# Attachment 4

Wetlands Delineation

# Wetland Delineation Report

Rhudes Creek Solar Project
Hardin County, Kentucky

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# 1.0 INTRODUCTION

## 1.1 Project Description

ibV Energy Partners (ibV) is proposing to construct a new, 100 $MW_{ac}$ solar facility at the Rhudes Creek Solar, LLC Site (the Project Site), an approximately 1,480-acre site made up of multiple parcels situated around South Black Branch Road in Cecilia, Hardin County, Kentucky (please refer to the Site Location map, Figure 1).

## 1.2 Project Purpose

The purpose of this wetland and waterway delineation was to map all wetlands and surface waters (including rivers, streams, ponds, lakes, etc.) regardless of jurisdictional status as well as other features such as, swales, ditches, gullies, etc. Documentation of these features will be used for design and avoidance purposes. Specific tasks performed include a field delineation of all potential state and federal jurisdictional areas within the Project Site, a subsequent mapping survey of jurisdictional area boundaries utilizing a handheld Global Positioning System (GPS) with sub-meter accuracy, and detailed descriptions of jurisdictional areas based on hydrology, vegetation, and soil data collected in the field. All features documented during the Site visits are included in this report.

# 2.0 REGULATORY AUTHORITIES

## 2.1 Waters of the United States

As defined by the United States Army Corps of Engineers (USACE), Waters of the United States (WOTUS) include all lakes, ponds, streams (intermittent and perennial), and wetlands regulated under Sections 401 and 404 of the Clean Water Act. Wetlands are defined as "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." The Kentucky Energy and Environment Cabinet, Division of Water, Water Quality Certification Section is responsible for the section 401 water quality permitting process.

The USACE also regulates navigable waters under Section 10 of the Rivers and Harbor Act (33 U.S.C. 401 et seq.), which requires a permit from the USACE to construct any structure in or over any navigable WOTUS, as well as any proposed action that would alter or disturb (such as excavation/dredging or deposition of materials) these waters. If the proposed structure or activity affects the course, location, condition, or capacity of the navigable water, even if the

proposed activity is outside the boundaries of the waterbody, a permit from the USACE is required.

### 2.2 Kentucky Wetlands and Buffer Rules

Currently there is no state-specific program in Kentucky for regulating wetlands. Municipalities, townships, and counties may have local zoning authority over certain areas or types of wetlands and waterways. The determination that a wetland or waterway is subject to regulatory jurisdiction is made independently by the federal, state, and local agencies. There are no state or local riparian buffer rules associated with the watershed where the Project Site is located.

## 3.0 PROJECT SETTING

### 3.1 Resources

A number of resources were reviewed and utilized in supporting this delineation, including United States Geological Survey (USGS) topographic mapping (Cecilia, KY and Howe Valley, KY 7.5 minute quadrangles)[1]; United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) wetlands mapper[2]; United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey for Hardin County, KY[3]; the NRCS List of Hydric Soils of the State of Kentucky; the Federal Emergency Management Agency (FEMA) Flood Insurance maps[4]; the USGS National Hydrography Dataset (NHD)[5]; and recent aerial photography[6].

### 3.2 Ecological Region

The Project Site is located in the Mitchell Plain Ecological Region of Kentucky (Level IV ecoregion 71b)[7]. Ecological Regions are large areas of similar climate where ecological communities occur in predictable patterns.

The rolling Mitchell Plain in the western part of the Interior Plateau (Level III Ecoregion 71). The Mitchell Plain is underlain by Mississippian limestones and is characterized by well-developed karst, low relief, and extensive agriculture. Sinkholes, ponds, springs, sinkhole wetlands, subterranean drainage, and dry valleys occur. Potential natural vegetation is a mosaic of bluestem prairie and oak-hickory forest. Today cropland and pastureland is extensive, mixed oak forest are found on steep slopes, and pin oak, swamp white oak, and sweetgum grow in poorly drained areas.

## 3.3 Soils

Soil survey maps provided by the USDA NRCS were reviewed prior to conducting the delineation fieldwork to determine the extent of mapped hydric soils within the Project Site. A total of 23 soil types occur within the Project Site (See Table 1, below and Figure 2). According to the National List of Hydric Soils prepared by the USDA NRCS[8], six of the soils mapped within the Project Site are classified as having the potential for hydric inclusions. The mapped soil types range from very poorly drained to well drained soils. The soil series descriptions and drainage classifications for the Project Site are provided in Table 1 (below).

**Table 1. Soils mapped at the Rhudes Creek Solar Project Site**

| Symbol | Soil Name | % Hydric | Hydrologic Soil Group | Drainage Class | Farmland Classification |
|---|---|---|---|---|---|
| **Partially Hydric Soils[1]** | | | | | |
| Dn | Dunning silty clay loam, 0 to 2 percent slopes, frequently flooded | 95 | C/D | Very poorly drained | Prime farmland if drained and either protected from flooding or not frequently flooded in growing season |
| GnB | Gatton silt loam, 2 to 6 percent slopes | 1 | D | Moderately well drained | All areas are prime farmland |
| Lc | Lawrence silt loam, 0 to 2 percent slope | 4 | D | Somewhat poorly drained | Prime farmland if drained |
| Mv | Melvin silt loam | 90 | B/D | Poorly drained | Prime farmland if drained and either protected from flooding or not frequently flooded in growing season |
| Nb | Newark silt loam, 0 to 2 percent slopes, frequently flooded | 2 | B/D | Somewhat poorly drained | Prime farmland if drained and either protected from flooding or not frequently flooded in growing season |

| Table 1. Soils mapped at the Rhudes Creek Solar Project Site | | | | | |
|---|---|---|---|---|---|
| **Symbol** | **Soil Name** | **% Hydric** | **Hydrologic Soil Group** | **Drainage Class** | **Farmland Classification** |
| No | Nolin silt loam, 0 to 2 percent slopes, frequently flooded | 2 | B | Well drained | Prime farmland if drained and either protected from flooding or not frequently flooded in growing season |
| **Non-hydric Soils** | | | | | |
| BrA | Bedford silt loam, 0 to 2 percent slopes | 0 | C/D | Moderately well drained | All areas are prime farmland |
| BrB | Bedford silt loam, 2 to 6 percent slopes | 0 | C/D | Moderately well drained | All areas are prime farmland |
| CrB | Crider silt loam, 2 to 6 slopes | 0 | B | Well drained | All areas are prime farmland |
| CrC | Crider silt loam, 6 to 12 percent slopes | 0 | B | Well drained | Farmland of statewide importance |
| CsC | Cumberland silt loam, 6 to 12 percent slopes | 0 | B | Well drained | Farmland of statewide importance |
| CsD | Cumberland silt loam, 12 to 20 percent slopes | 0 | B | Well drained | Not prime farmland |
| CtD3 | Cumberland silty clay loam, 12 to 20 percent slopes, severely eroded | 0 | B | Well drained | Not prime farmland |
| FdC | Fedonia-Rock outcrop complex, 6 to 20 percent slopes | 0 | C | Well drained | Not prime farmland |
| Hu | Huntington silt loam | 0 | B | Well drained | Prime farmland if drained and either protected from flooding or not frequently flooded in growing season |
| OtA | Otwood silt loam, 0 to 2 percent, rarely flooded | 0 | C/D | Well drained | All areas are prime farmland |
| PmB | Pembroke silt loam, 2 to 6 percent slopes | 0 | B | Well drained | All areas are prime farmland |

| Table 1. Soils mapped at the Rhudes Creek Solar Project Site | | | | | |
|---|---|---|---|---|---|
| **Symbol** | **Soil Name** | **% Hydric** | **Hydrologic Soil Group** | **Drainage Class** | **Farmland Classification** |
| PmC | Pembroke silt loam, 6 to 12 percent slopes | 0 | B | Well drained | Farmland of statewide importance |
| SnB | Sonora silt loam, 2 to 6 percent slopes | 0 | B | Well drained | All areas are prime farmland |
| SnC | Sonora silt loam, 6 to 12 percent slopes | 0 | B | Well drained | Farmland of statewide importance |
| SnC3 | Sonora silt loam, 6 to 12 percent slopes, severely eroded | 0 | B | Well drained | Not prime farmland |
| VtD3 | Vertrees silty clay loam, 6 to 20 percent slopes, severely eroded | 0 | C | Well drained | Not prime farmland |
| WbD | Waynesboro loam, 12 to 20 percent slopes | 0 | B | Well drained | Not prime farmland |

[1]Hydric classification taken from the *National List of Hydric Soils* (USDA NRCS 2015) which includes both major and minor (small) percentages for map units; therefore, in some cases most of the map unit may not be hydric. Also, some components may be phases of soil series that have a range of characteristics that both meet and do not meet hydric indicator requirements; therefore, only a portion of that component's concept may in fact be hydric. This can lead to a discrepancy between hydric classification and drainage class (USDA NRCS 2015).

## 4.0 HYDROLOGY

The Project Site is located within the Lower Valley Hydrologic Unit Code-12 (HUC-12) 051100011004 and Dorsey Run-Nolin River HUC-12 051100011006[5]. Black Branch and several unnamed tributaries flow through the site (Figure 3).

According to the FEMA Flood Insurance Rate Map (FIRM), the entire project site is classified as Zone X which is an area of minimal flood hazard[4].

There are two National Wetlands Inventory (NWI) wetlands and 24 NWI ponds mapped on the Project Site[2].

## 5.0 METHODOLOGY

Prior to initiating field investigations, TRC conducted a desktop review of publicly available data to determine the presence of mapped wetlands and waterbodies within the Project Site. TRC wetland scientists subsequently carried out field investigations within the Project Site to identify wetlands, waterbodies, and other surface waters. Surveys were performed in accordance with

criteria set forth in the USACE 1987 Wetlands Delineation Manual[9] and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region[10]. Data were recorded on USACE Routine Wetland Determination forms (Appendix B). Boundaries of observed wetland and water features were flagged with pink ribbon with a hand-written resource label and flag number, and their locations were recorded with a Samsung Galaxy Tab E Tablet connected to a Geode GPS unit capable of sub-meter accuracy.

Hydrophytic vegetation was assessed by identifying plant species and their assigned wetland indicator rating of obligate, facultative wet, facultative, facultative upland, and upland according to the 2016 National Wetland Plant List[11]. Vegetation in both upland and wetland communities were characterized using areal dominance method, which utilizes a of 30-foot radius around the sample location for tree cover, 15-foot radius for sapling and shrub cover, and five-foot radius for herbaceous plant cover.

Hydric soil indicators were determined using soil characteristics such as color matrix, hue, evidence of redox features which may include indicators such as saturation, gleyed matrix, mottling, hydrogen sulfide odor, and organic/peat layers present. Soil test pits were dug using a shovel to a depth of approximately 20-inches, or refusal due to the presence of a hardpan layer, rock, or fill materials. Soil color was described using the Munsell Color book[12]; texture described using USDA hand-texture methods; and the presence/absence of redoximorphic features, including depletions and concentrations, was recorded.

Hydrology was determined based on a number of indicators that are divided into two categories, primary and secondary. The USACE manual and Regional Supplement defines hydrology as present when at least one primary indicator or two secondary indicators are identified. One primary indicator is sufficient to determine if hydrology is present; however, if these are absent then two or more of the secondary indicators are required to determine hydrology. If other probable hydrology evidence was found then this was subsequently documented on the data form.

Additionally, surface waters (including waterbody channels and drainageways identified during field surveys) were investigated and characterized. To the extent practicable, these waters were investigated to determine drainage patterns and potential connections to other WOTUS. The criteria for a jurisdictional waterbody is the presence of a defined bed and bank, indicative of an active channel that exhibits stable characteristics[13]. The boundary of a jurisdictional waterbody extends to the ordinary high-water mark (OHWM) or to the boundaries of an adjacent wetland. All waterbodies within the Study Area were recorded and documented for future consultation efforts. Information collected included, but was not limited to, flow type, substrate type, and channel width and depth. Waterbody flow types are defined as follows:

- Perennial – A waterbody expected to have continuous year-round flow, with a well-defined OHWM;

- Intermittent – A waterbody expected to have seasonal flow with seasonal flow defined as continuous flow for a consecutive period of at least three months, with a defined OHWM;

- Ephemeral – A waterbody expected to only have flow of short duration after a rainfall event, often without a well-defined OHWM and channel;

- Pond, Lake, Open Water – A basin or area of non-flowing water where water is expected to pool on at least a seasonal basis defined as pooling for a consecutive period of at least three months, with a well-defined OHWM, hydrophilic vegetation may be present, in some cases man-made or altered.

- Ditch – A manmade channel excavated within upland locations with the apparent intent to drain wetlands, ponds, or other waterbodies to aid in agriculture, ranching, or other land management activities. For the purpose of this wetland report, all ditch features are presumed to be non-jurisdictional aquatic resources. Final determination of jurisdiction, however, rests with the USACE.

Waterbodies within the proposed study area were identified by the presence of an OHWM. The top of bank or the centerline of the channels or edge of ponds was geographically located by using Global Positioning System (GPS) with sub-meter accuracy. When a wetland or waterbody boundary was inaccessible, publicly available aerial photographs were used to determine the boundary. Information was collected on each waterbody, including flow type (e.g., perennial, intermittent, or ephemeral), substrate type (mud/silt, sand, gravel, large rock, boulder, and/or bedrock), and channel width and depth.

Representative photographs were taken of each delineated wetland community and waterbody within the Project Site and are included in Appendix A.

## 6.0 RESULTS

Based upon field investigations, 38 wetlands, 48 streams, 11 ponds, and 35 upland drainage ditches were identified within the approximately 1480-acre Project Site between December 9, 2019 and December 20, 2019 (See Figures 4 and 5).

Approximately 0.76% (11.28 acres) of the 1480-acre Project Site is classified as wetland. The remainder of the Project Site contains primarily agricultural field uplands and mixed hardwood forested uplands. Tables 2 and 3 (below) contain the complete inventory of wetlands and

waterbodies delineated at the Project Site, including high-level descriptions of each aquatic resource. The completed wetland determination forms are provided in Appendix B.

**Table 2. Wetlands Delineated at the Rhudes Creek Solar Site**

| Wetland Field Designation | Field Designated Cowardin Classification[1] | Delineated Area (acres) | Dominant Wetland Vegetation | Hydrological Indicators | TRC's Professional Opinion of Jurisdictional Status[2] | Watershed (HUC12) | Description |
|---|---|---|---|---|---|---|---|
| **WETLANDS** | | | | | | | |
| W-JLB-01 | PEM | 0.36 | *Panicum virgatum, Juncus effusus* | Surface Water (A1), High Water Table (A2), Saturation (A3), Oxidized Rhizospheres on Living Roots (C3) | Potentially Jurisdictional | 051100011004 | W-JLB-01 is situated between D-JLB-01 and D-JLB-02 which continues off property. |
| W-JLB-02 | PEM | 0.64 | *Panicum virgatum* | Surface Water (A1), High Water Table (A2), Saturation (A3), Oxidized Rhizospheres on Living Roots (C3) | Potentially isolated | 051100011004 | W-JLB-02 covers a low area of an agricultural field and borders the railroad that intersects the eastern portion of the northern parcels. |
| W-JLB-03 | PEM | 0.07 | *Alopecurus pratensis, Panicum virgatum* | High Water Table (A2), Saturation (A3), Oxidized Rhizospheres on Living Roots (C3) | Potentially Isolated | 051100011004 | W-JLB-03 is located just south of W-JLB-01 and does not have a nexus with any other feature. |
| W-JLB-04 | PFO | 0.03 | *Celtis laevigata, Ulmus americana, Quercus palustris* | Oxidized Rhizospheres on Living Roots (C3), Surface Soil Cracks (B6), Geomorphic Position (D2) | Potentially Jurisdictional | 051100011006 | W-JLB-04 is located between S-JLB-04 and S-JLB-01. S-JLB-01 flows offsite approx. 140 feet SW of W-JLB-04. |
| W-JLB-05 | PFO | 0.09 | *Platanus occidentalis, Ulmus americana* | Drainage Patterns (B10), Stunted or Stressed Plants (D1), Geomorphic Position (D2) | Potentially Jurisdictional | 051100011006 | W-JLB-05 is located between S-JLB-04 and S-JLB-09. S-JLB-09 enters the site approx. 200 feet NE of W-JLB-05. |
| W-JLB-06 | PFO | 0.71 | *Acer rubrum, Platanus occidentalis* | High Water Table (A2), Saturation (A3), Oxidized Rhizospheres on Living Roots (C3) | Potentially Jurisdictional | 051100011006 | W-JLB-06 is located adjacent to S. Black Branch Rd and has multiple ephemeral streams flowing through it. S-JLB-09 flows into W-JLB-06 from off site. |
| W-JLB-07 | PEM | 0.06 | *Solidago gigantea, Carex grayi, Xanthium strumarium* | High Water Table (A2), Saturation (A3), Drainage Patterns (B10) | Potentially Jurisdicitonal | 051100011004 | W-JLB-07 is located in an agricultural field immediately adjacent to waterbody WB-JLB-02. |
| W-JLB-08 | PFO | 0.12 | *Acer rubrum, Platanus occidentalis, Liquidambar stryraciflua, Quercus alba, Smilax rotundifolia* | High Water Table (A2), Saturation (A3), Oxidized Rhizospheres on Living Roots (C3), Water-Stained Leaves | Potentially isolated | 051100011006 | Located across S Black Branch Road from W-JLB-06. No features with a direct surface connection were observed. |
| W-JLB-09 | PEM | 0.10 | *Xanthium strumarium, Solidago gigantea, Setaria pumila, Rumex crispus* | Saturation (A3), Drainage Patterns (B10), Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2) | Potentially Jurisdictional | 051100011006 | Wetland fringe of S-JLB-15, an unnamed tributary to Black Branch (S-MRR-29). |
| W-JLB-10 | PFO | 0.002 | *Acer rubrum, Platanus occidentalis, Chasmanthium latifolium* | Surface Water (A1), High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9) | Jurisdictional | 051100011006 | Located along Black Branch (S-MRR-29). |
| W-JLB-11 | PFO | 0.002 | *Acer rubrum, Platanus occidentalis, Chasmanthium latifolium* | Surface Water (A1), High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9) | Jurisdictional | 051100011006 | Located along Black Branch (S-MRR-29). |

| Wetland Field Designation | Field Designated Cowardin Classification[1] | Delineated Area (acres) | Dominant Wetland Vegetation | Hydrological Indicators | TRC's Professional Opinion of Jurisdictional Status[2] | Watershed (HUC12) | Description |
|---|---|---|---|---|---|---|---|
| W-JLB-12 | PEM | 0.63 | *Solidago gigantea, Ludwigia alternifolia, Dichanthelium clandestinum, Carex grayi, Symphyotrichum novae-angliae* | Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2) | Potentially Jurisdictional | 051100011006 | Wetland fringe of S-JLB-17, an unnamed tributary to Black Branch (S-MRR-29). |
| W-JLB-12 | PSS | 0.33 | *Acer rubrum, Cornus amomum, Alnus serrulate, Solidago gigantea, Ludwigia alternifolia, Juncus effusus* | High Water Table (A2), Saturation (A3), Crayfish Burrows (C8), Saturation Visible Imagery (C9) | Potentially Jurisdictional | 051100011006 | Wetland fringe of S-JLB-17, an unnamed tributary to Black Branch (S-MRR-29). Direct connection to W-JLB-12 PEM. |
| W-JLB-13 | PFO | 0.05 | *Acer rubrum, Ulmus americana, Liquidambar styraciflua, Solidago gigantea, Symphyotrichum novae-angliae* | High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9) | Potentially Jurisdictional | 051100011006 | Wetland fringe of S-JLB-17, an unnamed tributary to Black Branch (S-MRR-29). Direct connection to W-JLB-13 PEM. |
| W-JLB-13 | PEM | 0.60 | *Solidago gigantea, Carex grayi, Ludwigia alternifolia, Symphyotrichum novae-angliae, Carex lurida* | High Water Table (A2), Saturation (A3), Drainage Patterns (B10), Saturation Visible on Aerial Imagery (C9) | Potentially Jurisdictional | 051100011006 | Wetland fringe of S-JLB-17, an unnamed tributary to Black Branch (S-MRR-29). Direct connection to W-JLB-12 PEM and W-JLB-13 PFO. |
| W-JLB-14 | PEM | 0.57 | *Persicaria pensylvanica, Solidago gigantea, Setaria pumila, Juncus effusus* | High Water Table (A2), Saturation (A3), Drainage Patterns (B10), Saturation Visible on Aerial Imagery (C9) | Potentially Jurisdictional | 051100011006 | Direct connection with S-JLB-18, and intermittent stream with a connection to S-JLB-14, a tributary to Black Branch. |
| W-JLB-15 | PEM | 0.21 | *Setaria pumila, Cyperus esculentus, Xanthium strumarium, Juncus effusus* | High Water Table (A2), Saturation (A3), Drainage Patterns (B10), Saturation Visible on Aerial Imagery (C9) | Jurisdictional | 051100011006 | Adjacent but not directly connected to Black Branch in the southern portion of the parcel that Black Branch transects. |
| W-JLB-16 | PEM | 0.44 | *Setaria pumila, Cyperus esculentus, Xanthium strumarium, Juncus effusus, Carex grayi* | High Water Table (A2), Saturation (A3), Drainage Patterns (B10), Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2) | Potentially Jurisdictional | 051100011006 | Emergent wetland hydrologically connected to W-JLB-15 through S-JLB-19. |
| W-JLB-17 | PFO | 0.04 | *Platanus occidentalis, Ulmus americana, Acer rubrum, Carya glabra, Liquidambar styraciflua, Poa palustris* | High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9), Drainage Patterns (B10), Geomorphic Position (D2) | Jurisdictional | 051100011006 | Located in the NW corner of the southernmost parcel. Connected to S-MRR-01 via S-MRR-06. |
| W-MRR-01 | PFO | 0.24 | *Acer saccharinum, Celtis occidentalis, Carex bromoides, Carex intumescens* | Saturation (A3), Water Marks (B1), Sparsely Vegetated Concave Surface (B8), Drainage Patterns (B10) | Potentially Jurisdictional | 051100011006 | Adjacent to but does not have a surface connection with S-MRR-01 in the southernmost parcel. |

| Wetland Field Designation | Field Designated Cowardin Classification[1] | Delineated Area (acres) | Dominant Wetland Vegetation | Hydrological Indicators | TRC's Professional Opinion of Jurisdictional Status[2] | Watershed (HUC12) | Description |
|---|---|---|---|---|---|---|---|
| W-MRR-02 | PFO | 0.23 | *Acer saccharinum, Carex intumescens, Rosa palustris, Cinna arundinacea* | Surface Water (A1), Saturation (A3), Water Marks (B1), Water-Stained Leaves (B9) | Potentially Jurisdictional | 051100011006 | Adjacent to W-MRR-01 and S-MRR-01, but not directly connected to either. |
| W-MRR-03 | PEM | 0.35 | *Platanus occidentalis, Quercus palustris, Solidago gigantea, Carex bromoides, Cinna arundinacea* | Saturation (A3), High Water Table (A2), Drift Deposits (B3), Stunted or Stressed Plants (D1) | Jurisdictional | 051100011006 | Adjacent to S-MRR-01 in the NW part of the southernmost parcel. Connected to S-MRR-01 by S-MRR-05. |
| W-MRR-04 | PEM | 1.29 | *Acer saccharinum, Platanus occidentalis, Carex bromoides, Carex grayi, Solidago gigantea, Elymus virginicus* | Saturation (A3), High Water Table (A2), Surface Water (A1), Sparsely Vegetated Concave Surface (B8) | Potentially Jurisdictional | 051100011006 | North of W-MRR-03 and W-JLB-17. Adjacent to S-MRR-01 but lacks a direct surface connection. |
| W-MRR-05 | PEM | 0.76 | *Quercus palustris, Juncus effusus, Scirpus cyperinus, Symphyotrichum pilosum* | Surface Water (A1), High Water Table (A2), Saturation (A3), Geomorphic Position (D2) | Potentially Non-Jurisdictional | 051100011006 | Located on the western boundary of the project site. No jurisdictional aquatic resources were observed near W-MRR-05. |
| W-MRR-06 | PEM | 0.17 | *Echinochloa frumentacea, Setaria faberi* | Surface Water (A1), Saturation (A3), Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2) | Potentially Non-Jurisdictional | 051100011006 | Located in the center of an agricultural field. W-MRR-06 has no above-ground hydrologic connection to another aquatic resource. |
| W-MRR-07 | PEM | 0.09 | *Echinochloa frumentacea, Setaria faberi* | Saturation (A3), Surface Water (A1), Geomorphic Position (D2), Saturation Visible on Aerial Imagery (C9) | Potentially Non-Jurisdictional | 051100011006 | Located in the center of an agricultural field. W-MRR-07 has no above-ground hydrologic connection to another aquatic resource. |
| W-MRR-08 | PEM | 0.07 | *Echinochloa frumentacea, Setaria faberi* | Surface Water (A1), Saturation (A3), Algal Mat or Crust (B4), Geomorphic Position (D2), Saturation Visible on Aerial Imagery (C9) | Potentially Non-Jurisdictional | 051100011006 | Located in the center of an agricultural field. W-MRR-08 has no above-ground hydrologic connection to another aquatic resource. |
| W-MRR-11 | PEM | 0.17 | *Echinochloa frumentacea, Setaria faberi* | Surface Water (A1), Saturation (A3), Inundation Visible on Aerial Imagery (B7), Geomorphic Position | Potentially Non-Jurisdictional | 051100011006 | Located in the center of an agricultural field. W-MRR-11 has no above-ground hydrologic connection to another aquatic resource. |
| W-MRR-12 | PEM | 0.72 | *Echinochloa frumentacea, Andropogon gerardii* | Surface Water (A1), Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2) | Potentially Non-Jurisdictional | 051100011006 | Located near the western boundary of the northwestern-most parcel. Follows along ephemeral stream S-MRR-21. |

| Wetland Field Designation | Field Designated Cowardin Classification[1] | Delineated Area (acres) | Dominant Wetland Vegetation | Hydrological Indicators | TRC's Professional Opinion of Jurisdictional Status[2] | Watershed (HUC12) | Description |
|---|---|---|---|---|---|---|---|
| W-MRR-13 | PEM | 1.01 | *Typha angustifolia, Juncus effusus, Scirpus cyperinus* | Surface Water (A1), Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2) | Potentially Jurisdictional | 051100011006 | Located in an agricultural field near the center of the northwestern-most parcel adjacent to waterbody WB-MRR-13. |
| W-MRR-14 | PFO | 0.41 | *Quercus palustris, Ulmus americana, Carex grayi* | Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2) | Potentially Jurisdictional | 051100011006 | Located on the western boundary of the northwestern-most parcel. Adjacent to stream S-MRR-18. |
| W-MRR-15 | PFO | 0.03 | *Carex grayi, Juncus effusus* | Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2) | Potentially Jurisdictional | 051100011006 | Located on the western boundary of the northwestern-most parcel. Adjacent to stream S-MRR-18. |
| W-MRR-16 | PFO | 0.09 | *Quercus palustris, Carex grayi* | Saturation (A3), Drainage Patterns (B10), Stunted Plants (D1), Geomorphic Position (D2) | Potentially Jurisdictional | 051100011006 | Located on the western boundary of the northwestern-most parcel. Adjacent to stream S-MRR-18. |
| W-MRR-17 | PEM | 0.35 | *Typha angustifolia* | Surface Water (A1), High Water Table (A2), Saturation (A3), Geomorphic Position (D2) | Potentially Jurisdictional | 051100011006 | Located east of W-RCS-13 in an agriculture field. Wetland fringe of stream S-MRR-18. |
| W-MRR-18 | PEM | 0.18 | *Typha angustifolia, Carex grayi, Juncus effusus* | Surface Water (A1), Satuation (A3), Geomorphic Position (D2), Drainage Patterns (B10) | Potentially Jurisdictional | 051100011006 | Located in an agricultural field. Wetland fringe of stream S-MRR-18. |
| W-MRR-19 | PEM | 0.12 | *Echinochloa frumentacea* | Saturation (A3), Inundation Visible on Aerial Imagery (B7), Geomorphic Position (D2), Saturation Visible on Aerial Imagery (C9) | Potentially Jurisdictional | 051100011006 | Located in an agricultural field just north of and connected to stream S-MRR-18 via D-MRR-19. |
| W-MRR-20 | PFO | 0.21 | *Quercus palustris, Carex garyi, Carex bromoides, Solidago gigantea* | Surface Water (A1), Saturation (A3), Water Marks (B1), Sparsely Vegetated Concave Surface (B8) | Potentially Jurisdictional | 051100011006 | Located towards the northern boundary of the project area adjacent to, but not directly connected to Black Branch. |
| **Total wetland acreage:** | | **11.27** | | | | | |

[1] Cowardin et al. 1979 categories include: Palustrine Forested (PFO), Palustrine Scrub-Shrub (PSS), and Palustrine Emergent (PEM). [2] Based on TRC's professional experience.

**Table 3. Waterbodies Delineated at the Rhudes Creek Solar Site**

| Waterbody Field Designation | Resource amount (ft or ac) | Stream Type | Waterbody Name[1] | Watershed (HUC12) | TRC's Professional Opinion of Jurisdictional Status[2] | Description |
|---|---|---|---|---|---|---|
| S-JLB-01 | 183.63 ft | Intermittent | N/A | 051100011006 | Jurisdictional | Intermittent stream originating from W-JLB-04 and flowing SW offsite. |
| S-JLB-02 | 22.33 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Ephemeral stream that flows into S-JLB-01. |
| S-JLB-03 | 32.87 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Ephemeral stream that flows into S-JLB-01. |
| S-JLB-04 | 373.6 ft | Intermittent | N/A | 051100011006 | Jurisdictional | Intermittent stream which flows southwest out of W-JLB-05 and connects it to W-JLB-04. |
| S-JLB-05 | 31.19 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Ephemeral tributary to S-JLB-04. |
| S-JLB-06 | 28.88 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Ephemeral tributary to S-JLB-04. |
| S-JLB-07 | 41.78 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Ephemeral stream that flows SW into W-JLB-05. |
| S-JLB-08 | 259.8 ft | Intermittent | N/A | 051100011006 | Jurisdictional | Intermittent stream that flows in from offsite and into W-JLB-05. |
| S-JLB-09 | 43.03 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Ephemeral tributary to S-JLB-12, flowing in from offsite. |
| S-JLB-10 | 318 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Appears to be ephemeral drainage from upland agricultural field to the north. |
| S-JLB-11 | 183.86 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Appears to be ephemeral drainage from upland agricultural field to the north. |

**Table 3. Waterbodies Delineated at the Rhudes Creek Solar Site**

| Waterbody Field Designation | Resource amount (ft or ac) | Stream Type | Waterbody Name[1] | Watershed (HUC12) | TRC's Professional Opinion of Jurisdictional Status[2] | Description |
|---|---|---|---|---|---|---|
| S-JLB-12 | 356.5 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Ephemeral stream flowing through the center of W-JLB-06. Flows out of WB-JLB-04. |
| S-JLB-13 | 105.13 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Ephemeral tributary to S-JLB-12. |
| S-JLB-14 | 1617.15 ft | Intermittent | Unnamed tributary to S-MRR-29 | 051100011006 | Jurisdictional | Intermittent stream flowing southwest in from offsite under S Black Branch Road. Has a connection with Black Branch (S-MRR-29). |
| S-JLB-15 | 671.59 ft | Intermittent | Unnamed tributary to S-MRR-29 | 051100011006 | Jurisdictional | Intermittent stream flowing east into Black Branch. Fringed by W-JLB-12. |
| S-JLB-16 | 30.68 ft | Ephemeral | Unnamed tributary to S-MRR-29 | 051100011006 | Potentially Jurisdictional | Ephemeral tributary flowing southwest into Black Branch. |
| S-JLB-17 | 2022.77 ft | Intermittent | Unnamed tributary to S-MRR-29 | 051100011006 | Jurisdictional | Intermittent tributary flowing southwest into black branch. Fringed by W-JLB-12 and W-JLB-13. |
| S-JLB-18 | 680.66 ft | Intermittent | Unnamed tributary to S-JLB-14 | 051100011006 | Jurisdictional | Intermittent tributary to S-JLB-18. Flows southwest out of W-JLB-14. |
| S-JLB-19 | 223.39 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Connects W-JLB-15 to W-JLB-16. |

**Table 3. Waterbodies Delineated at the Rhudes Creek Solar Site**

| Waterbody Field Designation | Resource amount (ft or ac) | Stream Type | Waterbody Name[1] | Watershed (HUC12) | TRC's Professional Opinion of Jurisdictional Status[2] | Description |
|---|---|---|---|---|---|---|
| S-MRR-01 | 9059.35 ft | Perennial | N/A | 051100011006 | Jurisdictional | Perennial stream flowing through the entirety of the southern parcels. Fringed by multiple delineated wetlands. May have an offsite connection with Black Branch. |
| S-MRR-02 | 125.36 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-01. |
| S-MRR-03 | 122.52 ft | Perennial | Unnamed tributary to S-MRR-01 | 051100011006 | Jurisdictional | Perennial tributary to S-MRR-01. Flows in from offsite. |
| S-MRR-04 | 29.48 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-01. |
| S-MRR-05 | 110.28 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-01. Connects W-MRR-03 to S-MRR-01 |
| S-MRR-06 | 29.28 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-01. Connects W-JLB-17 to S-MRR-01. |
| S-MRR-07 | 870.93 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-01. |
| S-MRR-08 | 222.08 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-09. |
| S-MRR-09 | 2070.20 ft | Intermittent | N/A | 051100011006 | Jurisdictional | Intermittent tributary to S-MRR-01. |
| S-MRR-10 | 452.30 ft | Intermittent | N/A | 051100011006 | Jurisdictional | Intermittent tributary to S-MRR-09. Flows out of WB-MRR-02. |
| S-MRR-11 | 1404.40 ft | Intermittent | N/A | 051100011006 | Jurisdictional | Intermittent tributary to S-MRR-01. |

**Table 3. Waterbodies Delineated at the Rhudes Creek Solar Site**

| Waterbody Field Designation | Resource amount (ft or ac) | Stream Type | Waterbody Name[1] | Watershed (HUC12) | TRC's Professional Opinion of Jurisdictional Status[2] | Description |
|---|---|---|---|---|---|---|
| S-MRR-12 | 410.25 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-11. |
| S-MRR-13 | 81.02 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-14. |
| S-MRR-14 | 514.84 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-15. |
| S-MRR-15 | 961.74 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-01. |
| S-MRR-16 | 794.05 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral stream flowing north out of WB-MRR-02. |
| S-MRR-18 | 2218.41 ft | Perennial | Unnamed tributary to Black Branch | 051100011006 | Jurisdictional | Perennial stream transecting the northwestern most parcel. Fringed by multiple wetlands. Flows east into Black Branch (S-MRR-29). |
| S-MRR-19 | 223.39 ft | Intermittent | N/A | 051100011006 | Jurisdictional | Intermittent tributary to S-MRR-18. |
| S-MRR-20 | 273.17 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral portion of S-MRR-19. |
| S-MRR-21 | 782.06 ft | Ephemeral | N/A | 051100011006 | Non-Jurisdictional | Ephemeral stream flowing north out of W-MRR-12. |
| S-MRR-22 | 308.47 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral tributary to S-MRR-18. |
| S-MRR-23 | 641.10 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral stream drainage agricultural field into W-MRR-13. |

**Table 3. Waterbodies Delineated at the Rhudes Creek Solar Site**

| Waterbody Field Designation | Resource amount (ft or ac) | Stream Type | Waterbody Name[1] | Watershed (HUC12) | TRC's Professional Opinion of Jurisdictional Status[2] | Description |
|---|---|---|---|---|---|---|
| S-MRR-24 | 617.06 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral stream drainage agricultural field into W-MRR-13. |
| S-MRR-25 | 1261.48 ft | Intermittent | N/A | 051100011006 | Jurisdictional | Intermittent tributary flowing north from WB-MRR-13 and fringed by W-MRR-13. |
| S-MRR-26 | 460.43 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral stream drainage agricultural field into W-MRR-13. |
| S-MRR-27 | 40.79 ft | Ephemeral | N/A | 051100011006 | Potentially Jurisdictional | Ephemeral stream drainage agricultural field into W-MRR-13. |
| S-MRR-28 | 533.02 ft | Ephemeral | N/A | 051100011006 | Non-jurisdictional | Apparently isolated ephemeral stream in an agricultural field. |
| S-MRR-29 | 6247.17 ft | Perennial | Black Branch | 051100011006 | Jurisdictional | Black Branch. Flows south through multiple parcels. Fringed by multiple wetlands and fed by many streams on site. |
| WB-JLB-1 | 0.16 acres | Pond | N/A | 051100011006 | Non-Jurisdictional | Isolated, seasonally flooded depression in an agricultural field. |
| WB-JLB-2 | 0.31 acres | Pond | N/A | 051100011006 | Non-Jurisdictional | Bermed, ponded depression in an agricultural field. Bordered by W-JLB-07 and D-JLB-01. |
| WB-JLB-3 | 7.49 acres | Waterbody | N/A | 051100011006 | Potentially Jurisdictional | Large frequently flooded area of an agricultural field. Potentially impounded by a railroad track. |

**Table 3. Waterbodies Delineated at the Rhudes Creek Solar Site**

| Waterbody Field Designation | Resource amount (ft or ac) | Stream Type | Waterbody Name[1] | Watershed (HUC12) | TRC's Professional Opinion of Jurisdictional Status[2] | Description |
|---|---|---|---|---|---|---|
| WB-JLB-4 | 0.02 acres | Pond | N/A | 051100011006 | Potentially Jurisdictional | Small ponded depression at the head of S-JLB-12. |
| WB-JLB-5 | 0.22 acres | Pond | N/A | 051100011006 | Non-Jurisdictional | Small pond reportedly dug for agricultural purposes. |
| WB-JLB-6 | 0.11 acres | Pond | N/A | 051100011006 | Non-Jurisdictional | Small pond reportedly dug for agricultural purposes. |
| WB-JLB-7 | 0.05 acres | Pond | N/A | 051100011006 | Potentially Jurisdictional | Small ponded depression fed by W-JLB-08. |
| WB-MRR-2 | 1.68 acres | Waterbody | N/A | 051100011006 | Potentially Jurisdictional | Medium-sized pond. S-MRR-16 and S-MRR-10 flow out from it. |
| WB-MRR-13 | 0.34 acres | Waterbody | N/A | 051100011006 | Potentially Jurisdictional | Ponded area of wetland W-MRR-13. |
| WB-TJR-1 | 0.35 acres | Pond | N/A | 051100011006 | Non-Jurisdictional | Small, isolated agricultural pond. |
| WB-TJR-2 | 0.57 acres | Pond | N/A | 051100011006 | Non-jurisdictional | Small, isolated agricultural pond. |
| D-JLB-01 | 884.97 ft | Ditch | N/A | 051100011004 | Non-Jurisdictional | Non-JD excavated ditch. Extends southwest from W-JLB-01. |
| D-JLB-02 | 769.5 ft | Ditch | N/A | 051100011004 | Non-Jurisdictional | Non-JD dug ditch. Extends southeast to and from W-JLB-01. |
| D-JLB-03 | 564.11 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD dug ditch. Isolated in an agricultural field. |
| D-JLB-04 | 1155.38 ft | Ditch | N/A | 051100011004 | Non-Jurisdictional | Non-JD dug ditch. Extends northwest from WB-JLB-03. |

**Table 3. Waterbodies Delineated at the Rhudes Creek Solar Site**

| Waterbody Field Designation | Resource amount (ft or ac) | Stream Type | Waterbody Name[1] | Watershed (HUC12) | TRC's Professional Opinion of Jurisdictional Status[2] | Description |
|---|---|---|---|---|---|---|
| D-JLB-05 | 156.62 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-JLB-06 | 262.19 ft | Ditch | N/A | 051100011004 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-JLB-07 | 608.63 ft | Ditch | N/A | 051100011004 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-JLB-08 | 43.80 ft | Ditch | N/A | 051100011004 | Non-Jurisdictional | Non-JD excavated ditch. Extends west out of WB-JLB-06. |
| D-JLB-09 | 101.84 ft | Ditch | N/A | 051100011004 | Non-Jurisdictional | Non-JD dug excavated. Isolated in an agricultural field. |
| D-JLB-10 | 692.25 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-JLB-11 | 1672.4 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-JLB-12 | 494.08 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-JLB-13 | 122.61 ft | Ditch | N/A | 051100011004 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-01 | 258.53 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-02 | 462.86 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-03 | 597.22 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |

**Table 3. Waterbodies Delineated at the Rhudes Creek Solar Site**

| Waterbody Field Designation | Resource amount (ft or ac) | Stream Type | Waterbody Name[1] | Watershed (HUC12) | TRC's Professional Opinion of Jurisdictional Status[2] | Description |
|---|---|---|---|---|---|---|
| D-MRR-04 | 511.15 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-05 | 1732.82 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Connected to D-MRR-06. |
| D-MRR-06 | 60.69 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Connected to D-MRR-05. |
| D-MRR-07 | 17.06 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-08 | 1004.11 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-09 | 160.64 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-10 | 1028.26 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-11 | 210.28 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-12 | 316.06 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-13 | 282.64 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-14 | 179.89 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-15 | 172.69 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |

**Table 3. Waterbodies Delineated at the Rhudes Creek Solar Site**

| Waterbody Field Designation | Resource amount (ft or ac) | Stream Type | Waterbody Name[1] | Watershed (HUC12) | TRC's Professional Opinion of Jurisdictional Status[2] | Description |
|---|---|---|---|---|---|---|
| D-MRR-16 | 711.31 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-17 | 890.41 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-MRR-18 | 130.93 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Connected to D-MRR-19. |
| D-MRR-19 | 143.86 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Connected to D-MRR-18. |
| D-TJR-01 | 379.10 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |
| D-TJR-18 | 432.55 ft | Ditch | N/A | 051100011006 | Non-Jurisdictional | Non-JD excavated ditch. Isolated in an agricultural field. |

[1]Waterbody name according to Federal and State Mapped Water Resources/FEMA Floodplain Mapping.
[2]Field determination of whether a stream falls under USACE Jurisdiction based on the definition of Waters of the United States (WOTUS)

| **Totals:** | |
|---|---|
| Streams | 39,701.8 ft |
| Waterbodies | 14.98 acres |
| Ditches | 17,211.4 ft |

## 7.0 CONCLUSIONS

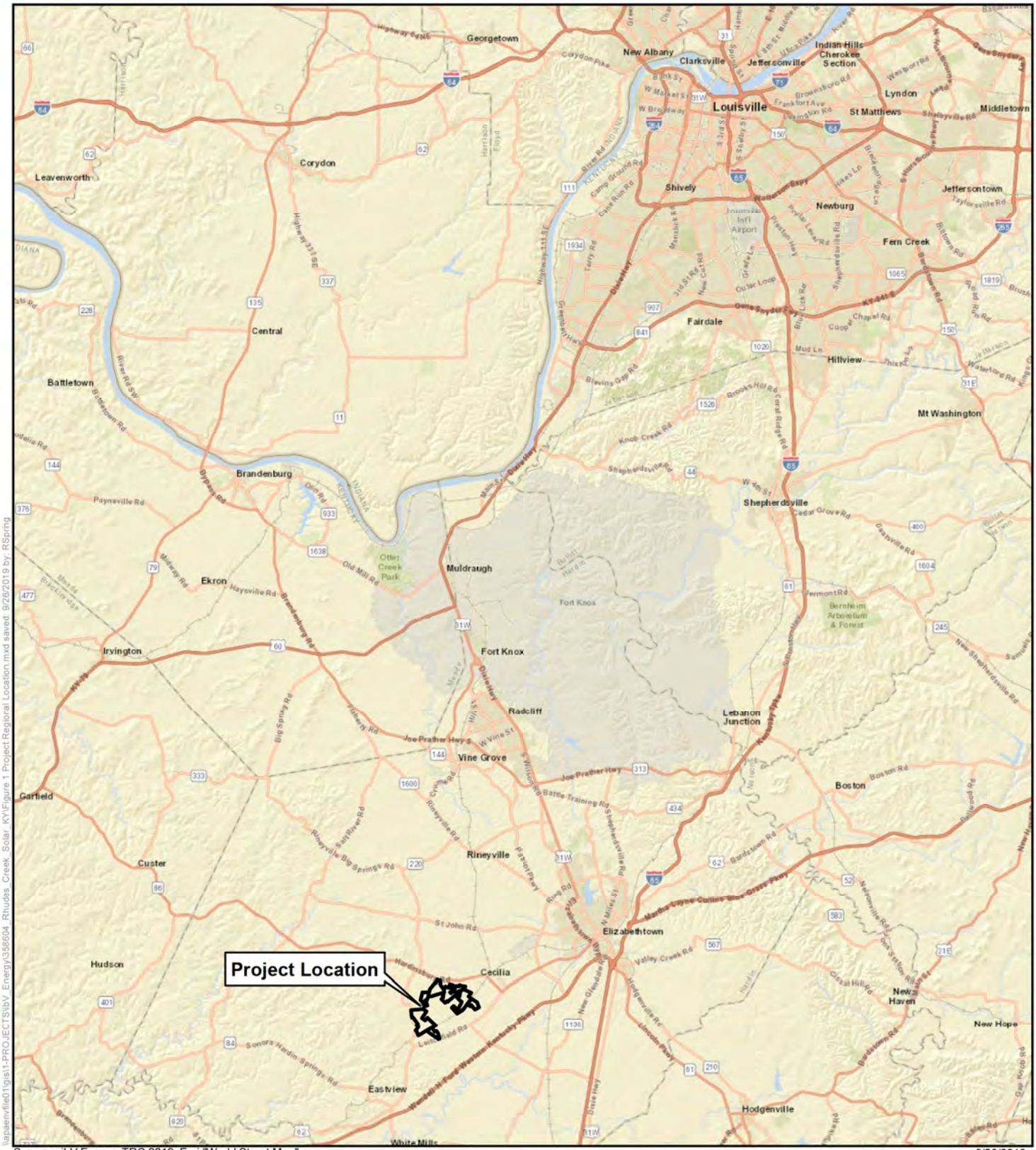
TRC's analysis suggests that all wetlands with an observable surface connection to Waters of the US (WOTUS) within Project Site likely fall under USACE jurisdiction. Wetlands with no apparent jurisdictional connection (refer to Table 3 for individual assessments) appear to be isolated wetlands. However, due to proximity to jurisdictional features, some of the wetlands referred to as non-jurisdictional may be claimed as aquatic resources under USACE jurisdiction during agency review. The project site also contains agricultural tiles under multiple fields which affect the natural hydrology. These tiles may also affect the jurisdictional status of some features.

Streams and waterbodies with a hydrological connection to S-MRR-29 (Black Branch) and S-MRR-01 likely fall under USACE jurisdiction. It is TRC's professional opinion that all features delineated as ditches do not fall under USACE jurisdiction. However, a confirmation of this delineation and a final determination of jurisdictional status for wetlands and waterbodies onsite must be made by the USACE.

## 8.0 REFERENCES


1. U.S. Geological Survey. topoView Viewer. https://ngmdb.usgs.gov/topoview/. Published 2018. Accessed July 25, 2018.
2. U. S. Fish and Wildlife Service. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. https://www.fws.gov/wetlands/. Published 2010. Accessed July 23, 2018.
3. Natural Resources Conservation Service. Web Soil Survey. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Published 2018. Accessed July 23, 2018.
4. Federal Emergency Management Agency. FEMA's National Flood Hazard Layer. https://fema.maps.arcgis.com/home/item.html?id=cbe088e7c8704464aa0fc34eb99e7f30. Published 2018. Accessed July 23, 2018.
5. U.S. Geological Survey. National Hydrography Dataset. https://nhd.usgs.gov/data.html. Published 2019. Accessed July 23, 2018.
6. ESRI. World Imagery [Basemap]. Scale not given. https://www.arcgis.com/home/item.html?id=10df2279f9684e4a9f6a7f08febac2a9. Published 2020.
7. U.S. Environmental Protection Agency. Level III and IV Ecoregions of the Continental United States. 2013. https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states. Accessed July 23, 2018.
8. Natural Resources Conservation Service. List of Hydric Soils. https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/. Published 2018. Accessed July 23, 2018.
9. U.S. Army Corps of Engineers. U.S. Army Corps of Engineers Wetlands Delineation Manual. 1987. https://www.lrh.usace.army.mil/Portals/38/docs/USACE 87 Wetland Delineation Manual.pdf. Accessed July 23, 2018.
10. U.S. Army Corps of Engineers. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0). 2012. https://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/EMP_Piedmont_v2b.pdf. Accessed July 23, 2018.
11. Lichvar, R.W., D.L. Banks, W.N. Kirchner, N.C. M. The National Wetland Plant List: 2016 wetland ratings. *Phytoneuron*. 2016;2016-30:1-17. doi:ISSN 2153 733X
12. Munsell Color. *Munsell Soil Color Charts : With Genuine Munsell Color Chips*. 2009 year revised. Grand Rapids, MI : Munsell Color, 2010.; 2010. https://search.library.wisc.edu/catalog/9910109259802121.
13. U.S. Army Corps of Engineers. *Regulatory Guidance Letter No 05-05.*; 2005. https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll9/id/1253. Accessed September 4, 2018.

# FIGURES




\\apaenvfile01\gis1\PROJECTS\ibV_Energy\368604_Rhudes_Creek_Solar_KY\Figure 1 Project Regional Location.mxd saved 9/26/2019 by: RSpring

Sources: ibV Energy, TRC 2019, Esri "World Street Map"

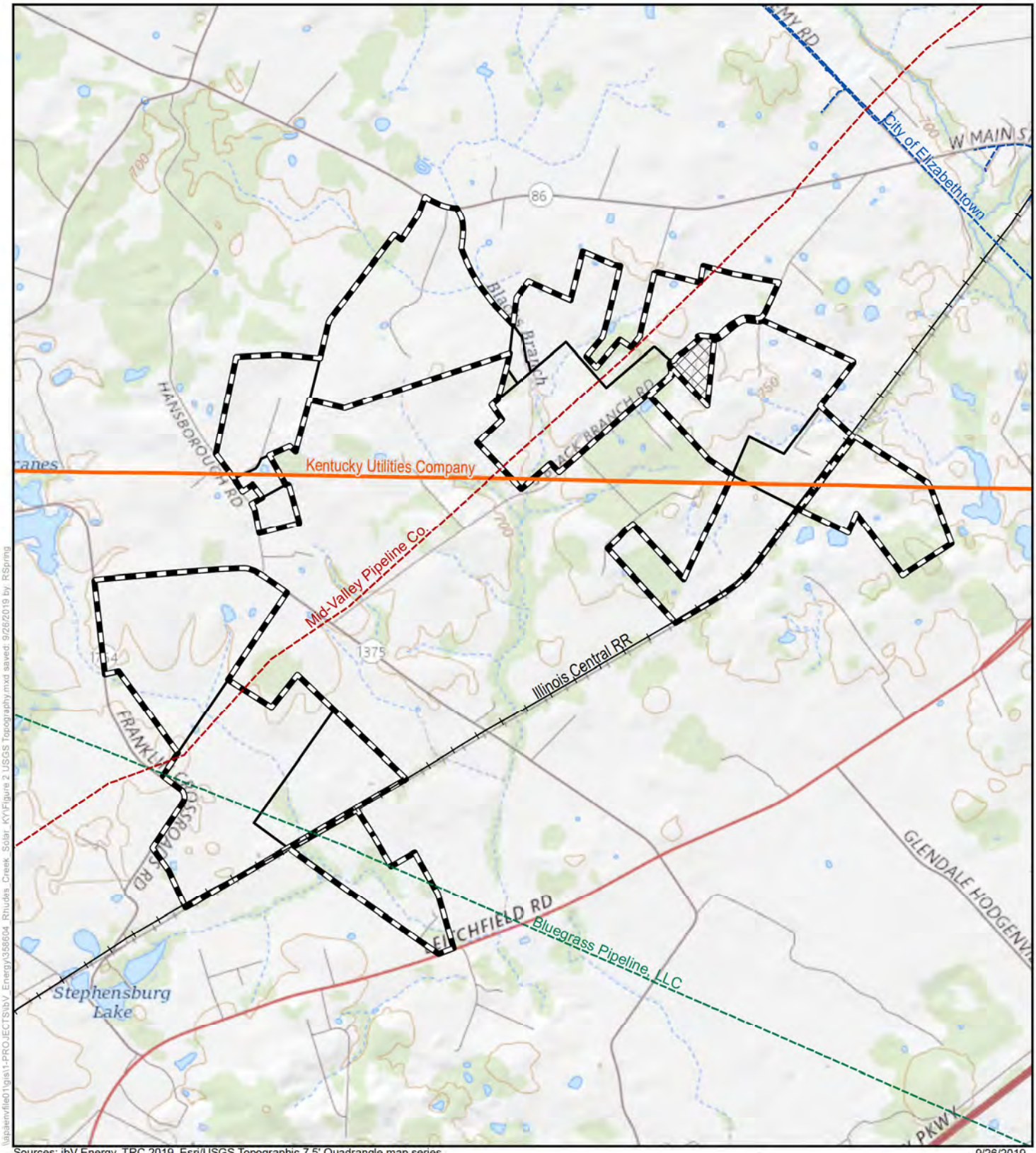
9/26/2019

TRC

*ibV Energy Partners*
*Rhudes Creek Solar Project*
*Hardin County, Kentucky*

Project Regional Location

**Figure 1**




Sources: ibV Energy, TRC 2019, Esri/USGS Topographic 7.5' Quadrangle map series. 9/26/2019


- Project Area
- Parcel Boundary
- Outparcel (Not part of Project Area)
- Crude Oil Pipeline
- Natural Gas Pipeline
- Other Liquid Pipeline
- Existing 345 kV Electrical Transmission Line
- Existing Railroad

N

1:31,680
1 inch = 2,640 feet
1 inch = 0.5 miles
*(when printed 8.5x11)*

0 ¼ ½ Miles

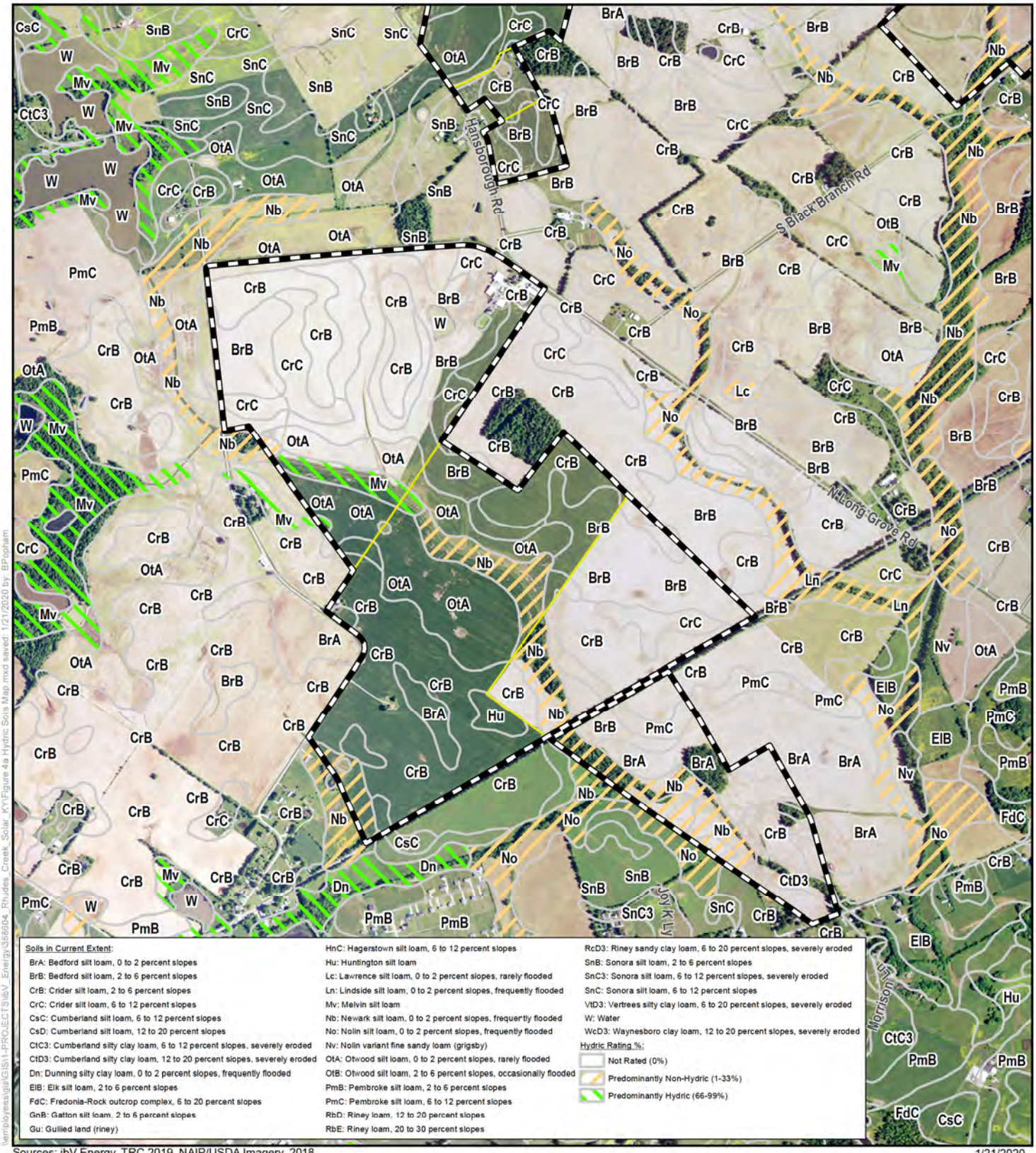
TRC

*ibV Energy Partners*
*Rhudes Creek Solar Project*
*Hardin County, Kentucky*

USGS Topography

**Figure 2**

\\tqalenvfile01\gis1\PROJECTS\ibV_Energy\358604_Rhudes_Creek_Solar_KY\Figure 2 USGS Topography.mxd saved 9/26/2019 by RSpring




Soils in Current Extent:

- BrA: Bedford silt loam, 0 to 2 percent slopes
- BrB: Bedford silt loam, 2 to 6 percent slopes
- CrB: Crider silt loam, 2 to 6 percent slopes
- CrC: Crider silt loam, 6 to 12 percent slopes
- CsC: Cumberland silt loam, 6 to 12 percent slopes
- CsD: Cumberland silt loam, 12 to 20 percent slopes
- CtC3: Cumberland silty clay loam, 6 to 12 percent slopes, severely eroded
- CtD3: Cumberland silty clay loam, 12 to 20 percent slopes, severely eroded
- Dn: Dunning silty clay loam, 0 to 2 percent slopes, frequently flooded
- ElB: Elk silt loam, 2 to 6 percent slopes
- FdC: Fredonia-Rock outcrop complex, 6 to 20 percent slopes
- GnB: Gatton silt loam, 2 to 6 percent slopes
- Gu: Gullied land (riney)
- HnC: Hagerstown silt loam, 6 to 12 percent slopes
- Hu: Huntington silt loam
- Lc: Lawrence silt loam, 0 to 2 percent slopes, rarely flooded
- Ln: Lindside silt loam, 0 to 2 percent slopes, frequently flooded
- Mv: Melvin silt loam
- Nb: Newark silt loam, 0 to 2 percent slopes, frequently flooded
- No: Nolin silt loam, 0 to 2 percent slopes, frequently flooded
- Nv: Nolin variant fine sandy loam (grigsby)
- OtA: Otwood silt loam, 0 to 2 percent slopes, rarely flooded
- OtB: Otwood silt loam, 2 to 6 percent slopes, occasionally flooded
- PmB: Pembroke silt loam, 2 to 6 percent slopes
- PmC: Pembroke silt loam, 6 to 12 percent slopes
- RbD: Riney loam, 12 to 20 percent slopes
- RbE: Riney loam, 20 to 30 percent slopes
- RcD3: Riney sandy clay loam, 6 to 20 percent slopes, severely eroded
- SnB: Sonora silt loam, 2 to 6 percent slopes
- SnC3: Sonora silt loam, 6 to 12 percent slopes, severely eroded
- SnC: Sonora silt loam, 6 to 12 percent slopes
- VtD3: Vertrees silty clay loam, 6 to 20 percent slopes, severely eroded
- W: Water
- WcD3: Waynesboro clay loam, 12 to 20 percent slopes, severely eroded

Hydric Rating %:

- Not Rated (0%)
- Predominantly Non-Hydric (1-33%)
- Predominantly Hydric (66-99%)

Sources: ibV Energy, TRC 2019, NAIP/USDA Imagery, 2018.

1/21/2020


Project Area

Parcel Boundary

Outparcel (Not part of Project Area)

N

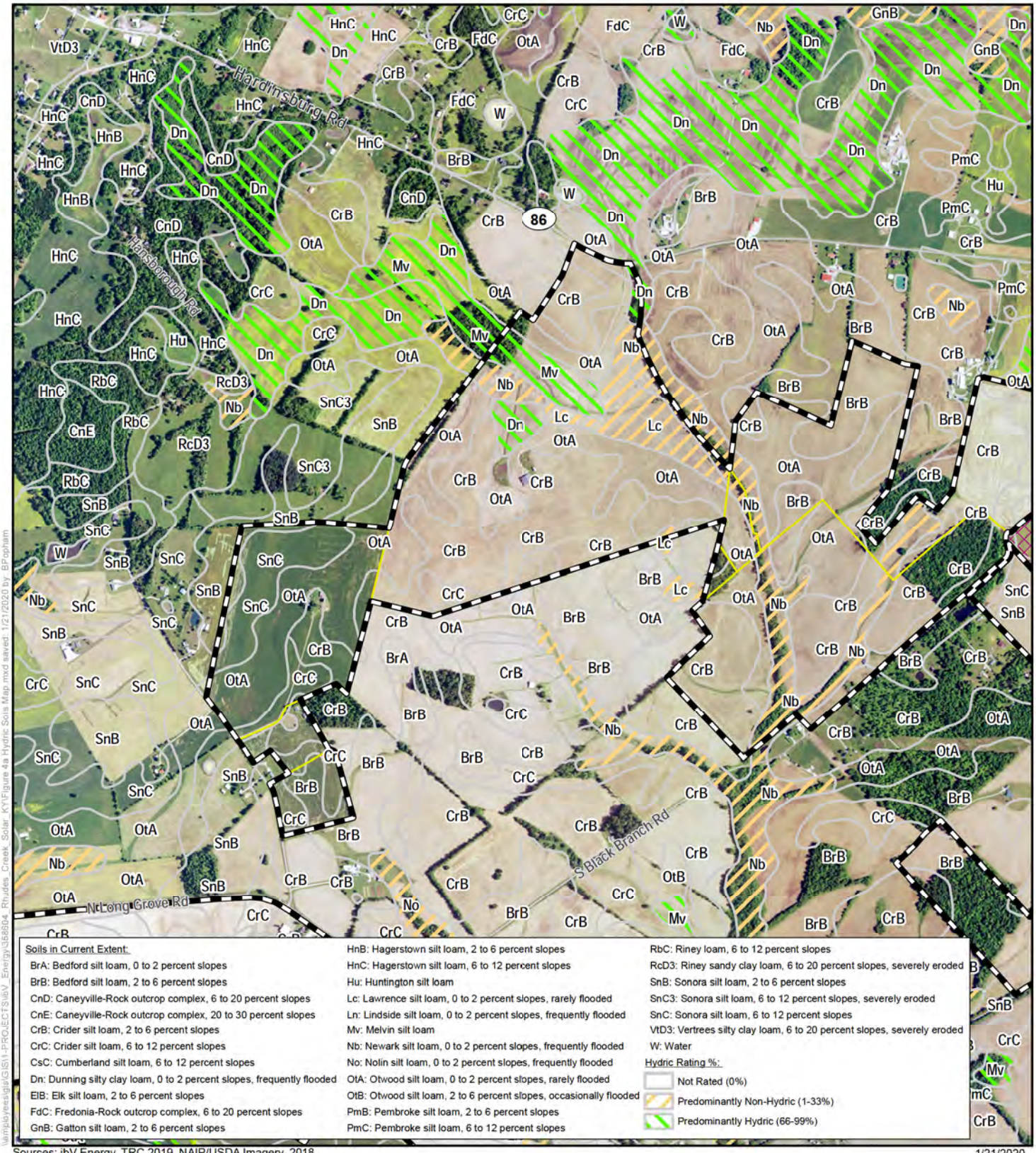
1:18,000
1 inch = 1,500 feet
*(when printed 8.5x11)*

0 750 1,500 Feet

TRC

*ibV Energy Partners*
*Rhudes Creek Solar Project*
*Hardin County, Kentucky*

Hydric Soils
**Figure 4a**
Sheet 1 of 3




Soils in Current Extent:

- BrA: Bedford silt loam, 0 to 2 percent slopes
- BrB: Bedford silt loam, 2 to 6 percent slopes
- CnD: Caneyville-Rock outcrop complex, 6 to 20 percent slopes
- CnE: Caneyville-Rock outcrop complex, 20 to 30 percent slopes
- CrB: Crider silt loam, 2 to 6 percent slopes
- CrC: Crider silt loam, 6 to 12 percent slopes
- CsC: Cumberland silt loam, 6 to 12 percent slopes
- Dn: Dunning silty clay loam, 0 to 2 percent slopes, frequently flooded
- ElB: Elk silt loam, 2 to 6 percent slopes
- FdC: Fredonia-Rock outcrop complex, 6 to 20 percent slopes
- GnB: Gatton silt loam, 2 to 6 percent slopes
- HnB: Hagerstown silt loam, 2 to 6 percent slopes
- HnC: Hagerstown silt loam, 6 to 12 percent slopes
- Hu: Huntington silt loam
- Lc: Lawrence silt loam, 0 to 2 percent slopes, rarely flooded
- Ln: Lindside silt loam, 0 to 2 percent slopes, frequently flooded
- Mv: Melvin silt loam
- Nb: Newark silt loam, 0 to 2 percent slopes, frequently flooded
- No: Nolin silt loam, 0 to 2 percent slopes, frequently flooded
- OtA: Otwood silt loam, 0 to 2 percent slopes, rarely flooded
- OtB: Otwood silt loam, 2 to 6 percent slopes, occasionally flooded
- PmB: Pembroke silt loam, 2 to 6 percent slopes
- PmC: Pembroke silt loam, 6 to 12 percent slopes
- RbC: Riney loam, 6 to 12 percent slopes
- RcD3: Riney sandy clay loam, 6 to 20 percent slopes, severely eroded
- SnB: Sonora silt loam, 2 to 6 percent slopes
- SnC3: Sonora silt loam, 6 to 12 percent slopes, severely eroded
- SnC: Sonora silt loam, 6 to 12 percent slopes
- VtD3: Vertrees silty clay loam, 6 to 20 percent slopes, severely eroded
- W: Water

Hydric Rating %:

- Not Rated (0%)
- Predominantly Non-Hydric (1-33%)
- Predominantly Hydric (66-99%)

Sources: ibV Energy, TRC 2019, NAIP/USDA Imagery, 2018.

1/21/2020


Project Area

Parcel Boundary

Outparcel (Not part of Project Area)

N

1:18,000
1 inch = 1,500 feet
*(when printed 8.5x11)*

0 750 1,500 Feet

TRC

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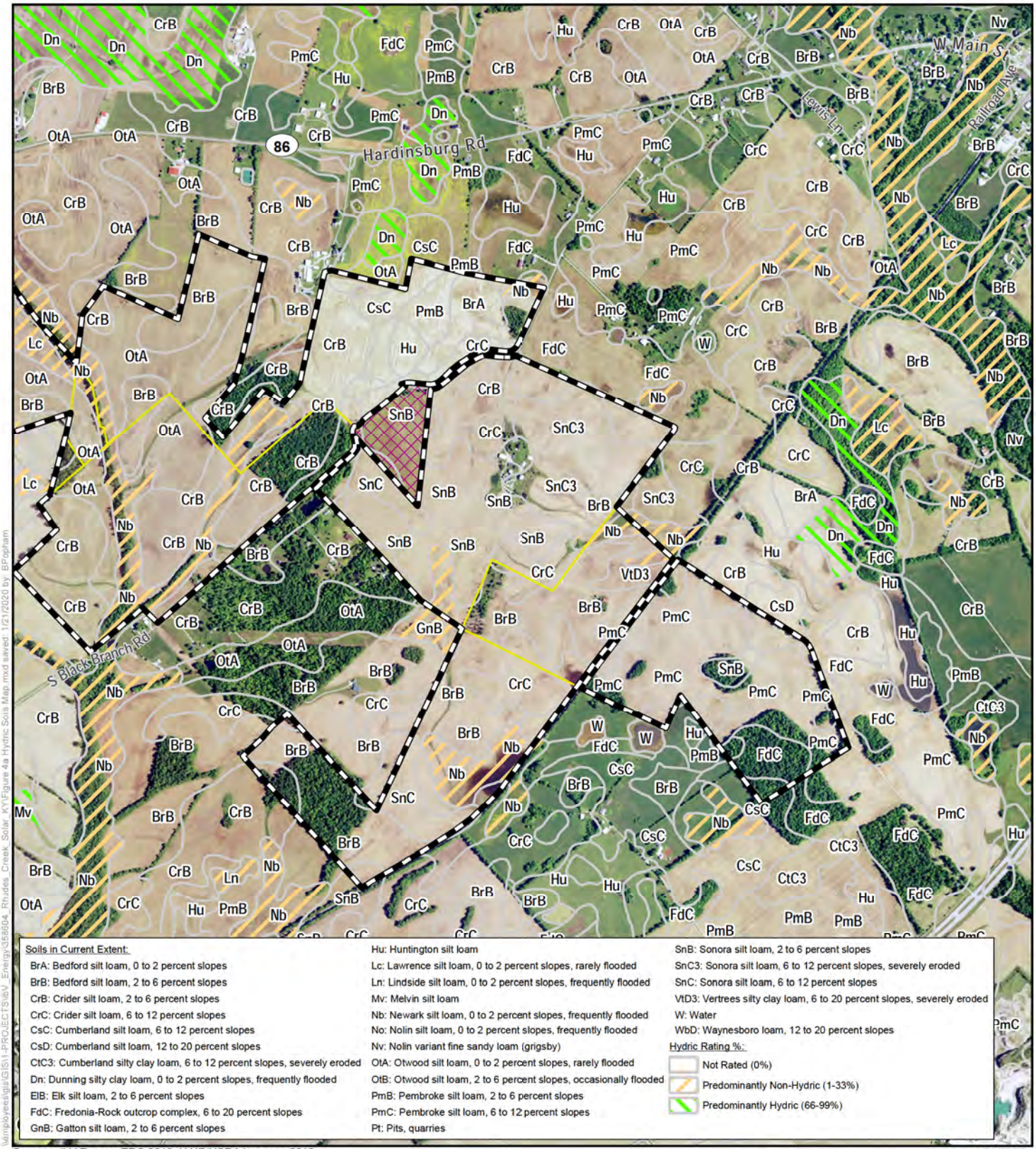
*Rhudes Creek Solar Project*
*Hardin County, Kentucky*

Hydric Soils
**Figure 4a**
Sheet 2 of 3




| Soils in Current Extent: | | |
|---|---|---|
| BrA: Bedford silt loam, 0 to 2 percent slopes | Hu: Huntington silt loam | SnB: Sonora silt loam, 2 to 6 percent slopes |
| BrB: Bedford silt loam, 2 to 6 percent slopes | Lc: Lawrence silt loam, 0 to 2 percent slopes, rarely flooded | SnC3: Sonora silt loam, 6 to 12 percent slopes, severely eroded |
| CrB: Crider silt loam, 2 to 6 percent slopes | Ln: Lindside silt loam, 0 to 2 percent slopes, frequently flooded | SnC: Sonora silt loam, 6 to 12 percent slopes |
| CrC: Crider silt loam, 6 to 12 percent slopes | Mv: Melvin silt loam | VtD3: Vertrees silty clay loam, 6 to 20 percent slopes, severely eroded |
| CsC: Cumberland silt loam, 6 to 12 percent slopes | Nb: Newark silt loam, 0 to 2 percent slopes, frequently flooded | W: Water |
| CsD: Cumberland silt loam, 12 to 20 percent slopes | No: Nolin silt loam, 0 to 2 percent slopes, frequently flooded | WbD: Waynesboro loam, 12 to 20 percent slopes |
| CtC3: Cumberland silty clay loam, 6 to 12 percent slopes, severely eroded | Nv: Nolin variant fine sandy loam (grigsby) | Hydric Rating %: |
| Dn: Dunning silty clay loam, 0 to 2 percent slopes, frequently flooded | OtA: Otwood silt loam, 0 to 2 percent slopes, rarely flooded | Not Rated (0%) |
| ElB: Elk silt loam, 2 to 6 percent slopes | OtB: Otwood silt loam, 2 to 6 percent slopes, occasionally flooded | Predominantly Non-Hydric (1-33%) |
| FdC: Fredonia-Rock outcrop complex, 6 to 20 percent slopes | PmB: Pembroke silt loam, 2 to 6 percent slopes | Predominantly Hydric (66-99%) |
| GnB: Gatton silt loam, 2 to 6 percent slopes | PmC: Pembroke silt loam, 6 to 12 percent slopes | |
| | Pt: Pits, quarries | |

Sources: ibV Energy, TRC 2019, NAIP/USDA Imagery, 2018.

1/21/2020


Project Area

Parcel Boundary

Outparcel (Not part of Project Area)

N

1:18,000
1 inch = 1,500 feet
*(when printed 8.5x11)*

0 750 1,500 Feet

TRC

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*Hardin County, Kentucky*

Hydric Soils
**Figure 4a**
Sheet 3 of 3

\\employees\gis\GIS_PROJECTS\ibV_Energy\368604_Rhudes_Creek_Solar_KY\Figure 4a Hydric Soils Map.mxd saved: 1/21/2020 by: BPopham


\\apaenvfile01\gis1\PROJECTS\ibV_Energy\368604_Rhudes_Creek_Solar_KY\Figure 7 NWI, NHD, FEMA.mxd saved 9/18/2019 by: RSpring

Sources: ibV Energy, TRC 2019, NAIP/USDA Imagery, 2018.

9/18/2019


- Project Area
- Parcel Boundary
- Outparcel (Not part of Project Area)
- NHD Flowline
- NHD Waterbody

NWI Type:

- Freshwater Emergent Wetland
- Freshwater Forested/ Shrub Wetland
- Freshwater Pond
- Riverine

N

1:12,000
1 inch = 1,000 feet
*(when printed 8.5x11)*

0 500 1,000 Feet

TRC

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*Rhudes Creek Solar Project*
*Hardin County, Kentucky*

NWI, NHD, FEMA
**Figure 4**
Sheet 1 of 3


\\apaenvfile01\gis1\PROJECTS\ibV_Energy\358604_Rhudes_Creek_Solar_KY\Figure 7 NWI, NHD, FEMA.mxd saved: 9/18/2019 by: RSpring

Sources: ibV Energy, TRC 2019, NAIP/USDA Imagery, 2018.

9/18/2019


- Project Area
- Parcel Boundary
- NHD Flowline
- NHD Waterbody

NWI Type:

- Freshwater Emergent Wetland
- Freshwater Forested/ Shrub Wetland
- Freshwater Pond
- Riverine

N

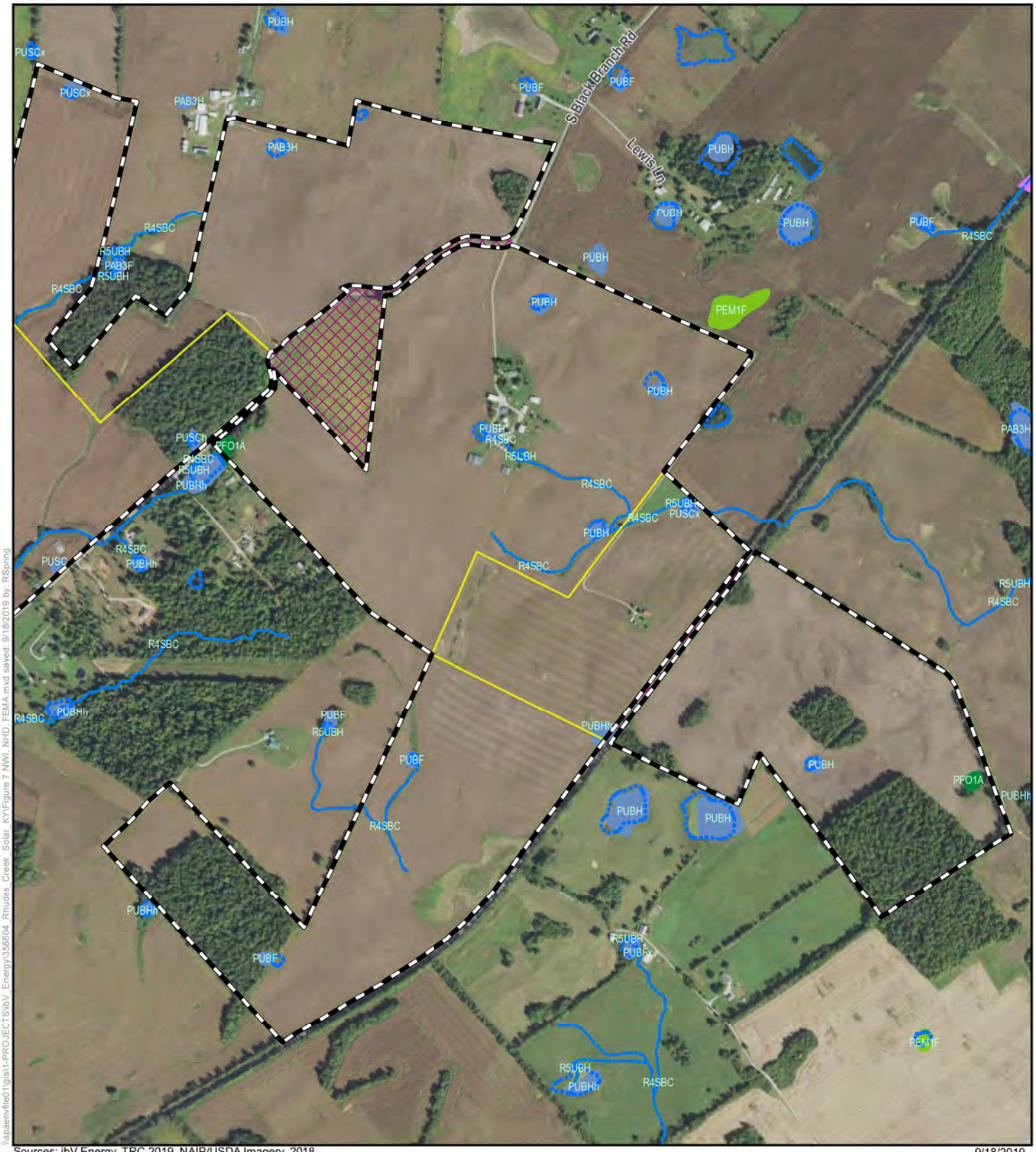
1:12,000
1 inch = 1,000 feet
*(when printed 8.5x11)*

0 500 1,000 Feet

TRC

*ibV Energy Partners*
*Rhudes Creek Solar Project*
*Hardin County, Kentucky*

NWI, NHD, FEMA
**Figure** 4
Sheet 2 of 3




Sources: ibV Energy, TRC 2019, NAIP/USDA Imagery, 2018.

9/18/2019


- Project Area
- Parcel Boundary
- Outparcel (Not part of Project Area)
- NHD Flowline
- NHD Waterbody
- 1% Chance/100-Year Floodplain

NWI Type:

- Freshwater Emergent Wetland
- Freshwater Forested/ Shrub Wetland
- Freshwater Pond
- Riverine

N

1:12,000
1 inch = 1,000 feet
*(when printed 8.5x11)*

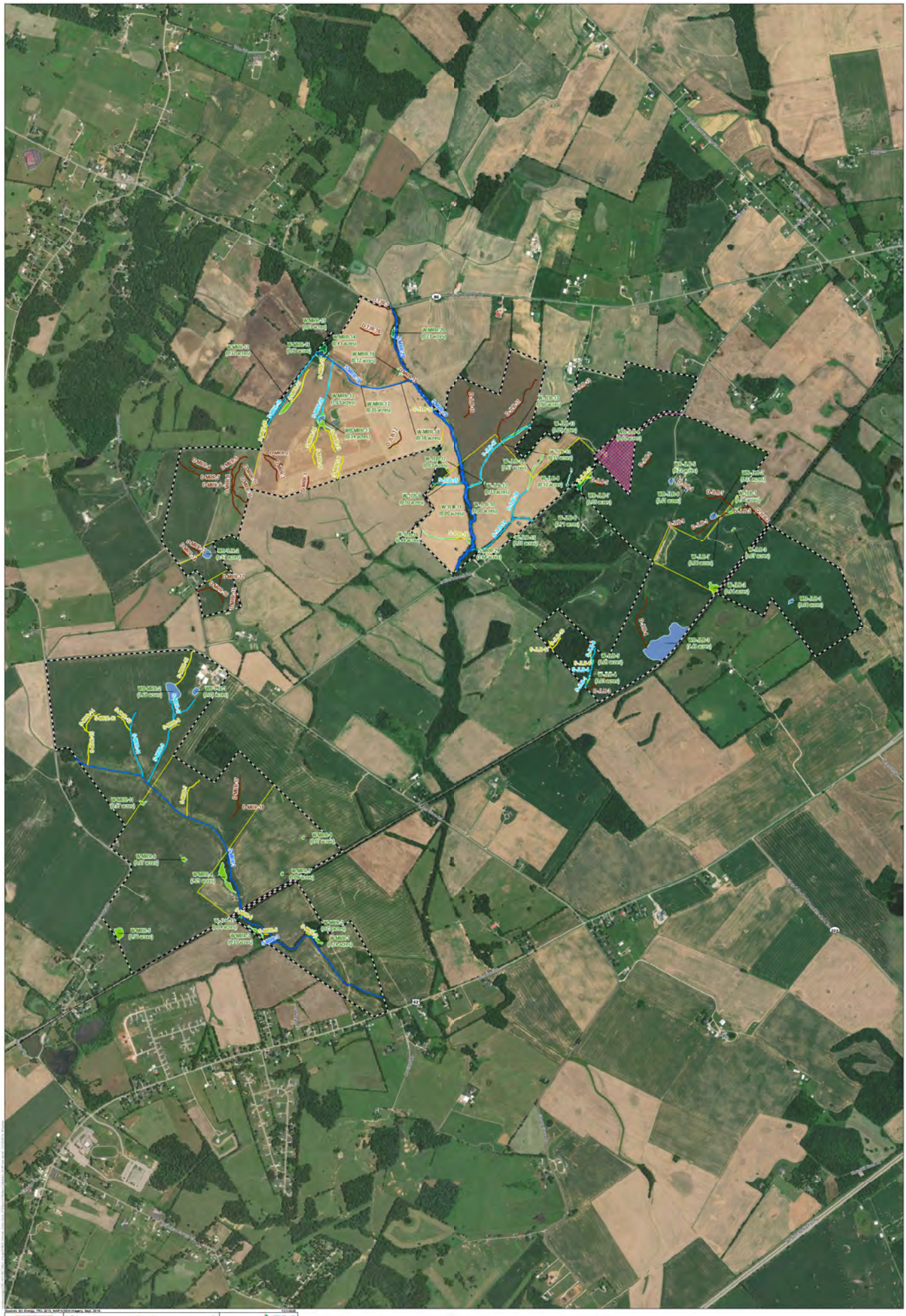
0 500 1,000 Feet

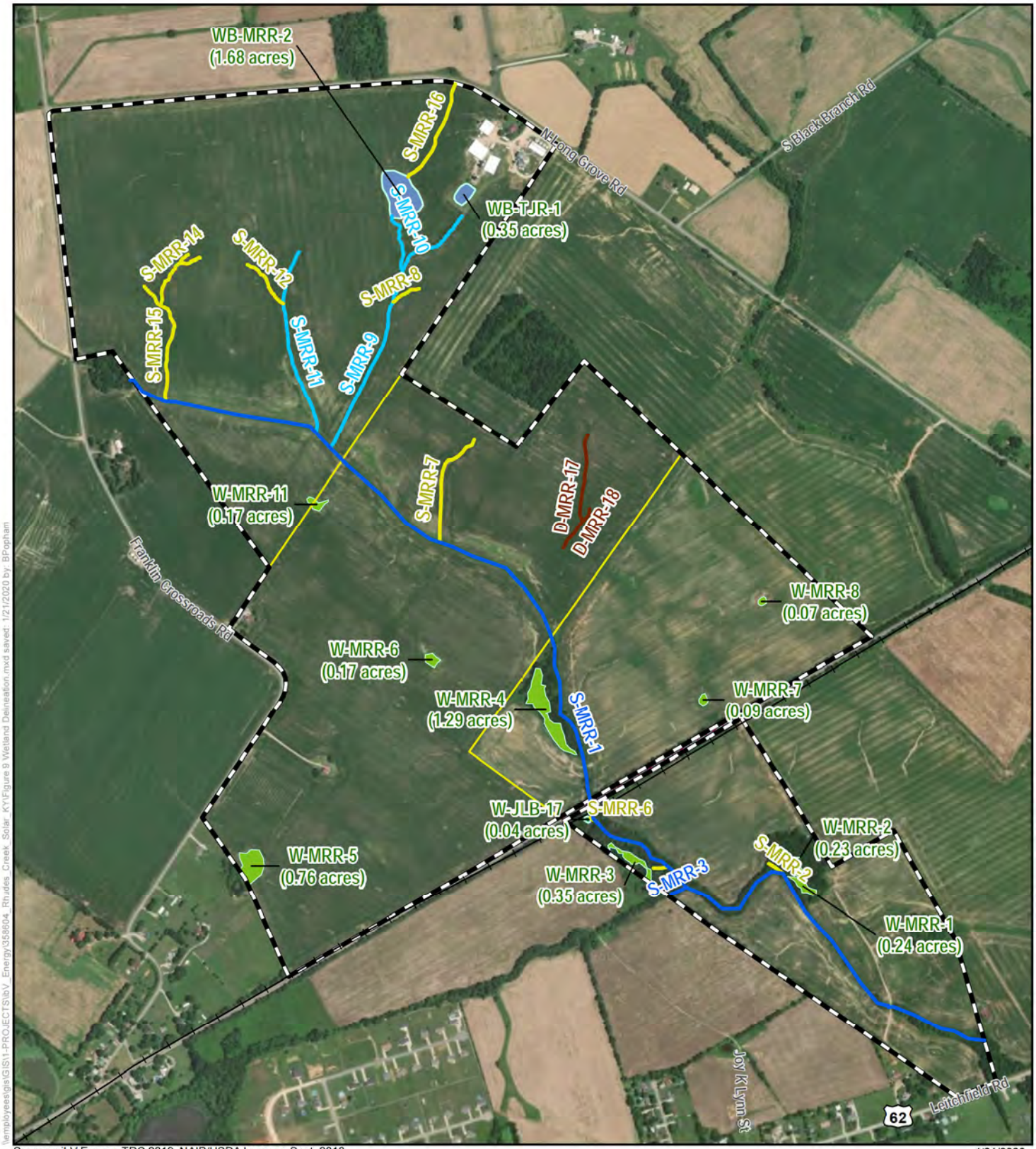
TRC

*ibV Energy Partners*
*Rhudes Creek Solar Project*
*Hardin County, Kentucky*

NWI, NHD, FEMA
**Figure** 4
Sheet 3 of 3

\\apaenvfile01\gis1\PROJECTS\ibV_Energy\358604_Rhudes_Creek_Solar_KY\Figure 7 NWI, NHD, FEMA.mxd saved: 9/18/2019 by: RSpring


Project Area
Parcel Boundary
Outparcel (Not part of Project Area)
PERENNIAL
INTERMITTENT
EPHEMERAL
DITCH
PEM
PFO
PSS
WATERBODY
N
1 inch = 796.5 feet
0
500
1,000
Feet
TRC
BV Energy Partners
Rhudes Creek Solar Project
Hardin County, Kentucky
Figure 5
TRC Delineated Wetlands & Waterbodies
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap




Sources: ibV Energy, TRC 2019, NAIP/USDA Imagery, Sept. 2018.

1/21/2020




- Project Area
- Parcel Boundary
- Outparcel (Not part of Project Area)
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Ditch
- PEM Wetland
- PFO Wetland
- Waterbody

N

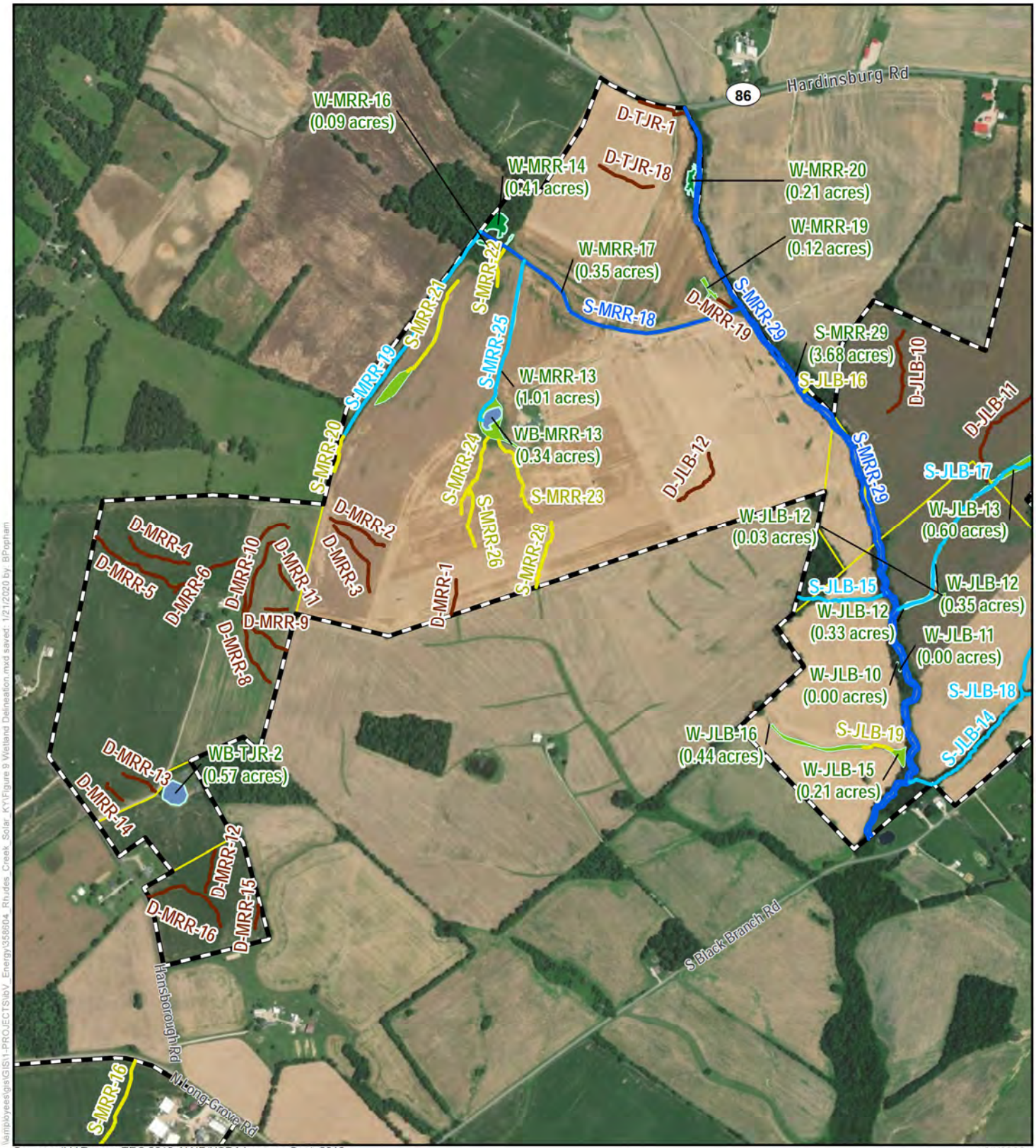
1:12,000
1 inch = 1,000 feet
*(when printed 8.5x11)*

0 500 1,000 Feet

TRC

*ibV Energy Partners*
*Rhudes Creek Solar Project*
*Hardin County, Kentucky*

**Figure 6** (Sheet 1 of 3)
TRC Delineated Wetlands & Waterbodies




Sources: ibV Energy, TRC 2019, NAIP/USDA Imagery, Sept. 2018.

1/21/2020


- Project Area
- Parcel Boundary
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Ditch
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Waterbody

N

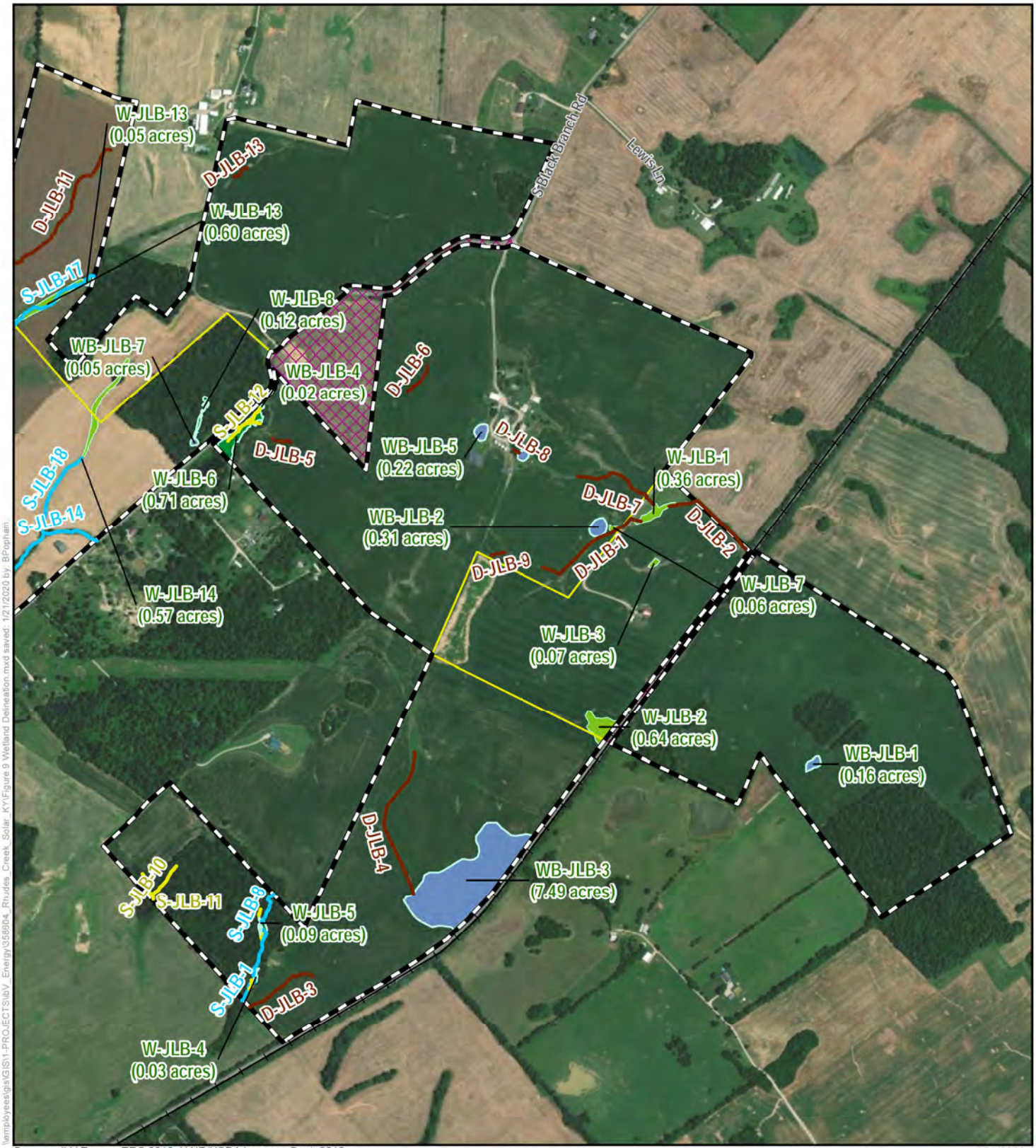
1:12,000
1 inch = 1,000 feet
*(when printed 8.5x11)*

0 500 1,000 Feet

TRC

*ibV Energy Partners*
*Rhudes Creek Solar Project*
*Hardin County, Kentucky*

**Figure 6** (Sheet 2 of 3)
TRC Delineated Wetlands & Waterbodies




Sources: ibV Energy, TRC 2019, NAIP/USDA Imagery, Sept. 2018.

1/21/2020


- Project Area
- Parcel Boundary
- Outparcel (Not part of Project Area)
- Intermittent Stream
- Ephemeral Stream
- Ditch
- PEM Wetland
- PFO Wetland
- Waterbody

N

1:12,000
1 inch = 1,000 feet
*(when printed 8.5x11)*

0 500 1,000 Feet

TRC

*ibV Energy Partners*
*Rhudes Creek Solar Project*
*Hardin County, Kentucky*

**Figure 6** (Sheet 3 of 3)
TRC Delineated Wetlands & Waterbodies

\employees\gis\GIS\1-PROJECTS\ibV_Energy\358804_Rhudes_Creek_Solar_KY\Figure 9 Wetland Delineation.mxd saved: 1/21/2020 by: BPopham