Wetland Delineation Report Russellville Solar Watermelon Road Russellville, Logan County, Kentucky

July 31, 2019 Terracon Project No. N1197212



Prepared for: Community Energy Solar, LLC Chapel Hill, North Carolina

Prepared by: Terracon Consultants, Inc. Cincinnati, Ohio



July 31, 2019

lerracon

Community Energy Solar, LLC 151 E. Rosemary Street Suite 202 Chapel Hill, North Carolina 27514-3539

- Attn: Mr. Chris Killenberg Director P: (919) 967-7063 E: chris.killenberg@communityenergyinc.com
- RE: Wetland Delineation Report Russellville Solar Watermelon Road Russellville, Logan County, Kentucky Terracon Project No. N1197212

Dear Mr. Killenberg,

Terracon is pleased to submit the Wetland Delineation Report for the above referenced project. Based on the results of the assessment, Terracon observed thirteen wetlands, fifteen streams, and fifteen ponds on the project site.

A cover letter addressed to the U.S. Army Corps of Engineers (USACE) has been included with the enclosed report; however, a copy of this report has not been provided to USACE by Terracon. A copy of the Wetland Delineation Report and attached letter should be submitted to USACE for review and concurrence. USACE can be reached at the following address:

US Army Corps of Engineers – Louisville District OPF-N, Room 752 P.O. Box 59 Louisville, KY 40201-0059

Terracon appreciates the opportunity to have worked for you on this project. If you have any questions regarding the content of this report, please contact me at (513) 612-9094 or via email at swest@terracon.com.

Sincerely, Terracon Consultants, Inc.

Cassie Brendel Field Scientist				Scott E. West Group Manager		
	Terracon (Consultants, Inc P (513) 321-5816		ark Drive Cincinnati, OH 45 -0294 terracon.com	5226	
Environmental		Facilitie	s 📒	Geotechnical		Materials



July 31, 2019

US Army Corps of Engineers – Louisville District OPF-N, Room 752 P.O. Box 59 Louisville, KY 40201-0059

RE: Wetland Delineation Report Russellville Solar Watermelon Road Russellville, Logan County, Kentucky Terracon Project No. N1197212

Regulatory Branch:

Terracon is pleased to submit the Wetland Delineation Report prepared for Community Energy Solar, LLC for the abovementioned project. This assessment describes the observations made during our site visit and other sources of information used to investigate the site for wetlands and other waterbodies. Based on the results of the assessment, the site appears to have thirteen wetlands, fifteen streams, and fifteen ponds within its boundaries. At this time, we are requesting that your office perform a review of the report for the project and advise our client if a permit will be required for any proposed impacts.

If you have any questions concerning this report, please contact Scott West at (513) 612-9094 or by e-mail at swest@terracon.com.

Sincerely, TERRACON Consultants, Inc.

Cassie Brendel Field Scientist Scott E. West Group Manager

Copy to: Mr. Chris Killenberg



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1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by Community Energy Solar, LLC (client) to perform a wetland delineation to determine if wetlands or other waters under the jurisdiction of the United States Army Corps of Engineers (USACE) and the Kentucky Department of Environmental Protection (KDEP) Division of Water (DOW) are present at the approximately 1,600-acre parcel, hereafter referred to as the project site. The project site is located on the east side of Watermelon Road, Russellville, Logan County, Kentucky. The site location is depicted on Exhibit 1 in Appendix A.

The purpose of performing a wetland delineation at the project site was to characterize the existing site conditions, observe the project site for suspect waterbodies and wetlands and provide a recommendation regarding whether or not suspect waterbodies (if observed) would be considered jurisdictional.

It is important to note that the findings presented in this report represent Terracon's professional opinion, based upon field observations made during the site visit and our experience with current regulatory guidance under the Clean Water Act. In order to verify the delineation boundaries and jurisdictional classifications presented in this report, the USACE must review this report and make a jurisdictional determination.

2.0 SCOPE OF SERVICES

Terracon performed the following scope of work:

- Reviewed United States Geologic Survey (USGS) topographical maps, National Wetlands Inventory (NWI) maps, United States Department of Agriculture (USDA) National Resource Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) soil maps and surveys, Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), and aerial photographs to assist with identifying suspect Waters of the United States (WOUS) at the project site;
- Mobilized to the project site to conduct the preliminary site visit;
- Prepared a map showing approximate locations of suspect waterbodies or wetland areas observed during the site visit, if any; and



Completed a Wetland Delineation Report that included project site characterization information, a discussion of applicable data, and recommendations for the project site.

3.0 PRELIMINARY DATA GATHERING AND ANALYSIS

Prior to performing the delineation, several map and aerial photograph resources were reviewed to assist with identifying potential WOUS at the project site. Each source of data is described in detail below.

3.1 Topographic Map

The USGS 7.5-Minute Topographic Map of the project site was reviewed to identify potential water features within the project site boundaries. The project site appears to consist of vacant land with various waterbodies within its boundaries. Four intermittent streams are depicted across the project site; one flowing across the northwestern portion, one connecting to a pond and wetlands in the southwestern portion, one flowing offsite in the northeastern portion, and one flowing offsite in the southeastern portion, and one flowing offsite in the southeastern portion, one in the southwestern portion, and one in the northeastern portion. Additionally, approximately twenty ponds are depicted throughout the project site. The slope ranges from approximately 600 to 650 feet while generally sloping to the south-southeast. A portion of the Russellville, Kentucky USGS Quadrangle can be seen as Exhibit 1 in Appendix A.

3.2 National Wetland Inventory Map

The NWI Map of the project site was reviewed to identify potential wetland areas. The map for the project site was published by the U.S. Department of the Interior's Fish and Wildlife Service and depicts probable wetland areas based on stereoscopic analysis of high-altitude aerial photographs and analysis of infrared bands from remotely-sensed imagery. The NWI map data for the project site can be seen as Exhibit 2 in Appendix A.

Number and Type of Feature	Cowardin Classification	General Location
One unconsolidated bottom pond, semi-permanently flooded	PUBF	
Nine unconsolidated bottom ponds, permanently flooded, excavated	PUBHx	Northwestern portion of the
One forested/shrub wetland, semi-permanently flooded	PFO1F	site.
One unconsolidated bottom pond, semi-permanently flooded, excavated	PUBFx	
One intermittent stream	R4SBC	
Two intermittent streams	R4SBC	

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Number and Type of Feature	Cowardin Classification	General Location
One unconsolidated bottom pond, permanently flooded, diked/impounded	PUBHh	
Five unconsolidated bottom ponds, permanently flooded, excavated	PUBHx	Southwestern portion of the site.
Two emergent wetlands, temporarily flooded	PEM1A	
One forested wetland, seasonally flooded	PFO1C	
Two forested wetlands, seasonally flooded	PFO1C	
One unconsolidated bottom pond, semi-permanently flooded	PUBF	North contains portion of the
Three unconsolidated bottom ponds, permanently flooded, excavated	PUBHx	Northeastern portion of the site.
One unconsolidated bottom pond, semi-permanently flooded, excavated	PUBFx	
One unconsolidated bottom pond, permanently flooded, excavated	PUBHx	Southeastern portion of the
One unconsolidated bottom pond, semi-permanently flooded, excavated	PUBFx	site.

3.3 Soil Survey

Data from the soil survey of Logan County, Kentucky was reviewed to identify soil types, including hydric soils. Data for the soil survey was compiled by the USDA NRCS in 1975. Hydric soils information was gathered from the 'National Hydric Soils List' (USDA Natural Resource Conservation Service, current). A soil survey map is included as Exhibit 3 in Appendix A.

The following soil types were identified within the project site on the soil survey map:

- <u>Baxter cherty silty loam 12 to 20 percent slopes (BaD)</u>: This soil is classified as deep, well drained and is found on sides of ridges. This map unit is not classified as hydric.
- <u>Baxter cherty silty clay loam 6 to 12 percent slopes, severely eroded (BbC3)</u>: This soil is classified as deep, well drained, and is found on narrow ridgetops. This map unit is not classified as hydric.
- <u>Crider silt loam, 0 to 2 percent slopes (CrA)</u>: This soil is classified as nearly level, deep, well drained, and is found on broad ridgetops. This map unit is not classified as hydric.
- <u>Crider silt loam, 2 to 6 percent slopes (CrB)</u>: This soil is classified as nearly level, deep, well drained, and is found on broad ridgetops. This map unit is not classified as hydric.
- <u>Crider silt loam 6 to 12 percent slopes (CrC)</u>: This soil is classified as nearly level, deep, well drained, and is found on long, narrow ridgetops and side slopes. This map unit is not classified as hydric.

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- <u>Lawrence silt loam (La)</u>: This soil is classified as nearly level, somewhat poorly drained, and is found on stream terraces and concave uplands. This map unit is classified as hydric.
- Lindside silt loam (Ld): This soil is classified as deep, moderately well drained, and is found on flood plains and upland depressions. This map unit is not classified as hydric.
- <u>Melvin silt loam (Me)</u>: This soil is classified as nearly level, deep, poorly drained, and is found on flood plains. This map unit is not classified as hydric.
- <u>Newark silt loam (Ne)</u>: This soil is classified as nearly level, somewhat poorly drained, and is found on flood plains. This map unit is classified as hydric.
- <u>Nicholson silt loam, 0 to 2 percent slopes (NhA)</u>: This soil is classified as moderately well drained and is found on broad ridgetops and low stream terraces. This map unit is not classified as hydric.
- <u>Nicholson silt loam, 2 to 6 percent slopes (NhB):</u> This soil is classified as moderately well drained and is found on broad ridgetops and stream terraces. This map unit is not classified as hydric.
- <u>Nolin silt loam (No)</u>: This soil is classified as nearly level, deep, well drained and is found on flood plains and upland depressions. This map unit is not classified as hydric.
- <u>Pembroke silt loam, 0 to 2 percent slopes (PeA)</u>: This soil is classified as nearly level to sloping, deep, well drained, and is found on broad ridgetops. This map unit is not classified as hydric.
- <u>Pembroke silt loam, 2 to 6 percent slopes (PeB)</u>: This soil is classified as nearly level to sloping, deep, well drained, and is found on broad ridgetops. This map unit is not classified as hydric.
- <u>Pembroke silt loam, 6 to 12 percent slopes (PeC)</u>: This soil is classified as nearly level to sloping, deep, well drained, and is found on broad ridgetops. This map unit is not classified as hydric.
- Pembroke silty clay loam 6 to 12 percent slopes, severely eroded (PfC3): This soil is classified as level to sloping, deep, well drained, and is found on broad ridgetops. This map unit is not classified as hydric.
- <u>Pickwick silty clay loam, 6 to 12 percent slopes, severely eroded (PfC3)</u>: This soil is classified as deep, well-drained soils, and is found on sides of ridges. This map unit is not classified as hydric.

3.4 Aerial Photographs

A recent aerial photograph (2018) of the project site was reviewed to determine land use and evaluate vegetative cover. The aerial photograph shows the project site to consist predominately of agricultural, forested, and grassy land. Additionally, multiple barn and farm house structures are apparent throughout the site. For reference, the aerial photograph has been included as Exhibit 4 in Appendix A.



3.5 **FEMA FIRM Data**

Terracon reviewed FEMA FIRM data (Panel #s:21141C0275D, 10/2/2012, 21141C0270D, 10/2/2012) to identify areas that may have elevated likelihoods of containing WOUS. The FEMA FIRM data indicated that the project site is predominately in Zone X, an area of minimal flood hazard. A small portion of the northeastern corner of the site lies in the 1% Annual Chance Flood Hazard. This data is included as Exhibit 5 in Appendix A.

4.0 FIELD TECHNIQUES

Terracon personnel, Cassie Brendel and Jim Schwieterman, conducted a reconnaissance of the project site on July 9 and 10, 2019, to characterize the existing site conditions and observe for the presence of wetlands and potential jurisdictional waters. Characteristics of jurisdictional waters and the wetland area were assessed utilizing the criteria detailed in sections 4.1 and 4.2 of this report. The evaluation methods generally followed the routine on-site determination method referenced in the 1987 USACE Manual and 2012 Midwest Regional Supplement.

4.1 Wetland Observations

Wetlands generally have three essential characteristics: hydrophytic (wetland) vegetation, hydric soils, and wetland hydrology. Based on NWI data, aerial imagery and topographical data, on-site areas were investigated for potential wetland properties. Additional areas were investigated, based on observations made during site reconnaissance. Data regarding the three essential characteristics was gathered within observed suspect wetland areas to further delineate boundaries.

4.1.1 Plant Community Assessment

Suspect areas were visually observed to determine the species, when possible, and absolute percentage of ground cover for four stratum of plant community types. Herbs were generally observed within a five-foot radius, shrubs/saplings within a fifteen-foot radius, and trees and vines within a thirty-foot radius of the observation location.

For each species of vegetation observed, their wetland indicator status was evaluated. Indicator status was determined using the NRCS Plants Database. Indicator categories for vegetation are presented below:

- Obligate Wetland (OBL) occur almost always (estimated probability greater than 99%) under natural conditions in wetlands.
- Facultative Wetland (FACW) usually occur in wetlands (estimated probability 67% 99%) but occasionally found in non-wetlands.



- **Facultative (FAC)** equally likely to occur in wetlands or non-wetlands (estimated probability 34% 66%).
- Facultative Upland (FACU) usually occur in non-wetlands (estimated probability 67% -99%) but occasionally found in wetlands.
- Obligate Upland (UPL) rarely occur in wetlands, but occur almost always (estimated probability greater than 99%) under natural conditions in non-wetlands.

The percent cover of each stratum was determined and dominance was evaluated. Dominant species were the most abundant species that accounted for more than 20 percent of the absolute percent coverage of the stratum. The number of dominant species with an indicator status of OBL, FACW, and/or FAC was compared to the total number of dominant species across all strata. Typically, when more than 50 percent of the dominant species had an indicator status of OBL, FACW, and/or FAC, hydrophytic vegetation was present.

If the percentage of dominant species with an indicator status of OBL, FACW, and/or FAC was less than 50 percent, prevalence index and morphological adaptations may have been evaluated to confirm if hydrophytic vegetation was present or absent.

4.1.2 Hydric Soils Assessment

After Terracon evaluated wetland vegetation, subsurface soil samples were collected using a soil probe. The samples were collected to a depth of approximately 15 inches below ground surface and were visually compared to <u>Munsell Soil Color Charts</u> (Munsell, 2009), which aided in the evaluation of hydric soil characteristics. The soil samples were further examined for hydric soil indicators including, but not limited to, histosol, thick dark surface, sandy gleyed matrix, sandy redox, loamy gleyed matrix, redox dark surface, and/or redox depressions. If these or other hydric soil indicators were observed in the subsurface soil sample, the observation location was considered to have hydric soil.

4.1.3 Wetland Hydrology Assessment

Visual indicators of wetland hydrology were evaluated. Examples of primary wetland hydrology indicators include, but are not limited to, surface water, high water table, soil saturation, water marks, sediment deposits, drift deposits, iron deposits, inundation visible on aerial imagery, sparsely vegetated concave surface, and water-stained leaves. If at least one primary or two secondary indicators were observed, the observation location was considered to have wetland hydrology.

4.1.4 Classification of Wetlands

Upon completion of the review of the three wetland criteria at each area, a wetland determination was made. Under normal circumstances, if one or more of the wetland criteria



were not identified, the area was not considered to be a wetland. If all three wetland indicators were identified, the area was classified as wetland. Additional observations were made throughout the wetland area to define the wetland/non-wetland boundary. Vegetation, soil and hydrology assessment data from at least one location within the wetland and one upland location outside of the wetland were recorded on a USACE Wetland Determination Form.

4.2 Other Waters Observations

Terracon also made observations of site features that may be considered a jurisdictional waterbody. If a potential jurisdictional waterbody was identified, observations regarding its characteristics were recorded. Potential jurisdictional waterbodies were evaluated based on the observation of the following characteristics:

- Flow Characteristics:
 - Perennial: contains water at all times except during extreme drought.
 - Intermittent: carries water a considerable portion of the time, but ceases to flow occasionally or seasonally.
 - Ephemeral: carries water only during and immediately after periods of rainfall or snowmelt.
- Ordinary High Water Mark:
 - The limit line on the shore established by the fluctuation of the water surface. It is shown by such things as a clear line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, the presence of litter and debris or other features influenced by the surrounding area.
- Bank Shape Descriptions:
 - Undercut: banks that overhang the stream channel
 - Steep: bank slope of approximately greater than 30 degrees
 - Gradual: bank slope of approximately 30 degrees or less
- Aquatic Habitat Descriptions:
 - Pool: deeper portion of a stream where water flows slower than in neighboring, shallower portions, smooth surface, and finer substrate
 - Riffle: shallow area in a stream where water flows swiftly over gravel and rock or other coarse substrate resulting in a rough flow and a turbulent surface
 - Run: section of a stream with a low or high velocity and with little or no turbulence on the surface of the water.

5.0 FIELD OBSERVATIONS RESULTS

On July 9 and 10, 2019, Terracon performed field observations at the project site. Thirteen wetlands, fifteen streams, fifteen ponds, and eleven karst features were identified within the project site boundaries. Ground photographs, included in Appendix B, provide an indication of the



physical characteristics observed during the site visit. Descriptions of the observed areas are listed in the following sections.

5.1 Plant Communities Found at Site

5.1.1 Scrub-Shrub/Emergent Wetlands

The dominant plant species found in the scrub-shrub, emergent wetlands were rice cut grass (*Leersia oryzoides*), Virginia whitegrass (*Leersia virginica*), broome sedge (*Carex scoparia*), swamp smartweed (*Polygonum hydropiperoides*), green ash (*Fraxinus pennsylvanica*) saplings, black willow (*Salix nigra*), deertongue (*Dichanthelium clandestinum*), brome-like sedge (*Carex bromoides*), American elm (*Ulmus americana*) saplings, longhair sedge (*Carex comosa*), boxelder (*Acer negundo*) saplings, fox sedge (*Carex vulpinoidea*), fowl mannagrass (*Glyceria striata*), and cattail sedge (*Carex typhina*).

5.1.2 Forested Wetlands

The dominant plant species found in the forested wetlands were red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), pin oak (*Quercus palustris*), sugarberry (*Celtis laevigata*), dotted smartweed (*Polygonum punctatum*), and swamp smartweed.

5.1.3 Agricultural Uplands

The dominant plant species found in the agricultural uplands were corn (*Zea mays*), tobacco (*Nicotiana tabacum*), and soybean (*Glycine max*).

5.1.4 Forested Uplands

The dominant plant species found in the forested uplands were black walnut (*Juglans nigra*), pawpaw (*Asimina triloba*), American beech (*Fagus grandifolia*), red maple, Amur honeysuckle (*Lonicera maackii*), mayapple (*Podophyllum peltatum*), and poison ivy (*Toxicodendron radicans*).

Photographs of the project site and on-site waters are attached in Appendix B.

5.2 Wetland Area Description

The following wetlands were observed at the project site during the site reconnaissance.

WETLAND	SIZE (ACRES)	COWARDIN CLASSIFICATION	WATER SOURCES	USACE JURISDICTIONAL
Α	0.95	PFO	Precipitation, Surface Runoff	Yes; adjacent to off- site stream
В	1.11	PEM	Precipitation, Surface Runoff	Yes; adjacent to Stream 1
С	0.88	PFO	Precipitation, Surface Runoff	Yes; neighboring Stream 2
D	0.09	PEM	Precipitation, Surface Runoff	Yes; neighboring Stream 2

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E	0.14	PEM	Precipitation, Surface Runoff	Yes; neighboring Stream 2
F	1.84	PFO	Precipitation, Surface Runoff, Streams 4 and 10, Pond 7	Yes; adjacent to Streams 4 and 9
G	0.18	PEM	Precipitation, Surface Runoff, Pond 8	Yes; neighboring Streams 4 and 9
н	0.08	PEM/PSS	Precipitation, Surface Runoff	Yes; neighboring Stream 13
I	0.03	PEM/PSS	Precipitation, Surface Runoff	Yes; adjacent to Stream 13
J	3.27	PFO	Precipitation, Surface Runoff	Yes; neighboring Stream 12
К	1.22	PFO	Precipitation, Surface Runoff	Yes; neighboring Stream 12
L	0.74	PEM	Precipitation, Surface Runoff, Stream 14	Yes; adjacent to Stream 14
М	0.05	PEM	Precipitation, Surface Runoff	Yes; neighboring Stream 2
TOTAL	10.58 acres			

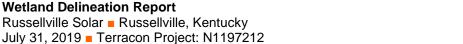
PEM – Palustrine emergent wetland; PSS – Palustrine scrub-shrub wetland; PFO - Palustrine forested wetland

Terracon considers these on-site wetlands jurisdictional based on their adjacent and neighboring locations to tributaries of an off-site anchor water, Red River.

5.3 Streams

The following streams were observed at the project site during the site reconnaissance:

STREAM	LENGTH (LINEAR FEET)	FLOW REGIME	AVERAGE STREAM WIDTH AT TOP OF BANK (FEET)
1	207	Ephemeral	2-4
2	4,599	Intermittent	10-12
3	1,537	Intermittent	4-6
4	186	Ephemeral	2-4
5	365	Ephemeral	4-6
5A	75	Ephemeral	2-4
6	84	Ephemeral	2-4
7	60	Ephemeral	2-4
8	16	Ephemeral	2-4
9	28	Ephemeral	2-4
10	171	Ephemeral	2-4
11	778	Ephemeral	2-4
12	1,466	Ephemeral	4-6
13	685	Ephemeral	2-4



STREAM	LENGTH (LINEAR FEET)	FLOW REGIME	AVERAGE STREAM WIDTH AT TOP OF BANK (FEET)
14	325	Ephemeral	2-4
TOTAL	10,582 ft		

Streams 2, 5, 6, 7, 8, 9, and 10 are drained by karst features, sinkholes leading to underground drainage systems. Due to their neighboring and adjacent locations to on-site waters and significant nexus to the off-site anchor water, Red River, Terracon considers these streams jurisdictional. Additionally, Terracon considers the remaining on-site streams jurisdictional based on their connection, as tributaries, to an off-site anchor water, Red River.

5.4 **Other Waters**

Other waters (ponds) were observed at the project site during the site reconnaissance:

POND	SIZE	COWARDIN	WATER SOURCES	USACE
	(ACRES)	CLASSIFICATION		JURISDICTIONAL
1	0.92	PUB	Precipitation, Surface Runoff	No
2	0.70	PUB	Precipitation, Surface Runoff	No
3	0.42	PUB	Precipitation, Surface Runoff	No
4	0.46	PUB	Precipitation, Surface Runoff	No
5	0.70	PUB	Precipitation, Surface Runoff	No
6	0.25	PUB	Precipitation, Surface Runoff	Yes; adjacent to Wetland C and neighboring Stream 2
7	0.81	PUB	Precipitation, Surface Runoff	Yes; adjacent to Stream 4 and neighboring Wetland F
8	0.23	PUB	Precipitation, Surface Runoff	Yes; adjacent to Wetland G and Stream 9
9	0.70	PUB	Precipitation, Surface Runoff	Yes; neighboring Wetland H and Stream 13
10	0.31	PUB	Precipitation, Surface Runoff	No
11	0.26	PUB	Precipitation, Surface Runoff	Yes; adjoining Wetland J
12	0.22	PUB	Precipitation, Surface Runoff	Yes; neighboring Wetlands J and K
13	0.29	PUB	Precipitation, Surface Runoff	No



14	0.35	PUB	Precipitation, Surface	No
			Runoff	
15	0.74	PUB	Precipitation, Surface Runoff	Yes; neighboring Stream 2
TOTAL	7.36 ac			

Terracon considers Ponds 6, 7, 8, 9, 11, 12, and 15 jurisdictional based on their neighboring and adjacent locations to waters on-site, which connect to an off-site anchor water, Red River. Ponds 1, 2, 3, 4, 5, 10, 13, and 14 are considered non-jurisdictional as they do not have a significant connection to any on-site waters.

Additionally, eleven karst features (five standalone and six associated with streams) were observed on-site during the site reconnaissance. These features are connected to sinkholes which connect to underground drainage systems. These features are not considered jurisdictional.

6.0 SUMMARY AND CONCLUSIONS OF FIELD OBSERVATIONS

A wetland delineation of an approximate 1,600-acre site located in Russellville, Kentucky was conducted on July 9 and 10, 2019. A review of the project site was conducted utilizing readily available information including, but not limited to, topographical, aerial and wetland data. In addition, a preliminary site visit was performed to characterize the existing site conditions and observe the project site for suspect waterbodies and wetlands (if any). A summary of field observations and conclusions concerning jurisdictional status is outlined in the following sections.

6.1 Wetlands

Thirteen wetlands, totaling 10.58 acres, were observed on the project site. It is Terracon's opinion that these on-site wetlands jurisdictional based on their adjacent and neighboring locations to tributaries of an off-site anchor water, Red River.

6.2 Streams

Fifteen streams, totaling 10,582 linear feet, were observed on the project site during the site reconnaissance. Terracon considers the on-site streams jurisdictional based on their connection to an off-site anchor water, Red River.



6.3 Other Waters

Fifteen ponds, totaling 7.36 acres, were observed on the project site during the site reconnaissance. Terracon considers Ponds 6, 7, 8, 9, 11, 12, and 15 jurisdictional based on their neighboring and adjacent locations to on-site waters, which connect to an off-site anchor water, Red River. Ponds 1, 2, 3, 4, 5, 10, 13, and 14 are considered non-jurisdictional as they do not appear to have a significant connection to any on-site waters.

Additionally, eleven karst features (five standalone and six associated with streams) were observed on-site during the site reconnaissance. These features are connected to sinkholes which connect to underground drainage systems. These features are not considered jurisdictional.

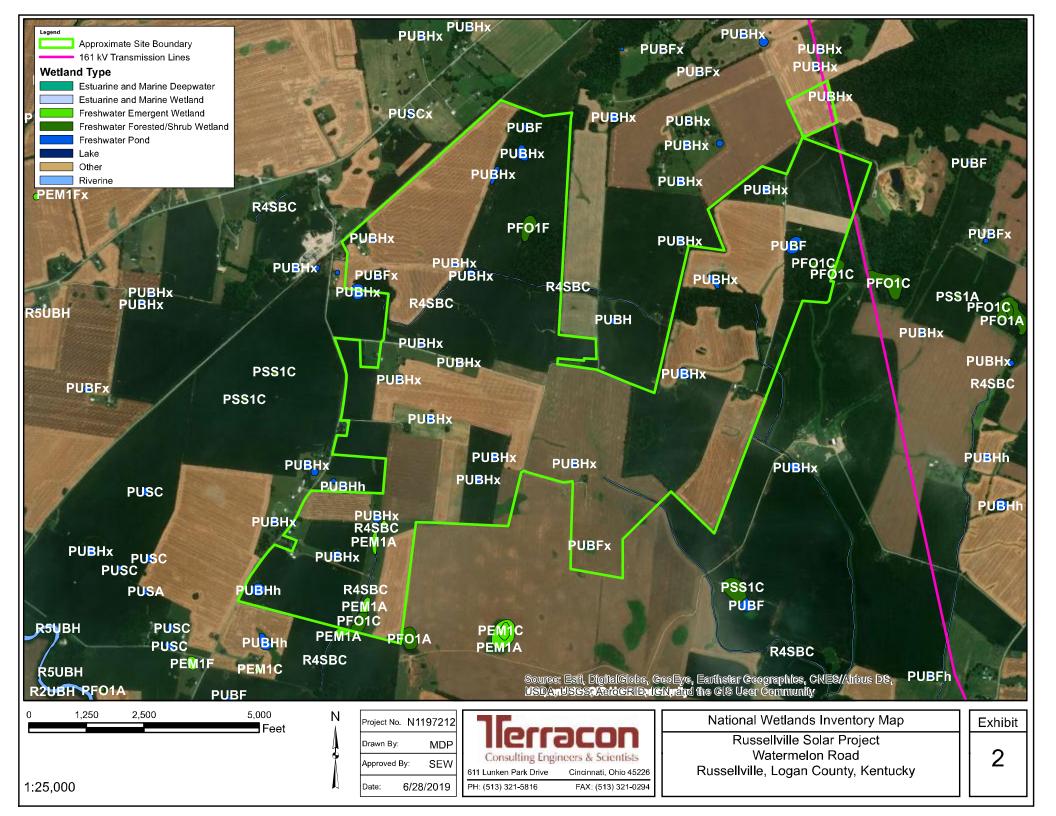
7.0 GENERAL COMMENTS

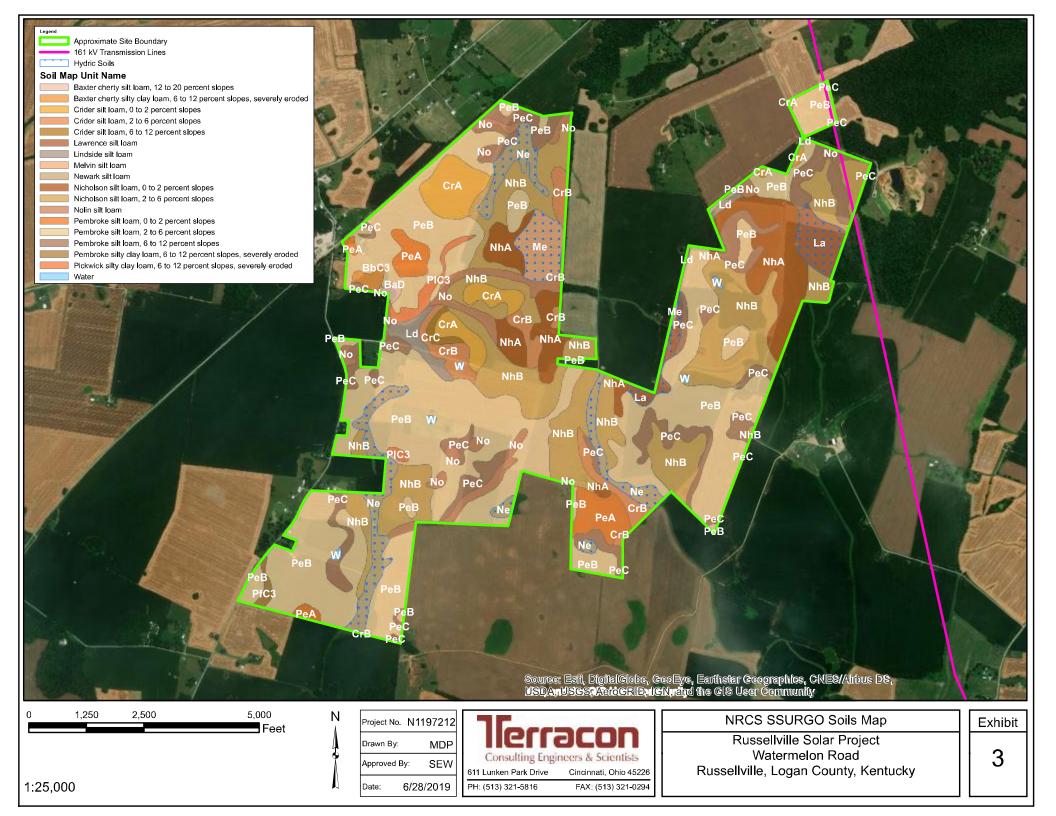
The wetland delineation was performed in accordance with generally accepted practices of this profession undertaken in similar studies at the same time and in the same geographical area. A wetland delineation, such as the one performed at this site, is of limited scope, is noninvasive, and cannot eliminate the potential that wetlands or waterbodies are present at the site beyond what is identified by the limited scope of this preliminary assessment. In conducting the limited scope of services described herein, certain sources of information and public records were not reviewed. No biological assessment can wholly eliminate uncertainty regarding the potential for concerns in connection with a project. The limitations of this preliminary assessment should be recognized.

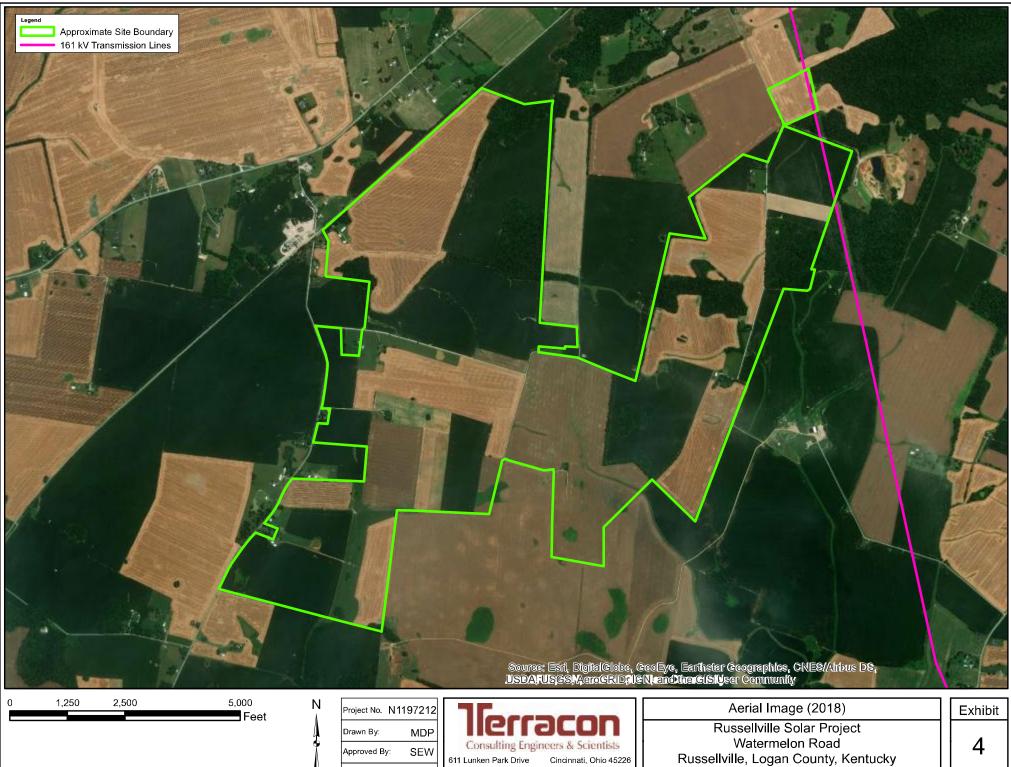
This report has been prepared in accordance with generally accepted scientific and engineering evaluation practices. This report is for the exclusive use of the client for the project being discussed. No warranties, either expressed or implied, are intended or made.

APPENDIX A – EXHIBITS

Approximate Ste Boundary te i xV Traumissios Lines	
0 1,250 2,500 5,000 N Project No. N1197212 Topographic Map	Exhibit
Preet Prawn By: MDP Approved By: SEW Date: 6/28/2019	1







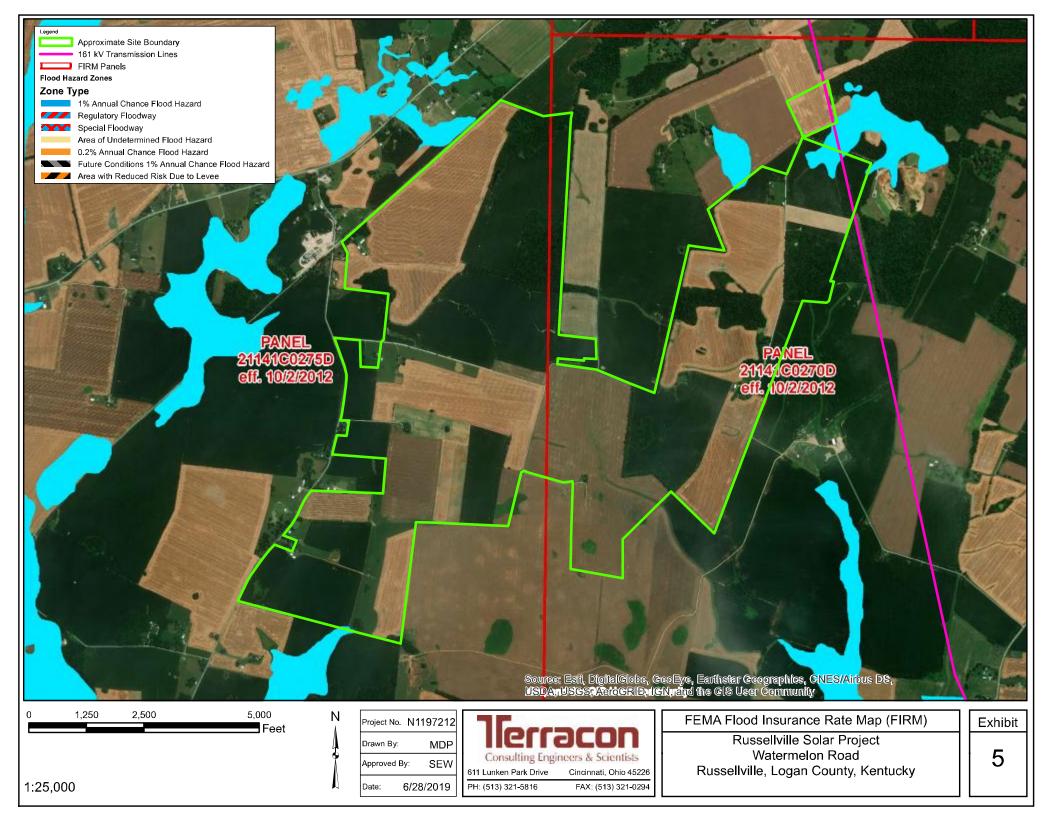
6/28/2019

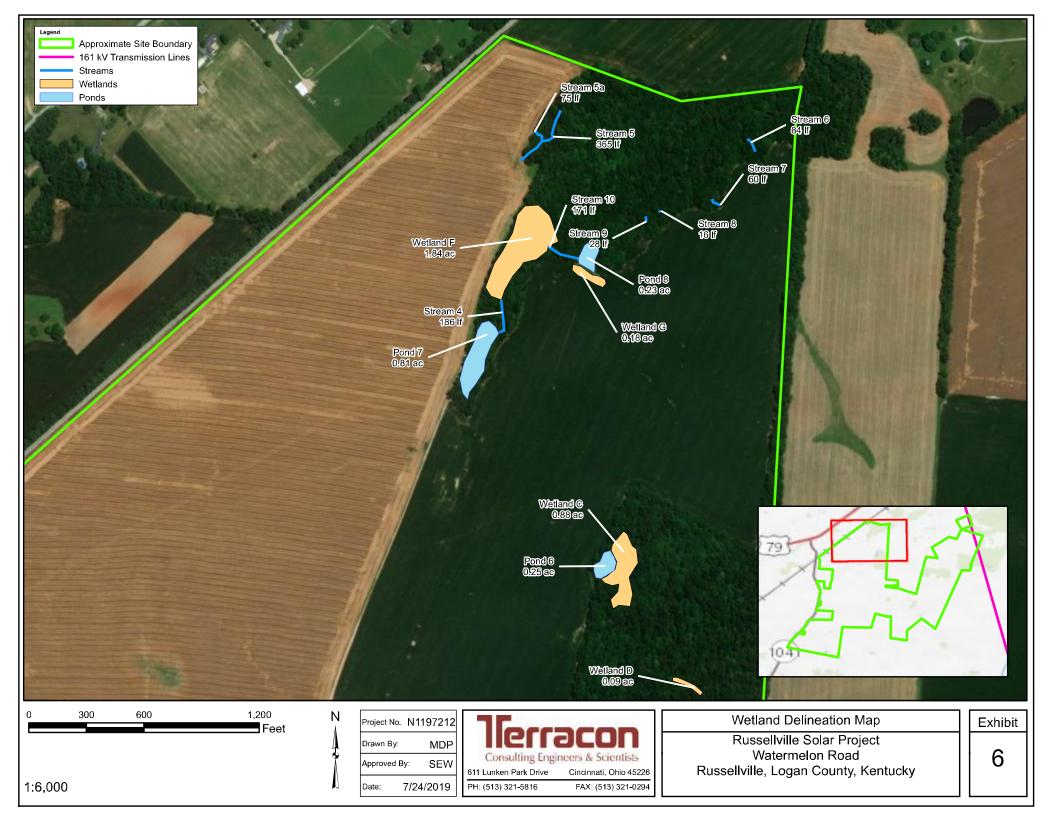
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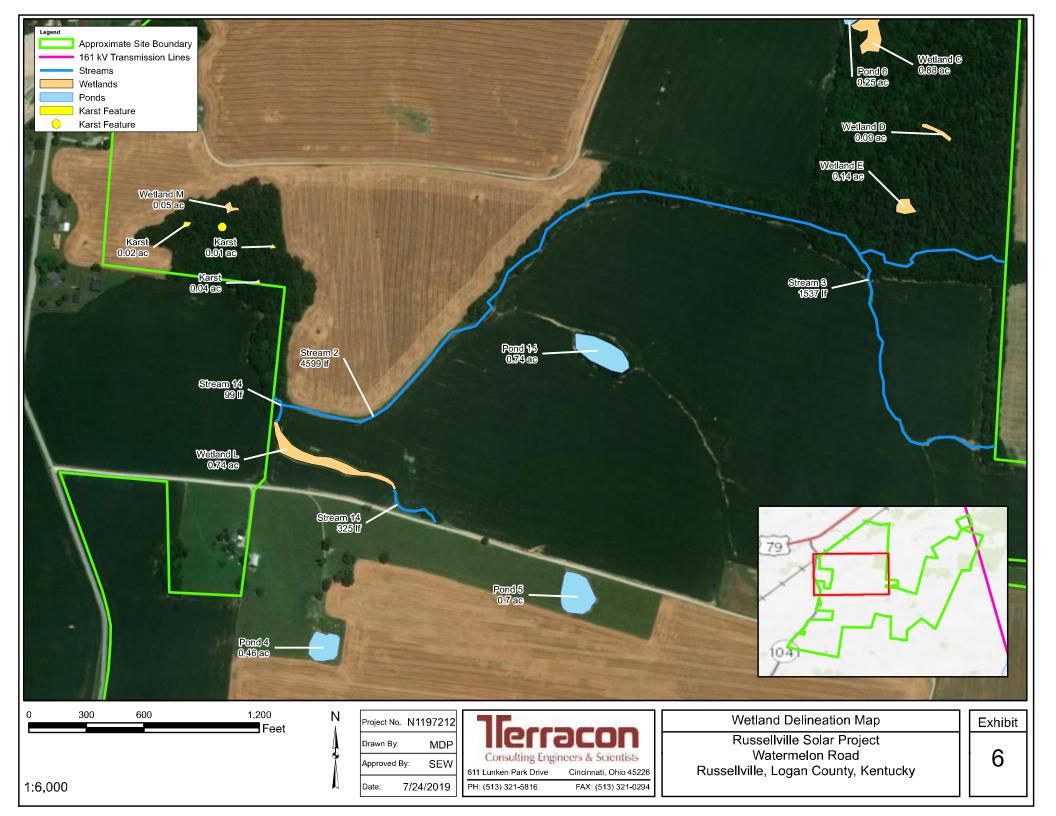
PH: (513) 321-5816

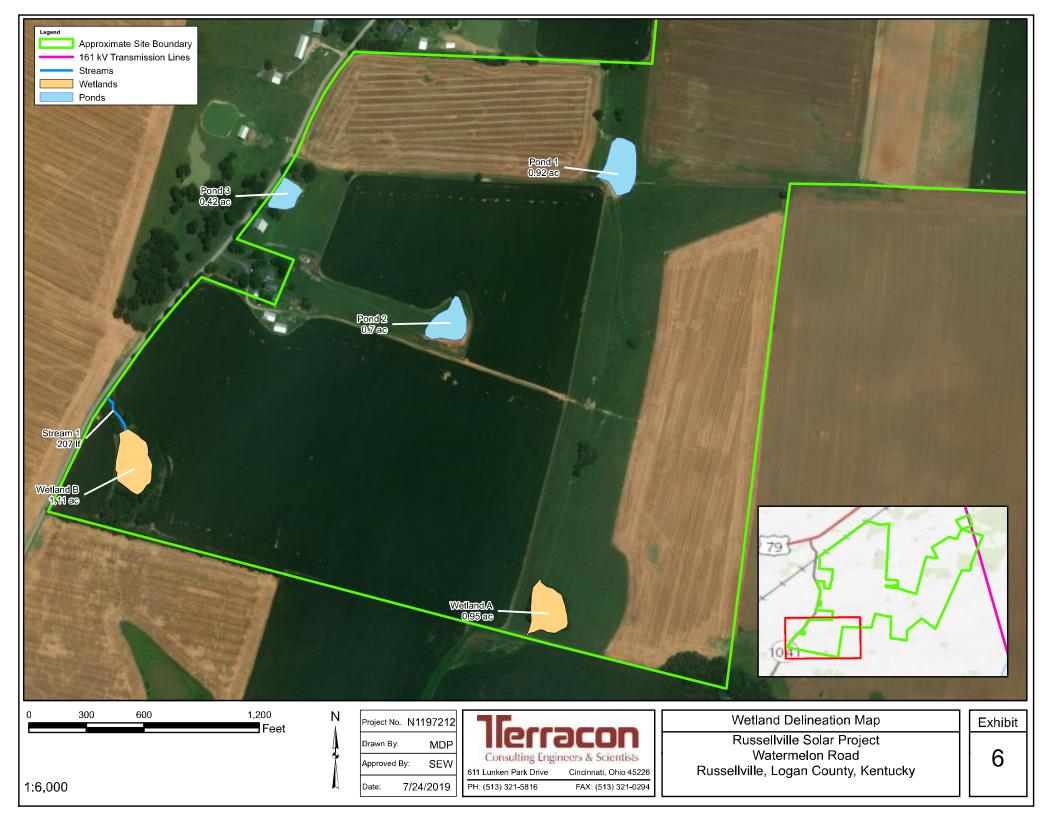
FAX: (513) 321-0294

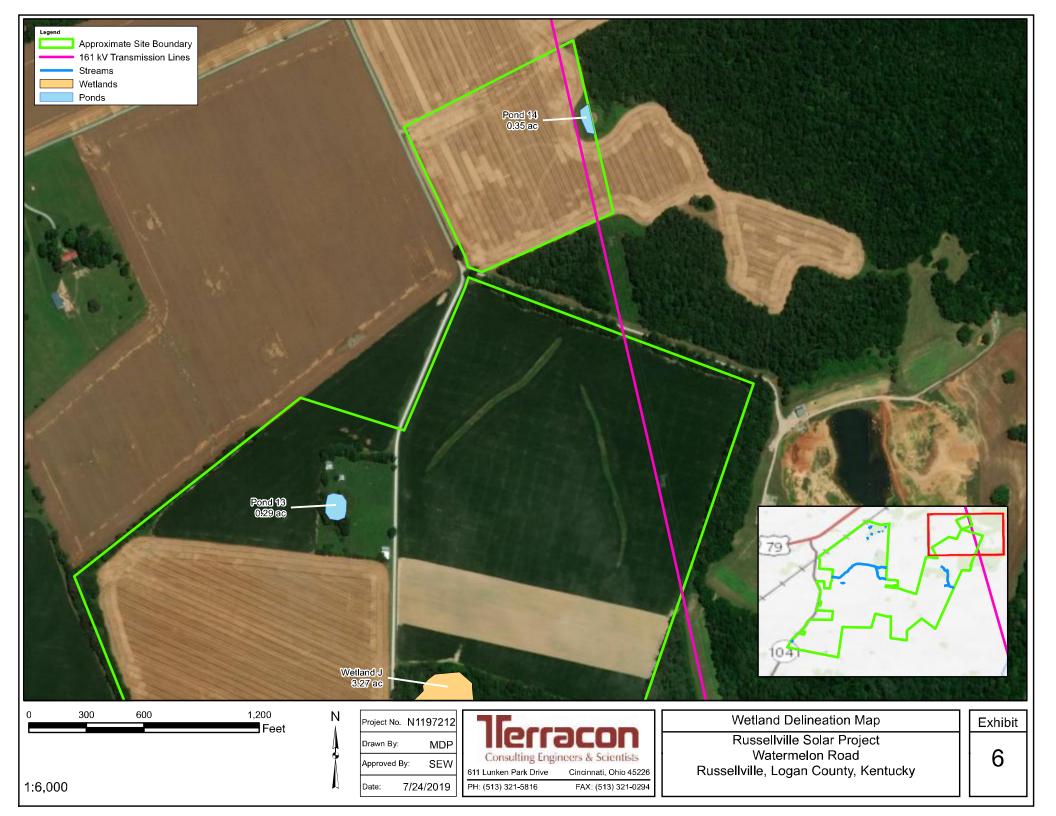
4	.05 000	
1	:25.000	

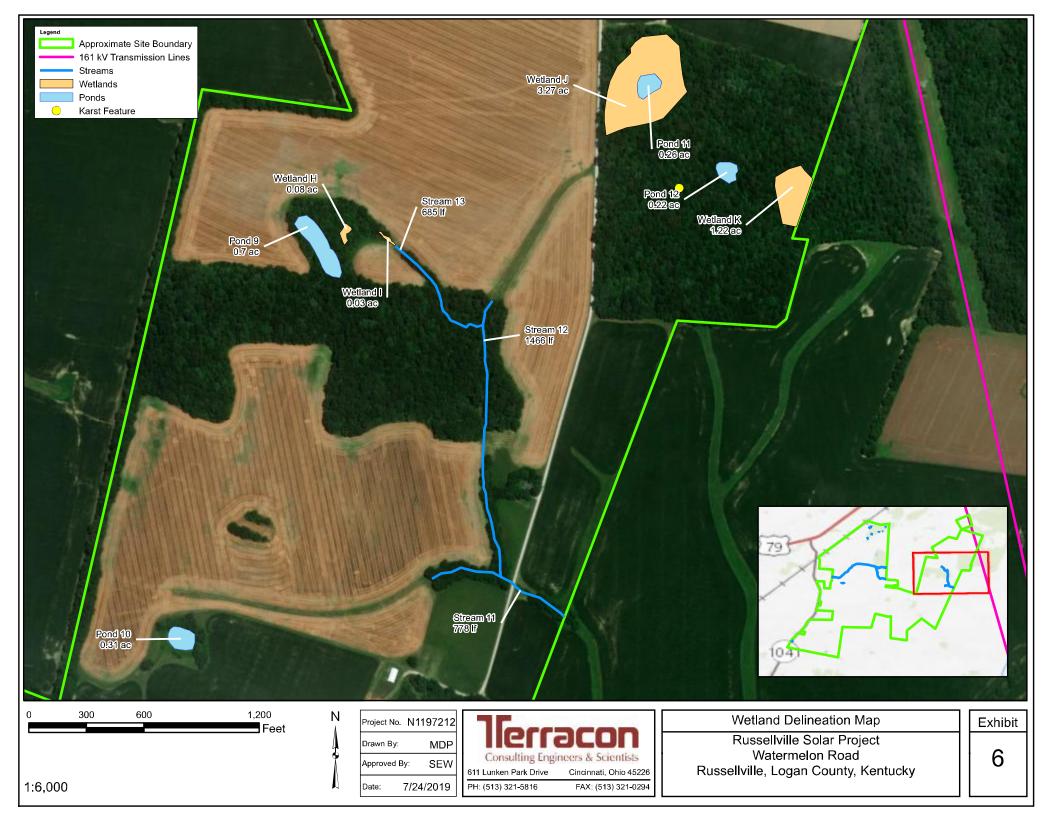












APPENDIX B – GROUND PHOTOGRAPHS





Pond 1.



General view of the site.





Pond 2.



Wetland A





Typical hydric soil found on-site.



Wetland B.





Stream 1.



General view of forested uplands on-site.





Stream 2.



Wetland C.





Example of hydric soil found on-site.



Pond 6.





Wetland D.



General view of forested uplands.

Russellville Solar
Watermelon Road Russellville, KY
Date Pictures Taken: July 9 and 10, 2019
Terracon Project No. N1197212





Stream 2.









Stream 4.



Wetland F.





Stream 10.



Pond 8.





Wetland F.



Stream 5.





Karst feature associated with Stream 5.



Wetland G.





Stream 11.



Pond 9.





Wetland H.



Example of hydric soil found on-site.





Stream 13.



Wetland J surrounding Pond 11.





Stream 2 leading to karst feature.

APPENDIX C – DATA SHEETS

Project/Site: Russellville Solar City/County	x: Russellvill/Logar	
Applicant/Owner: Community Energy Solar, LLC	State: F	Sampling Point: WA
Investigator(s): C. Brender J. Schwitten Mark Section, To	ownship, Range:	
Landform (hillslope, terrace, etc.): Local relief (co	oncave, convex, none):	Slope (%):
Subregion (LRR or MLRA): Lat:	Long:	Datum: NAD83
Soil Map Unit Name: Newark Sitt Joan	NWI clas	sification: _PF01.C
Are climatic / hydrologic conditions on the site typical for this time of year? Yes		in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed?	Are "Normal Circumstance	
Are Vegetation, Soil, or Hydrology naturally problematic?	(If needed, explain any an	swers in Remarks.)

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes X	No	Is the Sampled Area within a Wetland?	Yes No
Wetland Hydrology Present? Remarks: Soil and W Wetland A	yes <u>x</u> Igotative (_ No disturbar	rce due to	cattle exposure
HYDROLOGY				
Wetland Hydrology Indicators: Primary Indicators (minimum of o Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial I Water-Stained Leaves (B9) Aquatic Fauna (B13)	ene is required; check	True Aquatic Plants (Hydrogen Sulfide Od	or (C1) es on Living Roots (C3) Hron (C4) n in Tilled Soils (C6) (C7)	Secondary Indicators (minimum of two required) 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:				
		Depth (inches):		
	es X No	Depth (inches): Depth (inches): ell, aerial photos, prev	Wetland H	lydrology Present? Yes <u>X</u> No ilable:
Remarks:				

Sampling Point: WA

Depth	Matrix			x Features						
(inches)	Color (moist)	%	Color (moist)		Type'	Loc ²	Text		Rema	arks
0-19	1.5 YK5/2	_/0_	1.5YK 510	30	C	M	Sard	day		
	· · · ·		. /				0	00		
				_						
					_					
ype: C=Co	ncentration, D=Deple	etion, RM=R	educed Matrix, MS	S=Masked 3	Sand Grain	s.	² Locati	on: PL=Pore	Lining M=Ma	trix
dric Soil Ir	dicators:									c Hydric Soils ³ :
Histosol (Dark Surface	(S7)				2 cm Muc		
	pedon (A2)		Polyvalue Be				148)	Coast Pra		,
Black His			Thin Dark Su			, 148)			147, 148)	
	Sulfide (A4)		-+ Loamy Gleye		2)			Piedmont	Floodplain S	oils (F19)
	Layers (A5) k (A10) (LRR N)		Depleted Mat						136, 147)	
	Below Dark Surface	(A11)	Redox Dark \$ Depleted Dar		·				low Dark Sur	
	k Surface (A12)	(011)	Redox Depre					Other (Ex	plain in Rema	arks)
	cky Mineral (S1) (LF	RR N.	Iron-Mangane			R N.				
	147, 148)		MLRA 136		(, , , ,) (L.	,				
Sandy Gle	eyed Matrix (S4)		Umbric Surfac		LRA 136,	122)		³ Indicators o	f hydrophytic	vegetation and
_ Sandy Re			Piedmont Flo						drology must	
	Aatrix (S6)		Red Parent M	laterial (F21	I) (MLRA 1	27, 147))		urbed or prob	
	yer (if observed):									
Type:			_							/
Depth (inch	es):		-				Hydric	Soil Present	? Yes	No
marks:										

ProjecuSite: RUSSELVILL Solar	City/County: RUSSellville	16gan Samplin	Date: 7/9/19
Applicant/Owner: Community Entroy Solar	, LLC	State: KV Samp	ling Point: WB
Investigator(s): C. Brerdel J. Sch Briterian	Section, Township, Range:	camp	
	cal relief (concave, convex, none):	Slope (%):
Subregion (LRR or MLRA): Lat:	Long:		Datum: NAD83
Soil Map Unit Name: Pumbrold Gilty clay 10am 1 (1-	0129050005	NWI classification:	
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 C	ircumstances" present?	Yes × No
Are Vegetation, Soil, or Hydrology naturally pro		plain any answers in Rem	

Hydrophytic Vegetation Present? Hydric Soil Present? Wathood Middelan Present?	Yes <u>X</u> No Yes <u>X</u> No	Is the Sampled Area within a Wetland? Yes No
Wetland Hydrology Present? Remarks:	Yes No	
WHand B 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) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Image Water-Stained Leaves (B9) Aquatic Fauna (B13) Field Observations: Surface Water Present? Yes Water Table Present? Yes Saturation Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge	Presence of Reduce Recent Iron Reduce Thin Muck Surface Other (Explain in R rry (B7) No Depth (inches): No Depth (inches): No Depth (inches):	Odor (C1)
Remarks:		

Sampling Point: ______B

		e depth needed to document the indicator or confi	irm the absence of indicators.)
(inches) (Matrix Color (moist), 9	Redox Features Color (moist) % Type ¹ Loc ²	- Texture Down in
0-14 7	51R419 9	Color (moist) % Type' Loc ²	Remarks
<u>V 11 1</u>	ma la	e isinge av c M	_ Sudyclayly
Type: C=Concen	tration D=Depletion	RM=Reduced Matrix, MS=Masked Sand Grains.	21 and an Dia David State of the second
Hydric Soil Indica		Rim-Reduced Matrix, MS-Masked Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Histosol (A1)		Dark Surface (S7)	Indicators for Problematic Hydric Soils ³ :
Histic Epipedo	on (A2)	Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 14)	2 cm Muck (A10) (MLRA 147)
Black Histic (A		Polyvalue Below Surface (S8) (MLRA 14 Thin Dark Surface (S9) (MLRA 147, 148)	7, 148) Coast Prairie Redox (A16)
Hydrogen Sulf		Loamy Gleyed Matrix (F2)	(MLRA 147, 148) Piedmont Floodplain Soils (F19)
Stratified Laye		Depleted Matrix (F3)	(MLRA 136, 147)
2 cm Muck (At		Redox Dark Surface (F6)	Very Shallow Dark Surface (TF12)
	w Dark Surface (A11) Depleted Dark Surface (F7)	Other (Explain in Remarks)
Thick Dark Sur		Redox Depressions (F8)	
Sandy Mucky	Mineral (S1) (LRR N	Iron-Manganese Masses (F12) (LRR N,	
MLRA 147,	148)	MLRA 136)	
Sandy Gleyed		Umbric Surface (F13) (MLRA 136, 122)	³ Indicators of hydrophytic vegetation and
Sandy Redox (Piedmont Floodplain Soils (F19) (MLRA 1	148) wetland hydrology must be present.
_ Stripped Matrix		Red Parent Material (F21) (MLRA 127, 14)	 unless disturbed or problematic.
Restrictive Layer	(if observed):		
Туре:			
Depth (inches):			Hydric Soil Present? Yes No
Remarks:			
			· · · · · · · · · · · · · · · · · · ·

Project/Site: Kussellville	Solow	City/County: RUSelly	ille logan	Sampling Date: 7/9/19
Applicant/Owner: Commun	Ity Energy Sola	1 LLC	State: KY	Sampling Point: WC
Investigator(s): C. Brundul		Section, Township, Rang	ge:	
Landform (hillslope, terrace, etc.): _	Lo	cal relief (concave, conve	x, none):	Slope (%):
Subregion (LRR or MLRA):		Long:		Datum: NADE3
Soil Map Unit Name: Melvin	Silt loam		NWI classific	
Are climatic / hydrologic conditions	on the site typical for this time of ye	ar? Yes X No		
Are Vegetation, Soil	, or Hydrology significantly	disturbed? Are "N	ormal Circumstances" p	resent? Yes X No
Are Vegetation, Soil	, or Hydrology naturally pro		ded, explain any answer	

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes <u>No</u> No Yes <u>No</u> Yes <u>No</u> No	Is the Sampled Area within a Wetland? Yes No
Remarks: WHUND		
Wetland Hydrology Indicators: Primary Indicators (minimum of one is X Surface Water (A1) X High Water Table (A2) X Saturation (A3) X Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Image Water-Stained Leaves (B9) Aquatic Fauna (B13)	 True Aquatic Plants Hydrogen Sulfide O Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti Thin Muck Surface (Other (Explain in Re 	dor (C1) Drainage Patterns (B10) res on Living Roots (C3) Moss Trim Lines (B16) d Iron (C4) Dry-Season Water Table (C2) on in Tilled Soils (C6) Crayfish Burrows (C8) C7) Saturation Visible on Aerial Imagery (C9)
Field Observations: Surface Water Present? Yes Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge)	No Depth (inches): No Depth (inches): No Depth (inches): le, monitoring well, aerial photos, pre	Wetland Hydrology Present? Yes X No
Remarks:		

Sampling Point: ______

Depth	Matrix		Redo	x Feature	15					
(inches)	Color (moist)	%	Color (moist)	%	Type	Loc ²	Texture		Remarks	
0-14	7.5YR 5/2	75	57K 5/X	25	<u>C</u>	M	class	*		
	ncentration, D=Deple	tion, RM=	Reduced Matrix, MS	=Masked	Sand Gr	ains.			ing, M=Matrix.	
lydric Soil Ir							Inc		roblematic Hy	
Histosol (Dark Surface		1000				A10) (MLRA 14	47)
	pedon (A2)		Polyvalue Bel				148)		e Redox (A16)	
Black His	Sulfide (A4)		Thin Dark Su			47, 148)		(MLRA 14		
	Layers (A5)		Loamy Gleye		F2)		_		oodplain Soils ((F19)
	k (A10) (LRR N)		_X Depleted Mat Redox Dark S		(e)			(MLRA 13		(TE 10)
	Below Dark Surface	(A11)	Depleted Dark						v Dark Surface iin in Remarks)	
	k Surface (A12)	()	Redox Depres					other (Exple	in in Kernarks)	
	cky Mineral (S1) (LR	RR N,	Iron-Mangane			LRR N.				
	147, 148)		MLRA 136							
	eyed Matrix (S4)		Umbric Surfac	ce (F13) (MLRA 13	6, 122)	3	ndicators of h	ydrophytic vege	etation and
_ Sandy Re			Piedmont Floor						logy must be p	
	Aatrix (S6)		Red Parent M	aterial (F2	21) (MLR.	A 127, 147	')	unless disturb	ed or problema	atic.
estrictive La	yer (if observed):									
Type:									V	
Depth (inch	es):						Hydric S	oil Present?	Yes X	No
emarks:										

Project/Site: hussellville	Solar	City/County:	sellville		pling Date: 7	19/19
Applicant/Owner:	4 FREIGH Sol	ar, LLC		State: Y Sa	mpling Point:	WD/WE
Investigator(s): C. Ryundur	J. Schooldt	IMUSection, Townsh	ip, Range:		1	
Landform (hillslope, terrace, etc.):		Local relief (concave	e, convex, none	e):	Slope (%):
Subregion (LRR or MLRA):	Lat:		Long:		Datum:	NAD83
Soil Map Unit Name:				NWI classification:		
Are climatic / hydrologic conditions o	n the site typical for this tim	e of year? Yes	No (If	no, explain in Remark	(S.)	
Are Vegetation, Soil,	or Hydrology signif	ficantly disturbed?	Are "Normal C	Circumstances" presen	t? Yes	No
Are Vegetation, Soil,	or Hydrology natur	ally problematic?	(If needed, exp	plain any answers in R	(emarks.)	

Hydrophytic Vegetation Present?	Yes No X	In the Consolid Access
Hydric Soil Present?	Yes 🖌 No	Is the Sampled Area within a Wetland? Yes No
Wetland Hydrology Present?	Yes No	100
Remarks: WHANDSD and F		
HYDROLOGY		
Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is re		Surface Soil Cracks (B6)
Surface Water (A1)	True Aquatic Plants	
High Water Table (A2)	Hydrogen Sulfide Oc	
Saturation (A3) Water Marks (B1)		res on Living Roots (C3) Moss Trim Lines (B16)
Sediment Deposits (B2)	Presence of Reduce	
Drift Deposits (B3)	Thin Muck Surface (on in Tilled Soils (C6) Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Re	
Iron Deposits (B5)		Geomorphic Position (D2)
Inundation Visible on Aerial Imagery	(B7)	Shallow Aquitard (D3)
K Water-Stained Leaves (B9)		Microtopographic Relief (D4)
Aquatic Fauna (B13)		FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes X	No Depth (inches):	
Water Table Present? Yes	No K Depth (inches):	
Saturation Present? Yes Xes	No Depth (inches):	Wetland Hydrology Present? Yes No
Describe Recorded Data (stream gauge,	monitoring well, aerial photos, pre	vious inspections), if available:
Remarks:		

Sampling Point: WD/WE

Depth	Matrix			x Features				
(inches))-/4	<u>Color (moist)</u> 7.5/K5Q	70	$\frac{\text{Color (moist)}}{5/k}$	20	Type ¹	M	<u>dayy</u>	Remarks
	centration, D=Deple	tion, RM=	Reduced Matrix, MS	=Masked Sa	and Grai	ns.	² Location: Pl	_=Pore Lining, M=Matrix.
ydric Soil In							Indica	tors for Problematic Hydric Soils ³ :
_ Histosol (A	,		Dark Surface					cm Muck (A10) (MLRA 147)
Black Hist	ic (A3)		Polyvalue Be				148) C	oast Prairie Redox (A16)
	Sulfide (A4)		Thin Dark Su Loamy Gleye			7, 148)	Di	(MLRA 147, 148)
	ayers (A5)		Depleted Mat					edmont Floodplain Soils (F19)
	k (A10) (LRR N)		Redox Dark S					(MLRA 136, 147) ery Shallow Dark Surface (TF12)
	Below Dark Surface	(A11)	Depleted Dar		7)			ther (Explain in Remarks)
	Surface (A12)		Redox Depres		·			(Explain in Formation)
	cky Mineral (S1) (LR 147, 148)	RN,	Iron-Mangane MLRA 136	se Masses (F12) (LF	RR N,		
	yed Matrix (S4)		Umbric Surfac				³ Indi	cators of hydrophytic vegetation and
_ Sandy Red			Piedmont Floor				B) wet	land hydrology must be present.
_ Stripped M	, e		Red Parent M	aterial (F21)	(MLRA	127, 147) unle	ess disturbed or problematic.
	yer (if observed):							
Type:								~
Depth (inche	es):		_				Hydric Soil I	Present? Yes No
emarks:								

Project/Site: Russelluille Solar Applicant/Owner: Community Energy Sola	Sity/County: BUSSINILL	State: K Samplin	g Date: ling Point:
Investigator(s): C. Brender J. Shwicter Han:	Section, Township, Range:		
Landform (hillslope, terrace, etc.): Loc	al relief (concave, convex, nor	ne):	Slope (%):
Subregion (LRR or MLRA): Lat:	Long:		Datum:
Soil Map Unit Name:		NWI classification:	
Are climatic / hydrologic conditions on the site typical for this time of year	r? Yes X No	(If no, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology significantly of		Circumstances" present?	
Are Vegetation, Soil, or Hydrology naturally prof		xplain any answers in Rem	

Remarks:	Wetland Hydrology Present? Yes X No Remarks:				
Remarks:					
	Wetland Hydrology Present? Yes X No	Remarks:			

Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) True Aquatic Plants (B14) High Water Table (A2) Hydrogen Sulfide Odor (C1) Saturation (A3) Oxidized Rhizospheres on Living Roots (C3) Water Marks (B1) Presence of Reduced Iron (C4) Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6)		(4) Dry-Season Water Table (C2)	
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Ae Water-Stained Leaves (Aquatic Fauna (B13)		Thin Muck Surface (C7) Other (Explain in Remarks)	 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: Surface Water Present? Water Table Present? Saturation Present? (includes capillary fringe) Describe Recorded Data (str	Yes X No Yes No No Yes No Yes X No Yes	Depth (inches): 2 Depth (inches): 6 Depth (inches): 4 ing well, aerial photos, previous insp	Wetland Hydrology Present? Yes <u>No</u> No
Remarks:			

Sampling Point: $_WF$

Profile Description: (Describe to the de			r confirm the	absence of indi	cators.)
Depth <u>Matrix</u> (inches) Color (moist) %	Color (moist) %	Type ¹	Loc ² T	exture	Remarks
D-12 7.5VP 512 70	5YR 5/5/ 30				Remarks
a traip de 10	on of y ou		101 600	any chargery	
ype: C=Concentration, D=Depletion, RN ydric Soil Indicators:	Reduced Matrix, MS=Mask	ed Sand Grair	ns. "Loo	ation: PL=Pore I	
Histosol (A1)	Dark Surface (C7)				Problematic Hydric Soils ³ :
Histosol (A1) Histic Epipedon (A2)	Dark Surface (S7) Polyvalue Below Surface	face (SR) (MI	PA 147 140		k (A10) (MLRA 147)
Black Histic (A3)	Thin Dark Surface (S				irie Redox (A16) 147, 148)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix		, 140)		Floodplain Soils (F19)
Stratified Layers (A5)	Depleted Matrix (F3)	· ·			136, 147)
2 cm Muck (A10) (LRR N)	Redox Dark Surface				low Dark Surface (TF12)
Depleted Below Dark Surface (A11)	Depleted Dark Surface	ce (F7)			plain in Remarks)
Thick Dark Surface (A12)	Redox Depressions (
Sandy Mucky Mineral (S1) (LRR N,	Iron-Manganese Mas	ses (F12) (LR	RN,		
MLRA 147, 148)	MLRA 136)				
 Sandy Gleyed Matrix (S4) Sandy Redox (S5) 	Umbric Surface (F13)				f hydrophytic vegetation and
_ Stripped Matrix (S6)	Piedmont Floodplain Red Parent Material (drology must be present, urbed or problematic.
estrictive Layer (if observed):		(121) (MILINA	121, 141)	uniess dist.	rbed or problematic.
Type:					
Depth (inches):			Have	dric Soil Present	? Yes No
emarks:			пус	aric Soll Present	r res No
marks.					

Project/Site: <u>BUSELVille Solar</u> City/County: Applicant/Owner: <u>Community Energy Solar</u> , LLC	Russellville / Logar Sampling Date: 7/9 4-7/10/19
Applicant/Owner: Community Energy Solar, LLC	State: KY Sampling Point: WG/WL
Investigator(s): C. Brendel J. Schulterman Section, Tow	inship, Range:
Landform (hillslope, terrace, etc.): Local relief (con	cave, convex, none): Slope (%):
Subregion (LRR or MLRA): Lat:	Long: Datum: NAD73
Soil Map Unit Name: MUVIN SIH LOOUM / NUWWIK SiH	COMNWI classification:/A
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.)

Hydrophytic Vegetation Present?	Yes 🗡	No	Is the Sampled Area	
Hydric Soil Present?	Yes ×	No	within a Wetland?	Yes X No
Wetland Hydrology Present?	Yes 🗡	No		
Remarks: WUTLAND G and HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one 	e is required; check	all that apply) True Aquatic Plants (Hydrogen Sulfide Od Oxidized Rhizospher Presence of Reducer Recent Iron Reductio	or (C1) es on Living Roots (C3) f Iron (C4) n in Tilled Soils (C6)	Secondary Indicators (minimum of two required)
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Ima Water-Stained Leaves (B9) Aquatic Fauna (B13) Field Observations: Surface Water Present? Yes	agery (B7)	Thin Muck Surface (C Other (Explain in Rer Depth (inches):	narks)	 Saturation Visible on Aerial Imagery (C9) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
Water Table Present? Yes	No_⊻ ⊁_ No	Depth (inches):		lydrology Present? Yes <u>×</u> No
Describe Recorded Data (stream ga Remarks:	auge, monitoring w	ell, aerial photos, pre	vious inspections), if ava	ilable:

Sampling Point: NG/WL

	pth needed to document the indicator or confirm	n the absence of indicators.)
(inches) Color (moist) %	Color (moist) % Type ¹ Loc ²	Texture Remarks
N-14 7.6VR4/2 76	7.5VR5/10 25 C W	
with the pro-	tiste que as	Lamy dayy
	/	
	/	
	Reduced Matrix, MS=Masked Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :
Histosol (A1)	Dark Surface (S7)	2 cm Muck (A10) (MLRA 147)
Histic Epipedon (A2)	 Polyvalue Below Surface (S8) (MLRA 147, 	148) Coast Prairie Redox (A16)
Black Histic (A3)	Thin Dark Surface (S9) (MLRA 147, 148)	(MLRA 147, 148)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Piedmont Floodplain Soils (F19)
Stratified Layers (A5)	Depleted Matrix (F3)	(MLRA 136, 147)
2 cm Muck (A10) (LRR N)	Redox Dark Surface (F6)	 Very Shallow Dark Surface (TF12)
 Depleted Below Dark Surface (A11) Thick Dark Surface (A12) 	Depleted Dark Surface (F7)	 Other (Explain in Remarks)
Sandy Mucky Mineral (S1) (LRR N,	Redox Depressions (F8)	
MLRA 147, 148)	Iron-Manganese Masses (F12) (LRR N, MLRA 136)	
Sandy Gleyed Matrix (S4)	Umbric Surface (F13) (MLRA 136, 122)	3 Indiantees of budges built and a total
Sandy Redox (S5)	Piedmont Floodplain Soils (F19) (MLRA 14)	 ³Indicators of hydrophytic vegetation and wetland hydrology must be present,
Stripped Matrix (S6)	Red Parent Material (F21) (MLRA 127, 147	
Restrictive Layer (if observed):		aness distanced of problematic.
Type:		
Depth (inches):		Hydric Soil Present? Yes X
Remarks:		

Project/Site: Russellville Slar City/County: R Applicant/Owner: Community Energy Solar, LLC Investigator(s): C. Bandul, J. Schwill Mallection, Townshi	State: FY Sampling Point: WH
Landform (hillslope, terrace, etc.): Local relief (concave Subregion (LRR or MLRA): Lat:	e, convex, none): Slope (%): Long: Datum: NADE 4
	No (If no, explain in Remarks.)
	Are "Normal Circumstances" present? Yes No (If needed, explain any answers in Remarks.)

				1	
Hydrophytic Vegetation Pres Hydric Soil Present?		Yes X Yes X	No No	Is the Sampled Area within a Wetland?	Yes No
Wetland Hydrology Present	!	Yes X	No		
Remarks:					
HYDROLOGY					
Wetland Hydrology Indicat	ors:				Secondary Indicators (minimum of two required
Primary Indicators (minimum	of one is re	quired; chec	k all that apply)		Surface Soil Cracks (B6)
Surface Water (A1)			True Aquatic Plants	(B14)	 Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)			Hydrogen Sulfide Od		∠ Drainage Patterns (B10)
Saturation (A3)		×	Oxidized Rhizospher	res on Living Roots (C3)	
Water Marks (B1)		_	Presence of Reduce	d Iron (C4)	Dry-Season Water Table (C2)
Sediment Deposits (B2)			Recent Iron Reduction	on in Tilled Soils (C6)	Z Crayfish Burrows (C8)
Drift Deposits (B3)			Thin Muck Surface (C7)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)			Other (Explain in Re	marks)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)					Geomorphic Position (D2)
Inundation Visible on Ae		(B7)			Shallow Aquitard (D3)
Water-Stained Leaves (E	39)				Microtopographic Relief (D4)
Aquatic Fauna (B13)					FAC-Neutral Test (D5)
Field Observations:					
Surface Water Present?	Yes	_ No _/	Depth (inches):		
Water Table Present?	Yes	_ No _Y	Depth (inches): Depth (inches):		\vee
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre					lydrology Present? Yes X No
Seconde Recorded Data (Sile	sanı gauge,	monitoring w	en, aeriai priotos, pre	vious inspections), if ava	liable:
Remarks:					

Sampling Point: ______

Profile Description: (Describe to the de Depth Matrix	Redox Features	sector or sommin		
(inches) Color (moist) %		Type ¹ Loc ²	Texture	Remarks
0-12 JONR 5/2 70	7.5/R 5/6 30	A MA		Remarks
Una horn bla TO	TOTA OF a	C M	Coungelayey	
Type: C=Concentration, D=Depletion, RM	=Reduced Matrix MS=Masked S	and Grains	² Location: DL=Dou	re Lining, M=Matrix.
lydric Soil Indicators:	reduced matrix, mo-masked of	ing Grains.		for Problematic Hydric Soils ³ :
Histosol (A1)	Dark Surface (S7)			
Histic Epipedon (A2)	Polyvalue Below Surface	(S8) (MI PA 147		fuck (A10) (MLRA 147) Prairie Redox (A16)
Black Histic (A3)	Thin Dark Surface (S9) (N			RA 147, 148)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)			ont Floodplain Soils (F19)
Stratified Layers (A5)	Depleted Matrix (F3)			RA 136, 147)
2 cm Muck (A10) (LRR N)	Redox Dark Surface (F6)			hallow Dark Surface (TF12)
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F	7)		Explain in Remarks)
Thick Dark Surface (A12)	Redox Depressions (F8)	,		Explain in recitations)
Sandy Mucky Mineral (S1) (LRR N,	Iron-Manganese Masses (F12) (LRR N.		
MLRA 147, 148)	MLRA 136)			
Sandy Gleyed Matrix (S4)	Umbric Surface (F13) (ML	RA 136, 122)	³ Indicator	s of hydrophytic vegetation and
Sandy Redox (S5)	Piedmont Floodplain Soils			hydrology must be present.
Stripped Matrix (S6)	Red Parent Material (F21)			isturbed or problematic.
Restrictive Layer (if observed):			1	
Туре:				
Depth (inches):			Hydric Soil Prese	ent? Yes X No
Remarks:			injune contriest	
tomarka.				

Project/Site: <u>Russellville Solar</u> Applicant/Owner: <u>Community Energy Sola</u> Investigator(s): <u>C. Brendy</u> J. Schwill Otman	City/County: <u>RUSELVILE</u> r_LLC Section, Township, Range:	State: KY Sampling	g Date: _7/10/19 ling Point:W_T
Landform (hillslope, terrace, etc.): Loc	al relief (concave, convex, none	e):	Slope (%):
Subregion (LRR or MLRA): Lat:	Long:		Datum: NA-D63
Soil Map Unit Name: Nicholson Silt 100m, Oto	2 pycent slopes	NWI classification:	NIA
Are climatic / hydrologic conditions on the site typical for this time of year	1	f no, explain in Remarks.)	/ .
Are Vegetation, Soil, or Hydrology significantly		Circumstances" present?	Yes × No
Are Vegetation, Soil, or Hydrology naturally pro		plain any answers in Rema	

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes × Yes × Yes ×	No	Is the Sampled Area within a Wetland?	Yes	No
Remarks:					
IYDROLOGY					

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
	Dry-Season Water Table (C2)
Field Observations:	
Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches):	etland Hydrology Present? Yes <u></u> No s), if available:

ł

Sampling Point: WI

Depth Matrix	pth needed to document the indicator or confirm Redox Features	
(inches) Color (moist) %	Color (moist) % Type ¹ Loc ²	Texture Remarks
0-12 7.5YR5/2 80	104R 4/10 20 C M	Oamy Classey
		0-
Type: C=Concentration D=Doplation Rh	I=Reduced Matrix, MS=Masked Sand Grains.	2
lydric Soil Indicators:	I=Reduced Matrix, MS=Masked Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Histosol (A1)	Dark Surface (87)	Indicators for Problematic Hydric Soils ³ :
Histic Epipedon (A2)	Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 1)	2 cm Muck (A10) (MLRA 147)
Black Histic (A3)	Polyvalue Below Sunace (So) (MLRA 147, 147, 147, 148)	148) Coast Prairie Redox (A16) (MLRA 147, 148)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Piedmont Floodplain Soils (F19)
Stratified Layers (A5)	Depleted Matrix (F3)	(MLRA 136, 147)
2 cm Muck (A10) (LRR N)	Redox Dark Surface (F6)	Very Shallow Dark Surface (TF12)
 Depleted Below Dark Surface (A11) 	 Depleted Dark Surface (F7) 	Other (Explain in Remarks)
Thick Dark Surface (A12)	Redox Depressions (F8)	
Sandy Mucky Mineral (S1) (LRR N,	Iron-Manganese Masses (F12) (LRR N,	
MLRA 147, 148)	MLRA 136)	
Sandy Gleyed Matrix (S4)	Umbric Surface (F13) (MLRA 136, 122)	3 Indicators of hydrophytic vegetation and
_ Sandy Redox (S5) Stripped Matrix (S6)	Piedmont Floodplain Soils (F19) (MLRA 148 Red Parent Material (501) (MLRA 148	,
estrictive Layer (if observed):	Red Parent Material (F21) (MLRA 127, 147)	unless disturbed or problematic.
Type:		
		× ×
Depth (inches):		Hydric Soil Present? Yes No
Remarks:		
emarks:		

Project/Site: RUSSENVILLe Star City/County: Applicant/Owner: Community Star Energy, LLC	s	Logan Sampling Date: 7/10/19 tate: KY_ Sampling Point: WJ/WK
Investigator(s): C. Brundy, J. Schwigter Man Section, Tow	vnship, Range:	,
Landform (hillslope, terrace, etc.): Local relief (con	cave, convex, none):	Slope (%):
Subregion (LRR or MLRA): Lat:	Long:	Datum: NAD83
Soil Map Unit Name: LOW(UNCL SI'H LOOM		NWI classification: PF616
Are climatic / hydrologic conditions on the site typical for this time of year? Yes	/	o, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed?	Are "Normal Cire	cumstances" present? Yes 📈 No
Are Vegetation, Soil, or Hydrology naturally problematic?		in any answers in Remarks.)

Hydrophytic Vegetation Present?	./	No	Is the Sampled Area		
Hydric Soil Present?	~	No	within a Wetland?	Yes No	
Wetland Hydrology Present? Remarks:	Yes I	No			
Wetlands Jandk	4				
HYDROLOGY					
Wetland Hydrology Indicators:				Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is r	equired; check all	that apply)		Surface Soil Cracks (B6)	
Surface Water (A1)	Tru	e Aquatic Plants (B	14)	Sparsely Vegetated Concave Surface (B8)	
 High Water Table (A2) 	Hyd	drogen Sulfide Odor	r (C1)	Drainage Patterns (B10)	
Saturation (A3)	Oxi	dized Rhizospheres	s on Living Roots (C3)	Moss Trim Lines (B16)	
Water Marks (B1)	Pres	sence of Reduced I	Iron (C4)	Dry-Season Water Table (C2)	
Sediment Deposits (B2)	Rec	ent Iron Reduction	in Tilled Soils (C6)	Crayfish Burrows (C8)	
Drift Deposits (B3)		n Muck Surface (C7	,	Saturation Visible on Aerial Imagery (C9)	
Algal Mat or Crust (B4)	Oth	er (Explain in Rema			
	_ Iron Deposits (B5) Geomorphic Position (D2)				
Inundation Visible on Aerial Imager	y (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 X Dep	pth (inches):	_		
		pth (inches):			
(includes capillary fringe)	No De;			lydrology Present? Yes <u> </u>	
Describe Recorded Data (stream gauge	, monitoring well, a	aerial photos, previo	ous inspections), if avail	ilable:	
Remarks:					

Sampling Point: _______WK

Depth Matrix	Redox Features	
(inches) Color (moist) %	Color (moist) % Type ¹ Loc ²	Texture Remarks
D-14 IOYR 9/2 80	15YR 4/10 20 C M	Loumyclasty
1		0 0 2
Super CaCencentration D-Depletion Dt		2
ydric Soll Indicators:	=Reduced Matrix, MS=Masked Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Histosol (A1)	Dark Surface (CZ)	Indicators for Problematic Hydric Soils ³ :
Histosof (A1) Histic Epipedon (A2)	Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 1	2 cm Muck (A10) (MLRA 147)
Black Histic (A3)	Polyvalue Below Surface (S8) (MLRA 147, 1 Thin Dark Surface (S9) (MLRA 147, 148)	
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	(MLRA 147, 148) Piedmont Floodplain Soils (F19)
Stratified Layers (A5)	Depleted Matrix (F3)	(MLRA 136, 147)
2 cm Muck (A10) (LRR N)	Redox Dark Surface (F6)	Very Shallow Dark Surface (TF12)
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	Other (Explain in Remarks)
_ Thick Dark Surface (A12)	Redox Depressions (F8)	_ ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Sandy Mucky Mineral (S1) (LRR N,	Iron-Manganese Masses (F12) (LRR N,	
MLRA 147, 148)	MLRA 136)	
Sandy Gleyed Matrix (S4)	Umbric Surface (F13) (MLRA 136, 122)	³ Indicators of hydrophytic vegetation and
_ Sandy Redox (S5)	Piedmont Floodplain Soils (F19) (MLRA 148)	
_ Stripped Matrix (S6)	Red Parent Material (F21) (MLRA 127, 147)	unless disturbed or problematic.
estrictive Layer (if observed):		
Туре:		<u> </u>
Depth (inches):		Hydric Soil Present? Yes Xes No
emarks:		

Project/Site: Russellville Solar Applicant/Owner: Community Energy So Investigator(s): C. Bander J. Schwittern	City/County: <u><u><u>RUSSEllyi</u></u> <u>ar</u>, <u>LLC</u> <u>M</u> Section, Township, Range:</u>	State: K	ampling Date: <u>7/10/19</u> Sampling Point: <u>WM</u>
Landform (hillslope, terrace, etc.):	Local relief (concave, convex,	none):	Slope (%):
Subregion (LRR or MLRA): Lat:	Long:		Datum: AAD83
Soil Map Unit Name: Bayter Cherry Sitty clay 1	sam, 6 for 2 90 sla	as NWI classificati	on: NIA
Are climatic / hydrologic conditions on the site typical for this time			
Are Vegetation, Soil, or Hydrology signific		nal Circumstances" pre-	
Are Vegetation, Soil, or Hydrology natural	ly problematic? (If needed	d, explain any answers	in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No	Is the Sampled Area within a Wetland? Yes No
Remarks:		

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) High Water Table (A2) Hydrogen Sulfide Odor (C1) Saturation (A3) Oxidized Rhizospheres on Living Ro Water Marks (B1) Presence of Reduced Iron (C4) Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils Drift Deposits (B3) Thin Muck Surface (C7) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) 	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)
Aquatic Fauna (B13) Field Observations:	FAC-Neutral Test (D5)
Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): (includes capillary fringe) Depth (inches): Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection)	Netland Hydrology Present? Yes <u>No</u> No ns), if available:
Remarks:	

Sampling Point: WM

	pth needed to document the indicator or confirm	m the absence of indicators.)
(inches) Color (moist) %		Taxtura
0-12 2.6YR 5/6 80	544/6 20 C M	8Hydlay
¹ Type: C=Concentration, D=Depletion, RM Hydric Soil Indicators:	=Reduced Matrix, MS=Masked Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Histosol (A1)	Ded Coders (07)	Indicators for Problematic Hydric Soils ³ :
Histosof (A1) Histic Epipedon (A2)	Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147,	2 cm Muck (A10) (MLRA 147)
Black Histic (A3)	Foryvalue Below Surface (S8) (MLRA 147, Thin Dark Surface (S9) (MLRA 147, 148)	148) Coast Prairie Redox (A16) (MLRA 147, 148)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Piedmont Floodplain Soils (F19)
Stratified Layers (A5)	Depleted Matrix (F3)	(MLRA 136, 147)
2 cm Muck (A10) (LRR N)	Redox Dark Surface (F6)	Very Shallow Dark Surface (TF12)
 Depleted Below Dark Surface (A11) 	 Depleted Dark Surface (F7) 	Other (Explain in Remarks)
Thick Dark Surface (A12)	Redox Depressions (F8)	
Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	Iron-Manganese Masses (F12) (LRR N,	
Sandy Gleyed Matrix (S4)	MLRA 136) Umbric Surface (F13) (MLRA 136, 122)	Stadiostan of history have been
Sandy Redox (S5)	Piedmont Floodplain Soils (F19) (MLRA 144	³ Indicators of hydrophytic vegetation and
Stripped Matrix (S6)	Red Parent Material (F21) (MLRA 127, 147)	
Restrictive Layer (if observed):		/ concas claubed of problemate.
Type:		
Depth (inches):		Hydric Soil Present? Yes X
Remarks:		

Project/Site: BUSSELVILLEBAY	City/County: BUSSelluille/	State:	1/9/10
Applicant/Owner: Community Energy Solar,	LLC	State: Ky Sampling Point:	UP-I
Investigator(s): C. Brandel J. Schwertlerman	Section, Township, Range:		
Landform (hillslope, terrace, etc.): Lo	cal relief (concave, convex, none)	Slope	(%):
Subregion (LRR or MLRA): Lat:	Long:	Datum:	NADEB
Soil Map Unit Name: PEMBYOKE Silt LOOM		NWI classification:/A	
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes <u> </u>	io, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology significantly	disturbed? Are "Normal Ci	rcumstances" present? Yes 📉	No
Are Vegetation, Soil, or Hydrology naturally pro	oblematic? (If needed, exp	ain any answers in Remarks.)	

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	_ NoX
Remarks:					
	1.0				
Agricultural uplan	dS				

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; chec	k all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5)	k all that apply) True Aquatic Plants (B14) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living R Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soil Thin Muck Surface (C7) Other (Explain in Remarks)	 Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2)
 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):	
,	Depth (inches):	,
Saturation Present? Yes No (includes capillary fringe)	Depth (inches):	Wetland Hydrology Present? Yes No
Describe Recorded Data (stream gauge, monitoring v	vell, aerial photos, previous inspectio	ons), if available:
Remarks:		

	0 1
	110 1
Sampling Point:	UL-

Depth Matrix	th needed to document the indicator or confirm Redox Features	the absence of mulcators.)
inches) Color (moist) %	Color (moist) % Type ¹ Loc ²	Texture Remarks
-12 7.5VR 5/2 100		
ta som ga		
ype: C=Concentration, D=Depletion, RM= ydric Soil Indicators:	Reduced Matrix, MS=Masked Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
	Deck Outerer (07)	Indicators for Problematic Hydric Soils ³ :
Histosol (A1) Histic Epipedon (A2)	Dark Surface (S7) Dalwalue Below Surface (S8) (MLDA 147	2 cm Muck (A10) (MLRA 147)
Black Histic (A3)	Polyvalue Below Surface (S8) (MLRA 147, 1 Thin Dark Surface (S9) (MLRA 147, 148)	148) Coast Prairie Redox (A16) (MLRA 147, 148)
Hydrogen Sulfide (A4)	Loamy Gleved Matrix (F2)	Piedmont Floodplain Soils (F19)
Stratified Layers (A5)	Depleted Matrix (F3)	(MLRA 136, 147)
2 cm Muck (A10) (LRR N)	Redox Dark Surface (F6)	Very Shallow Dark Surface (TF12)
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	Other (Explain in Remarks)
Thick Dark Surface (A12)	Redox Depressions (F8)	
Sandy Mucky Mineral (S1) (LRR N,	Iron-Manganese Masses (F12) (LRR N,	
MLRA 147, 148)	MLRA 136)	
Sandy Gleyed Matrix (S4)	Umbric Surface (F13) (MLRA 136, 122)	³ Indicators of hydrophytic vegetation and
_ Sandy Redox (S5)	Piedmont Floodplain Soils (F19) (MLRA 148	
_ Stripped Matrix (S6) estrictive Layer (if observed):	Red Parent Material (F21) (MLRA 127, 147)	unless disturbed or problematic.
Type:		×
Depth (inches):		Hydric Soil Present? Yes No
emarks:		

Project/Site: Russellville Solar City/County Applicant/Owner: Community Energy Solar; LLC Investigator(s): C. Ryender, P. Churleren Man Section, To	State:	Sampling Date: 7/9/19 Sampling Point: UP-2
Landform (hillslope, terrace, etc.): Local relief (co Subregion (LRR or MLRA): Lat:	ncave, convex, none): Long:	Slope (%): Datum: NAD83
Soil Map Unit Name: <u>PEMbrock_SIF (back</u> Are climatic / hydrologic conditions on the site typical for this time of year? Yes		ssification:A
Are Vegetation, Soil, or Hydrology significantly disturbed? Are Vegetation, Soil, or Hydrology naturally problematic?		es" present? Yes X No

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X_	Is the Sampled Area within a Wetland?	Yes No _ X
Agricultural uplan				
HYDŘOLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one is	s required; che	ck all that apply)		Secondary Indicators (minimum of two required) Surface Soil Cracks (B6)
 Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imag Water-Stained Leaves (B9) Aquatic Fauna (B13) 	ery (B7)	Presence of Reduce	dor (C1) eres on Living Roots (C3) ed Iron (C4) ion in Tilled Soils (C6) (C7)	 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)
Water Table Present? Yes _	No X No X	_ Depth (inches): _ Depth (inches): _ Depth (inches): well, aerial photos, pr	Wetland H	lydrology Present? Yes No ilable:
Remarks:				

Com	-	lim m	D -	in the
Sam	n	lina	20	int:
Quin	100	111154	1 0	

OIL		Sampling Point: UP-
Profile Description: (Describe to the dep	th needed to document the indicator or confirm	n the absence of indicators.)
Depth Matrix	Redox Features	
(inches) Color (moist) %	Color (moist) % Type ¹ Loc ²	Texture Remarks
1-12 7,5VR512 100		
off off we		
vpe: C=Concentration D=Depletion RM	Reduced Matrix, MS=Masked Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
dric Soil Indicators:	research many, no maned band orbing.	Indicators for Problematic Hydric Soils ³ :
Histosol (A1)	Dark Surface (S7)	2 cm Muck (A10) (MLRA 147)
Histic Epipedon (A2)	 Polyvalue Below Surface (S8) (MLRA 147, 	
Black Histic (A3)	Polyvalde Below Surface (S8) (MLRA 147, Thin Dark Surface (S9) (MLRA 147, 148)	(MLRA 147, 148)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Piedmont Floodplain Soils (F19)
Stratified Layers (A5)	Depleted Matrix (F3)	(MLRA 136, 147)
2 cm Muck (A10) (LRR N)	Redox Dark Surface (F6)	Very Shallow Dark Surface (TF12)
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	Other (Explain in Remarks)
Thick Dark Surface (A12)	Redox Depressions (F8)	
Sandy Mucky Mineral (S1) (LRR N,	Iron-Manganese Masses (F12) (LRR N,	
MLRA 147, 148)	MLRA 136)	
Sandy Gleyed Matrix (S4)	Umbric Surface (F13) (MLRA 136, 122)	³ Indicators of hydrophytic vegetation and
Sandy Redox (S5)	Piedmont Floodplain Soils (F19) (MLRA 14	
Stripped Matrix (S6)	Red Parent Material (F21) (MLRA 127, 147	
estrictive Layer (if observed):		
Туре:		
Depth (inches):		Hydric Soil Present? Yes No
emarks:		

Project/Site: Russelluille Solar	City/County: Russelluill	1/ Logan Samplin	ng Date: Dling Point:3
Applicant/Owner: Community Energy Solar, U	.0	_ State: Ky_ Samp	ling Point: UP-3
Applicant/Owner: Community Energy Solar, U Investigator(s): C. Burdel J. Schwitzaman	Section, Township, Range: _		
Landform (hillslope, terrace, etc.): Lo	cal relief (concave, convex, no	one):	Slope (%):
Subregion (LRR or MLRA): Lat:	Long:		Datum: NAD83
Soil Map Unit Name: //wb/ok/ Silt loam		NWI classification:	
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes X. No	(If no, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology significantly	disturbed? Are "Norma	al Circumstances" present?	Yes X No
Are Vegetation, Soil, or Hydrology naturally pro	oblematic? (If needed,	explain any answers in Rem	narks.)

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes No	
Agricultural upands					
HYDROLOGY					
Wetland Hydrology Indicators:				Secondary Indicators (minimum of two re	quired)
	y (B7)	True Aquatic Plants (Hydrogen Sulfide Od Oxidized Rhizospher Presence of Reduced Recent Iron Reductio Thin Muck Surface (0 Other (Explain in Rer Depth (inches): Depth (inches):	or (C1) es on Living Roots (C3) d Iron (C4) n in Tilled Soils (C6) C7) narks) Wetland H	Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery for Stanted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)	(C9)
Remarks:	, monitoring w	en, aenar photos, pre	vious inspections), ir ava		

Sampling Point: ______3

Profile Description: (Describe to the dep	th needed to document the indicator or confir	m the absence of indi	cators.)
Depth Matrix	Redox Features		
(inches) Color (moist) %	Color (moist) % Type ¹ Loc ²	Texture	Remarks
D-12 7,54K 514 100			
¹ Type: C=Concentration, D=Depletion, RM=	Reduced Matrix, MS=Masked Sand Grains.	² Location: PL=Pore I	Lining, M=Matrix.
Hydric Soil Indicators:			Problematic Hydric Soils3:
Histosol (A1)	Dark Surface (S7)		k (A10) (MLRA 147)
Histic Epipedon (A2)	Polyvalue Below Surface (S8) (MLRA 147,		irie Redox (A16)
Black Histic (A3)	Thin Dark Surface (S9) (MLRA 147, 148)		147, 148)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)		Floodplain Soils (F19)
Stratified Layers (A5)	 Depleted Matrix (F3) 		136, 147)
2 cm Muck (A10) (LRR N)	Redox Dark Surface (F6)		low Dark Surface (TF12)
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)		plain in Remarks)
Thick Dark Surface (A12)	Redox Depressions (F8)		
Sandy Mucky Mineral (S1) (LRR N,	Iron-Manganese Masses (F12) (LRR N,		
MLRA 147, 148)	MLRA 136)		
Sandy Gleyed Matrix (S4)	Umbric Surface (F13) (MLRA 136, 122)		f hydrophytic vegetation and
Sandy Redox (S5)	Piedmont Floodplain Soils (F19) (MLRA 14		drology must be present,
Stripped Matrix (S6)	Red Parent Material (F21) (MLRA 127, 147) unless distu	urbed or problematic.
Restrictive Layer (if observed):			
Туре:			~
Depth (inches):		Hydric Soil Present	? Yes No
Remarks:			

Project/Site: Busselluille Slar	_ city/county: Russellville/Lagan	Sampling Date: 7/10/19
Applicant/Owner: Community Energy Star	State: KY	Sampling Point: UP-4
Investigator(s):	Section, Township, Range:	
Landform (hillslope, terrace, etc.):	Local relief (concave, convex, none):	Slope (%):
Subregion (LRR or MLRA): Lat:	Long:	Slope (%): Datum:NAD83
Subregion (LRR or MLRA): Lat: Lat:Lat:	NWI class	ification:/A
Are climatic / hydrologic conditions on the site typical for this time of	f year? Yes 🗡 No (If no, explain in	// '
Are Vegetation, Soil, or Hydrology significar	ntly disturbed? Are "Normal Circumstances	present? Yes X No
Are Vegetation, Soil, or Hydrology naturally		

Hydrophytic Vegetation Prese		No	Is the Sampled Area		~
Hydric Soil Present?		No_X	within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No _X			
Fallsted uplan	nds				
Wetland Hydrology Indicator	rs:			Secondary Indicato	rs (minimum of two required)
Primary Indicators (minimum o	of one is required	; check all that apply)		Surface Soil Cr	
Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aeria Water-Stained Leaves (B9 Aquatic Fauna (B13) Field Observations: Surface Water Present? Water Table Present? Water Table Present? Saturation Present? Cincludes capillary fringe)) Yes No Yes No Yes No	Presence of Red Recent Iron Red Thin Muck Surfac Other (Explain in Depth (inches): Depth (inches): Depth (inches):	e Odor (C1) oheres on Living Roots (C3) uced Iron (C4) uction in Tilled Soils (C6) ce (C7) Remarks) Wetland H	Drainage Patter Moss Trim Line Dry-Season Wa Crayfish Burrow Saturation Visib Stunted or Stree Geomorphic Po Shallow Aquitar Microtopograph FAC-Neutral Te	es (B16) ater Table (C2) ws (C8) ble on Aerial Imagery (C9) ssed Plants (D1) osition (D2) rd (D3) hic Relief (D4)
Remarks:					

		0	. 1
Sampling	Point:	WF-	9

Profile Description: (Describe to the dep	th needed to document the indicator or confirm	n the absence	of indicators.)
Depth Matrix	Redox Features		
(inches) <u>Color (moist)</u> % D-12 7,5/R5/4 100	Color (moist) %Type ¹ Loc ²	Texture	Remarks
Type: C=Concentration, D=Depletion, RM=	Reduced Matrix, MS=Masked Sand Grains	² Location: PL	=Pore Lining, M=Matrix.
Hydric Soil Indicators:			ors for Problematic Hydric Soils3:
 Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) 2 cm Muck (A10) (LRR N) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sándy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Restrictive Layer (if observed): Type:	 Dark Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Loamy Gleyed Matrix (F2) Depleted Matrix (F3) Redox Dark Surface (F6) Depleted Dark Surface (F7) Redox Depressions (F8) Iron-Manganese Masses (F12) (LRR N, MLRA 136) Umbric Surface (F13) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 147, 147, 147) 	2 co 148) Co (Pie (Ver Oth ⁹ Indic: 8) wetla) unle:	m Muck (A10) (MLRA 147) ast Prairie Redox (A16) (MLRA 147, 148) admont Floodplain Soils (F19) (MLRA 136, 147) ry Shallow Dark Surface (TF12) her (Explain in Remarks) ators of hydrophytic vegetation and and hydrology must be present, as disturbed or problematic.
Depth (inches):	_	Hydric Soil P	resent? Yes No

Project/Site: Busselfuille Solar		1/Logan	Sampling Date: 7/10/19 Sampling Point: UP-5
Applicant/Owner. Community Energy Eda	CILLC	State: KY	Sampling Point: UP-5
Investigator(s): C. Brendel , J. Schwittem	MSection, Township, Range: _		
Landform (hillslope, terrace, etc.):	Local relief (concave, convex, no	one):	Slope (%):
Subregion (LRR or MLRA): Lat:	Long:		Datum: NAD83
Soil Map Unit Name: Nicholson Silt Gam		NWI classifica	ation: N/A
Are climatic / hydrologic conditions on the site typical for this time o	f year? Yes X No	(If no, explain in Re	emarks.)
Are Vegetation, Soil, or Hydrology signification			resent? Yes X No
Are Vegetation, Soil, or Hydrology naturally	problematic? (If needed,	explain any answer	s in Remarks.)

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes	No No	Is the Sampled Area within a Wetland?	Yes No X			
Wetland Hydrology Present?	Yes		within a wettand:	NO			
Remarks:	165						
Forested uplance	ł						
HYDROLOGY							
Wetland Hydrology Indicators:				Secondary Indicators (minimum of two required)			
Primary Indicators (minimum of one is	required; che	ck all that apply)		Surface Soil Cracks (B6)			
Surface Water (A1)		True Aquatic Plants	(B14)	Sparsely Vegetated Concave Surface (B8)			
High Water Table (A2)	_	Hydrogen Sulfide Od	for (C1)	Drainage Patterns (B10)			
Saturation (A3)	_	Oxidized Rhizospher	res on Living Roots (C3)	Moss Trim Lines (B16)			
Water Marks (B1)	_	Presence of Reduce	d Iron (C4)	Dry-Season Water Table (C2)			
Sediment Deposits (B2)	_	Recent Iron Reduction	on in Tilled Soils (C6)	Crayfish Burrows (C8)			
Drift Deposits (B3)	_	Thin Muck Surface (Saturation Visible on Aerial Imagery (C9)			
Algal Mat or Crust (B4)	_	Other (Explain in Re	marks)	Stunted or Stressed Plants (D1)			
Iron Deposits (B5)				Geomorphic Position (D2)			
Inundation Visible on Aerial Image	ery (B7)			Shallow Aquitard (D3)			
Water-Stained Leaves (B9)				Microtopographic Relief (D4)			
Aquatic Fauna (B13)				FAC-Neutral Test (D5)			
Field Observations:	. V						
Surface Water Present? Yes	No	_ Depth (inches): Depth (inches):					
Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge		_ Depth (inches):		lydrology Present? Yes No			
Describe Recorded Data (stream gaug	je, monitoring	well, aerial priotos, pre	evious inspections), il ava	lable.			
Remarks:							

-			
Sam	plipa	Doint	٩.
odili	DILLIO	Point:	

Profile Des	ription: (Describe)	to the depth	needed to document the indicator of	confirm the	abconce of last	Sampling	
		to the depth		confirm the	absence of Indi	cators.)	
Depth (inches)	Color (moist)	0/0	Redox Features Color (moist) % Type ¹	Loc ² T	exture	Rema	de o
)-12	7.51R54	100	color (molat) Type	LOC IN	exture	Rema	rks
) 10	J.SIK99	100					
	/						
		etion, RM=R	educed Matrix, MS=Masked Sand Grain	ns. ² Loc	ation: PL=Pore I	ining, M=Mat	rix.
lydric Soil I	ndicators:				Indicators for	Problematic	Hydric Soils ³ :
_ Histosol	(A1)		Dark Surface (S7)		2 cm Muc	k (A10) (MLR	A 147)
_ Histic Ep	ipedon (A2)		Polyvalue Below Surface (S8) (ML)			irie Redox (A	-
Black His			Thin Dark Surface (S9) (MLRA 147	7, 148)	(MLRA	147, 148)	
_ , .	n Sulfide (A4)		Loamy Gleyed Matrix (F2)		Piedmont	Floodplain Sc	oils (F19)
_	Layers (A5)		 Depleted Matrix (F3) 		(MLRA	136, 147)	
	ck (A10) (LRR N)		Redox Dark Surface (F6)		Very Shall	low Dark Surfa	ace (TF12)
	Below Dark Surface	(A11)	 Depleted Dark Surface (F7) 		Other (Ex	plain in Rema	rks)
	rk Surface (A12)		Redox Depressions (F8)				
	ucky Mineral (S1) (LI	RR N,	Iron-Manganese Masses (F12) (LR	RN,			
	147, 148)		MLRA 136)				
	leyed Matrix (S4)		Umbric Surface (F13) (MLRA 136,				vegetation and
	edox (S5) Matrix (S6)		Piedmont Floodplain Soils (F19) (M Red Dependencial (S24) (M) Participation			drology must b	
	ayer (if observed):		Red Parent Material (F21) (MLRA	127, 147)	unless distu	irbed or proble	ematic.
	ayer (il observeu).						
Type:			-				1
Depth (inc	hes):		-	Hyd	ric Soil Present	? Yes	No 🔀
emarks:							