su	rface (S9) (MLRA	147, 148)		(MLRA 147, 148)
	en Sulfide (A4)			d Matrix	(F2)	,,	Пр	iedmont Floodolain Soils (F19)
	d Lavers (A5)		Depleted Mat	trix (F3)	(• _)			(MI RA 136, 147)
	ick (A10) (I RR N)			Surface (F	F6)			ery Shallow Dark Surface (TE12)
	d Below Dark Surfac	ο (Δ11)		k Surface	(F7)			ther (Explain in Remarks)
	a Below Dark Sullac			k Sullace	:0)			
	Ark Surface (A12)				0) 00 (E12)			
		LKK N,			es (FIZ)	LKK N,		
	A 147, 148)			b)			31	and a set of the selection of the second of the second
	bleyed Matrix (S4)			ce (F13)	(MLRA 1	36, 122)	ind	cators of hydrophytic vegetation and
Sandy R	(edox (S5)			odplain S	50IIS (F19)	(MLRA 14	8) we	tland hydrology must be present,
Stripped	Matrix (S6)		Red Parent N	/laterial (F	-21) (MLF	A 127, 147	') uni	ess disturbed or problematic.
Restrictive I	Layer (if observed)							
Туре:								
Depth (in	ches):						Hydric Soil	Present? Yes 🔽 No 🗔
Remarks:								
S	oils have been g	reatly infl	uenced by the h	istoric n	nining th	roughou	t the study a	area. While some samples
ap	opear to be unaf	fected, th	ere are hints of s	soil ove	rturn an	d coal fra	gments thro	bughout many of the samples.
S	oils meet F3 indi	cator for	hydric soils.				-	
			,					

Project/Site: Vinton Solar Energy Center Project	City/County: McArthu	r/Vinton	Sampling Date: 4/7/17
Applicant/Owner: Invenergy LLC		State: OH	Sampling Point: Wetland 17
Investigator(s): Nathan Renaudin & Lindsey Moss	Section, Township, Ran	ıge:	
Landform (hillslope, terrace, etc.): Hillslope	Local relief (concave, conve	ex, none): Concave	Slope (%): <u>1</u>
Subregion (LRR or MLRA): MLRA126 Lat: 39.2	73582 Long	_{j:} -82.434111	Datum: WGS84
Soil Map Unit Name: Bethesda Silty Clay Loam		NWI classific	cation: PEM
Are climatic / h <u>ydrologi</u> c conditions on the site typic <u>al for th</u> is t	ime of year? Yes No	(If no, explain in R	Remarks.)
Are Vegetation 🚺 Soil 📝 , or Hydrology 📝 sig	nificantly disturbed? Are "N	vormal Circumstances" ب	oresent? Yes No 🖌
Are Vegetation, Soil, or Hydrology nat	urally problematic? (If nee	eded, explain any answe	ers in Remarks.)
SUMMARY OF FINDINGS – Attach site map sl	nowing sampling point lo	cations, transects	s, important features, etc.
Hydrophytic Vegetation Present? Yes 🗸 No.			
Hydric Soil Present?	Is the Sampled A within a Wetland	Area d? Yes	
Wetland Hydrology Present? Yes 🗸 No			
Remarks:			
The majority of the study area is in a field that ha	us been historically impacte	d by strip mining by	it is now actively grazed
by cattle. This particular wetland can be found in	an open field alongside de	lineated pond 8 Th	he sample point is located
approximately 5.400 feet east of the intersection	of township roads 14 and 2	15 just north of infir	mary road.
			inary roadi
HYDROLOGY			
Wetland Hydrology Indicators:		Secondary Indica	ators (minimum of two required)
Primary Indicators (minimum of one is required; check all the	at apply)	Surface Soil	Cracks (B6)
✓ Surface Water (A1) True A	Aquatic Plants (B14)	Sparsely Ve	getated Concave Surface (B8)
High Water Table (A2)	gen Sulfide Odor (C1)	🗹 Drainage Pa	tterns (B10)
✓ Saturation (A3) ✓ Oxidiz	ed Rhizospheres on Living Roots	, (C3) 🔲 Moss Trim L	ines (B16)
Water Marks (B1)	nce of Reduced Iron (C4)	Dry-Season	Water Table (C2)
Sediment Deposits (B2)	It Iron Reduction in Tilled Soils (C	6) 🛛 🗌 Crayfish Bur	rows (C8)
Drift Deposits (B3)	luck Surface (C7)	✓ Saturation V	isible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other	(Explain in Remarks)	Stunted or S	tressed Plants (D1)
Iron Deposits (B5)		Geomorphic	Position (D2)
Inundation Visible on Aerial Imagery (B7)		Shallow Aqu	itard (D3)
Water-Stained Leaves (B9)		Microtopogra	aphic Relief (D4)
Aquatic Fauna (B13)		FAC-Neutral	Test (D5)
Field Observations:			
Surface Water Present? Yes Ves No Depth	ו (inches): <u>1</u>		
Water Table Present? Yes 🖌 No 📃 Depti	ו (inches): <u>-8</u>		
Saturation Present? Yes 🖌 No 💭 Dept	1 (inches): 0 Wet	land Hydrology Preser	nt? Yes 🔽 No 🔄
(includes capillary fringe)	viel shates and views increasions)	if evelleble.	
Describe Recorded Data (stream gauge, monitoring well, ae	rial photos, previous inspections),	, if available:	
Remarks:			
Within this data form negative numbers in the w	ater table represent inches	helow surface and	0 within the saturation
column represents surface saturation. During th	e nast few days there has	been several inche	es of rain that has made
many areas much wetter than most of the year	e past lew days, there has		

0.01	Absolute	Dominant	Indicator	Dominance Test worksheet:					
Tree Stratum (Plot size: 30ft)	% Cover	Species?	Status	Number of Dominant Species					
1		·		That Are OBL, FACW, or FAC: (A)					
2		·	·	Total Number of Dominant					
3		·	·	Species Across All Strata: [] (B)					
4		·		Percent of Dominant Species					
5		·		That Are OBL, FACW, or FAC: 100 (A/B)					
б		Talaloa	·	Prevalence Index worksheet:					
		= Total Co	/er	Total % Cover of: Multiply by:					
50% of total cover:	20% of	total cover	:	OBL species x 1 =					
Sapling Stratum (Plot size: 15ft)				FACW species x 2 =					
1				FAC species x 3 =					
2		· - <u></u>		FACU species x 4 =					
3		·		UPL species x 5 =					
4		·		Column Totals: (A) (B)					
5		·							
6				Prevalence Index = B/A =					
		= Total Co	/er	Hydrophytic Vegetation Indicators:					
50% of total cover:	20% of	total cover	:	1 - Rapid Test for Hydrophytic Vegetation					
Shrub Stratum (Plot size: 15ft)				∠ 2 - Dominance Test is >50%					
1				3 - Prevalence Index is ≤3.0 ¹					
2				4 - Morphological Adaptations ¹ (Provide supporting					
3				data in Remarks or on a separate sheet)					
4				Problematic Hydrophytic Vegetation (Explain)					
5				1					
6				be present, unless disturbed or problematic.					
		= Total Cov	/er	Definitions of Fire Mensteller Office					
				Definitions of Five vedetation Strata:					
50% of total cover:	20% of	total cover	:	Definitions of Five Vegetation Strata:					
50% of total cover:	20% of	total cover	:	Tree – Woody plants, excluding woody vines,					
50% of total cover: Herb Stratum (Plot size: 5ft) 1 Juncus effusus (Common Rush)	20% of 60	total cover	FACW	Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).					
50% of total cover: <u>Herb Stratum</u> (Plot size: <u>5ft</u>) 1. Juncus effusus (Common Rush) 2. Carex vulpinoidea (Fox Sedge)	20% of <u>60</u>	total cover	FACW OBL	Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).					
50% of total cover:	20% of 60 5	total cover	FACW OBL FACW	Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less					
50% of total cover:	20% of 60 10 5 3	total cover	FACW OBL FACW FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. 					
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50% of total cover:	20% of 60 10 5 3 2 	Y N N N = Total Cover	FACW OBL FACW FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 					
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50% of total cover:	20% of 60 10 5 3 2 80 20% of	total cover	FACW OBL FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 					
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50% of total cover:	20% of 60 10 5 3 2 	Y N N N	FACW OBL FACW FACU FACU FACU FACU FACU FACU	 Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. 					
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Profile Desc	cription: (Describe	to the dep	th needed to docur	nent the	indicator	or confirm	the absence	of indicators.)	
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Depth	Matrix		Redox Features						
(inches)	Color (moist)	%	Color (moist)	%	Type	Loc ²	Texture	Remarks	
0-2	2.5Y 2/1	100					Loam	Muck layer	
2-12	2.5Y 4/1	90	10YR 5/8	10	D	М	Silt Loam	Some Coal Fragments	
					·	·			
					·				
					·		·		
						·	·		
					. <u> </u>				
					·	·		. <u> </u>	
					·				
¹ Type: C=C	oncentration, D=Dep	oletion, RM=	Reduced Matrix, MS	S=Masked	d Sand Gr	ains.	² Location: Pl	_=Pore Lining, M=Matrix.	
Hydric Soil	Indicators:						Indica	tors for Problematic Hydric Soils ³ :	
Histosol	(A1)		Dark Surface	(S7)			2	cm Muck (A10) (MLRA 147)	
Histic Er	pipedon (A2)		Polyvalue Be	low Surfa	ace (S8) (I	MLRA 147.	148) C	oast Prairie Redox (A16)	
Black Hi	stic (A3)		Thin Dark Su	rface (S9) (MLRA	147, 148)		(MLRA 147, 148)	
	en Sulfide (A4)			d Matrix	(F2)	,,	Пр	iedmont Floodplain Soils (F19)	
	d Lavers (A5)		Depleted Mat	trix (F3)	(• _)			(MI RA 136, 147)	
	ick (A10) (I RR N)			Surface (F	F6)			ery Shallow Dark Surface (TE12)	
	d Below Dark Surfac	ο (Δ11)		k Surface	(F7)			ther (Explain in Remarks)	
	a Below Dark Sullac			k Sullace	:0)				
	Ark Surface (A12)				0) 00 (E12) (
		LKK N,			es (F12) (LKK N,			
	A 147, 148)			b)			31	and a set of the selection of the second of the second	
	bleyed Matrix (S4)			ce (F13)		36, 122)	ind	cators of hydrophytic vegetation and	
Sandy R	(edox (S5)			odplain S	50IIS (F19)	(MLRA 14	8) we	tland hydrology must be present,	
Stripped	Matrix (S6)		Red Parent N	/laterial (F	-21) (MLR	A 127, 147	') uni	ess disturbed or problematic.	
Restrictive I	Layer (if observed)								
Туре:									
Depth (in	ches):						Hydric Soil	Present? Yes 🔽 No 🗔	
Remarks:									
S	oils have been g	reatly infl	uenced by the h	istoric n	nining th	roughou	t the study a	area. While some samples	
ap	opear to be unaf	fected, th	ere are hints of s	soil ove	rturn an	d coal fra	gments thro	bughout many of the samples.	
S	oils meet F3 indi	cator for	hydric soils.				-		
			,						

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Vinton Solar Energy Center Project City	//County: McArthur/Vinton Sampling Date: 4/7/17					
Applicant/Owner: Invenergy LLC State: OH Sampling Point: Upland 16/						
nvestigator(s): Nathan Renaudin & Lindsey Moss Section, Township, Range:						
Landform (hillslope, terrace, etc.): Hillslope Local	relief (concave, convex, none): <u>Concave</u> Slope (%): <u>1</u>					
Subregion (LRR or MLRA): MLRA126 Lat: 39.273646	Long: -82.434457 Datum: WGS84					
Soil Map Unit Name: Bethesda Silty Clay Loam	NWI classification: UPL					
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes No 🖌 (If no, explain in Remarks.)					
Are Vegetation Soil , or Hydrology significantly dis	turbed? Are "Normal Circumstances" present? Yes 🗹 No 🗹					
Are Vegetation , Soil , or Hydrology naturally proble	matic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sa	ampling point locations, transects, important features, etc.					
Hydric Soil Present? Yes No	Is the Sampled Area within a Wetland? Yes No ✓					
Wetland Hydrology Present?						
Remarks:						
The majority of the study area is in a field that has been his	storically impacted by strip mining but is now actively grazed					
by cattle. This upland point can be found on a hillslope in a	in open field alongside delineated Pond 8 and represents the					
upland sample for both delineated Wetlands 16 and 17. The	he sample point is located approximately 5,400 feet east of					
the intersection of township roads 14 and 15 just north of ir	nfirmary road.					
HYDROLOGY						
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)					
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)					
Surface Water (A1) True Aquatic Plant	s (B14) Sparsely Vegetated Concave Surface (B8)					
High Water Table (A2)	Ddor (C1) Drainage Patterns (B10)					
Saturation (A3) Oxidized Rhizosph	eres on Living Roots (C3) 🔲 Moss Trim Lines (B16)					
Water Marks (B1)	ced Iron (C4) Dry-Season Water Table (C2)					
Sediment Deposits (B2)	tion in Tilled Soils (C6) Crayfish Burrows (C8)					
Drift Deposits (B3)	(C7) Saturation Visible on Aerial Imagery (C9)					
Algal Mat or Crust (B4) Other (Explain in F	Lemarks) Stunted or Stressed Plants (D1)					
Iron Deposits (B5)	Geomorphic Position (D2)					
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)					
Water-Stained Leaves (B9)	Microtopographic Relief (D4)					
Aquatic Fauna (B13)	FAC-Neutral Test (D5)					
Field Observations:						
Surface Water Present? Yes No 🗹 Depth (inches):						
Water Table Present? Yes No 🖌 Depth (inches):						
Saturation Present? Yes No 🗸 Depth (inches):	Wetland Hydrology Present? Yes No					
(includes capillary fringe)						
Describe Recorded Data (stream gauge, monitoring well, aerial photos, p	previous inspections), if available:					
Demode						
Remarks:						
During the past few days, there has been several inches of	i rain that has made many areas much wetter than most of the					
year.						

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: Upland 16/17

8 9 10 11 50% of total cover: <u>50</u> <u>Woody Vine Stratum</u> (Plot size:) 1) 1 2 3 4 5	 	= Total Cov	er 20	herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
8 9 10 11 50% of total cover: 50 <u>Woody Vine Stratum</u> (Plot size:) 1 2 3 4	 	= Total Cov total cover:	 er 20	herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
8 9 10 11 <u>50% of total cover: <u>50</u> <u>Woody Vine Stratum</u> (Plot size:) 1 2 3.</u>		= Total Cov	er 20	herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
8 9 10 11 <u>50% of total cover: 50</u> <u>Woody Vine Stratum</u> (Plot size:) 1	 	= Total Cov total cover:	er 20	herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
8 9 10 11 50% of total cover: <u>50</u>) <u>Woody Vine Stratum</u> (Plot size:)	<u>100</u> 20% of	= Total Cov	er 20	herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
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8 9 10				herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.
8 9	·	·		herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.
8				herbaceous vines, regardless of size, and woody
		·		
7.				Herb - All herbaceous (non-woody) plants, including
6.				approximately 3 to 20 ft (1 to 6 m) in height.
5 Dactylis glomerata (Orchard Grass)	10	N	FACU	Shrub - Woody plants, excluding woody vines
<u>3. mioilum repens (white Clover)</u>	<u>25</u> 10			approximately 20 tt (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
2. Infolium pratense (Ked Clover)	<u>25</u> 25		FACU	Sapling – Woody plants, excluding woody vines,
1. Juncus ettusus (Common Rush)	30	Y	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: 5ft)	00	N/		approximately 20 ft (6 m) or more in height and 3 in.
50% of total cover:	20% of	total cover:		Tree - Woody plants, excluding woody vines
	;	= Total Cov	er	Definitions of Five Vegetation Strata:
6				be present, unless disturbed or problematic.
5				
4				Problematic Hydrophytic Vegetation ¹ (Explain)
3.				data in Remarks or on a separate sheet)
2				4 - Morphological Adaptations ¹ (Provide supporting
Shrub Stratum (Plot size: 1011)				\square 2 - Dominance Test is >00%
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation
		= Total Cov	er	Hydrophytic Vegetation Indicators:
6		·		Prevalence Index = $B/A = 3.50$
5				
4				$\begin{array}{c c} \text{UPL species} & 10 & x \text{ 5} = 30 \\ \text{Column Totals:} & 100 & (A) & 350 & (P) \\ \end{array}$
3				FACU species $\frac{60}{10}$ $x = \frac{240}{50}$
2.				FAC species $\frac{U}{60}$ x 3 = $\frac{U}{240}$
				FACW species $\frac{30}{2}$ x 2 = $\frac{60}{2}$
50% of total cover:	20% of	total cover:		OBL species $\frac{0}{22}$ x 1 = $\frac{0}{22}$
			CI	Total % Cover of:Multiply by:
ю		- Total Carr		Prevalence Index worksheet:
5				That Are OBL, FACW, or FAC: <u>33</u> (A/B)
4				Percent of Dominant Species
3	<u> </u>	·		Species Across All Strata: <u>3</u> (B)
2				Total Number of Dominant
1)	70 00101	000000	Olaluo	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redo	x Feature	S			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-2	2.5Y 4/3	100					Silt Loam	
2-16	2.5Y 4/3	95	10 YR 5/8	5	D	Μ	Silt Loam	Some coal fragments
						·		
·						·		
						·		
						·		
·							·	
¹ Type: C=C	oncentration, D=Dep	oletion, RM=	Reduced Matrix, M	S=Masked	d Sand Gr	ains.	² Location: Pl	L=Pore Lining, M=Matrix.
Hydric Soil	Indicators:						Indica	ators for Problematic Hydric Soils ³ :
Histosol	(A1)		Dark Surface	e (S7)			2	cm Muck (A10) (MLRA 147)
Histic Ep	pipedon (A2)		Polyvalue Be	elow Surfa	ce (S8) (I	/LRA 147,	148) 🔲 C	oast Prairie Redox (A16)
🔲 Black Hi	stic (A3)		🔲 Thin Dark Su	urface (S9) (MLRA	147, 148)		(MLRA 147, 148)
🔲 Hydroge	en Sulfide (A4)		Loamy Gleye	ed Matrix ((F2)		<u> </u>	iedmont Floodplain Soils (F19)
D Stratified	d Layers (A5)		Depleted Ma	trix (F3)			_	(MLRA 136, 147)
2 cm Mu	ick (A10) (LRR N)		Redox Dark	Surface (F	-6)			ery Shallow Dark Surface (TF12)
	d Below Dark Surfac	ce (A11)	Depleted Da	rk Surface	e (F7)		0 [_]	ther (Explain in Remarks)
	ark Sufface (A12)			essions (F	8) ee (F12) (
	1ucky Mineral (51) (LRR N,			es (F12) (LRR N,		
	$\frac{147, 140}{200}$			0) 000 (E13)		6 122)	³ Indi	icators of hydrophytic vegetation and
Sandy B	Redox (S5)			odolain S	(NILKA I	(MIRΔ 14	1101 1 8) we	tland hydrology must be present
	Matrix (S6)		Red Parent I	Material (F	21) (MI R	A 127, 147	7) unl	less disturbed or problematic
Restrictive	Laver (if observed)	:		natorial (i	21) (
Type:								
Depth (in	ches):						Hydric Soil	Present? Yes No 🔽
Remarks:								
S	oils have been g	reatly inf	uenced by the h	istoric n	nining th	roughou	t the study a	area. While some samples
ap	opear to be unaf	fected, th	ere are hints of	soil ovei	rturn an	d coal fra	agments thro	bughout many of the samples.

Appendix D

Ohio EPA ORAM Data Forms

	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization					
Version 5.0	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001				

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <u>http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx</u>

Background Information

Name: Nathan Renaudin

Date: 4/4/17

Affiliation: TRC Solutions

Address: 2200 Liberty Avenue, Suite 100, Pittsburgh PA, 15222

Phone Number: 412.713.7127

e-mail address: nrenaudin@trcsolutions.com

Name of Wetland: Wetland 1

Vegetation Communit(ies): PEM

HGM Class(es): Depressional

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

See attached map

Lat/Long or UTM Coordinate	39.272417 -82.451333
USGS Quad Name	Zaleski
County	Vinton
Township	Mcarthur
Section and Subsection	NA
Hydrologic Unit Code	050901010302
Site Visit	4/4/17
National Wetland Inventory Map	See Report
Ohio Wetland Inventory Map	See Report
Soil Survey	See Report
Delineation report/map	See Report

Name of Wetland: Wetland 1		
Wetland Size (acres, hectares): 1.04		Acres
Sketch: Include north arrow, relationship with other surface waters, vegetation zones,	etc.	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, See wetland report.	etc.	Acres
Comments, Narrative Discussion, Justification of Category Changes:		
Final score : 23C	ategory:	1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	Х	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	х	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	х	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	x	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	Х	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <u>http://www.dnr.state.oh.us/dnap</u>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

NO Go to Question 2 NO Go to Question 3 NO Go to Question 4
Go to Question 2 NO Go to Question 3 NO Go to Question 4
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NO)
Go to Question 5
NO
Go to Question 6
NO
Go to Question 7
NO
Go to Question 80
CO TO QUESTION DA
Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with	YES	NO
	50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	Wetland should be evaluated for possible Category 3 status.	Go to Question 9a
		Go to Question 9a	
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at	YES	NO
	an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Frie that is accessible to fish?	Go to Question 9b	Go to Question 10
9b	Does the wetland's hydrology result from measures designed to	YES	NO
	prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	Wetland should be evaluated for possible Category 3 status	Go to Question 9c
		Go to Question 10	
9c	Are Lake Erie water levels the wetland's primary hydrological influence,	YES	NO
	i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aguatic venetation	Go to Question 9d	Go to Question 10
9d	Does the wetland have a predominance of native species within its	YES	NO
	vegetation communities, although non-native or disturbance tolerant		
	native species can also be present?	3 wetland is a Category	Go to Question 9e
		Go to Question 10	
9e	Does the wetland have a predominance of non-native or disturbance	YES	NO
	tolerant hauve plant species within its vegetation communities?	Wetland should be evaluated for possible Category 3 status	Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in	YES	(NO)
	Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this	Wetland is a Category 3 wetland. Go to Question 11	Go to Question 11
	type of wetland and its quality.		
11	Relict Wet Prairies . Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	Zygadenus elegans var. glaucus	Calla palustris	Carex cryptolepis	Calamagrostis canadensis
Myriophyllum spicatum	Cacalia plantaginea	Carex atlantica var. capillacea	Carex lasiocarpa	Calamogrostis stricta
Najas minor	Carex flava	Carex echinata	Carex stricta	Carex atherodes
Phalaris arundinacea	Carex sterilis	Carex oligosperma	Cladium mariscoides	Carex buxbaumii
Phragmites australis	Carex stricta	Carex trisperma	Calamagrostis stricta	Carex pellita
Potamogeton crispus	Deschampsia caespitosa	Chamaedaphne calyculata	Calamagrostis canadensis	Carex sartwellii
Ranunculus ficaria	Eleocharis rostellata	Decodon verticillatus	Quercus palustris	Gentiana andrewsii
Rhamnus frangula	Eriophorum viridicarinatum	Eriophorum virginicum	~ 1	Helianthus grosseserratus
Typha angustifolia	Gentianopsis spp.	Larix laricina		Liatris spicata
Typha xglauca	Lobelia kalmii	Nemopanthus mucronatus		Lysimachia quadriflora
	Parnassia glauca	Schechzeria palustris		Lythrum alatum
	Potentilla fruticosa	Sphagnum spp.		Pycnanthemum virginianum
	Rhamnus alnifolia	Vaccinium macrocarpon		Silphium terebinthinaceum
	Rhynchospora capillacea	Vaccinium corymbosum		Sorghastrum nutans
	Salix candida	Vaccinium oxycoccos		Spartina pectinata
	Salix myricoides	Woodwardia virginica		Solidago riddellii
	Salix serissima	Xyris difformis		
	Solidago ohioensis	5 00		
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Wetland 1

Date: 4/4/17





End of Quantitative Rating. Complete Categorization Worksheets.

2

3

of marginal quality

and of highest quality

Present in moderate amounts, but not of highest quality or in small amounts of highest quality

Present in moderate or greater amounts

23

	circle		
		answer or	
		insert	Result
		score	
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
J	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	8	
	Metric 4. Habitat	7	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	3	
	TOTAL SCORE	23	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score greater than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	Vetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the <i>"gray zone"</i> for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.



End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization WorksheetOhio EPA, Division of Surface Water Final: February 1, 2001	۱r

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

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It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <u>http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx</u>

Background Information

Name: Nathan Renaudin

Date: 4/4/17

Affiliation: TRC Solutions

Address: 2200 Liberty Avenue, Suite 100, Pittsburgh PA, 15222

Phone Number: 412.713.7127

e-mail address: nrenaudin@trcsolutions.com

Name of Wetland: Wetland 2

Vegetation Communit(ies): PEM

HGM Class(es): Depressional

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

See attached map

Lat/Long or UTM Coordinate	39.276315- 82.448510
USGS Quad Name	Zaleski
County	Vinton
Township	Mcarthur
Section and Subsection	NA
Hydrologic Unit Code	050901010205
Site Visit	4/4/17
National Wetland Inventory Map	See Report
Ohio Wetland Inventory Map	See Report
Soil Survey	See Report
Delineation report/map	See Report

Name of Wetland: Wetland 2		
Wetland Size (acres, hectares): 0.18		Acres
Sketch: Include north arrow, relationship with other surface waters, vegetation zones,	etc.	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, See wetland report.	etc.	
Comments, Narrative Discussion, Justification of Category Changes:		
Comments, warrauve Discussion, Sustincation of Category Changes.		
Final score : 20	Category:	1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	Х	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	Х	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	х	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	х	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	Х	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

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7/6/2017 10:36:03 AM

in

Case No(s). 17-0774-EL-BGN

Summary: Application Part 4 of 5 (part 1 of 2) Exhibit F electronically filed by Christine M.T. Pirik on behalf of Pirik, Chris M.T.